

Sun Enterprise™ 4000 System Centerplane Upgrade Guide

*100 MHz Gigaplane Upgrade for the
Sun Enterprise 4000 System*



THE NETWORK IS THE COMPUTER™

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Preface

The *Sun Enterprise 4000 System Centerplane Upgrade Guide* provides procedures for the 100 MHz gigaplane upgrade for Sun Enterprise™ 4000 systems. As part of this upgrade, the CD-ROM drive and clock board are replaced, and the flash PROM updated. These instructions are designed to be performed only by an experienced service provider.

Using UNIX Commands

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

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook™ online documentation for the Solaris™ software environment
- Other software documentation that you received with your system

Typographic Conventions

TABLE P-1 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.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
AaBbCc123	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

TABLE P-2 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-3 Related Documentation

Application	Title	Part Number
Installation	<i>Ultra Enterprise 6000/5000/4000 Systems Installation Guide</i>	802-3844
Service	<i>Ultra Enterprise 6000/5000/4000 Systems Manual</i>	802-3845

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Please include the part number of your document in the subject line of your email.

System Upgrade Procedure

This chapter gives detailed instructions for upgrading your Sun Enterprise 4000 system. The upgrade procedure includes:

- Powering off the system—page 1
- Removing all Boards and Assemblies—page 2
- Removing the Outer Panels—page 5
- Replacing the Centerplane—page 5
- Replacing the Outer Panels
- Replacing all Boards and Assemblies—page 12
- Replacing the Clock Board—page 13
- Replacing the CD-ROM Drive—page 15
- Updating the System Flash PROM—page 14
- Powering on the System—page 17

Powering Off the System

1. **Halt the system using the appropriate commands and wait for the system-halted message and the boot monitor prompt.**

Refer to the *Solaris Handbook for SMCC Peripherals* that corresponds to your operating system.



Caution – Failure to halt the operating system properly can result in a loss of disk drive data.

2. **Turn off the system power in this order:**
 - a. **External drives and expansion cabinets (if any)**
 - b. **System cabinet**

c. Terminal

3. Turn the front panel keyswitch counterclockwise to the Standby position.

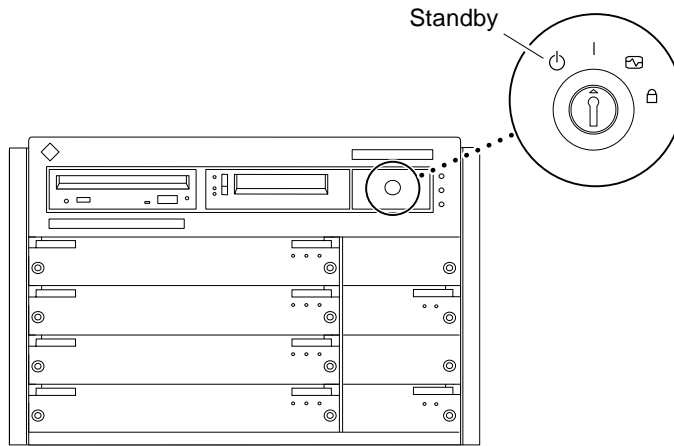


FIGURE 1 Keyswitch in Standby Position

4. Turn the AC power switch to off.

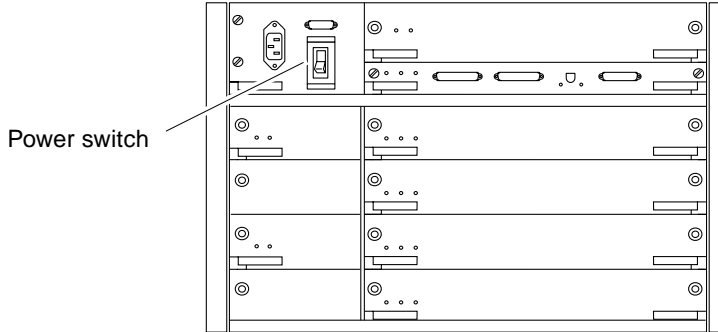


FIGURE 2 AC Power Switch—Rear View

Removing the Boards and Assemblies



Caution – Use a grounding wrist strap to prevent static damage.

