

SPARCserver 1000 System Board Manual



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Preface

This system board manual is written for a trained service provider who intends to install the SPARCserver 1000™ or SPARCserver 1000E™ system board. In general, the term SPARCserver 1000 refers to both the SPARCserver 1000 and the SPARCserver 1000E system board. Where the SPARCserver 1000E is different, this is explicitly noted.

When You Need Help with UNIX Commands

This manual does not include specific software commands or procedures. In their place, a software task is named. Refer to the operating system documentation that was shipped with your system when you need help with commands or procedures such as:

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

Depending on the operating system you are using, complete descriptions of commands and procedures can be found in:

- On-line AnswerBook™ documentation that comes with Solaris
- Other software documentation you received with your system

Document Conventions and Symbols

The following table describes the typefaces and symbols used in this book.

Table P-1 Typographic Conventions

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. system% You have mail.
AaBbCc123	What you type, contrasted with on-screen computer output	system% su password:
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type <code>rm filename</code> .
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be root to do this.

Related Documentation

These documents give information about installing and using the server or related boards and peripherals.

Table P-2 Related Documents

Application	Name	Part Number
Diagnostics	<i>Open Boot PROM 2.x User's Guide</i>	800-5674-xx
	<i>Open Boot Command Reference</i>	800-6076-xx
User's Guides	<i>SPARCserver 1000 Storage Device User's Guide</i>	801-2198-xx
	<i>POST User's Guide</i>	800-7487-xx
	<i>System and Network Administration for the Sun Workstation</i>	800-1323-xx
Service, System	<i>SPARCserver 1000 System Service Manual</i>	801-2895-xx
Service, Peripherals	<i>Memory Module Installation Manual</i>	801-2888-xx
	<i>SCSI Disk Expansion Board Installation Manual</i>	801-2196-xx
Safety, Other	<i>Data Center Regulatory Compliance Manual</i>	801-2892-xx
	<i>Sun Site Preparation Guide Manual Set</i>	825-1392-xx

Notes, Cautions, and Warnings



Warning – The SPARC module has a *hot surface*. Avoid contact. Surfaces are hot and may cause personal injury if touched.



Warning – This equipment contains lethal voltage. Accidental contact can result in serious injury or death.



Caution – Improper handling by unqualified personnel can cause serious damage to this equipment. Unqualified personnel who tamper with this equipment may be held liable for any resultant damage to the equipment.

Individuals who remove any outer panels to access this equipment must observe all safety precautions and ensure compliance with skill level requirements, certification, and all applicable local and national laws.

Procedures contained in this document must be performed by qualified service-trained maintenance providers.

Note – Before you begin, carefully read each of the procedures in this manual. If you have not performed similar operations on comparable equipment, *do not attempt* to perform these procedures.

Before You Start



This chapter covers the procedures and information you need to know before you begin installation or service on your SPARCserver 1000 system.

1.1 Tools Required

- Sun ESD mat and grounding wrist strap
- #0 Phillips screwdriver
- #1 Phillips screwdriver
- Flat-blade screwdriver

1.2 Safety Precautions

To protect yourself and the equipment, observe the following precautions when working on or in the server.

Table 1-1 Safety Precautions

Item	Problem	Precaution
AC cord	ESD (Electrostatic discharge)	Ensure the AC cord connects the server to a grounded electrical outlet. The power cord provides a ground path for the unit to bleed off electrostatic voltage.
Wrist strap or Foot strap	ESD	Wear a conductive wrist strap or foot strap when you handle printed circuit boards. Proper use of a conductive strap reduces the risk of damage to the boards by discharging static electricity to ground.
ESD mat	ESD	The mat provides ESD protection when used with a wrist strap or foot strap. The mat also cushions the board to prevent breakage of any small parts that contact the bench surface.
PC boards	ESD	Handle the PC board by the edges only. Store the board in an antistatic bag.
Cover panels	System damage and overheating	Install all cover panels after performing any service work on the system. The panels keep out foreign objects to prevent physical damage to internal parts and guide airflow to prevent overheating.
Airflow restrictor boards (filler panels)	System damage and overheating	Install airflow restrictor boards in all unused card cage slots. Unused, open slots severely reduce the cooling capability of the system and can lead to equipment damage from overheating.

1.3 System Board Description

Figure 1-1 shows the locations of major components on the system board.

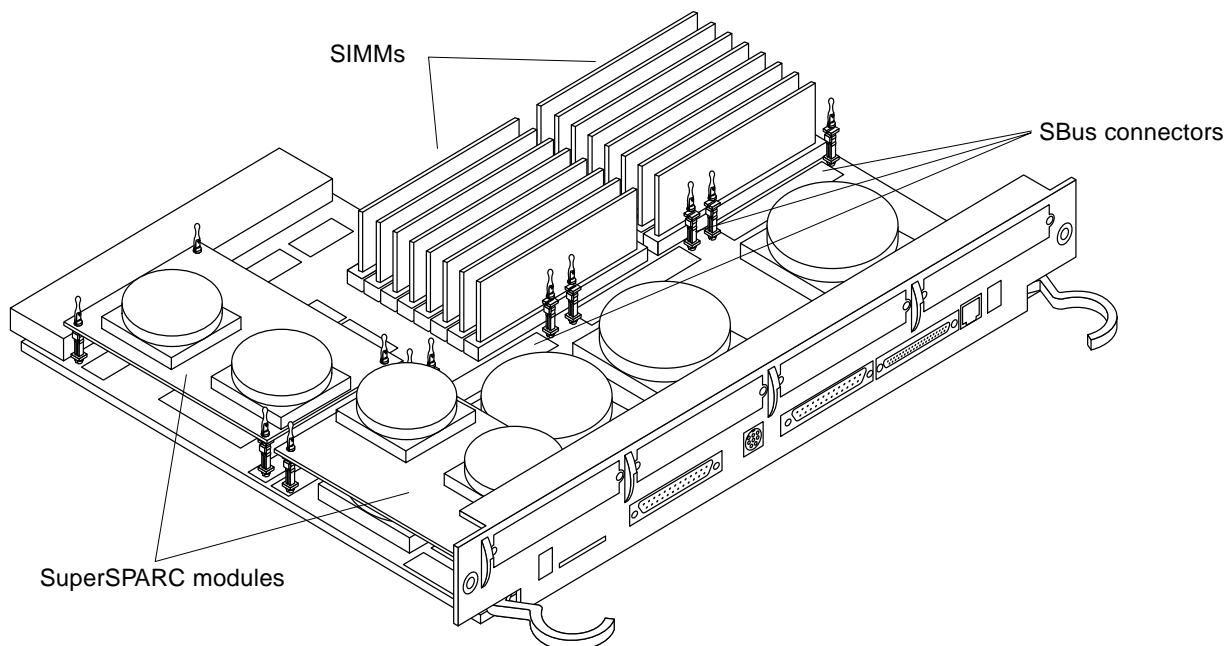


Figure 1-1 End and Side Views of the System Board

All system boards are essentially the same; no jumper changes are necessary. System boards can be moved to any slot, especially during troubleshooting.

