

*Sun™ Ultra™ 1 Series
to Sun Ultra™ 1 Model 200E
Upgrade Guide*



The Network Is the Computer™

Sun Microsystems Computer Company

2550 Garcia Avenue
Mountain View, CA 94043 USA
415 960-1300 fax 415 969-9131

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- 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.

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Preface

This document describes how to upgrade a Sun™ Ultra™ 1 Series system to a Sun Ultra 1 Model 200E Series system.

Unless specifically called out to the contrary, references to Sun Ultra 1 Series systems covers Sun Ultra 1 Series Model 140 and Model 170 systems, as well as Sun Ultra 1 Creator Series Model 170E systems and Sun Enterprise Ultra 1 Series systems.

UNIX Commands

This document does not include specific software commands or procedures. Instead, it may name software tasks and refer you to operating system documentation or the handbook that was shipped with your new hardware.

The type of information that you might need to use references for includes:

- Shutting down the system
- Booting the system
- Configuring devices
- Other basic software procedures

See one or more of the following:

- *Solaris 2.x Handbook for SMCC Peripherals* contains Solaris™ 2.x software commands.
- On-line AnswerBook™ for the complete set of documentation supporting the Solaris 2.x software environment.
- Other software documentation that you received with your system.

Typographic Conventions

The following table describes the typographic changes used in this book.

Typeface or Symbol	Meaning	Example
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. machine_name% You have mail.
AaBbCc123	What you type, contrasted with on-screen computer output	<pre>machine_name% su Password:</pre>
<i>AaBbCc123</i>	Command-line placeholder: replace with a real name or value	To delete a file, type <code>rm filename</code> .
<i>AaBbCc123</i>	Book titles, new words or terms, or 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 root to do this.

Shell Prompts

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

Shell	Prompt
C shell	machine_name%
C shell superuser	machine_name#
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Related Documents

The following documents contain topics that relate to the information in *Sun Ultra 1 Series to Sun Ultra 1 Model 200E Upgrade Guide*

Application	Title	Part Number
Installation	<i>Sun Ultra 1 Series Installation Guide</i>	802-4144-xx, 802-4145-xx, 802-4146-xx

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Luxembourg	32-2-720-09-09	32-2-725-88-50
Germany	01-30-81-61-91	01-30-81-61-92
The Netherlands	06-022-34-45	06-022-34-46
Sweden	020-79-57-26	020-79-57-27
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Upgrade Process



Overview

This document describes how to upgrade a Sun™ Ultra™ 1 Series system to a Sun Ultra 1 Model 200E Series system.

Unless specifically called out to the contrary, references to Sun Ultra 1 Series systems covers Sun Ultra 1 Series Model 140 and Model 170 systems, as well as Sun Ultra 1 Creator Series Model 170E systems and Sun Enterprise Ultra 1 Series systems.

Read the documentation in the RMA (Return Material Authorization) information package provided with the upgrade.

Review the safety information in this chapter, and then proceed to the following steps:

1. Disconnect the Sun Ultra 1 Series monitor, keyboard and mouse, and associated cables.
2. Read Chapter 2, “System Board and Component Removal” for directions about removing the Creator framebuffer card (if installed), the NVRAM/TOD module, SBus cards, and DSIMMs (memory modules) from the Sun Ultra 1 Series motherboard. Set them aside for installation on the Sun Ultra 1 Model 200E Series system board.

3. Read Chapter 3, “System Board and Component Replacement” for directions about installing the Sun Ultra 1 Model 200E Series motherboard in the system chassis, and replacing DSIMMs (memory modules), the NVRAM/TOD chip, SBus cards, and the Creator framebuffer card on the upgrade system board.
4. Connect the monitor, keyboard and mouse, and any external devices to the upgraded Sun Ultra 1 Model 200E Series system as shown in the *Sun Ultra 1 Series Hardware Setup Instructions*.
5. Pack the old system board, following the instructions in the RMA information package about packing.
6. Return the old system board to Sun, as directed by the RMA information package documents.

If you have any additional questions, contact your Sun sales representative.

Upgrade Kit

The upgrade kit contains an electrostatic discharge (ESD)kit, part number 560-1302-xx, so you can safely handle parts that are sensitive to static electricity damage. The ESD kit includes a plastic antistatic mat, and a conductive wrist strap (packed in a white envelope).

Tools Required

You will need the following tools and equipment:

- Antistatic mat (included in upgrade kit)
- Foamblock spacer and template (included in upgrade kit)
- Front card guide (included in upgrade kit)
- Wrist strap (included in upgrade kit)
- Phillips screwdriver
- Longnose pliers
- Container for screws

Safety Requirements

For protection, observe the following safety precautions when working on 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.

Symbols

The following symbols mean:



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



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



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

Safety Precautions

Modification to Equipment



Caution – 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 – 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.

Power Cord Connection



Warning – 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.



Warning – 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, dangerous voltages may be contacted.

Electrostatic Discharge



Caution – The boards and hard disk drive 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 a wrist strap when handling the drive assemblies, boards, or cards.

Lithium Battery



Caution – On Sun system boards, a lithium battery is molded into the real-time clock, SGS No. MK48T59Y. 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.

Electrostatic Discharge (ESD) Precautions



Caution – The system chassis power must be set to Standby, and the AC power cord must remain plugged in to a power source to ensure a proper ground.

To minimize electrostatic discharge, observe the following precautions:

- Hold the system board, SBus cards, SIMMs, or system components by the edges only.
- When removing a board, card, or module from an antistatic bag, lay it on an antistatic surface such as a Sun ESD mat, antistatic bag, or disposable antistatic mat. Do not place boards, cards, or modules on an unprotected surface. Connectors and components have very thin pins that bend easily.
- Transport boards, cards, or modules in an antistatic bag.
- Always wear an antistatic wrist strap that is connected to a metal surface on the chassis, preferably the power supply case, when working on system components and parts.
- Systems being worked on should be connected to a grounded power outlet to provide a safe ground path.

System Board and Component Removal



This chapter provides step-by-step procedures for removing various components associated with system board operation. Before removing the system board, you must remove all DSIMMs, NVRAM/TOD module, SBus cards, and the Creator framebuffer board, if installed, following in order the removal procedures listed in this chapter.

After you have completed, in order, the removal procedures described in this chapter, continue on to the installation procedures shown in Chapter 3, “System Board and Component Replacement”.

Workspace Preparation

You will need to set aside enough space to contain the workstation chassis, the antistatic mat from the upgrade kit, and the motherboard that will be removed from the workstation.

- 1. Power off the system to be upgraded, as described in the system documentation.**



Caution – Ensure that the power cord is plugged into the system power supply, and connected to a grounded power outlet. This ensures a ground path to permit grounding any static charge, which can damage some components of the system.

- 2. Disconnect the system monitor, keyboard and mouse, and any external devices connected to the system, as described in the system documentation.**
Do not disconnect the power cord.
- 3. Turn the workstation around so that you are facing the system backpanel.**
- 4. Remove the antistatic mat from the upgrade kit, unfold it, and set it to one side of the system.**

Removing the Cover

1. Use a Phillips screwdriver to remove the lock block (if installed) on the cover (Figure 2-1).

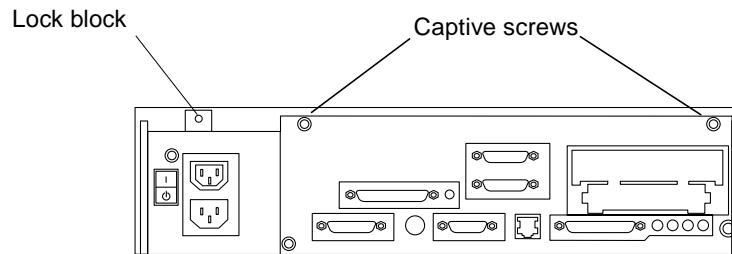


Figure 2-1 Lock Block Location

2. Loosen the two captive screws securing the cover (Figure 2-1).
3. Grasp the sides of the cover and lift up the back of the cover. After the cover clears the back panel, push the cover away from the front panel (Figure 2-2).

