



Sun Enterprise™ 6500/5500/4500 and 3500 Systems Product Notes™

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Part No. 805-5713-19
July 2001, [Revision A](#)

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Product Notes

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2GB Memory Option

When installing the 2GB memory option (256MByte DIMMs) the system flash PROM must be upgraded to 3.2.29 or compatible versions *before* installing the memory option.

Currently, for Solaris 2.5.1 operating environments, configurations are limited to a maximum total memory of 56GB, configurations that exceed 56GB for this version are not supported. Solaris 2.6 operating environments, together with patch 105181-19, support a maximum configuration of 60GB. There is no limitation for systems running Solaris 7 or 8 operating environments (maximum achievable configuration

is 60GB). For the Solaris 2.5.1 operating environments the `/usr/platform/sun4u/sbin/prtdiag` command displays erroneous memory capacity information. Solaris patch 104595-09 is available (at <http://sunsolve.sun.com>) to correct this problem.

Software Installation

Note – The following procedure is not required for Solaris 2.5.1, Solaris 7 or Solaris 8 operating environments.

When installing the Solaris 2.6 operating environment on a new system configured with the 2GB memory option, follow the software procedure indicated for installation of the 400-MHz 8-Mbyte CPU modules (see following section) with two exceptions:

- Software installation procedure is required for Solaris 2.6 operating environments only.
- Patch #104595 is not required.

For hardware installation refer to the *Sun Enterprise 6x00/5x00/4x00/3x00 Systems DIMM Installation Guide*.

400-MHz 8-Mbyte CPU Modules

When installing 400-MHz 8-Mbyte CPU modules, the following software upgrade procedures must be performed and followed *before* installing the modules.

Software Installation

When installing Solaris™ 2.5.1 or 2.6 on a new system configured with 400-MHz 8-Mbyte modules, modifications are required to the installation procedure in order for the system to run properly. For the Solaris 7 or 8 operating environments, this procedure is not required.

Note – This procedure *must* be performed in the order specified.

Updating the Flash PROMs

The Sun Enterprise 6500, 5500, 4500, and 3500 system boards (including the CPU/memory board and various types of I/O board) have individual flash PROMs.

Caution – Do not combine old and new CPU PROM versions.

TABLE 1 Flash PROM Program Versions

Board	PROM Version	Notes
CPU/Memory	OBP 3.2.x	
I/O Type 1	FCODE 1.8.x	Type 1 is an SBus board with 3 SBus slots and 25Mbyte/sec Fibre Channel sockets.
I/O Type 2	FCODE 1.8.x	Type 2 is a Graphics board with 2 SBus slots, 25 Mbyte/sec Fibre Channel sockets, and 1 graphics adapter (UPA) slot.
I/O Type 3	FCODE 1.8.x	Type 3 is a PCI board with 2 PCI slots.
I/O Type 4	FCODE 1.8.x	Type 4 is an SBus+ board with 3 SBus slots and 100 Mbyte/second GBIC interfaces
I/O Type 5	FCODE 1.8.x	Type 5 is a Graphics+ board with 2 SBus slots and 1 graphics adapter (UPA) slot and 100 Mbyte/second GBIC interfaces.

Note – These CPU modules require that the system flash PROM be updated to 3.2.29 or compatible versions *before* installing the modules. Any necessary operating system patches should be applied before the module installation.

Operating Environment Installation

To install the Solaris 2.5.1 or 2.6 operating environments, use the "Operating Environment Installation CD (part number 704-7076 dated February 2000) that comes with your system. Following the operating environment installation, return to the following hardware installation procedure.

Note – For Solaris 2.5.1, patch #104595 or compatible versions, which is not specific to the CPU module, is required in order to run `/usr/platform/sun4u/sbin/prtdiag`

Note – If your system is running the Solaris 7 operating environment, you must install software patch #106541. If your system is running the Solaris 8 operating environment, you must install software patch #108528.

Hardware Installation

Use the following torque tightening procedure:



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

1. **Tighten the screws in three steps:**
 - a. **Tighten each screw in the sequence shown until it reaches the metal plate.**
 - b. **Tighten each screw an additional 1/2 turn in the sequence shown.**
 - c. **Tighten the five screws to 6-inch pounds in the same sequence.**



Caution – Do not overtorque or undertorque the screws.

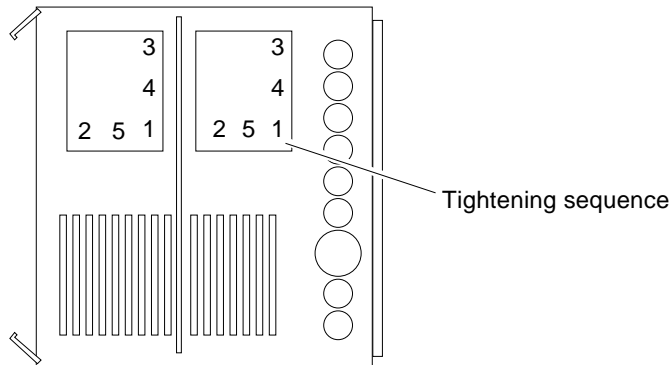


FIGURE 1 CPU Module Torque Tightening Sequence

CPU Module Cover

The 400-MHz 8-Mbyte CPU modules now have a cover with CPU module installation instructions and the screw tightening sequence (FIGURE 2).