However, the system board in card cage slot 0 is considered the system bus master. The minimum configuration for this board requires a SPARC® module in location A. If a serial-interface console is used, it must be plugged into RS232 connector A on the system master. If a color monitor is used, a color-graphics interface card must be installed in SBus slot 1 on the system master.

Also, by convention, system boards are installed in the lowest card cage slot numbers first. Fill all SuperSPARC module A slots before using the B slots. Fill all group 0 SIMMs before installing any group 1 SIMMs.

For comprehensive slot assignment rules and configuration priorities, refer to Appendix C, “General Rules for System Configuration.”

1.4 System Board Block Diagram

Figure 1-2 is a block diagram of the system board. The SuperSPARC modules, SIMMs, and optional SBus cards are removable and can be replaced or moved to another SPARCserver 1000 system board.

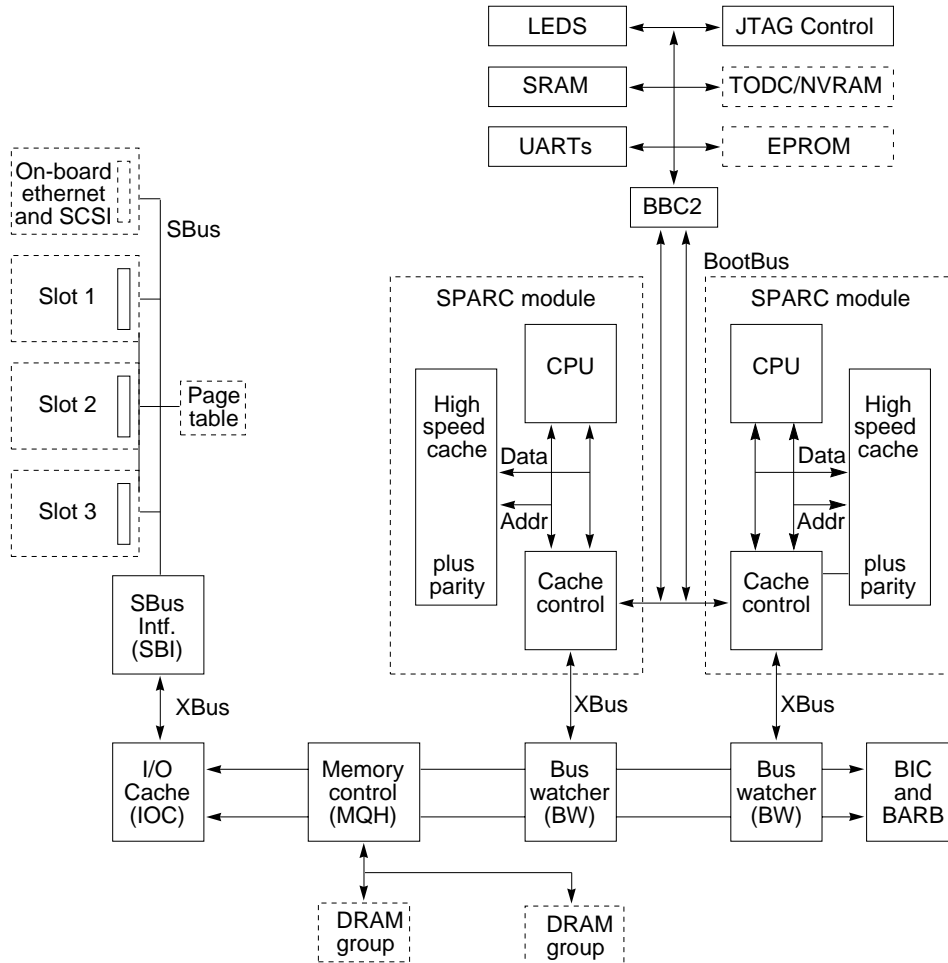


Figure 1-2 System Board Block Diagram

The components shown in solid outlines cannot be replaced in the field; if the diagnostic self-tests report that a non-removable component failed, the entire system board must be replaced.

1.5 Replaceable Units

The following items are system board components that can be replaced at customer's site.

Table 1-2 Replaceable Units for the System Board

FRU	Part Number
SPARCserver 1000 System board, 0 processors, 0 SIMMs	501-2336
SPARCserver 1000E System board, 0 processors, 0 SIMMs	501-2668
SuperSPARC module	* Various part numbers
OpenBoot PROM	*
TOD/NVRAM	100-3528
SIMM, 8 Mbyte	501-1817
SIMM, 32 Mbyte	501-2196
1Mx9 NVSIMM	501-2197
Filler panel, SBus slot cutout	340-2305
Air restrictor board, card cage board slot	540-2388

*-See your Sun representative for latest part number.

xx -Denotes revision level of an assembly; the factory ships the applicable revision level.

Removing and Replacing System Boards and Assemblies



This chapter provides information on removing or replacing:

- System boards
- SuperSPARC modules
- SBus cards
- SIMMs and NVSIMMs
- OpenBoot PROMs
- TOD/NVRAM

2.1 Handling System Boards and Assemblies



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



Caution – The system board, its modules, and cards have surface-mount components that can be broken by flexing the board.

To minimize the amount of board flexing, observe the following precautions:

- Hold the system board only by the edges near the middle of the board, where the board stiffener is located. Do not hold the board *only* at the ends.
- When removing the board from an antistatic bag, keep the board vertical until you lay it on the Sun ESD mat.

- Do not place the system board or SBus cards on a hard surface. Use a cushioned antistatic mat. The board connectors and components have very thin pins that bend easily.
- Do not use an oscilloscope probe on the components. The soldered pins are easily damaged or shorted by the probe point.
- Transport the board in an antistatic bag.

2.2 System Board

2.2.1 Removal

Before you remove a system board, you must first halt the system and turn off the power using the instructions that follow.

Before turning off the system power, you must halt the operating system. See the Preface, “When You Need Help with UNIX Commands,” if you need references to help with the commands or help in performing the system administration procedures described below.



Caution – To avoid damaging internal circuits, do not disconnect or plug in any cable while power is applied to the system.

To shut down the system and give users a shutdown warning:

1. **Back up the system files and data to tape, if necessary.**
2. **Notify users that the system is going down.**
3. **Halt the system using the appropriate commands.**
4. **Wait for the system-halted message and the boot monitor prompt.**
5. **Turn the key switch located on the front panel to the Standby position.**
6. **Turn the AC power switch on the system back panel off.**
7. **Unfasten any cable connectors from the board back panel and set aside.** Disconnect any keyboard, SCSI, network, or other cables connected to the back panel. Label cables to ease reconnection later.
8. **Remove the two screws that hold the system board to the card cage.** Refer to Figure 2-1. Set the screws aside for later reinstallation.