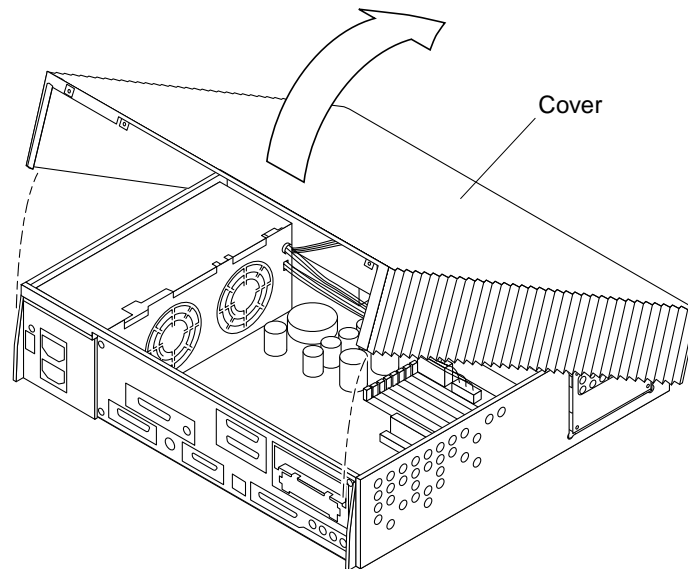


Figure 2-2 Removing the Cover

Attaching the Wrist Strap

- 1. Remove the grounding wrist strap from its envelope that is contained in the upgrade kit.**
- 2. Unwrap the first two folds of the wrist strap and wrap the adhesive side firmly against your left wrist (Figure 2-3).**
- 3. Peel the liner from the copper foil at the opposite end of the wrist strap and attach the copper end of the wrist strap to the power supply top.**

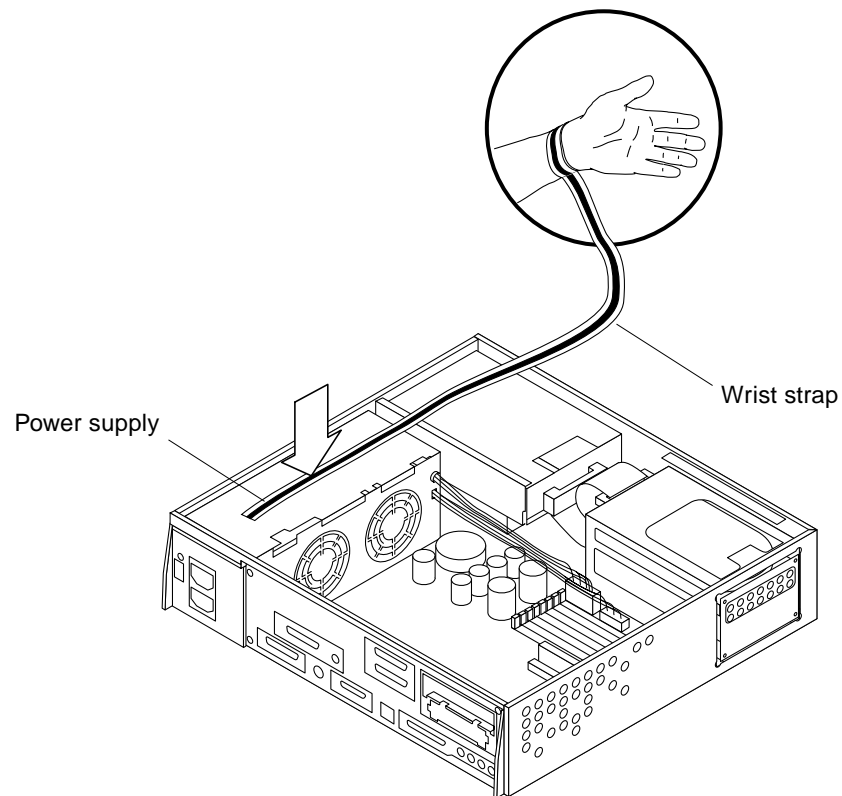


Figure 2-3 Attaching the Wrist Strap

Removing a Creator Framebuffer

If the Sun Ultra 1 Series system being upgraded has a Creator framebuffer, it must be removed and transferred to the upgraded system.



Caution – The Creator framebuffer card contains electronic components that may be extremely sensitive to static electricity.

Always wear a grounding strap when you handle a Creator card.

1. **Remove the two screws and washers securing the Creator framebuffer to the back panel (Figure 2-4).**

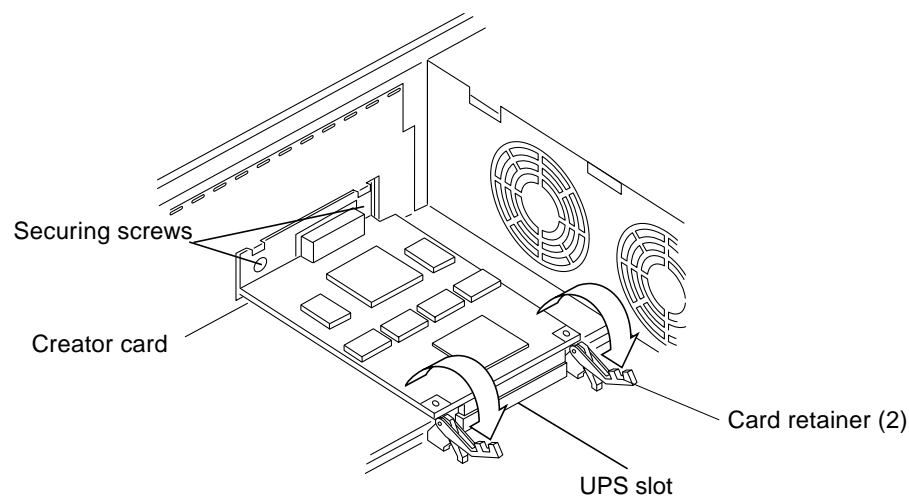


Figure 2-4 Preparing to Remove the Creator Card

2. **Unlock the card retainers (Figure 2-4).**

- 3. Grasp the Creator card at both corners, and gently pull both corners up to disconnect the Creator card from the socket (Figure 2-5).**

Caution – Avoid applying force to one end or one side of the Creator framebuffer. The connector pins can be damaged.

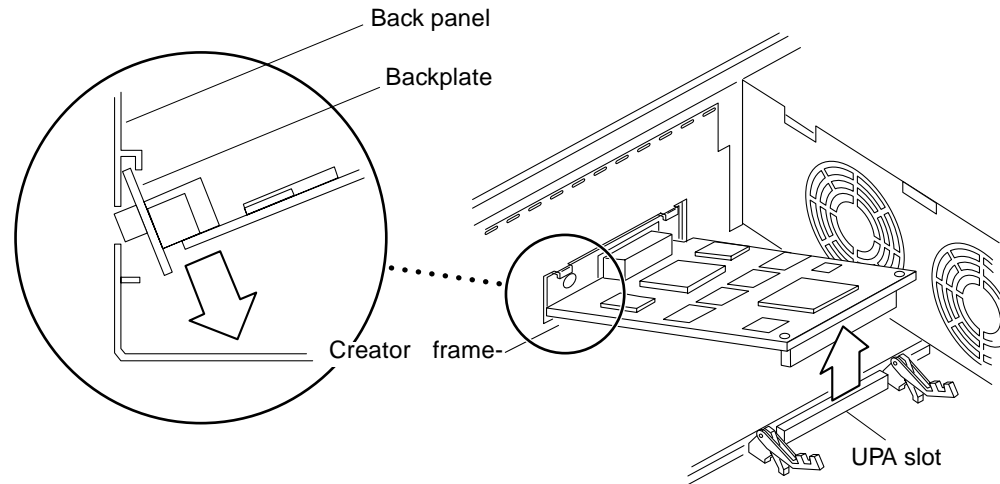


Figure 2-5 Removing the Creator Card

- 4. Slowly, lift up the Creator card at an angle.**
- 5. Lower the Creator card backplate. Disengage the Creator card from the back panel.**
- 6. Place the Creator card on the antistatic mat.**

Removing the NVRAM/TOD Module



Caution – The Non-Volatile Random Access Memory/Time Of Day (NVRAM/TOD) clock module contains the system host identification (ID) and Ethernet address.

It is made of electronic components that are extremely sensitive to static electricity. Always wear a grounding strap when you handle the NVRAM/TOD module. Handle the carrier only by the edges. Do not touch the components or any metal parts.

- 1. Locate the NVRAM/TOD module on the system board (Figure 2-6).**
Look for a sizeable chip with a stick-on label.