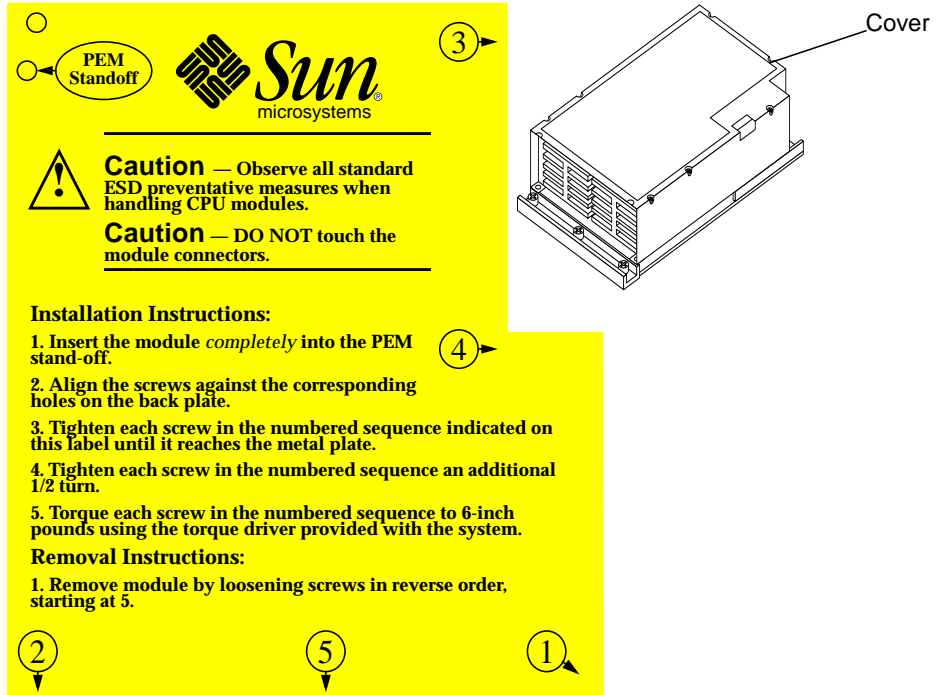


FIGURE 2 CPU Module With Cover and Label

2. Power on the system.

Universal Bezel Insert

The universal bezel insert allows for installing an additional mass storage or tape storage device on top of the system. The two doors of the bezel can be opened by pulling near the arrows at the center of the insert.

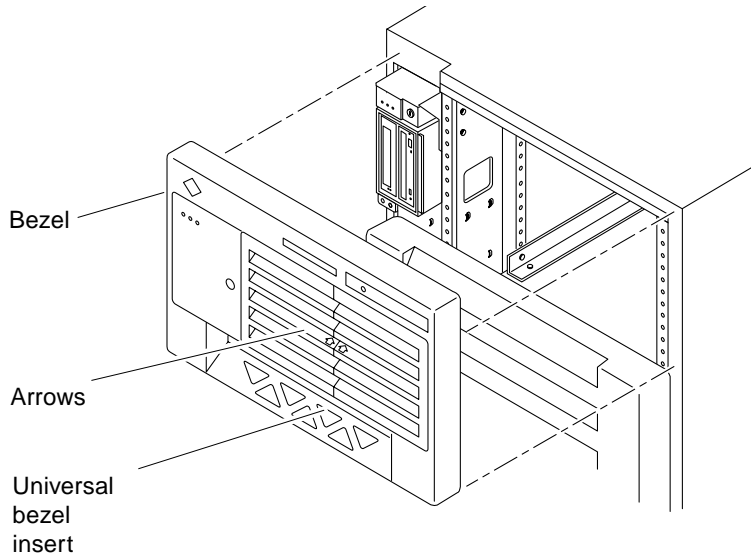


FIGURE 3 Universal Bezel Insert

Replacing the Bezel

- 1. Remove the entire bezel from the chassis.**

Refer to your system reference manual for instructions.

- 2. Remove the ten screws that secure the old bezel insert to the bezel (FIGURE 4).**

FIGURE 4 shows the screw locations for the new universal bezel insert, however, the location of the screws on the old bezel insert is similar.

- 3. Set the universal bezel insert into the bezel and tighten the bottom center screw. At the top tighten the screw that is second from the right, then tighten the rest of the nine screws.**

There are four screws at the top and five at the bottom.

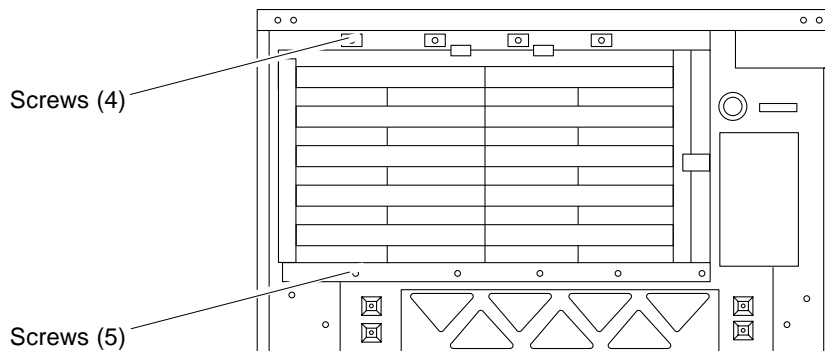


FIGURE 4 Universal Bezel Rear—Screw Locations

Installing the Power Sequencer

A second AC power sequencer can be installed as an option in the Sun Enterprise 68-inch expansion cabinet and the Sun Enterprise 5500 and 6500 system cabinet. FIGURE 5 shows the power sequencer installation in an expansion cabinet, but the location is similar in the system cabinet.