1. Disconnect all cables from the boards.

Squeeze the locking tabs on the sides of the connector body, or loosen any retaining screws (if provided), and pull the connectors out.

Note – Label all cables for reconnection.

2. With wrist strap on, insert a screwdriver in the notch at the top of the SCSI tray to pull out the tray and separate it from the rear slip connector (FIGURE 3).

3. Remove all boards and power supplies from the front of the system and place them on a padded ESD mat.

Refer to your system manual for the detailed procedure.

Note – Label each board with its respective slot number, so that each board can be replaced in the correct slot.

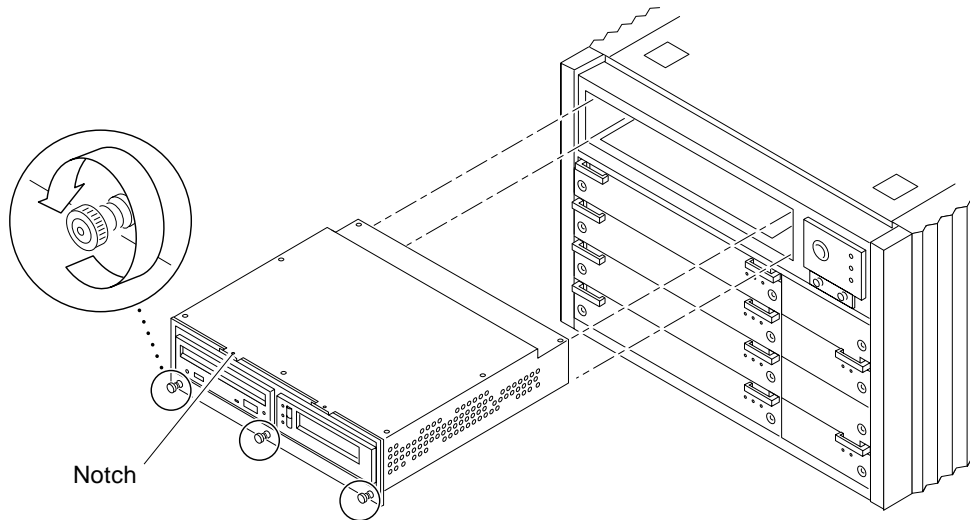


FIGURE 3 SCSI Tray

4. Loosen the two captive screws securing the keyswitch assembly to the system and gently pull the keyswitch from the enclosure (FIGURE 4).

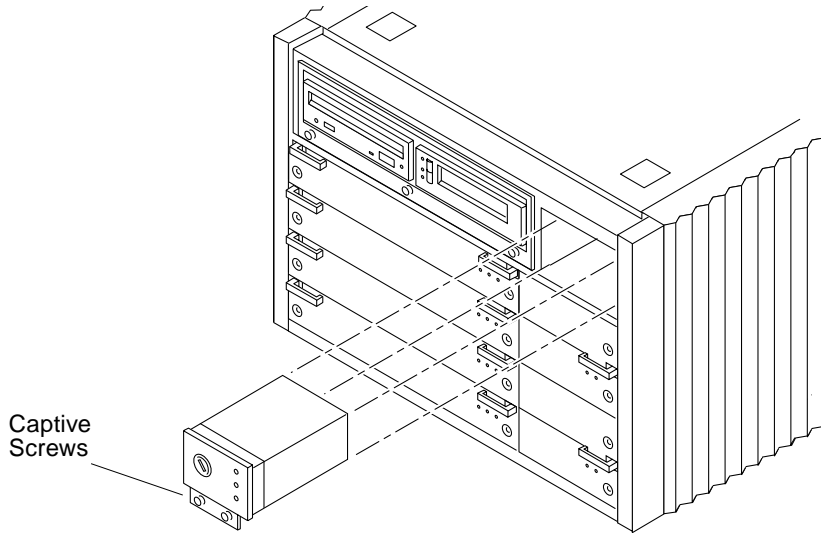


FIGURE 4 Keyswitch Assembly

- 5. Remove all the boards and power supplies from the rear of the system and place them on a padded ESD mat.**

Refer to your system manual for the detailed procedure.