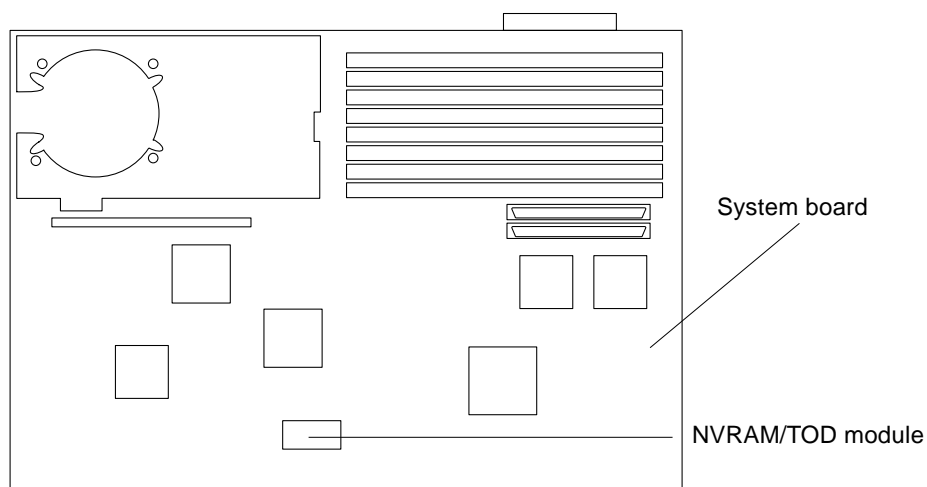


Figure 2-6 NVRAM/TOD Module Location

- 2. Hold the NVRAM/TOD carrier on both ends and lift it straight up.**
Wiggle the NVRAM/TOD carrier slightly, if necessary, to loosen it in the socket.
- 3. Place the NVRAM/TOD module and its carrier on the antistatic mat.**

Removing SBus Cards



Caution – SBus cards contain electronic components that may be extremely sensitive to static electricity.

Always wear a grounding wrist strap when you handle SBus cards.

Note – Identify the location of the SBus card(s). Ultra 1 Creator Series systems contain two SBus slots (Figure 2-7).

An Ultra 1 Model 140 or Model 170 system may contain up to three SBus cards, but only two may be transferred to the Sun Ultra 1 Model 200E Series upgrade system.

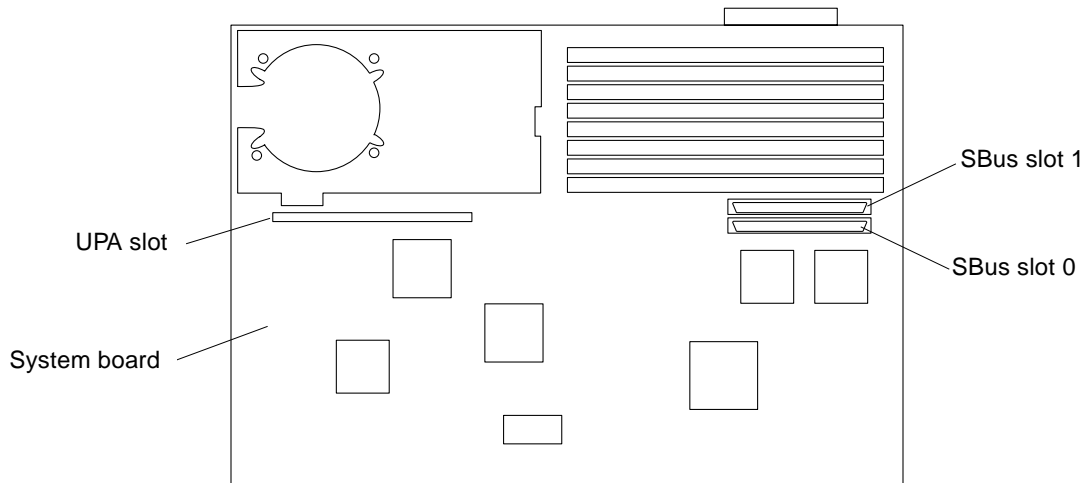


Figure 2-7 Sun Ultra 1 Model 200E Series SBus Slot Locations

Note – If there are two SBus cards in the system, first remove the SBus card from slot 1 then remove the SBus card from slot 0.

1. Push the card retainers back from the edge of the SBus card (Figure 2-8).
2. Grasp the SBus card at each corner, and pull straight up to disconnect the SBus card from the socket.

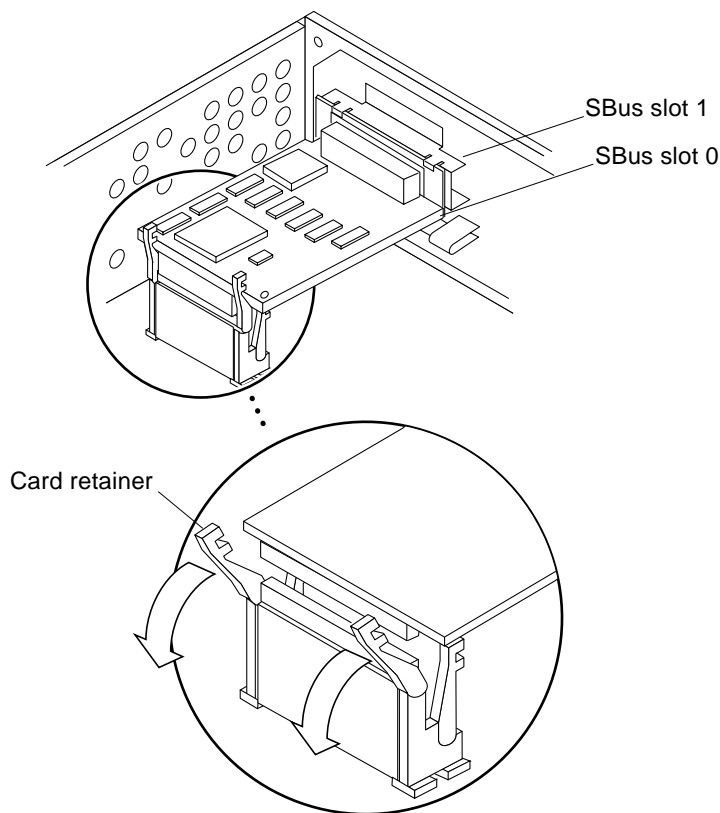


Figure 2-8 Removing an SBus Card from Slot 0

Caution – Avoid applying force only to one end or one side of the board. The connector pins can be damaged by pulling up unevenly.

3. Slide the SBus card out of the back panel.
4. Place the SBus card on the antistatic mat.

Removing DSIMMs



Caution – DSIMM components are extremely sensitive to static electricity. Static electricity from your clothes or work environment can destroy the modules.

Do not remove any DSIMM from an antistatic container until you are ready to install it on the system board. Handle the modules only by the edges. Do not touch the components or any metal parts. Always wear a grounding wrist strap when you handle DSIMMs.

Note the position of the DIMMs installed in the old system so that you can install them in the same position in the upgrade system.

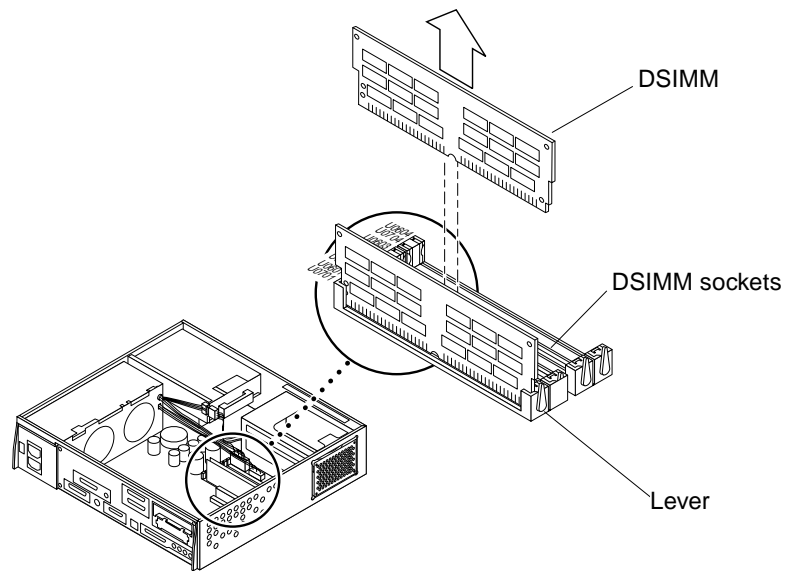


Figure 2-9 Removing a DSIMM

1. Locate the DSIMM to be removed (Figure 2-9).

2. Push the ejection lever away from the DSIMM (Figure 2-10).

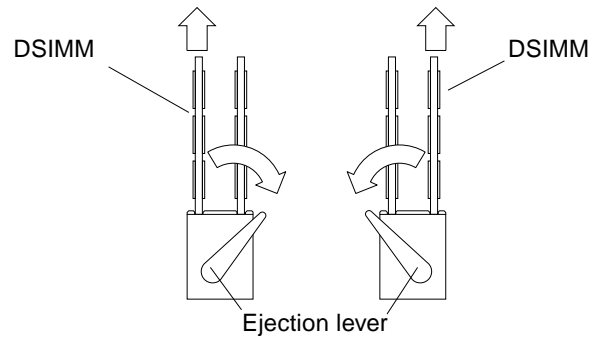


Figure 2-10 DSIMM Ejection Levers

3. Remove the DSIMM from the socket by lifting the DSIMM straight up.
Place DSIMM on the antistatic mat.

Removing the System Board



Caution – Use an antistatic mat when working with the system board. An antistatic mat contains the cushioning needed to protect the underside components, to prevent board flexing, and to provide antistatic protection.