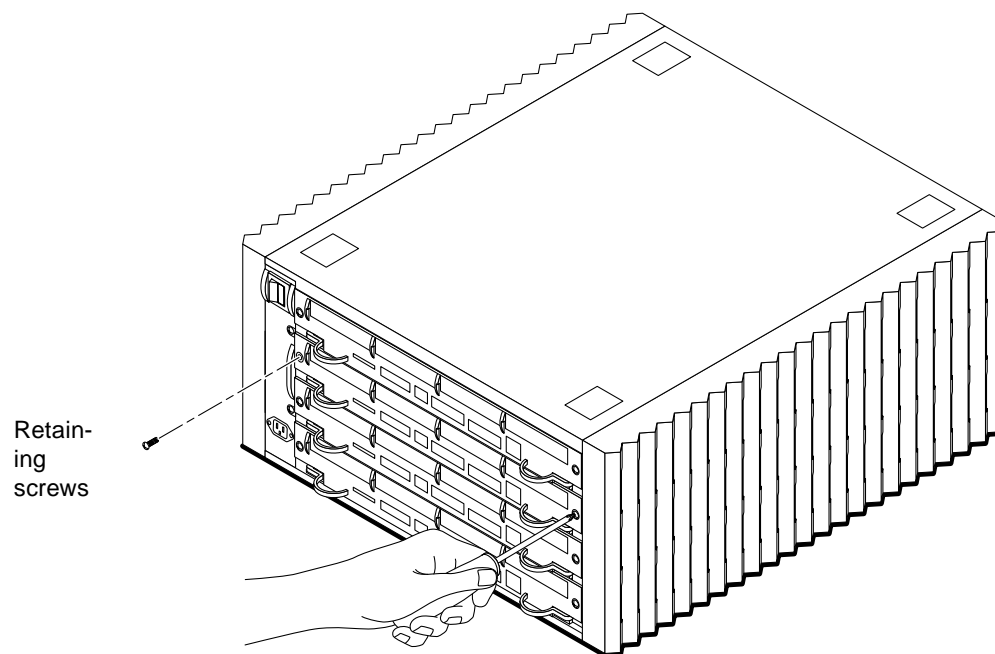


Figure 2-1 Removing the System Board Retaining Screws

- 9. Pull the curved ends of both extraction levers outward simultaneously to release the board from the backplane connectors.**
Refer to Figure 2-2.

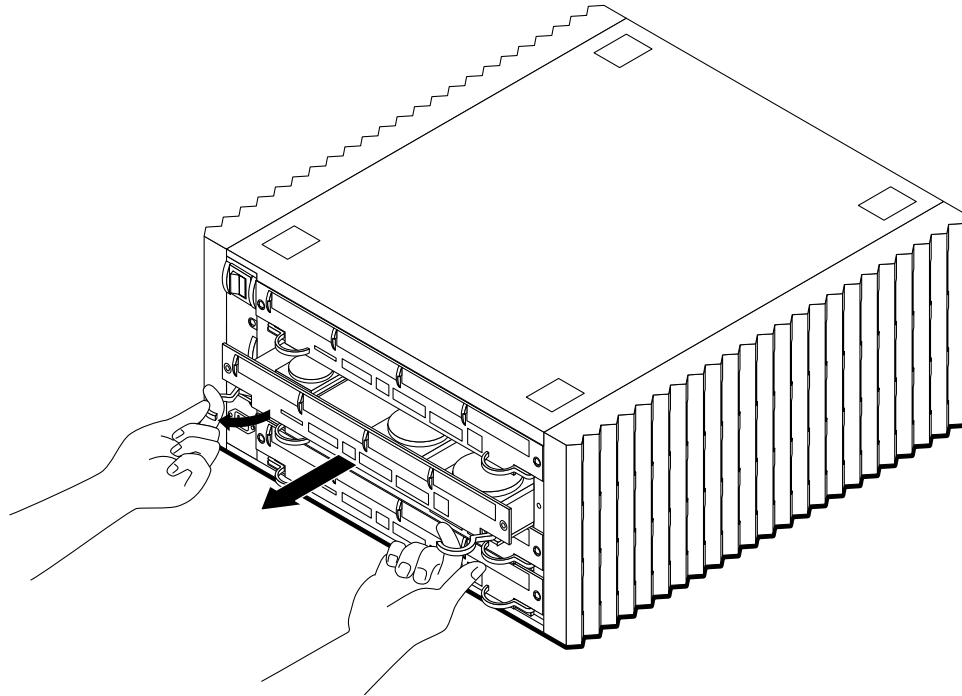


Figure 2-2 Removing the System Board

10. Holding the board by both of the extraction levers, gently slide the board out of the card cage.



Caution – The board has a cutout on the right-hand side, therefore, the right side of the board will clear the card guides before the left side. Grip the edges of the board firmly or the board could fall and damage components.

11. Place the board on the ESD mat or in an antistatic bag.

2.2.2 Replacement

Note – To select a card cage slot for the system board, refer to Appendix C, “General Rules for System Configuration.”

1. **Open the protective packaging and take out the system board.**
2. **Carefully insert the board in the proper slot in the card cage, ensuring that the board does not slip out of the left and right card guides.**
The component side of the board must face up.
3. **Ensure that both extraction levers are in the outward position as you slide the board toward the backplane connectors.**
Refer to Figure 2-2. The board will not seat fully unless the levers are in this starting position.



Caution – DO NOT FORCE any board into a slot, this can cause damage to the board and system. The board should insert and seat smoothly. If it binds, remove it, and inspect the card cage slot for any obvious obstructions. Also inspect both the board and the backplane for bent pins or other damage.

4. **Use the extraction levers to seat the board.**
Simultaneously swing both levers into the locked position. Do not press on board to seat it—doing so will damage the connector pins.
5. **Install two screws to secure the board to the card cage.**
Refer to Figure 2-1.
6. **Connect any applicable interface cables to the system board back panel.**

2.3 Using Standoffs

Plastic standoffs lock the SuperSPARC modules and SBus cards to the system board. Refer to Figure 2-3.

- To unlock a standoff, pull up the tip insert.
- To lock a standoff, first ensure that the module or card rests on the standoff flange, then press down the tip insert.

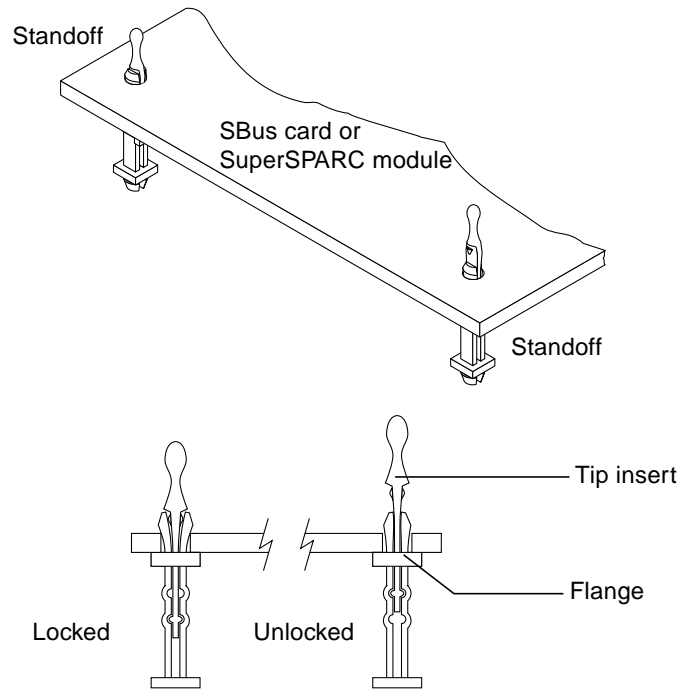


Figure 2-3 Locking and Unlocking Standoffs

2.4 SuperSPARC Modules

Each system board can have two SuperSPARC modules, A and B. Refer to Figure 2-4. To select the proper location for a SuperSPARC module, refer to Appendix C, "General Rules for System Configuration."