1. **Notify users that you are going to bring down the system, then halt operations and power off your host system (system cabinet).**
2. **Ensure that the key switch is in the Standby position.**
3. **Turn off the power sequencer circuit breaker at the rear of the system.**
4. **Remove the four screws securing the sequencer filler panel to the left side pillar.**
5. **Set the optional power sequencer into the pillar, bottom first, so that it rests on the two hooks located on the sequencer bottom. Secure the power sequencer with the four mounting screws.**
6. **Open the cover latch and connect the AC power cord to the power sequencer connector.**

Pull the cover latch over the power cord to secure it to the socket.

7. For further instructions including cabling, refer to the documentation that came with your power sequencer.

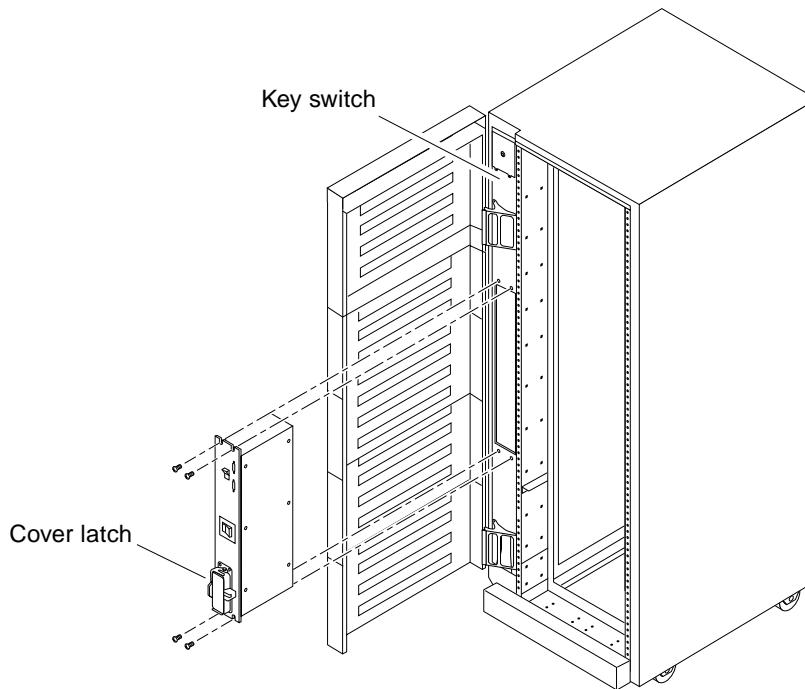


FIGURE 5 Power Sequencer Installation in the Expansion Cabinet

Replacing the Centerplane

Note – These procedures are designed to be performed only by an experienced service provider.

The system chassis in both the Sun Enterprise 4x00 and 5x00 Systems 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 (FIGURE 6).

Sun Enterprise 4500 System

For additional information, refer to *Sun Enterprise 4000 System Centerplane Upgrade Manual*, part number 805-7186-10.



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

1. **Power off the system, remove all boards, assemblies and cables. Remove all outer panels.**

For instructions, refer to your system reference manual or to the *Sun Enterprise 4000 System Centerplane Upgrade Manual*.

2. **Place the empty system chassis front side down (FIGURE 6).**

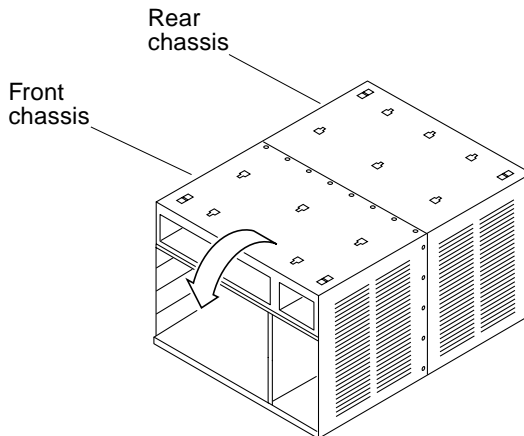


FIGURE 6 Orientation of Empty System Chassis

3. **Remove the 26 screws that surround the center seam of the system chassis (FIGURE 7).**
4. **Lift and remove the rear chassis section and set it aside (FIGURE 7).**