Before removing the system board, remove all DSIMMs, the Creator framebuffer, and SBus card(s). You will reinstall the DSIMMs, Creator framebuffer, and SBus cards on the upgrade system board.

Note the chassis slot location for each DSIMM and SBus card before you remove them.

1. **Disconnect the DC power cables from the system board at J2601 and J2603 (Figure 2-11).**

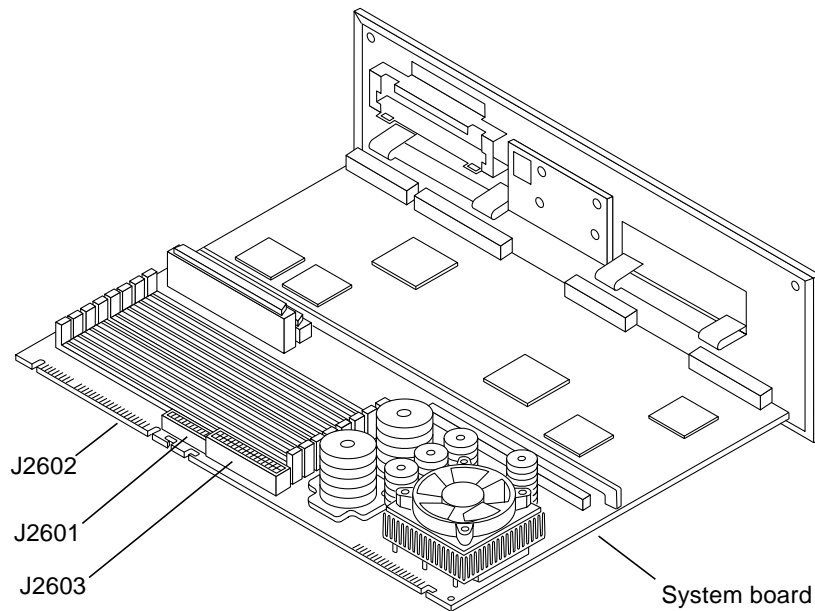


Figure 2-11 Disconnecting Connectors from the System Board

2. **Disconnect the flat ribbon SCSI cable from the system board at J2602 (Figure 2-11).**

Note – J2602 is a keyed edge connector located on the edge of the system board near the DSIMM sockets and the position marked J0101.

- 3. Disconnect the speaker/LED cable from the system board at J2001 (Figure 2-12).**

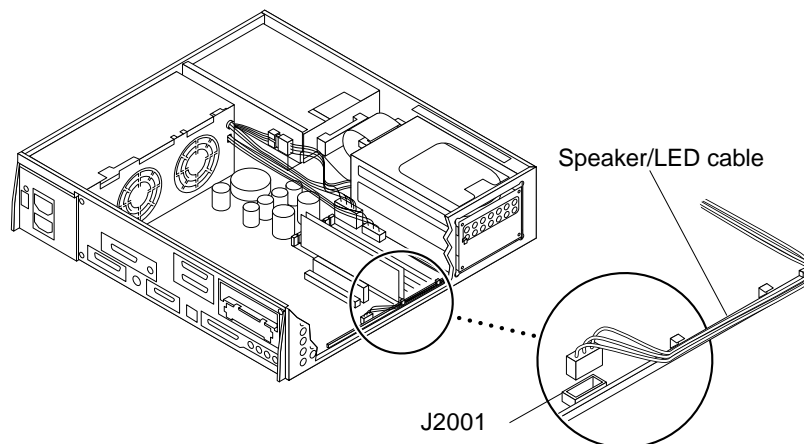


Figure 2-12 LED/Speaker and SCSI Connectors on the System Board

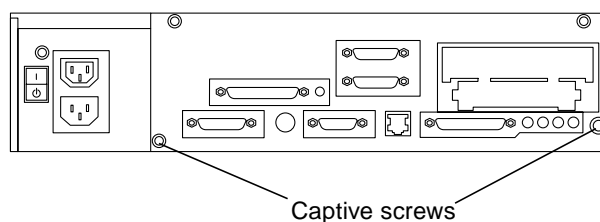


Figure 2-13 Captive Screws on the Back Panel

- 4. Loosen both captive screws on the back panel with a Phillips screwdriver (Figure 2-13).**

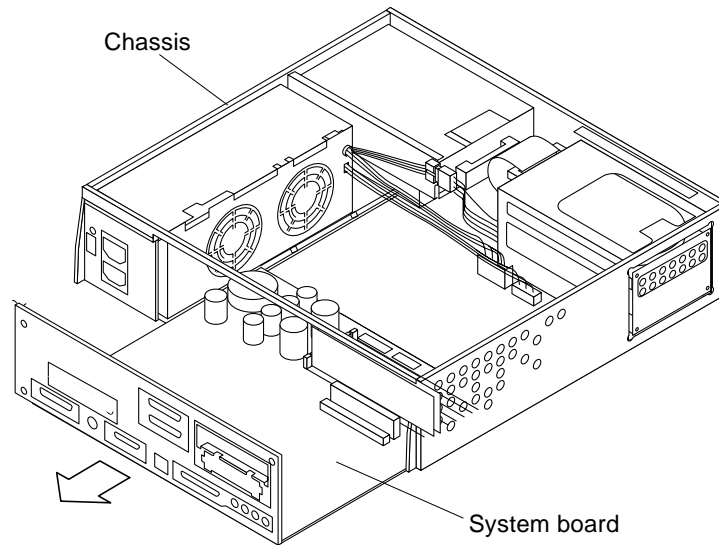


Figure 2-14 Sliding the System Board Out of the Chassis

- 5. Grasp the system board and slide it out of the chassis (Figure 2-14). Handle the system board by the back panel or by the edges only.**
- 6. Place the system board on the antistatic mat.**
- 7. You have completed the component removal procedures. Now to go to Chapter 3, “System Board and Component Replacement” to complete the upgrade installation.**

System Board and Component Replacement



This chapter provides procedures for replacing the system board and for transferring various components being transferred from the old system to the upgrade system board.

Installing the System Board



Caution – Use an antistatic mat when working with the system board. An antistatic mat contains the cushioning needed to protect the underside components, to prevent board flexing, and to provide antistatic protection.

1. Remove the Sun Ultra 1 Model 200E Series motherboard from the upgrade container and place the motherboard on the antistatic mat.
2. Remove filler panel(s) from the replacement system board so the rear panel of the replacement system board and the old system board look the same.
 - a. Squeeze the filler panel bottom locking tabs to unhook them from the back panel (Figure 3-1).
 - b. Pull the filler panel away from the back panel.