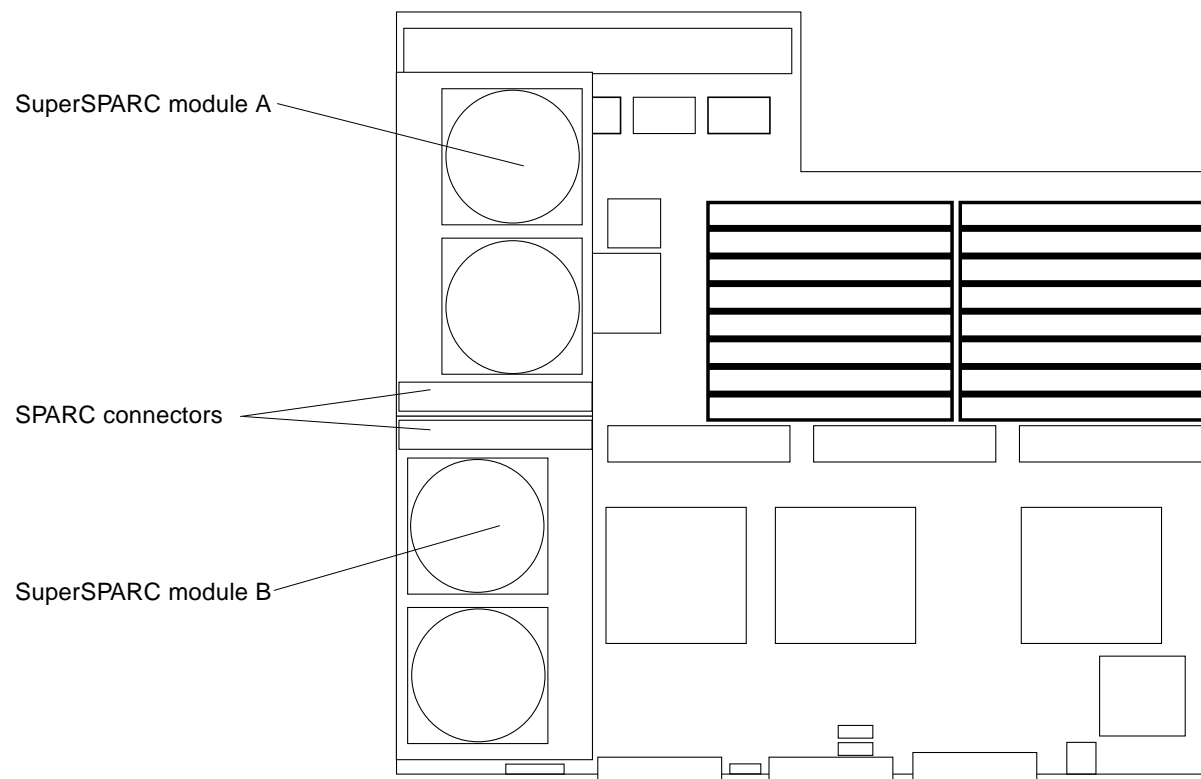


Figure 2-4 SuperSPARC Modules A and B Installed

2.4.1 Removal

SuperSPARC module A is mounted on four standoffs on the system board. SuperSPARC module B is mounted like an SBus card, the connector end mounts on standoffs but the back panel end slides onto the lip of a back panel filler plate.

2.4.1.1 SuperSPARC Module A



Warning – The heatsinks on the SuperSPARC modules may be hot. Use caution when removing or installing SuperSPARC modules and avoid contact with the heatsinks. Hold SuperSPARC modules only by the edges.

1. **Unlock the four standoffs that secure the module to the system board.**
Pull up the tip insert of each standoff to unlock. Refer to Figure 2-3.
2. **Hold the SuperSPARC module by the edges near the connector and carefully rock the module back and forth to loosen the connector from the socket.**



Caution – The connector housing will break if the module is tilted too far.

3. **Place the module in an antistatic bag.**

2.4.1.2 SuperSPARC Module B



Warning – The heatsinks on the SuperSPARC modules may be hot. Use caution when removing or installing SuperSPARC modules and avoid contact with the heatsinks. Hold SuperSPARC modules only by the edges.

1. **To unlock the SuperSPARC module, pull up the tips of the two standoffs.**
Pull up the tip insert of a standoff to unlock it.
2. **Hold the module by the edges near the connector and gently rock the module back and forth to loosen it from the socket.**
3. **Lift the module from the socket at an angle while guiding the other side of the module out from the back panel filler.**
The special SuperSPARC module back panel filler is shown in Figure 2-5. Each of the module holes rests on a small pin. The module must be rocked back and forth gently to free it from the back panel filler.

Note – It may be necessary to remove either SuperSPARC module A or the SBus card in slot 1 to get a firm grip on module B. A firm grip is necessary to remove the module from the connector without breaking the connector.