Note – Label each board with its respective slot number, so that each board can be replaced in the correct slot.

- 6. Remove the fan tray assembly from the rear of the system (FIGURE 5).**

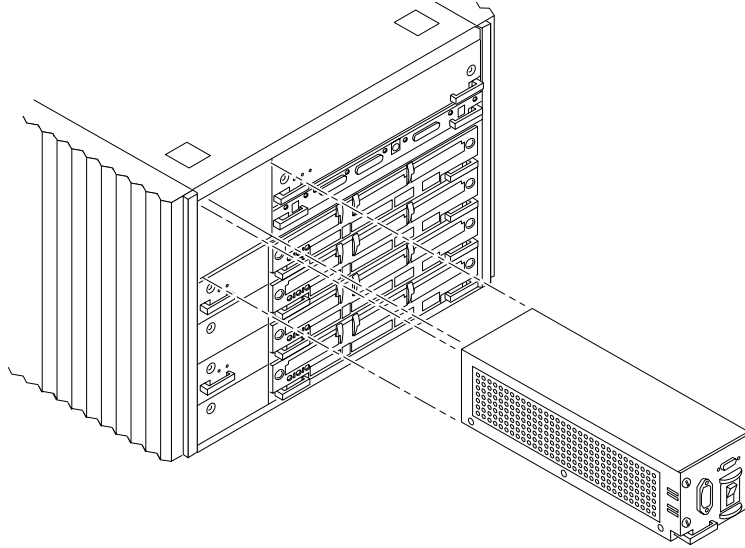


FIGURE 5 Fan Tray Assembly—System Rear

- 7. Disconnect any remaining cables from the system.**

Note – Label all cables for reconnection.

Removing the Outer Panels

- 1. Ensure that all cables have been disconnected and that the keyswitch is in the standby position with the key removed.**
- 2. Remove the upper bezel:**
 - a. Press the lower left and right sides of the upper bezel to release the locking tabs.**
 - b. Swing the bottom edge of the bezel toward you to release the tabs in the top of the bezel, then lift the bezel off.**
- 3. Remove the right and left side panels:**
 - a. Push the side panel back approximately 3/4 of an inch (2 cm).**

b. Pull the bottom of the panel away from the side, then lift the panel off the chassis.

4. Remove the top panel:

a. Remove the square inserts from the corners of the top panel.

Press the small dot to tilt the insert up, then lift it off.

b. Lift the front corners of the top panel 1/8 inch (3 mm) by pressing the two locking tabs at the front corners of the panel.

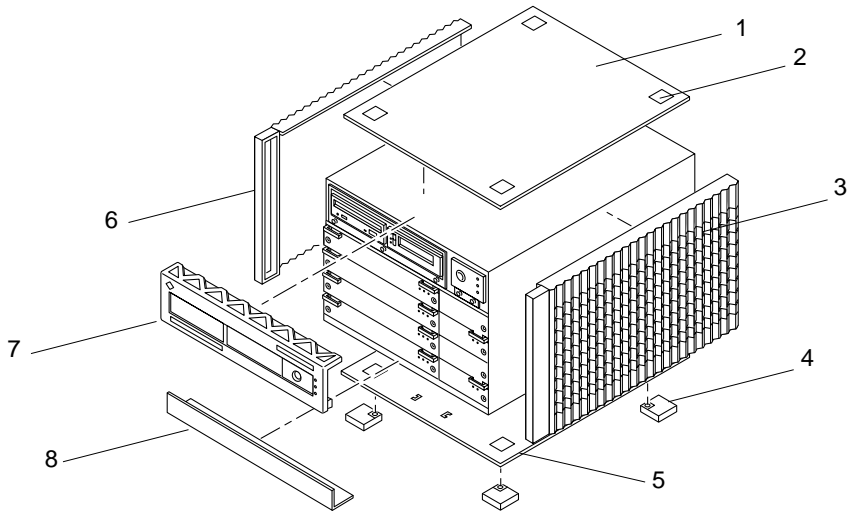
c. Firmly push the panel back 1 inch (2.5 cm), then lift it off.