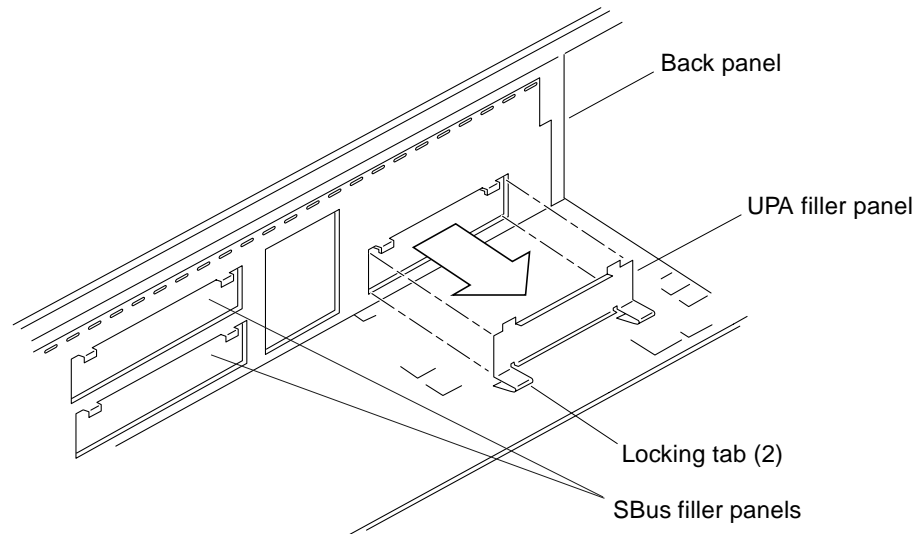


Figure 3-1 Removing Filler Panels from the Back Panel

3. Install the front card guide on the Sun Ultra 1 Model 200E Series motherboard (Figure 3-2).

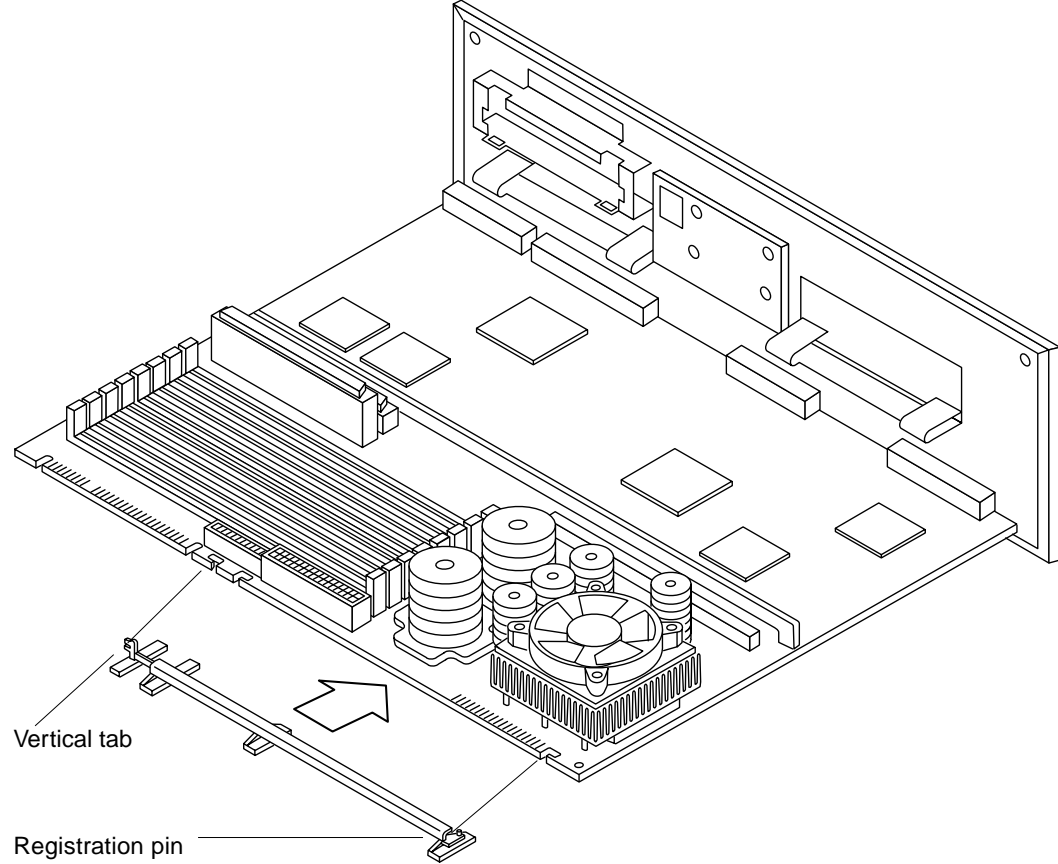


Figure 3-2 System Motherboard and Front Card Guide.

- a. Insert the vertical tab on the far left of the front card guide into the slot at the front edge of the motherboard (Figure 3-2).**
- b. Swing the front card forward until the registration pin on the far right side of the front card guide clicks into engagement with the motherboard front edge slot shown in Figure 3-2.**
The card guide will flex enough to allow the vertical tab to fit into its slot and hold the card guide in position.

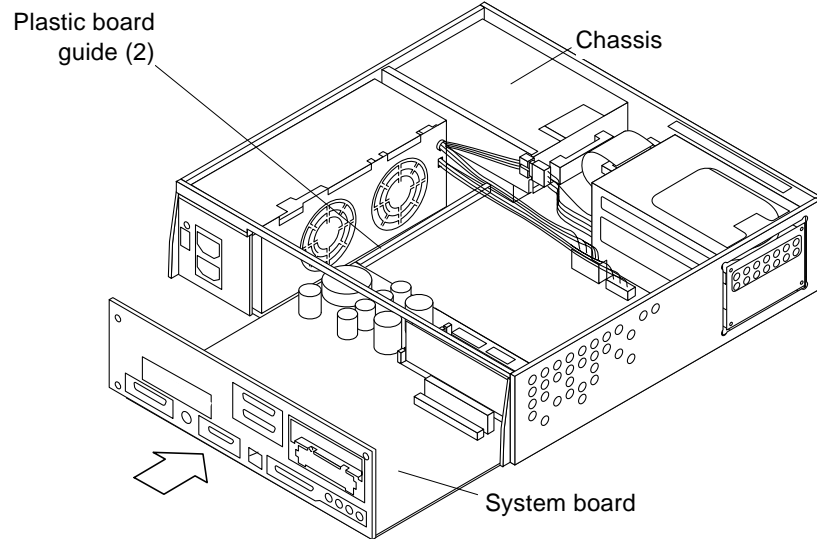


Figure 3-3 Sliding the System Board Into The Chassis

4. Slide the system board into the chassis. Verify that both sides of the system board fit into the plastic board guide slots in the base of the chassis (Figure 3-3).

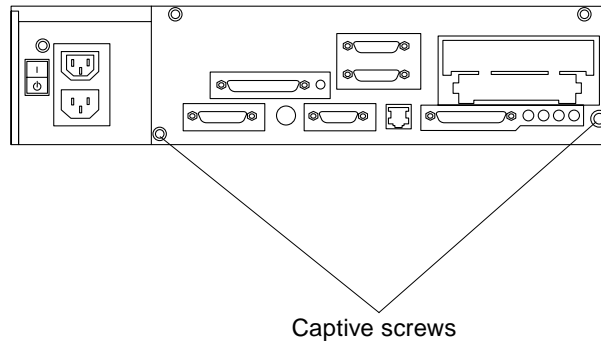


Figure 3-4 Captive Screws on the Back Panel

5. Tighten the two captive screws securing the system board to the chassis (Figure 3-4).

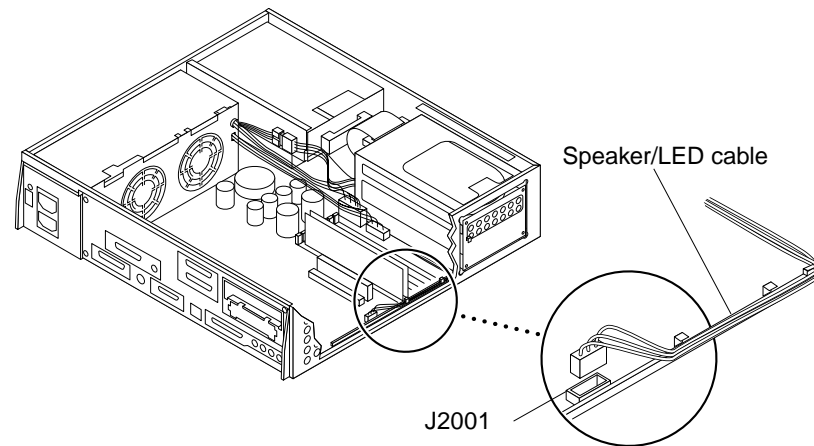


Figure 3-5 LED/Speaker Connector on the System Board

- 6. Connect the speaker/LED cable to the system board at J2001 (Figure 3-5).** Run the speaker/LED cable under the cable guide tabs on the edge of the motherboard.

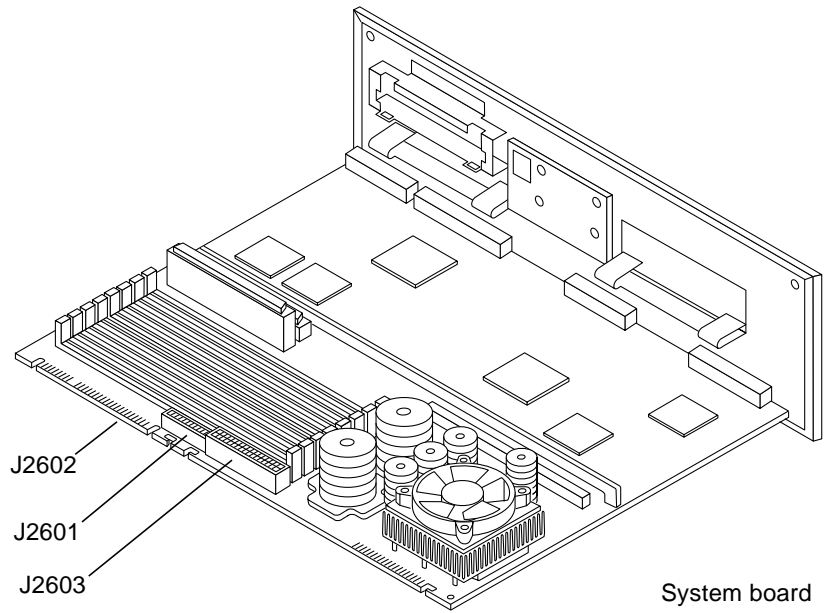


Figure 3-6 Reconnecting Connectors to the System Board

- 7. Connect the DC power cables to the system board connectors at J2601 and J2603 (Figure 3-6).**
- 8. Connect the SCSI cable to the system board edge connector at J2602 (Figure 3-6).**