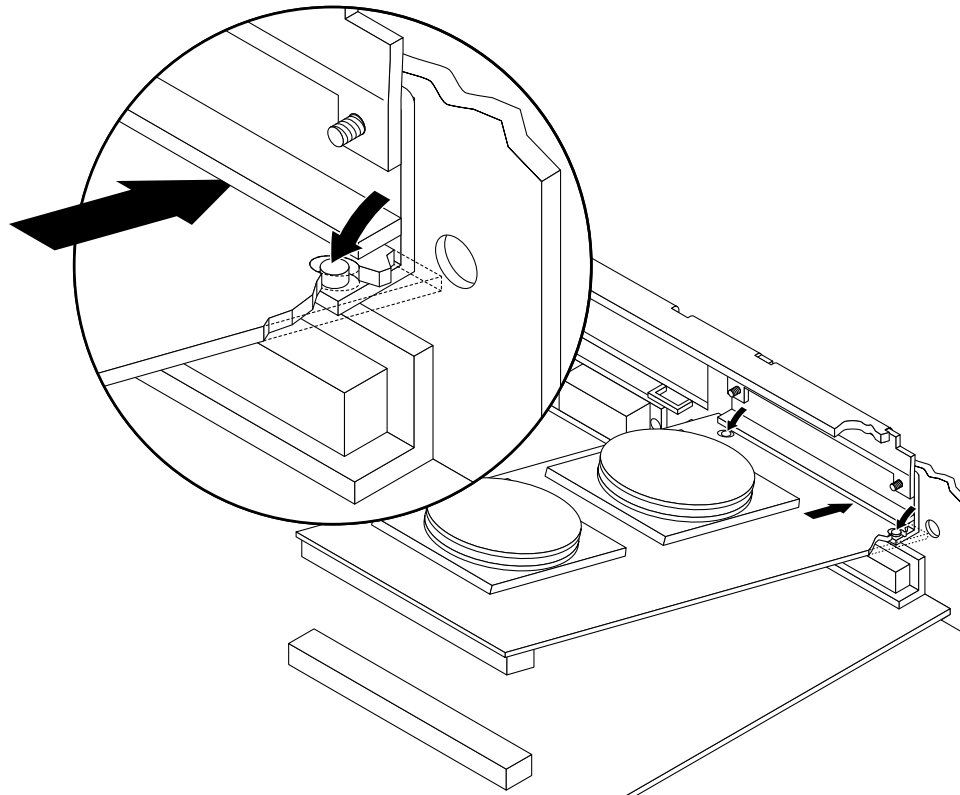


Figure 2-5 Installing SuperSPARC Module B

4. Place the SuperSPARC module in an antistatic bag.

2.4.2 Replacement

1. **Unlock the standoffs for the chosen location if they are not already unlocked.**
Pull up the tip insert of a standoff to unlock it. Refer to Figure 2-3.
2. **Take the SuperSPARC module out of the protective packaging and inspect the connector for bent pins.**

- 3. Place the SuperSPARC module on the standoffs and align the module connector with the system board socket. For SuperSPARC module B, slide the back panel end (the side opposite the connector) into place under the lip of the back panel filler panel, then align the connector with the socket. Ensure that the holes in the board line up over the pins in the filler panel. Refer to Figure 2-5.**



Caution – Ensure the heat sink does not get caught on the lip of the system board back panel during installation. If it does, the board will not seat properly in the backplane.

- 4. Hold the SuperSPARC module by the edges near the connector and firmly but gently press the module down until the connector is fully seated.**



Caution – Do not rock the module onto the socket; the plastic connector housing may break.

- 5. Starting from the side opposite from the connector, press each corner of the SuperSPARC module to ensure that it rests on the collar of the standoff.**
- 6. Press down on the tip insert of each standoff to lock the module in place.**

2.5 SBus Card

The system board has three SBus card locations. Refer to Figure 2-6. To select the location for an SBus card, refer to Appendix C, “General Rules for System Configuration.”

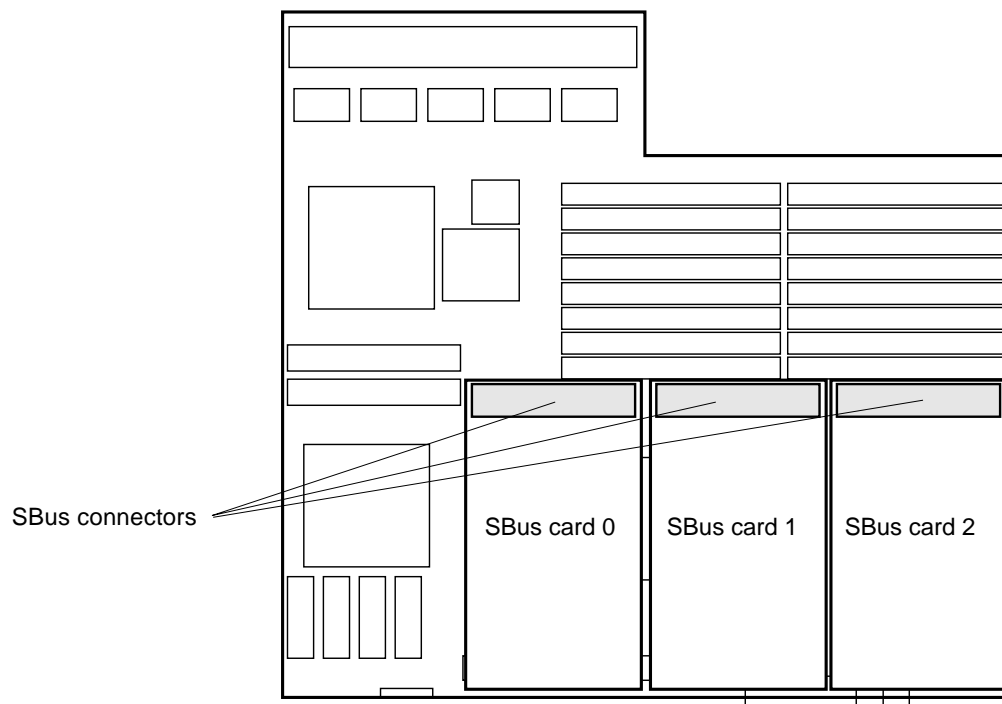


Figure 2-6 SBus Card Locations

2.5.1 Removal

- 1. Remove the two screws that secure the SBus card to the back panel.**
Save the screws for installation of a replacement SBus card or a filler panel.
- 2. Unlock the SBus card by pulling up the tips of the two standoffs.**
Pull up the tip insert of a standoff to unlock it. Refer to Figure 2-3.
- 3. Hold the card by the edges near the connector and gently rock the card back and forth to loosen it from the socket.**
You may have to remove the SBus cards, SIMMs, or SuperSPARC modules next to your chosen SBus card in order to have enough room to hold onto the SBus card during removal.



Caution – The connector housing may break if the SBus card is tilted too far.

4. Lift the SBus card from the socket at an angle while guiding the face plate out from the back panel opening.
Refer to Figure 2-7.
5. Place the SBus card in an antistatic bag.
6. If the SBus card is not immediately replaced, install a filler panel (part number 340-2305) on the back panel opening of the system board. To secure the filler panel, use the screws that were removed in step 1.



Caution – Be sure to install the filler panel right-side up, installing it upside down creates a gap at the top edge of the SBus slot opening that can impair system cooling and regulatory compliance.

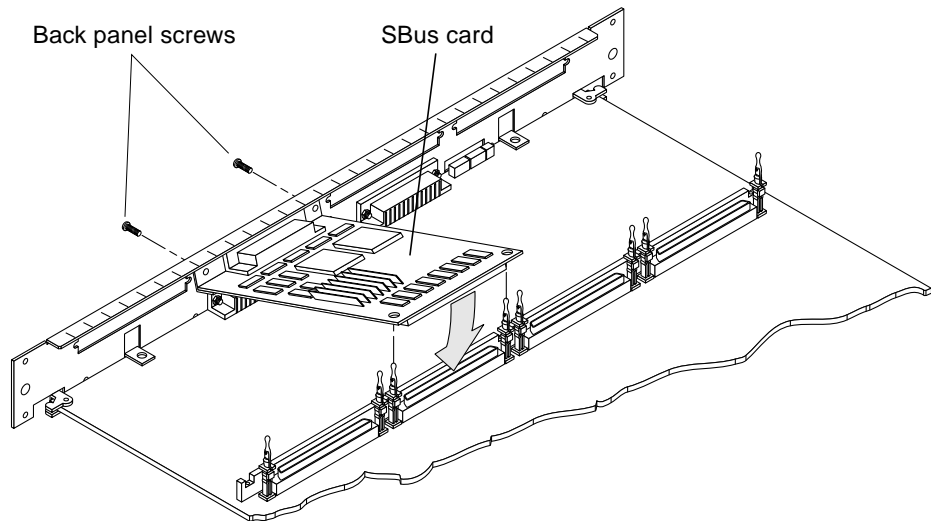


Figure 2-7 Removing or Installing an SBus Card

2.5.2 Installation or Replacement

Note – If the new SBus card has an adapter plate (refer to Figure 2-8), remove the plate by performing the procedures in Section 2.5.2.1. If the SBus card does not have an adapter plate, go instead to Section 2.5.2.2.