5. Remove the bottom panel:

a. Turn the chassis upside down.

b. Remove the four feet by removing the screw that holds each foot.

c. Lift the front corners of the bottom panel, push the panel toward the back of the chassis, and lift the panel off.



Key	Description
1	Top panel
2	Square insert
3	Side panel
4	Foot
5	Bottom panel
6	Side panel
7	Upper bezel
8	Lower bezel

FIGURE 6 Outer Panels—Sun Enterprise 4000 System

6. Remove the lower bezel:

- a. With the chassis still upside down, use a flat-bladed screwdriver to lift the left side of the lower bezel approximately 1/8 of an inch (3 mm).
- b. Slide the bezel 1/4 of an inch (6 mm) to the left and lift it off the chassis.

7. Place the empty system chassis front side down (FIGURE 7).

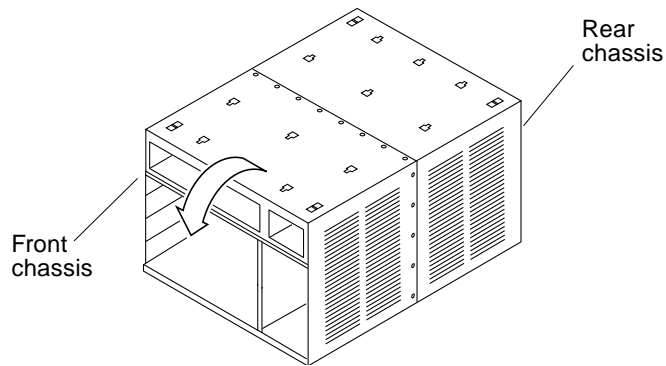


FIGURE 7 Orientation of Empty System Chassis

Replacing the Centerplane

The system chassis is in two sections consisting of a front chassis and a rear chassis. The centerplane is located between the two sections of the chassis and is fastened to the front chassis.



Caution – Use a grounding wrist strap to prevent static damage.

1. Remove the 26 screws that surround the center seam of the system chassis.
2. Lift and remove the rear chassis section and set it aside (FIGURE 8).