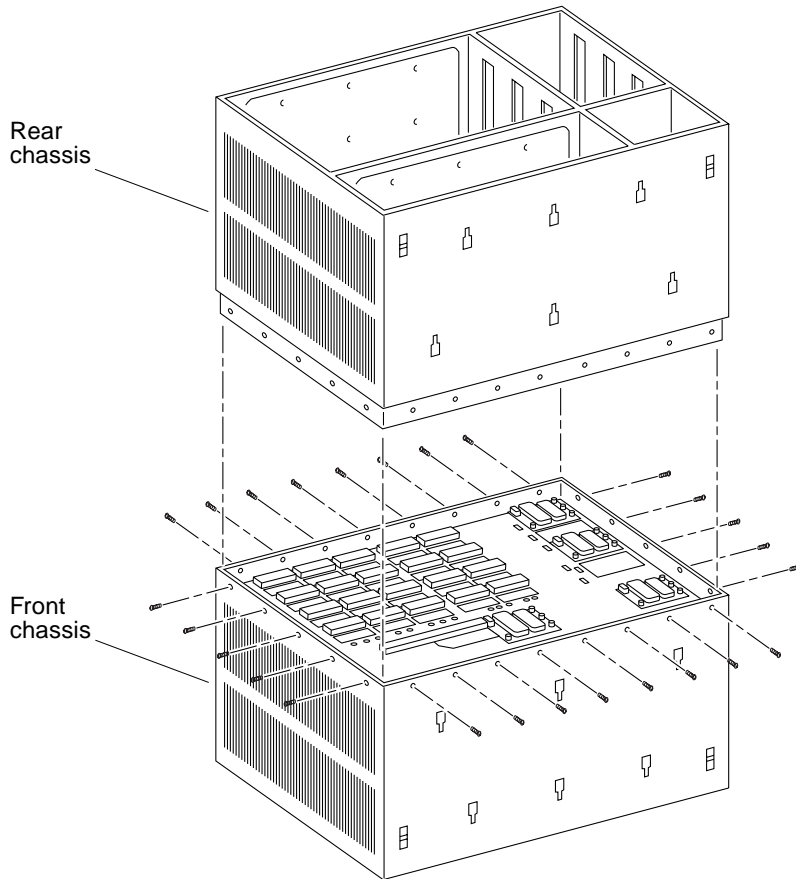


FIGURE 7 System Chassis—Front and Rear

5. Remove the 20 screws that hold the centerplane to the front chassis (FIGURE 8).

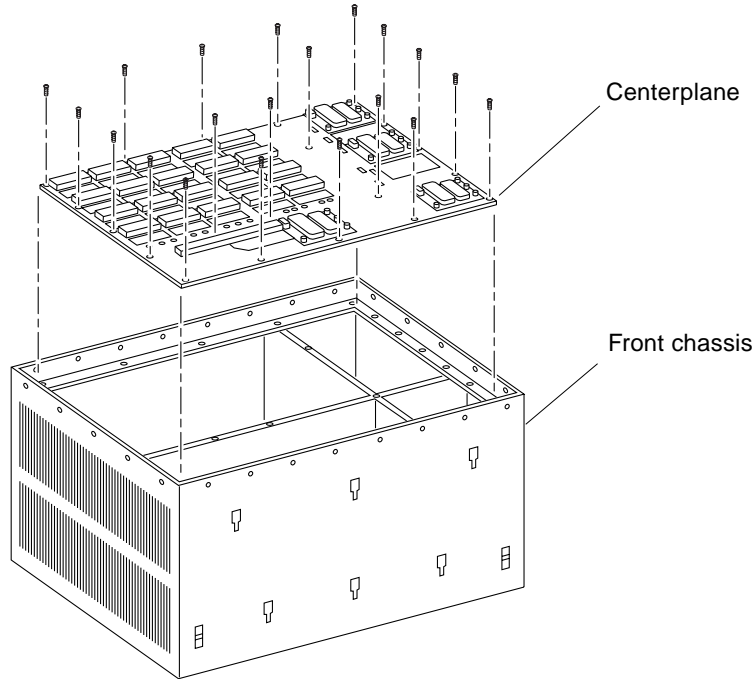


FIGURE 8 Centerplane Replacement Detail



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

6. With a wrist strap on, lift the centerplane out and set it on an ESD mat.

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

7. Place the new centerplane into the front chassis.
Be sure the centerplane has the proper orientation when placed in the front chassis.
8. Replace the 20 screws that hold the centerplane to the front chassis.
9. Place the rear chassis on the front chassis.
10. Replace the 26 screws that secure the front and rear chassis together.

Sun Enterprise 5000 System

For additional information, refer to *Sun Enterprise 5000 System Centerplane Upgrade Manual*, part number 806-0294-10.

Note – To perform this procedure you must power off the system, disconnect all cables, and remove all boards and assemblies.

Removing the Chassis from the Cabinet

1. Remove the two screws on each side of the system cabinet that attach the top rails to the system cabinet.
2. Loosen the four screws on each side of the system cabinet that attach the top rails to the main chassis.
3. Remove the top rails by guiding the four screws on each side of the system chassis through the key slots in each top rail.
4. Remove the four screws on each side of the system cabinet that attach the bottom rails to the main chassis, and then set them aside.



Caution – Use care when removing the system chassis. It weighs approximately 100 pounds (45 kilograms).