2.5.2.1 Preparing for Installation

1. **Open the protective packaging and take out the SBus card.**
2. **Remove the adapter bracket from the SBus card rear panel.**
Refer to Figure 2-8. Using a #0 Phillips screwdriver, remove the two screws securing the adapter to the card rear panel. The adapter bracket and the screws are not needed for this installation.

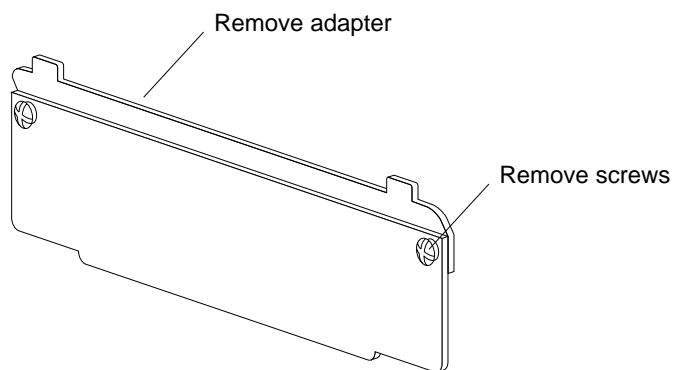


Figure 2-8 SBus Card Rear Panel with Adapter

3. **Remove the black plastic card retainer shipped with the card.**
Refer to Figure 2-9. Spread the ends of the retainer apart to remove it from the card. The retainer is not needed for this installation.

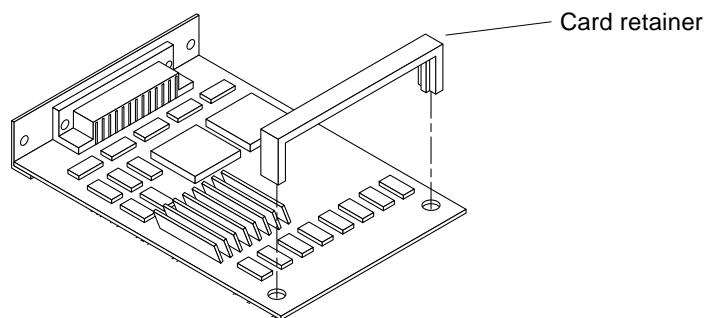


Figure 2-9 SBus Card Retainer

Link Integrity Test

4. **For DSBE/S and FSBE/S cards: remove the two outer retaining screws (refer to Figure 2-10), but do NOT remove the middle screw or the springfinger.**
Use a #0 Phillips screwdriver and a 3/16 nut driver or socket wrench.
5. **For DSBE/S and FSBE/S cards, configure jumper J0302 for link integrity test functionality. Refer to**
DSBE/S — Figure 2-10:
FSBE/S — Figure 2-11
 - a. **Put the shunt over both pins to *disable* the Link Integrity Test, as shown in Figure 2-12 “Disabled.”.**
 - b. **Put the shunt in one pin to *enable* the Link Integrity Test, as shown in Figure 2-12 “Enabled.”.**



Caution – If the customer chooses to disable the test, it must be disabled both at the hub and at the SBus card. In the event of “loss of carrier” or “not responding” problems, check the status of the link enable on both the SBus card and the hub.