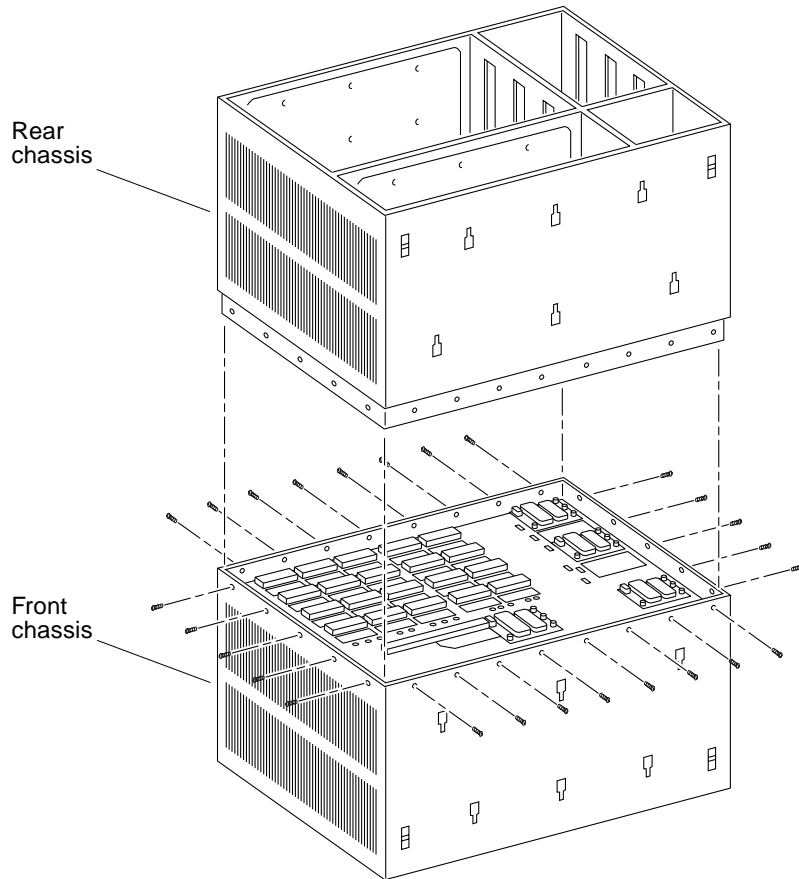


FIGURE 8 Front and Rear of the System Chassis

3. Remove the 20 screws that hold the centerplane to the front chassis (FIGURE 9).

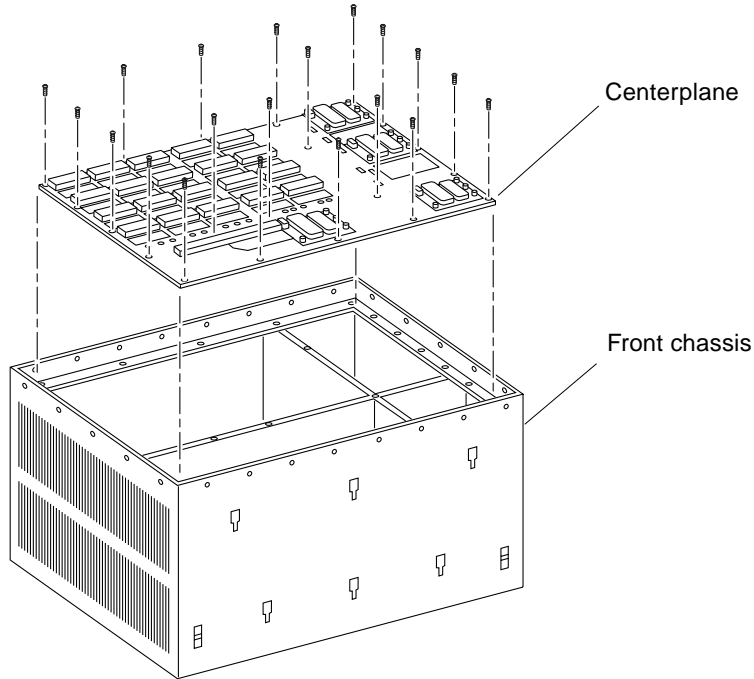


FIGURE 9 Centerplane Replacement Detail



Caution – Use a grounding wrist strap to prevent static damage.

4. With a wrist strap on, lift the centerplane out and set it aside.

Note – Remember the proper orientation of the centerplane when removing it from the front chassis.

5. Place the new centerplane into the front chassis.

Be sure the centerplane has the proper orientation when placed in the front chassis.

6. Replace the 20 screws that hold the centerplane to the front chassis.

7. Place the rear chassis on the front chassis.

8. Replace the 26 screws securing the front and rear chassis together.

Replacing the Outer Panels

1. Place the system front side down as shown in FIGURE 7.
2. Replace the lower bezel:
 - a. Align the bezel 1/4 of an inch (6 mm) to the left of the system chassis to engage the tabs.
 - b. Slide it to the right until it locks into position.
3. Replace the bottom panel.