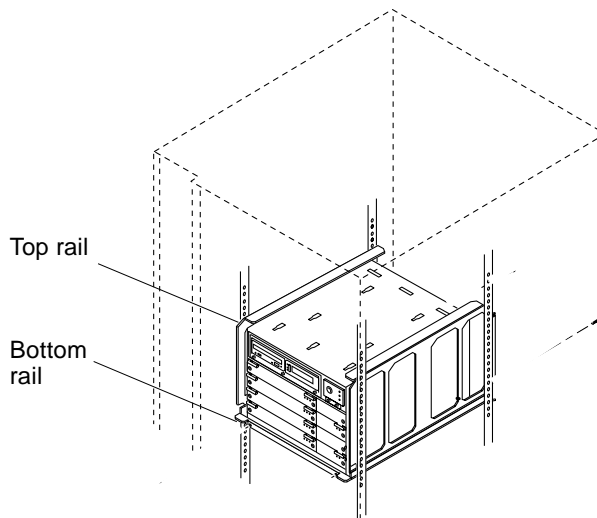


FIGURE 9 Top and Bottom Rails in System Cabinet

5. Carefully slide the system chassis out of the cabinet and place it front side down.

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.

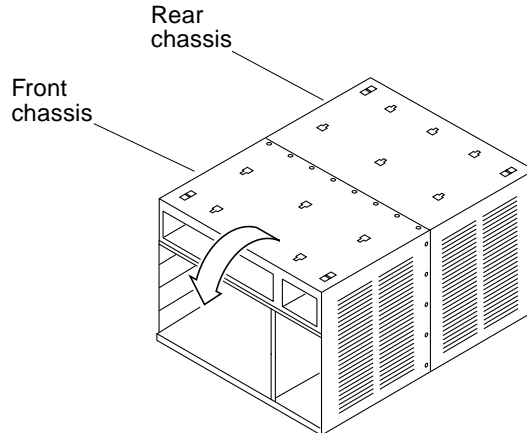


FIGURE 10 Orientation of Empty System Chassis

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 11).

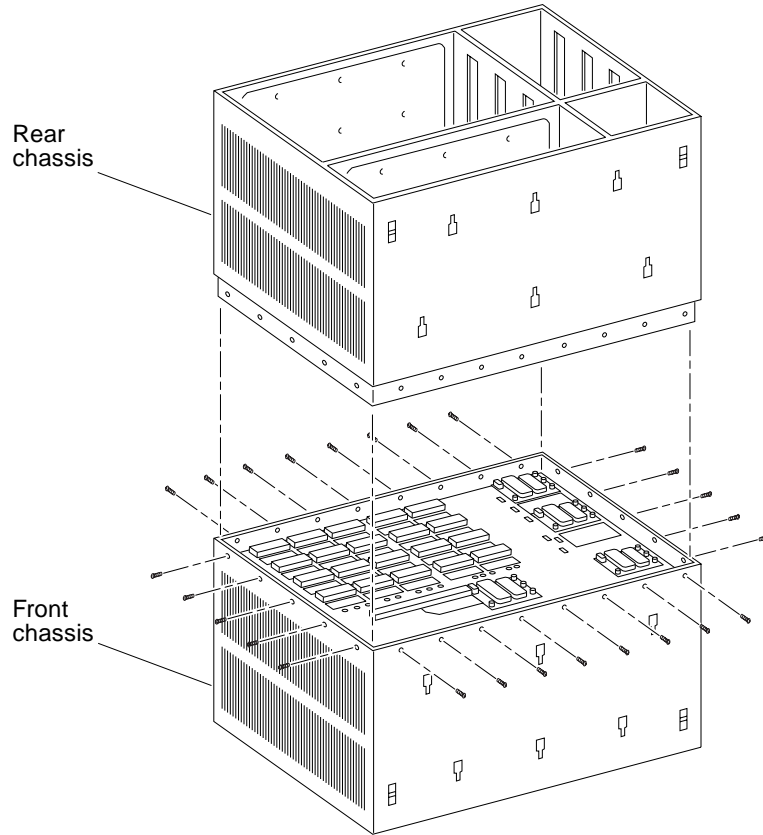


FIGURE 11 System Chassis—Front and Rear

3. Remove the 20 screws that hold the centerplane to the front chassis (FIGURE 12).

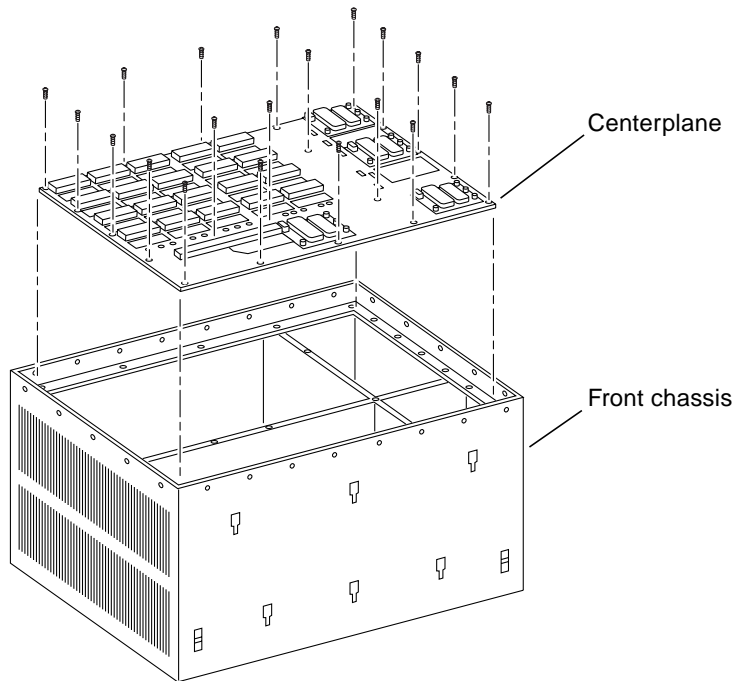


FIGURE 12 Centerplane Replacement Detail



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

4. With the wrist strap attached, lift the centerplane out and set it on an ESD mat.

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.