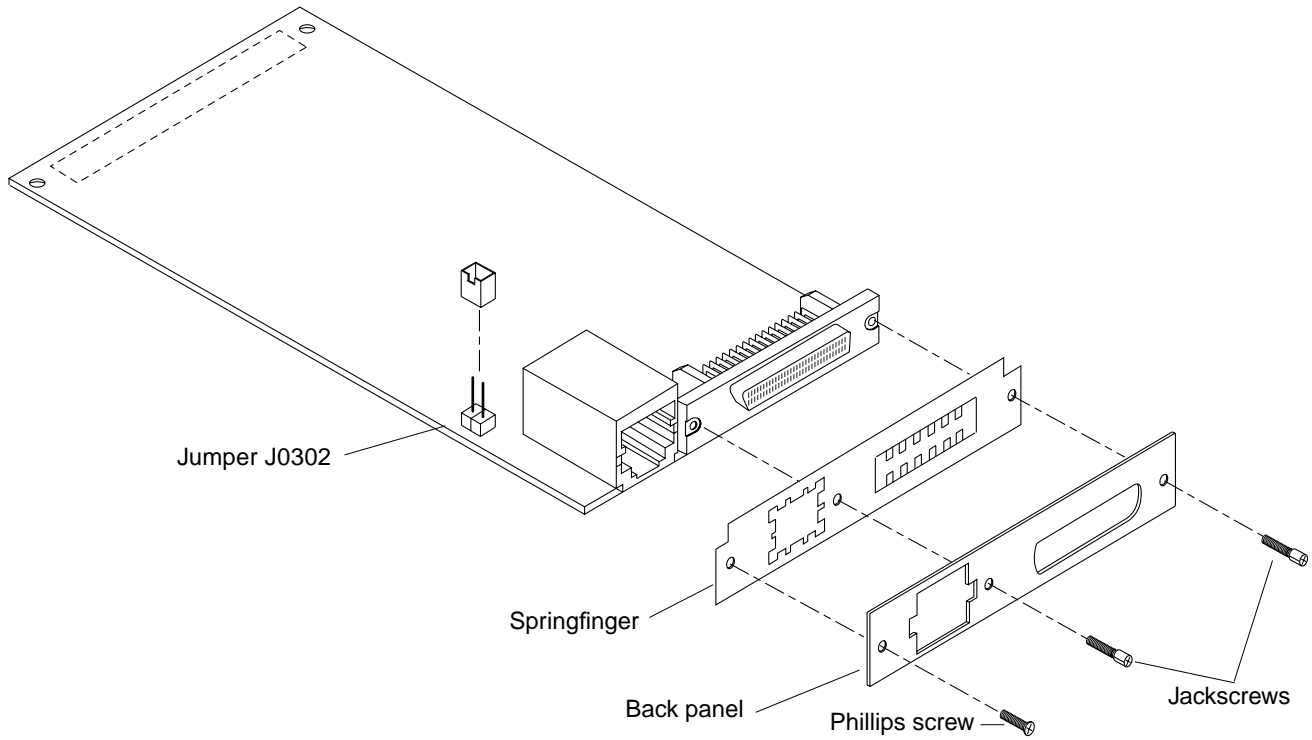


Figure 2-10 DSBE/S SBus Card

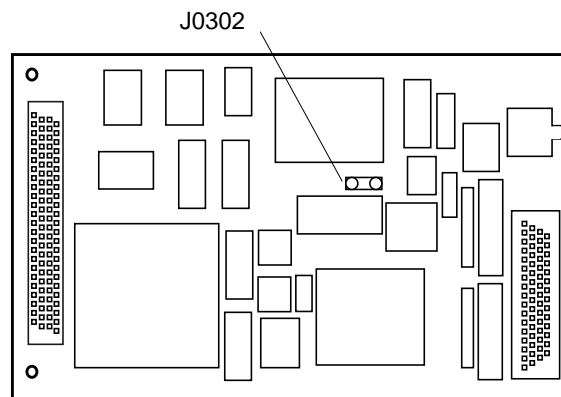


Figure 2-11 FSBE/S SBus Card

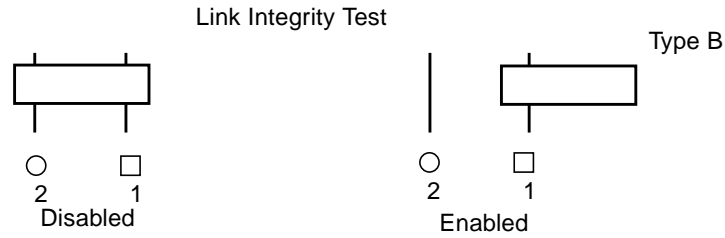


Figure 2-12 Disabling and Enabling the Link Integrity Test

2.5.2.2 Installing an SBus Card

1. **If a filler panel covers the back panel SBus slot, remove the two screws and detach the filler panel.**
Retain the screws to attach the SBus card to the back panel, unless the card has a wide connector, or set of connectors.
2. **Unlock the two standoffs for the slot.**
Pull up the tip insert of a standoff to unlock it. Refer to Figure 2-3.
3. **Take the SBus card out of the protective packaging and inspect the pins in the connector to make sure they are not bent.**
4. **Guide the SBus card face plate under the springfingers and against the rear face of the back panel.**
Refer to Figure 2-7. The I/O connectors of the SBus card should be visible through the opening in the back panel.
5. **Hold the card by the edges nearest the SBus connector and place the card over the two standoffs.**
6. **Hold the SBus card by the edges near the connector and firmly but gently press the card down until the connector is fully seated.**
To align the connector and socket, push the card toward the system board back panel.



Caution – Do not rock the card onto the socket; the plastic connector housing may break.

7. **Press each corner of the SBus card to ensure that it rests on the collar of the standoff.**

8. Press down on the tip insert of each standoff to lock the card in place.
9. Replace and tighten the backpanel screws to secure the SBus card to the system board back panel.

2.6 DSIMMs and NVSIMMs

Three SIMM options exist; two are DRAM SIMMs. (Refer to Figure 2-13.) The third is a nonvolatile SIMM (NVSIMM). (Refer to Figure 2-14.) All three SIMM types are removed and replaced in the same manner. Table 2-1 summarizes the SIMM variations.

Table 2-1 SIMM Variations

Capacity	Type	Part Number	Type
8Mbyte	SRAM	501-1817	A
8Mbyte	SRAM	501-1817	B
32Mbyte	SRAM	501-2196	A
32Mbyte	SRAM	501-2196	B
1Mbyte	NVSIMM (battery-backed)	501-2197	C

Note – These SIMMs were designed for the SPARCserver 1000 system and are not interchangeable with other types of SIMMs.

Type A 8 Mbyte SIMMs are interchangeable with Type B 8 Mbyte SIMMs. The two 32 Mbyte SIMM types may also be interchanged. However, SIMMs of different capacities cannot be interchanged within a group. To select the proper socket locations for the SIMMs, refer to Appendix A, “Configuring SIMMs and Jumpers.”

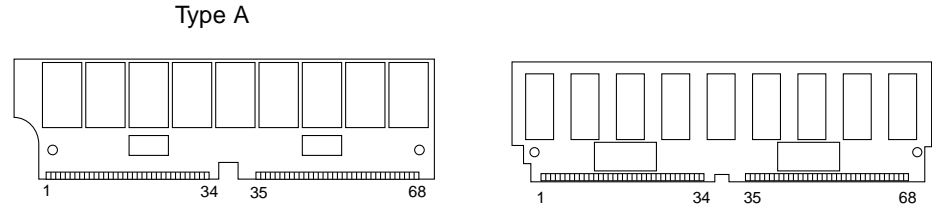


Figure 2-13 SIMMs

Note – The two SIMMs shown in Figure 2-13 differ in appearance only because they are made by different manufacturers, and not because of different memory capacities. Each SIMM can hold either 8 or 32 Mbytes (depending on whether 1 Mbit or 4 Mbit DRAMs are used.)

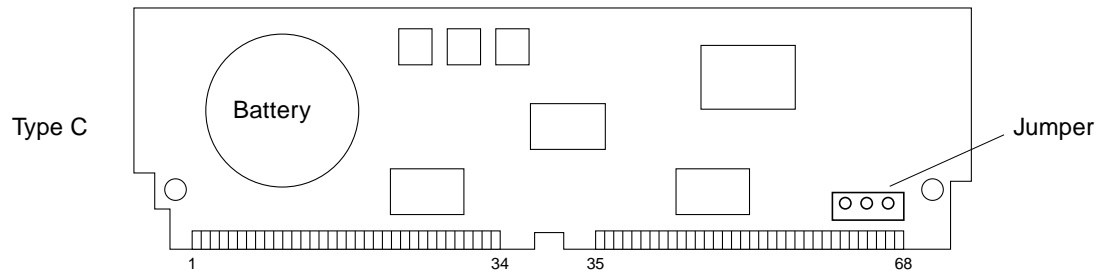


Figure 2-14 NVSIMM (Battery Side)

2.6.1 Removal

To remove a SIMM from a system board:

1. **Locate the faulty SIMM by matching the location number displayed by POST with the J-number shown in Figure 2-15.**