Set the panel about an inch back from the front of the system chassis. Push the panel forward until it locks into place.
4. Secure each foot to the bottom of the system chassis with the screws removed previously.
5. Turn the enclosure over so that the feet are supporting the chassis.
6. Replace the top panel:
 - a. Set the panel about an inch back from the front of the system chassis. Push the panel forward until it locks into place.
 - b. Align the small dots on the square inserts with the dots on the top panel and press the inserts until they engage.
7. Replace the right and left side panels:
 - a. With the panel set about 3/4 of an inch (2 cm) back from the system chassis, align the top and bottom panel tabs with the corresponding slots on the system.
 - b. Push the panel forward to lock it in place.
8. Replace the upper bezel:
 - a. Set the tabs at the top of the bezel into the corresponding slots at the top of the system chassis.
 - b. Press the bottom of the bezel into place.

Replacing the Boards and Assemblies



Caution – Use a grounding wrist strap to prevent static damage.

1. **Replace all the boards and power supplies in the front of the system.**

Note – Insert boards component side *down* in the front of the system.

Refer to your system manual for the detailed procedure.

2. **Tighten the bottom three captive screws on the SCSI tray to secure the tray to the enclosure (FIGURE 3).**
3. **Replace the keyswitch assembly in the front of the system (FIGURE 4).**
4. **Replace the fan tray assembly in the rear of the system (FIGURE 5).**
5. **Replace the boards and power supplies in the rear of the system.**

Note – Insert boards component side *up* in the rear of the system.

6. **Replace the top cover by sliding it over the key slots until it fits securely on the main chassis.**
7. **Replace the square inserts on the corners of the top panel (FIGURE 6).**
8. **Place each side vent alongside the main chassis and push the vent forward until it stops.**
9. **Replace the top bezel.**
10. **Ensure that the keyswitch is in the Standby position (FIGURE 1).**
11. **Reattach the I/O cables.**
12. **Reattach the power cables.**

Replacing the Clock Board

The clock board is located at the top rear of the system, below the peripheral power supply. After replacing the clock board, update the system flash PROM as shown in “Updating the System Flash PROM” on page 14.

Note – The TOD/NVRAM chip *must be removed from the old clock board* and installed on the upgrade clock board since it contains the host ID and Ethernet ID.

1. Loosen the two captive screws securing the clock board to the system chassis.
2. Pull the ends of both extraction levers outward simultaneously to release the board from the centerplane receptacles (FIGURE 10).
3. Place the clock board on a padded ESD mat.



Caution – Use a grounding wrist strap when handling the TOD/NVRAM chip.