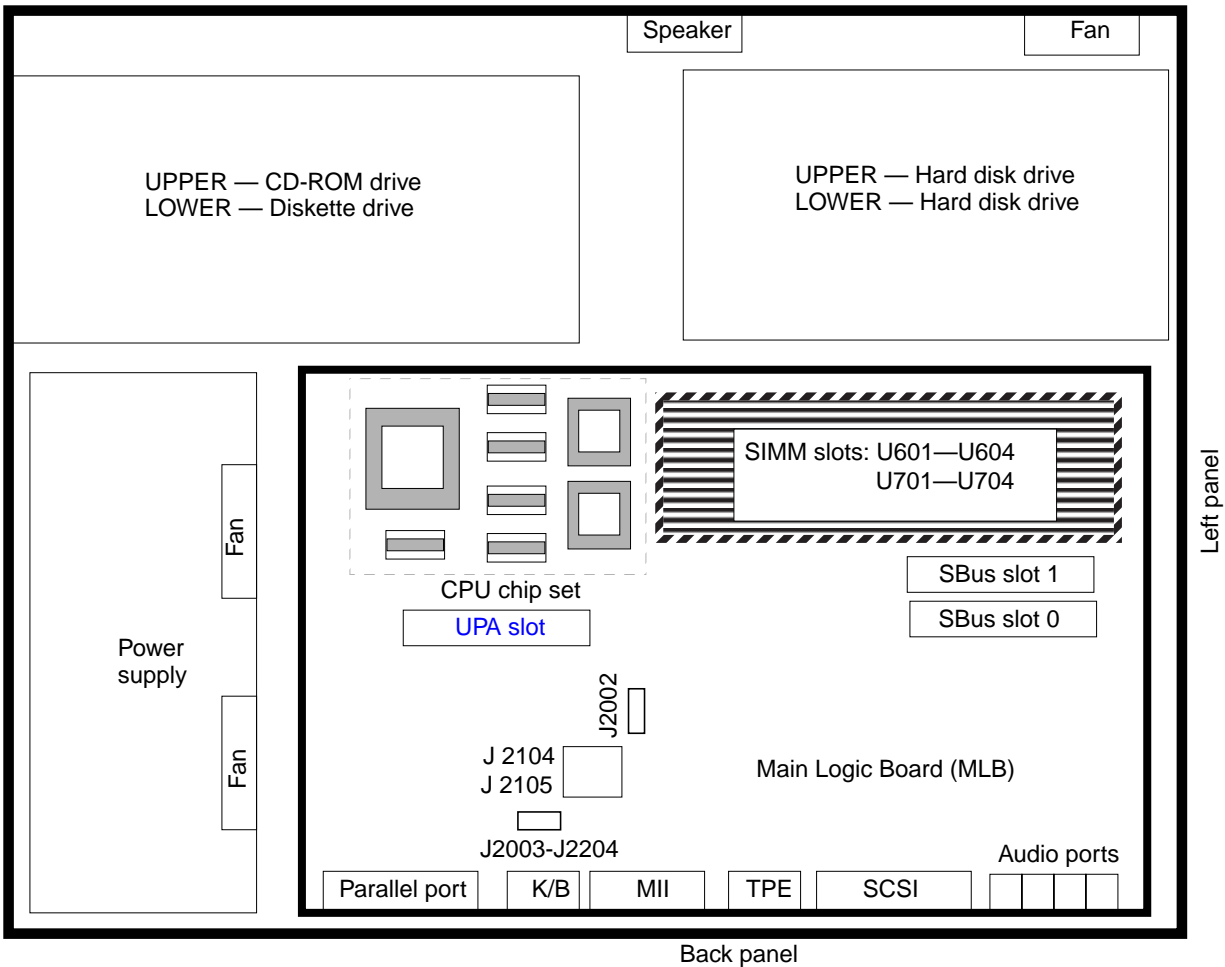


Figure 3-8 Location of the Serial Port Jumpers

Note – Jumpers J2104 and J2105 can be set to either RS-423 or RS-232 serial interface. The jumpers are preset for RS-423. RS-232 is required for digital telecommunication within the European Community.

Replacing the NVRAM/TOD Module



Caution – The Non-Volatile Random Access Memory/Time Of Day (NVRAM/TOD) clock module is made of electronic components that are extremely sensitive to static electricity.

Do not remove it from an anti-static container or antistatic pad until you are ready to install it on the system board. Handle the carrier only by the edges. Do not touch the components or any metal parts. Always wear a grounding strap when you handle the NVRAM/TOD or its carrier.

1. Locate the NVRAM/TOD socket on the system board (Figure 3-9).

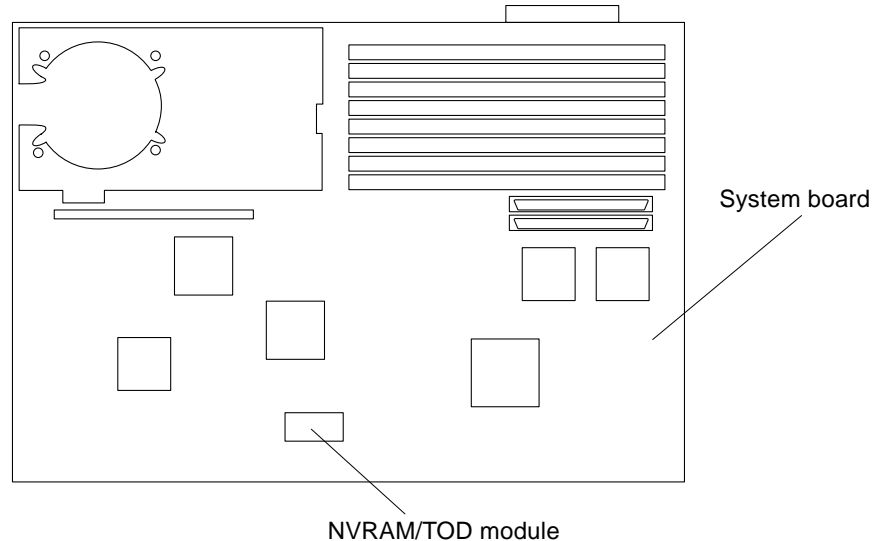


Figure 3-9 NVRAM/TOD Socket Position

2. Replace the NVRAM/TOD module installed on the upgrade board with the NVRAM/TOD module that you removed from the old motherboard.

Note – The carrier is keyed to ensure correct NVRAM/TOD installation.

Note – If you don't replace the NVRAM/TOD module on the upgrade motherboard with the one from the old motherboard, you will have to redo the network administration to reconnect the new system to the network.

3. Push the NVRAM/TOD into the carrier until it sits tightly in the socket.

Note – Installing the NVRAM/TOD on the motherboard may result in automatically setting the `diag-switch?` NVRAM parameter to true.

If the parameter value is reset, the system may take more than a minute to initialize on startup. If this happens, you can do the following to correct the inconvenience:

1. Press Stop-a
 2. At the `ok` prompt type `setenv diag-switch? false`, and then press the Return key.
-

4. Replace the new NVRAM/TOD module in the old motherboard and return it with the old system to Sun.

Replacing SBus Cards

Note – Sun Ultra 1 Model 140 and Model 170 systems can have up to three SBus cards installed. The Sun Ultra 1 Model 200E Series can contain no more than two SBus cards. The remaining slot in the Model 200E is for a Creator framebuffer. The Creator card looks like an SBus card, but the connector is different and will not fit an SBus slot.

Note – If you are installing two SBus cards onto the new motherboard, install the first one in slot 0, and the second in slot 1.

1. Remove the SBus card from the antistatic mat or bag.
2. If required, set the SBus card jumpers or switches. (See the SBus card product documentation).
3. Locate the slot for the replacement SBus card (Figure 3-10).