Installing the Chassis in the Cabinet

1. Disconnect the keyswitch cable from the keyswitch assembly and remove the cable.

1. Route the new keyswitch cable included in the upgrade kit through the opening in the cabinet pillar below the SCSI tray (FIGURE 13). Do not connect the cable to the keyswitch at this time.

The cable will be connected after the new SCSI tray has been installed.

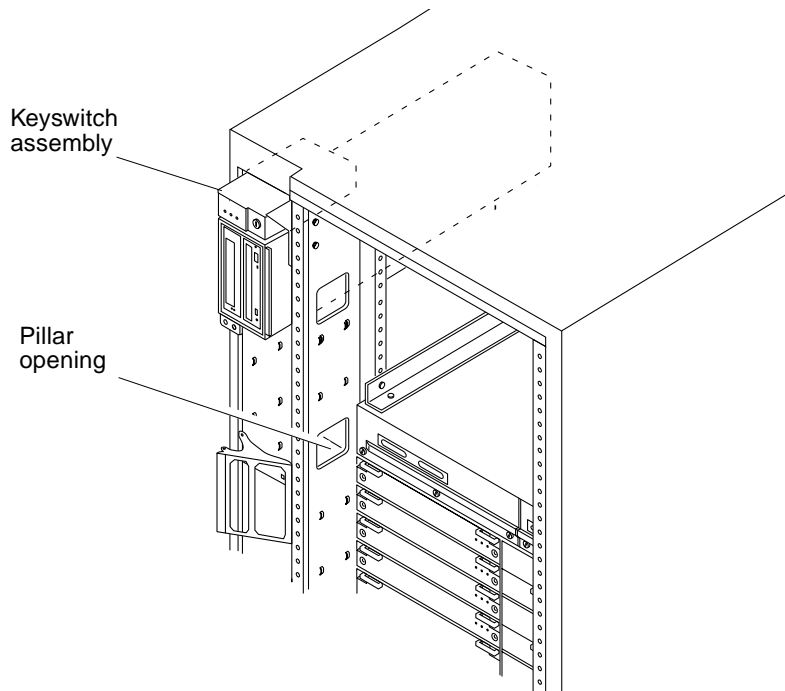


FIGURE 13 Pillar Opening for Cable Routing

2. Place the rear chassis on the front chassis, as shown in FIGURE 11, and replace the 26 screws around the center of the system chassis.



Caution – Use care when lifting the system chassis. It is very heavy.

3. Lift and slide the system chassis into the system cabinet using the bottom rails as a guide (FIGURE 9).
4. Replace the four screws on each side of the system cabinet that attach the bottom rails to the main chassis.
5. Replace the top rails by guiding the four screws on each side of the system chassis through the key slots in each top rail and then tighten the screws.

6. Replace the two screws on each side of the system chassis attaching the top rail to the system cabinet.

Dynamic Reconfiguration for Hot-Pluggable System Boards

If the dynamic reconfiguration feature is enabled in the operating environment, service providers can install, remove, or replace a hot-pluggable system board without powering down the system. For the Solaris 2.6, Solaris 7, and Solaris 8 Operating Environments, dynamic reconfiguration applies to specific types of boards in the Sun Enterprise 3x00. For instructions, refer to the *Sun Enterprise 6x00, 5x00, 4x00, and 3x00 Systems Dynamic Reconfiguration User's Guide* included in the online AnswerBook2 for your Solaris Operating Environment or refer to the sun.com web site for more information on dynamic reconfiguration.

Clock Boards

For the Sun Enterprise xx00 series, you must install OBP/PROM code 3.2.29 or compatible versions when upgrading the clock board.

Hardware Options

The following options developed after the manuals were printed:

- EMI shields/front metal screen doors are options for the Sun Enterprise 5500 and 6500 system cabinets and the Sun Enterprise 68-inch expansion cabinet.
- An optional second AC power sequencer is available as an option for Sun Enterprise 6500 and 5500 system cabinets and for the Sun Enterprise expansion cabinet.

Installing Sun Enterprise 4500(s) in a Sun StorEdge™ Expansion Cabinet

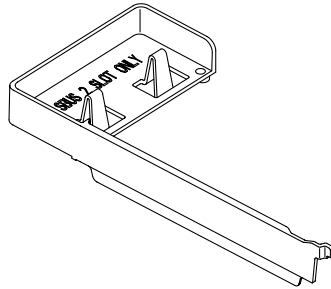
When installing Sun Enterprise 4500(s) in a Sun StorEdge Expansion Cabinet, refer to the Rackmount Placement Matrix at the sun.com web site for more information.