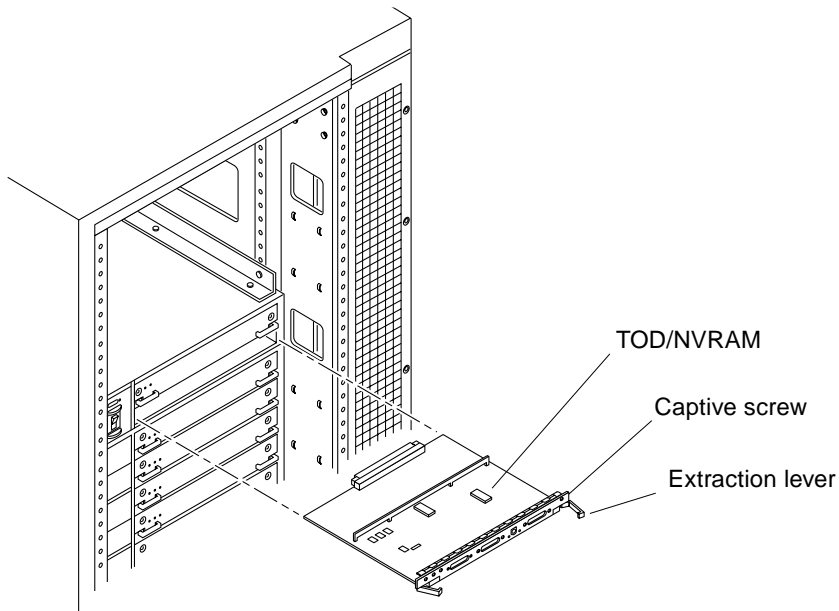


FIGURE 10 Clock Board and TOD/NVRAM Location

4. With a wrist strap attached, *gently* pull the TOD/NVRAM chip from the clock board.
5. **Align the TOD/NVRAM chip removed from the original clock board with the connector on the upgrade clock board so that pin 1 on the chip is aligned with pin 1 on the board.**
 - A small crescent-shape indentation on both the chip and the connector denotes the top (mate these areas).
 - A small round indentation on the corner of the chip denotes pin 1.
6. **Ensure that all pins on the TOD/NVRAM chip are aligned correctly with the board connector pins.**



Caution – To avoid system damage, make sure that you connect pin 1 on the TOD chip into pin 1 on the board connector.

7. **Gently press on the top of the chip to seat it.**
8. **Carefully insert the board in the clock board slot component-side up, ensuring that the board does not slip out of the card guides.**
9. **Use the open extraction levers to seat the board. Push the board into the card cage, then simultaneously press both extraction levers to seat the board on the centerplane.**

Do not press on the board front panel to seat it, doing so will damage the connector pins.
10. **Secure the board to the chassis using the two captive screws, one on each side.**
11. **Connect any applicable interface cables to the front panel of the board.**

This concludes the hardware portion of the clock board upgrade. Continue with the next section, “Updating the System Flash PROM” to complete the procedure.

Updating the System Flash PROM

After replacing the clock board, update the system flash PROM. If you have internet access, the patch can be downloaded using the following procedure. If you do not have internet access, obtain the PROM patch software from your local Sun service provider.

After the system flash PROM is reprogrammed, the flash utility attempts to reboot the system. If the system fails to auto reboot, power cycle or reset the system by pressing the reset button.



Caution – Some combinations of old and new PROM versions are incompatible, and flash programming may cause default NVRAM values to overwrite customized NVRAM variables. Be sure to record the custom and default values displayed so that you can restore them afterward if necessary.

1. **Through your web browser, go to** `http://sunsolve.sun.com`.
2. **On the SunSolve Online web page, select these links in order:**
 - a. **Public Patches**
 - b. **Security and Recommended Patches**
 - c. **Detailed List (in the Hardware category)**
 - d. **103346-11**

The last link downloads a compressed tar file into your working directory.
3. **Uncompress and untar the** `103346-11.tar.Z` **file.**
4. **Change directory to the** `103346-11` **directory.**
5. **Read the** *README* **file in this directory for further instructions.**