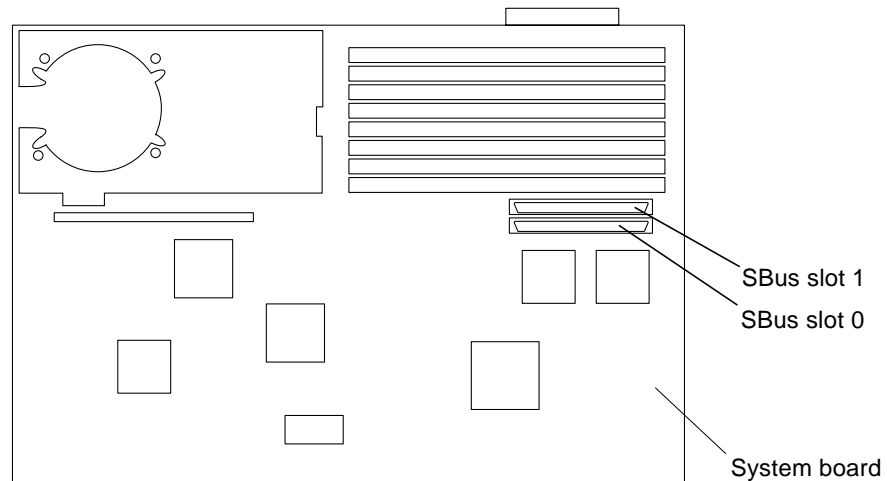


Figure 3-10 SBus Slot Positions

4. Slide the SBus card at an angle into the system unit by hooking the card backplate under the two tabs on the back panel (Figure 3-11). Ensure the card backplate is visible through the back panel slot.
5. Align the connector with the socket. Gently press the corners of the card to seat the card connector into the socket.



Warning - Do not force the card or pin damage may occur.

6. Push the rear card retainers forward over the SBus card (Figure 3-11).

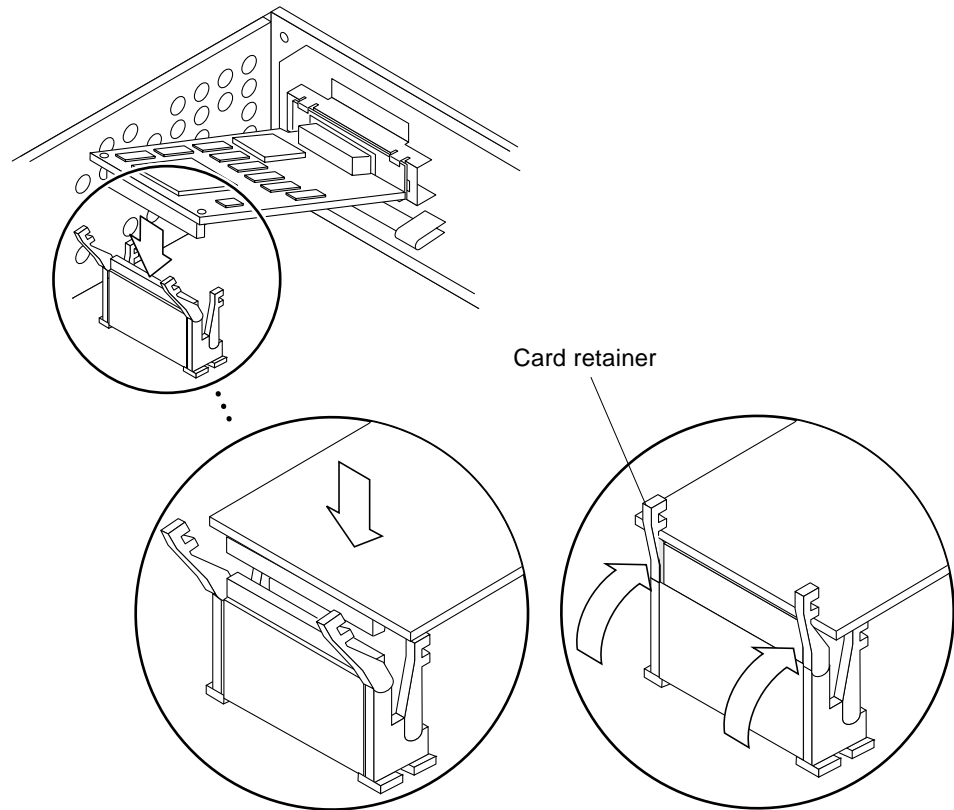


Figure 3-11 Replacing the SBus Card

7. If you have another SBus card to install, repeat steps 1 through 6 above.

Replacing the Creator Board

If the old Sun Ultra 1 Series system contained a Creator board, install it in the new system now.

1. Verify that both card retainers are pushed back (Figure 3-12).
2. At an angle, lower the Creator board into the chassis over the UPA socket.
3. Hook the Creator board backplate under the chassis back panel tabs. Ensure that the backplate is visible through the back panel slot.
4. Carefully press both corners of the Creator board evenly to seat the Creator board connector into the UPA socket (Figure 3-13).



Caution – Avoid applying force to one end or one side of the Creator board or the connector pins may be damaged.

5. Push the card retainer onto the board (Figure 3-14).
6. Replace the two screws and washers securing the Creator board to the back panel.

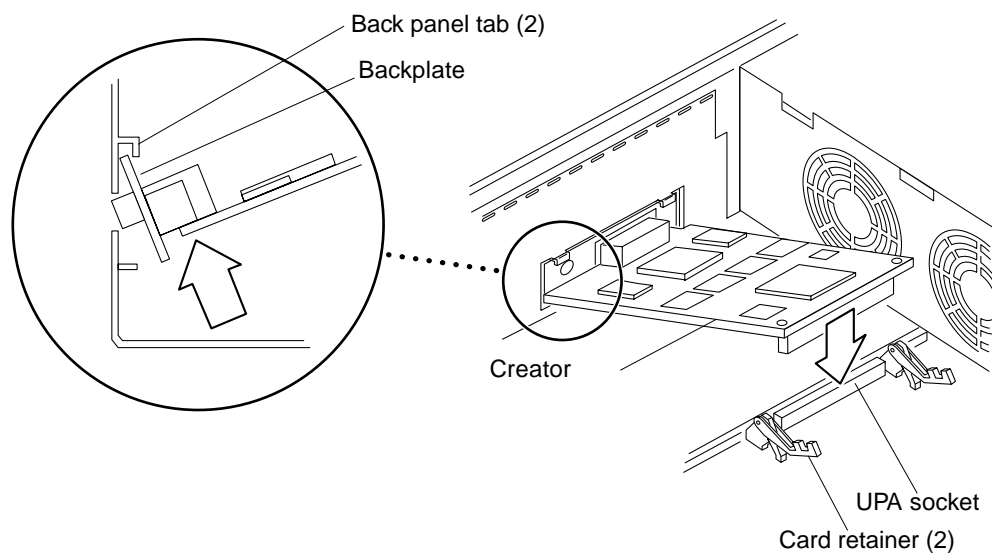


Figure 3-12 Replacing the Creator Board

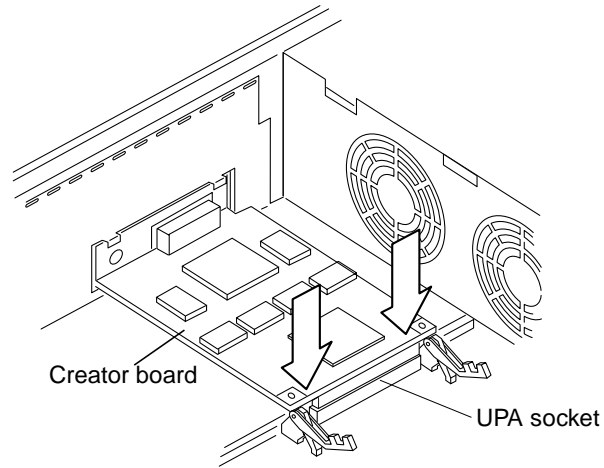


Figure 3-13 Pushing Down the Creator Board into the Socket

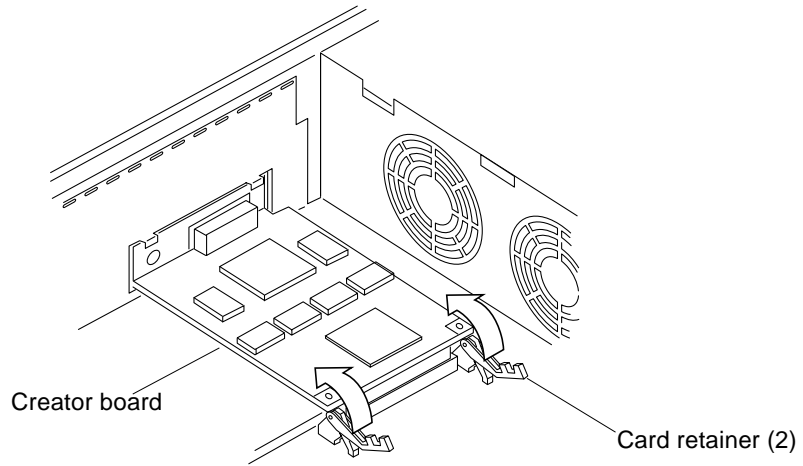


Figure 3-14 Securing the Creator Board into the Chassis

Replacing DSIMMs



Caution – DSIMM components are extremely sensitive to static electricity. Static electricity from your clothes or work environment can destroy the modules.