The SBus Blank Filler Panel and the SBus Card Thermal Baffle for Sun Enterprise 6500/5500 and Rack-Mounted 4500s

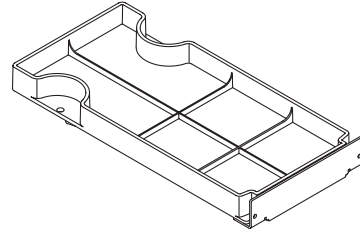
SBus+ I/O boards and Graphics+ I/O boards in the Sun Enterprise 6500/5500/4500 systems require an SBus Blank Filler Panel (1099A) or an SBus Card Thermal Baffle (1098A) to improve the thermal conditions in the I/O boards.

The SBus Blank Filler Panel or the SBus Card Thermal Baffle are required under the following conditions:

- Any new Enterprise 6500, 5500, or 4500 systems with any combination of three or more SBus+ or Graphics+ I/O boards requires the SBus Blank Filler Panel or SBus Card Thermal Baffle in all the SBus+ or Graphics+ I/O boards
- Any Enterprise 6500, 5500, or 4500 systems in the same cabinet with multiple servers and multiple A5x00 storage devices should have the SBus Card Thermal Baffle or SBus Blank Filler Panel in all SBus+ and Graphics+ I/O boards.
- It is recommended that any installed base Enterprise 6500, 5500, 4500 systems with SBus+ or Graphics+ I/O boards, and operating above desired thermal conditions, use the SBus Blank Filler Panel and SBus Card Thermal Baffle.



SBus Card Thermal Baffle



SBus Blank Filler Panel

Rules When To Use the SBUS Card Thermal Baffle and/or SBUS Blank Filler Panel

The following rules apply when using the SBUS Blank Filler Panel and/or SBUS Card Thermal Baffle:

- The SBUS Blank Filler Panel can be used in the SBUS+ or Graphics+ I/O board. The SBUS Card Thermal Baffle can only be used in the SBUS+ I/O board.
- The SBUS Blank Filler Panel occupies only the SBUS 2 slot on an SBUS+ or Graphics+ I/O board. No SBUS card can be used in that slot.
- The SBUS Card Thermal Baffle can only be used in the SBUS 2 slot and only in conjunction with an SBUS card.
- All empty SBUS+ I/O boards should have the SBUS Blank Filler Panels installed in the SBUS 2 slot. No SBUS cards can be used in this slot.
- Any SBUS+ I/O board with SBUS cards configured in the board must have the first SBUS card configured in the SBUS 2 slot with the SBUS Card Thermal Baffle. If there is more than one card, the remaining cards can be placed in any remaining SBUS slot.
- All Graphics+ I/O boards, empty or not, should have an SBUS Blank Filler Panel installed in the SBUS slot 2.

Installing StorEdge T3 Arrays in a Sun Enterprise 6500/5500 System Cabinet

When you are installing StorEdge T3 Array(s) in a Sun Enterprise 6500/5500 System Cabinet, the following parts are required to maintain cooling levels for the cabinet environment: 1 Rack Unit(RU) Air Baffle and a single or dual Enterprise Cabinet mount kit. The following matrix shows ordering options and marketing part numbers.

	1 RU Air Baffle	(Single T3 Array) Mount Kit	(Dual T3 Array) Mount Kit
Factory-Configured	9629A	9668A	9667A
Field-Installed	X9629A	X9668A	X9667A

The system cabinet can support up to two T3s. The T3s must be installed in the lowest possible location within the rack. For more information on T3 rackmount hole locations, refer to the Rackmount Placement Matrix at the sun.com website.

10X DVD-ROM in Sun Enterprise Systems

10X DVD-ROM products in Sun Enterprise 6503/5503/4503/3503 systems can be used only in a CD-ROM capacity.

464-MHz 8-Mbyte CPU Modules

Note – When installing 464-MHz 8-Mbyte modules in a Sun Enterprise 4500 system, EMI spring gaskets (X990G1) must be installed on the media tray of the 4500 system if gasketing around the media tray is not already in place.

Note – When installing 464-Mhz 8-Mbyte CPU modules in a Sun Enterprise 6500, or a Sun Enterprise 5500 with one or more Sun Enterprise 4500s in the cabinet, a gasketed EMI door (X9633A) must be installed. For previously installed non-gasketed EMI doors (X9623A), EMI foam gaskets (X991G) must be installed on the inside edges.

Note – Sun StorEdge™ T3 systems are not supported in Sun Enterprise 6500 and Sun Enterprise 5500 cabinets with an EMI door.

Note – Two or more Sun Enterprise 4500-Rs in the Sun StorEdge Expansion cabinet require a standard EMI door. There is no Sun StorEdge T3 system restriction in the Sun StorEdge Expansion cabinet.

Note – The 464-MHz 8-Mbyte CPU modules in Sun Enterprise 6500/5500 and rackmounted Sun Enterprise 4500 systems should not exceed temperatures of 35°C between 0–6,000 foot altitude or exceed 32°C between 6,000–10,000 foot altitude. Standalone Sun Enterprise 4500 and 3500 systems cannot exceed 40°C between 0–6,000 feet or exceed 37°C between 6,000–10,000 feet.

When installing 464-MHz 8-Mbyte CPU modules, the following software upgrade procedures must be performed and followed *before* installing the modules.