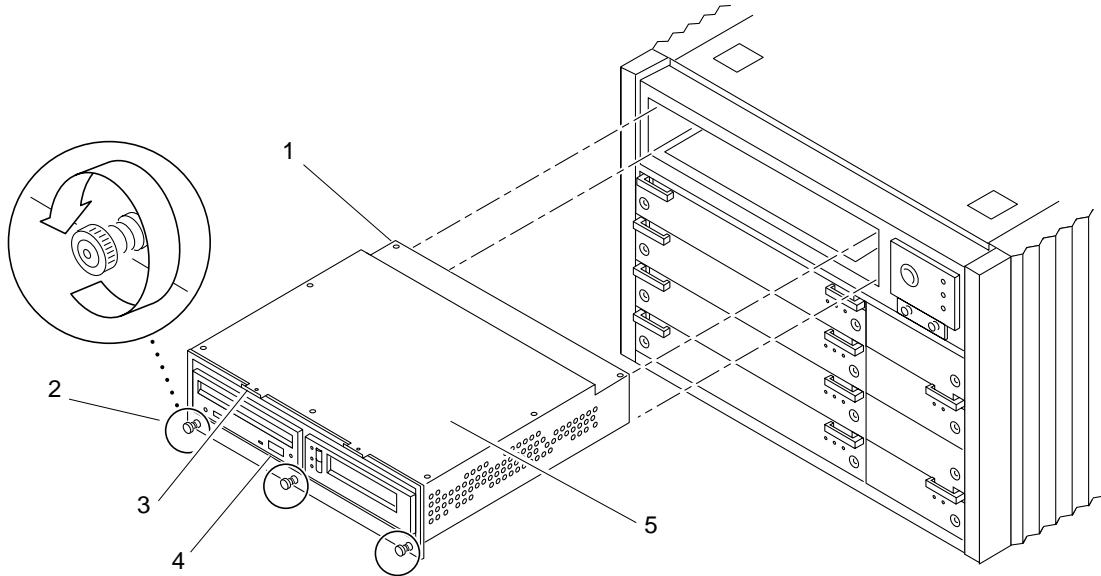
Replacing the CD-ROM Drive

Refer to your server system reference manual for further information on replacing a device.

Note – For cooling purposes, the tape drive must be installed on the side nearest the keyswitch.

1. **Loosen the bottom three captive screws securing the SCSI tray to the chassis.**

2. With a wrist strap on, insert a screwdriver in the notch at the top of the SCSI tray to pull out the tray and separate it from the rear slip connectors.



Key	Description
1	Screw securing tray cover
2	Captive screw
3	Notch
4	CD-ROM drive
5	Tray cover

FIGURE 11 Removing the SCSI Tray

3. Remove the seven screws on top of the SCSI tray to lift off the tray cover and access the CD-ROM drive.
4. Remove the CD-ROM drive from the SCSI tray:
 - a. Loosen the three captive screws securing the CD-ROM drive to the SCSI tray.
 - b. Remove the mounting plate from the CD-ROM drive being replaced and attach it to the replacement CD-ROM drive.
5. Install the CD-ROM drive:
 - a. Set the replacement CD-ROM drive SCSI address to 6.

- b. Tighten the three captive screws to secure the CD-ROM drive to the SCSI tray.
6. Replace the tray cover with the seven screws removed in Step 3.
7. Place the SCSI tray into the system and tighten the three captive screws securing it to the enclosure (FIGURE 11).

Powering On the System

Note – Refer to Chapter 12 in your system reference manual for additional information on restarting your Sun Enterprise system.

1. Ensure that the keyswitch is in the Standby position (FIGURE 12).

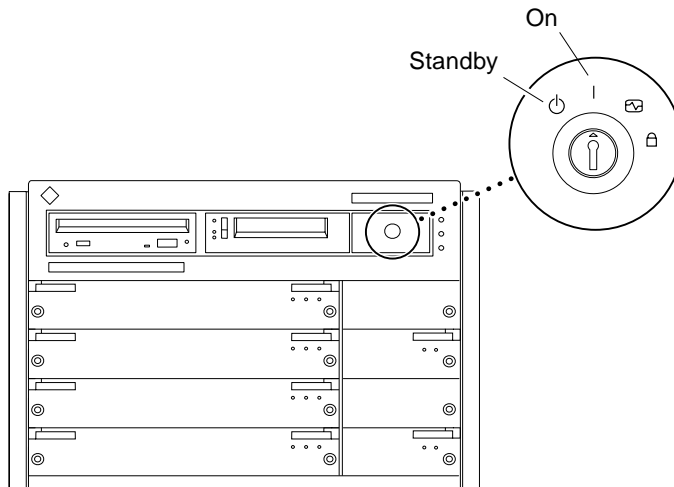


FIGURE 12 Keyswitch Standby and On Positions

2. Reattach the I/O cables and power cables.
3. Turn on power to the terminal to view system messages.
4. Turn the keyswitch to the On position.
5. Watch the terminal screen for any POST error messages.