Do not remove any DSIMM from the antistatic container or mat until you are ready to install it on the system board. Handle the modules only by the edges. Do not touch the components or any metal parts. Always wear a grounding wrist strap when you handle the modules.

Sun Ultra 1 Series system *must* have at least two identical DSIMMs installed in paired sockets of any DSIMM bank. Table 3-2 identifies DSIMM installation locations.



Caution – Each DSIMM bank must contain two DSIMMs of equal density (for example: two 16-Mbyte DSIMMs to function properly. Do not mix DSIMM densities in any bank.

Table 3-2 DSIMM Bank and Socket Pair Locations

Bank	Socket Pair
0	U0701 + U0601
1	U0702 + U0602
2	U0703 + U0603
3	U0704 + U0604

1. Remove the DSIMM from the antistatic mat.
2. Position the DSIMM in the socket. Ensure that the notch is on the same side as the lever (Figure 3-15).
3. Insert the DSIMM into the socket by pushing it down at both ends until fully seated (Figure 3-15).

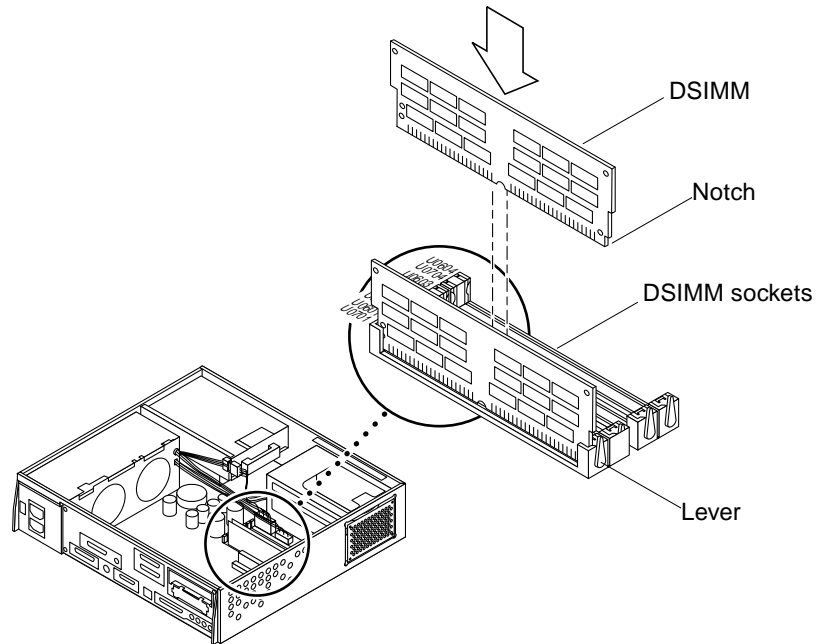


Figure 3-15 Installing a DSIMM

Installing the Foamblock Spacer

1. Install the foamblock spacer, contained in the upgrade kit, inside the cover.
 - a. Peel off the paper backing from the foamblock spacer template as shown (Figure 3-16).

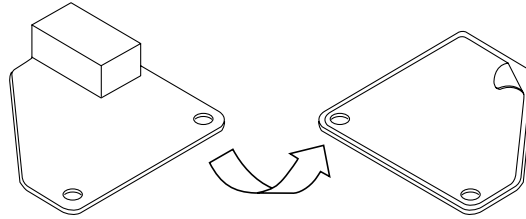


Figure 3-16 Peeling Off Backing Paper

- b. Align the registration pins on the inside of the cover with the holes in the foamblock spacer template as shown and press the template firmly in place (Figure 3-17).

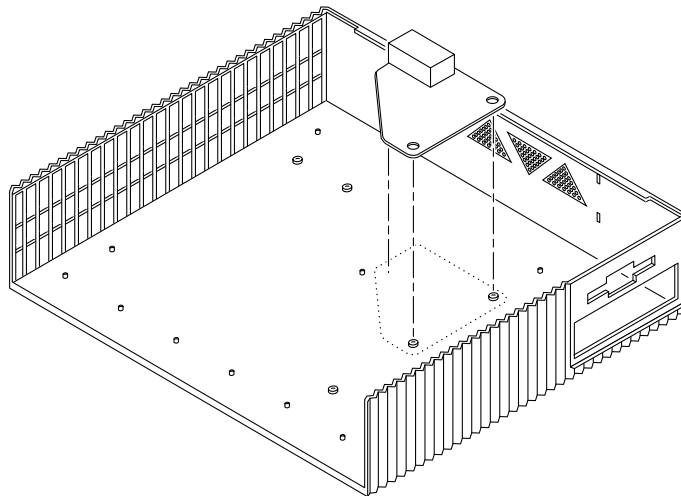


Figure 3-17 Positioning the Foamblock Spacer on the System Cover

Replacing the Cover

1. Remove the antistatic wrist strap from your wrist and from the power supply cover.
2. Position the cover on the system as shown (Figure 3-18).
3. Lower the back side of the cover until the channels on both sides of the cover align with the two flanges at the rear of the system. Press down on both sides of the cover until it is firmly seated (Figure 3-18).
4. Tighten the captive screws on the back panel (Figure 3-18).

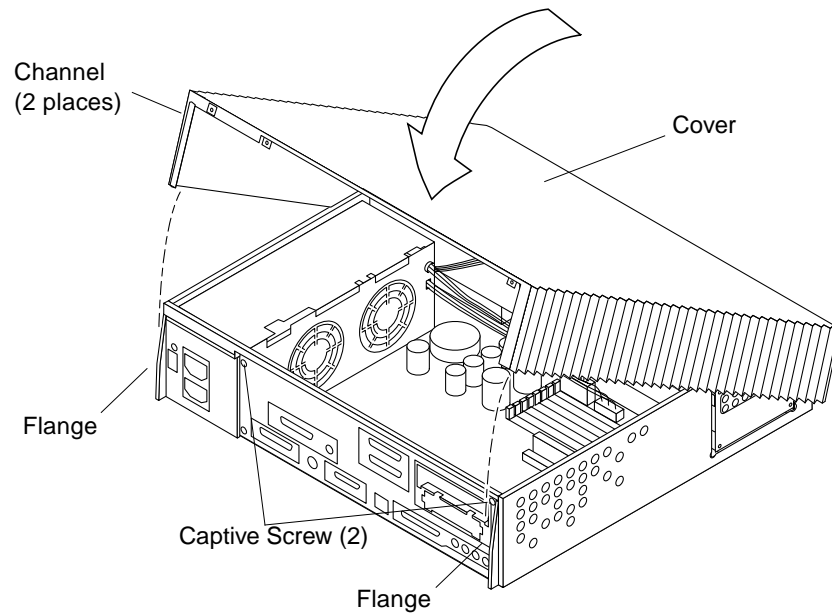


Figure 3-18 Replacing the Cover

5. Replace the lock block and use a Phillips screwdriver to tighten the screw that secures the lock block to the cover (Figure 3-19).

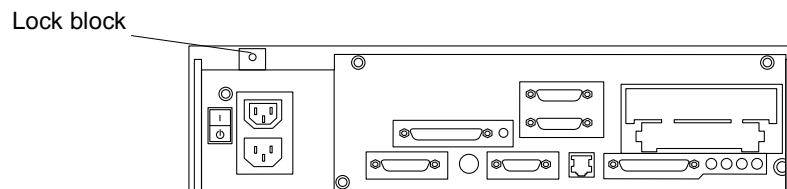


Figure 3-19 Backpanel Lock Block



Caution – Do not use a power driver to tighten the backpanel screws. Do not overtighten the backpanel screws.

6. Connect the monitor, keyboard and mouse, and any external devices to the upgraded Sun Ultra 1 Model 200E Series system as shown in the *Sun Ultra 1 Series Hardware Setup Guide*.

Resetting #power-cycle NVRAM Variable

Note - The Solaris operating environment Power Management software uses the #power-cycles NVRAM variable to control the frequency of automatic system shutdown if automatic shutdown is enabled.

- 1. Reset the #power-cycles NVRAM variable to zero as follows:**
 - a. Set system power to on.**
 - b. Press Stop-A after the system banner appears on the monitor.**
 - c. At the ok prompt, type:**

```
ok setenv #power-cycles 0
```

- d. Verify the #power-cycles NVRAM variable increments each time the system is power cycled.**

Returning the Old System Board

Follow the instructions in the RMA documentation to repackage and return the old system board to Sun.