Software Installation

When installing Solaris™ 2.5.1 or 2.6 on a new system configured with 464-MHz 8-Mbyte modules, modifications are required to the installation procedure in order for the system to run properly. For the Solaris 7 or 8 operating environments, this procedure is not required.

Note – This procedure *must* be performed in the order specified.

Updating the Flash PROMs

The Sun Enterprise 6500, 5500, 4500, and 3500 system boards (including the CPU/memory board and various types of I/O board) have individual flash PROMs.

Caution – Do not combine old and new CPU PROM versions.

TABLE 2 Flash PROM Program Versions

Board	PROM Version	Notes
CPU/Memory	OBP 3.2.x	
I/O Type 1	FCODE 1.8.x	Type 1 is an SBus board with 3 SBus slots and 25Mbyte/sec Fibre Channel sockets.
I/O Type 2	FCODE 1.8.x	Type 2 is a Graphics board with 2 SBus slots, 25 Mbyte/sec Fibre Channel sockets, and 1 graphics adapter (UPA) slot.
I/O Type 3	FCODE 1.8.x	Type 3 is a PCI board with 2 PCI slots.
I/O Type 4	FCODE 1.8.x	Type 4 is an SBus+ board with 3 SBus slots and 100 Mbyte/second GBIC interfaces
I/O Type 5	FCODE 1.8.x	Type 5 is a Graphics+ board with 2 SBus slots and 1 graphics adapter (UPA) slot and 100 Mbyte/second GBIC interfaces.

Note – These CPU modules require that the system flash PROM be updated to 3.2.29 or compatible versions *before* installing the modules. Any necessary operating system patches should be applied before the module installation.

Operating Environment Installation

Note – If your system is running the Solaris 7 operating environment, you must install software patch #106541. If your system is running the Solaris 8 operating environment, you must install software patch #108528.

To install the Solaris 2.5.1 or 2.6 operating environments, use the "Operating Environment Installation CD (part number 704-7076 dated February 2000) that comes with your system. Following the operating environment installation, return to the following hardware installation procedure.

Note – For Solaris 2.5.1, patch #104595 or compatible versions, which is not specific to the CPU module, is required in order to run `/usr/platform/sun4u/sbin/prtdiag`

When installing Solaris 2.5 or Solaris 2.6 on a system with 464-MHz 8-Mbyte CPU modules, you may experience issues with auto-negotiation on ethernet interfaces, such as with boot net operations. To address these issues, use the following workaround for each ethernet interface, depending on whether your ethernet interface operates at 10 or 100 Mbit/sec:

at the OBP prompt, enter:

```
ok apply transfer-speed=10 <path-for-hme>
```

or

```
ok apply transfer-speed=100 <path-for-hme>
```

Hardware Installation

Use the following torque tightening procedure:



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

7. **Tighten the screws in three steps:**
 - a. **Tighten each screw in the sequence shown until it reaches the metal plate.**
 - b. **Tighten each screw an additional 1/2 turn in the sequence shown.**
 - c. **Tighten the five screws to 6-inch pounds in the same sequence.**



Caution – Do not overtorque or undertorque the screws.

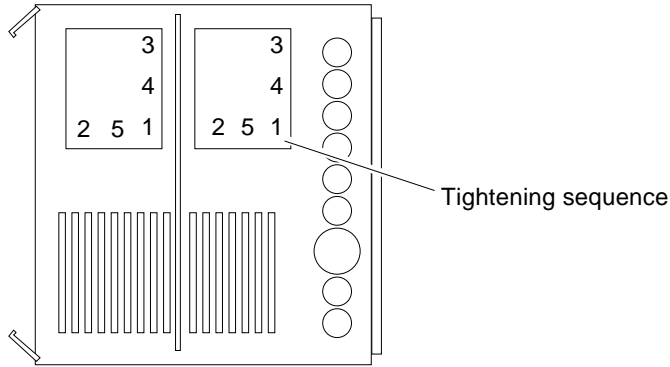


FIGURE 14 CPU Module Torque Tightening Sequence

CPU Module Cover

The 464-MHz 8-Mbyte CPU modules now have a cover with CPU module installation instructions and the screw tightening sequence (FIGURE 2).

The diagram shows a CPU module with a cover. A yellow label is attached to the cover. The label contains the following text:

PEM Standoff

Sun
microsystems

Caution — Observe all standard ESD preventative measures when handling CPU modules.

Caution — DO NOT touch the module connectors.

Installation Instructions:

1. Insert the module *completely* into the PEM stand-off.
2. Align the screws against the corresponding holes on the back plate.
3. Tighten each screw in the numbered sequence indicated on this label until it reaches the metal plate.
4. Tighten each screw in the numbered sequence an additional 1/2 turn.
5. Torque each screw in the numbered sequence to 6-inch pounds using the torque driver provided with the system.

Removal Instructions:

1. Remove module by loosening screws in reverse order, starting at 5.

The label also features a 'PEM Standoff' icon, the Sun Microsystems logo, and five numbered callouts (1-5) pointing to specific locations on the label and the module cover. A separate diagram shows the 'Cover' component.

FIGURE 15 CPU Module With Cover and Label

8. Power on the system.