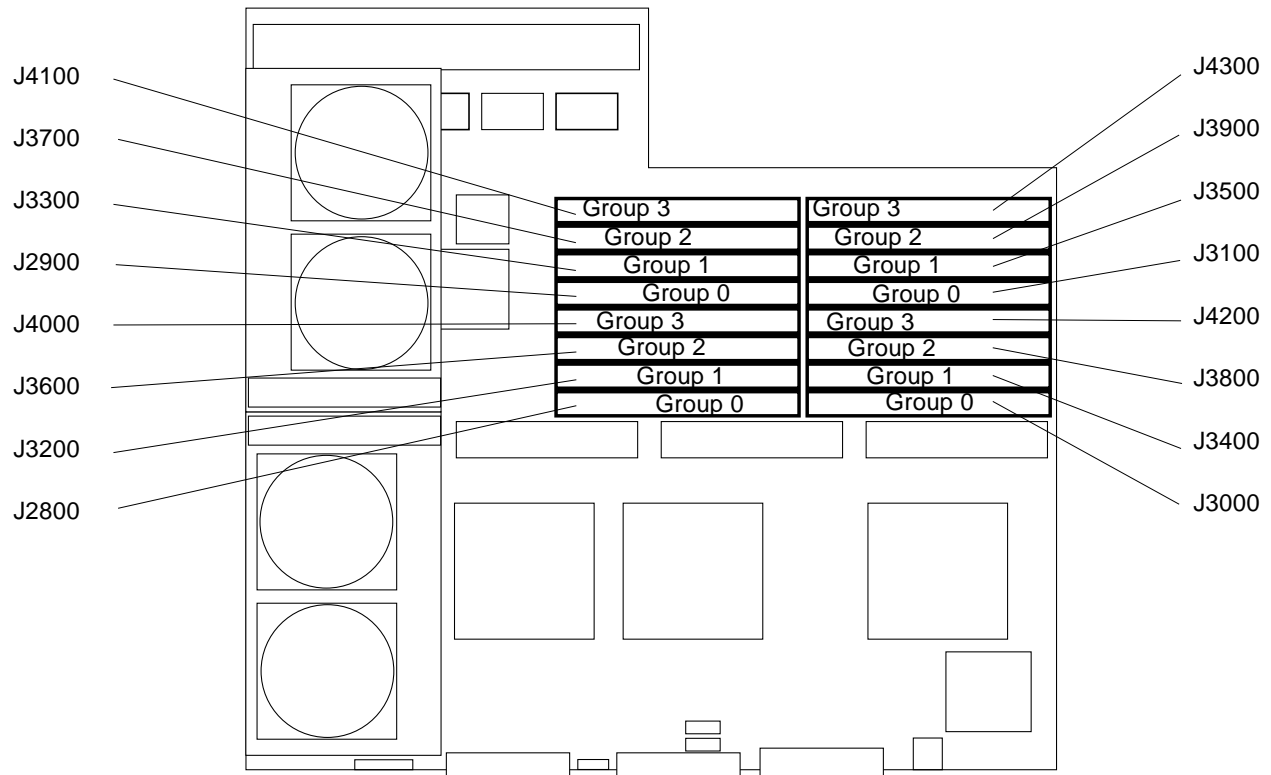


Figure 2-15 SIMM Socket Locations

2. Orient the system board so that the backplane connector faces you.
3. To unlock a SIMM, press the locking tabs toward the outside of the socket and tilt the SIMM forward.
Refer to Figure 2-16.

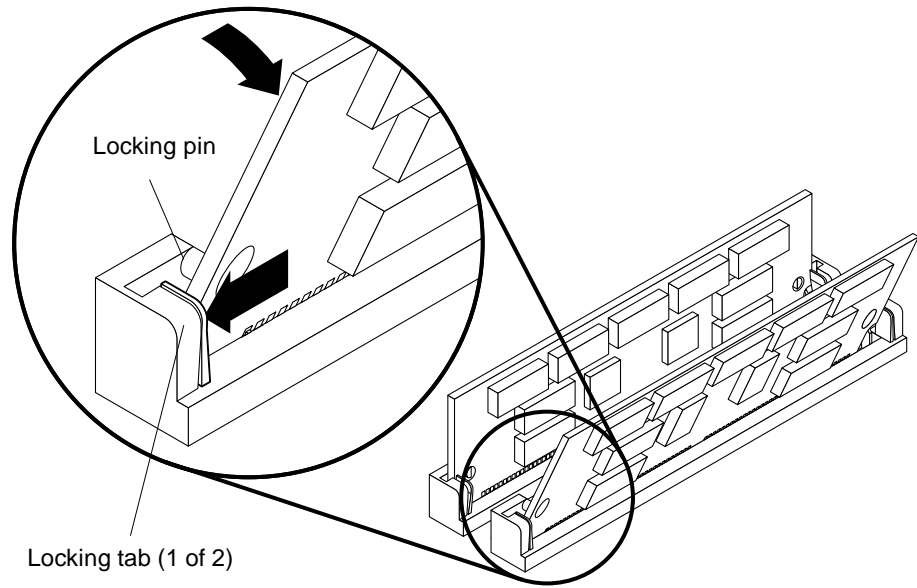


Figure 2-16 Unlocking a SIMM

- 4. Unlock two more SIMMs to make space for the faulty SIMM to tilt forward far enough to be free of the locking pins. Refer to Figure 2-17.**

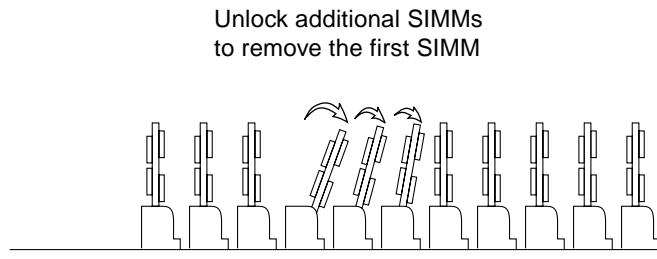


Figure 2-17 Creating Space to Remove a SIMM

- 5. Remove the SIMM from the socket and place it in an antistatic bag.**

2.6.2 Replacement

Note – Do not mix 8 Mbyte SIMMs with 32 Mbyte SIMMs (or 1 Mbyte NVSIMMs) in the same group. (However, SIMMs from different *manufacturers* are interchangeable in a single group if the SIMMs all have the same capacity and speed.)



Caution – If you are adding memory to a system, see Section A.1, “SIMM Configuration” and Section C.1.4, “SIMMs”. Selecting the wrong location(s) can impair system performance.

To install or replace SIMMs, proceed as follows:

1. **Orient the system board so that the backplane connector faces you.**
2. **Remove the SIMM (or NVSIMM) from the antistatic package.**
3. **For NVSIMMs only: if the battery is not already activated, move the jumper to the ON position. See Figure 2-18. If jumper is already in the ON position, do not move it.**



Caution – Once you turn the battery ON, do not move or remove the jumper. Any data contained in the NVSIMM memory will be lost.

Note – It is not necessary to move jumpers on NVSIMMs that have been factory-installed in a new system. The system is delivered with the NVSIMM batteries activated.

4. **Hold the SIMM at the edges, with pin 1 to the left.**
The side alignment notch (the left SIMM in Figure 2-13) or the double notch (the right SIMM in Figure 2-13 or the NVSIMM in Figure 2-14) are at the left side.
5. **Guide the SIMM into the slot at an angle so that the SIMM connector pads touch the bottom of the socket.**
The bottom alignment notch must align with the tab in the center of the socket. Ensure the locking pins (see Figure 2-16) align with the holes in the sides of the SIMM.

6. Tilt the SIMM upright to lock it in place.

The locking tabs should automatically lock around the SIMM.

Note – The SIMM should require very little insertion force. If the SIMM doesn't seat properly, or if a replacement SIMM is made by a different manufacturer, the replacement SIMM may be backward; verify the SIMM alignment holes and notch *exactly* match the corresponding parts of the socket.

7. Lock any SIMMs that were loosened during the installation procedure.

2.6.3 NVSIMMs

Before installing NVSIMMs you must first activate the battery to ensure data retention. To activate the battery you must locate the jumper on the right side of the NVSIMM. Refer to Figure 2-18. Move the jumper to the battery ON position.

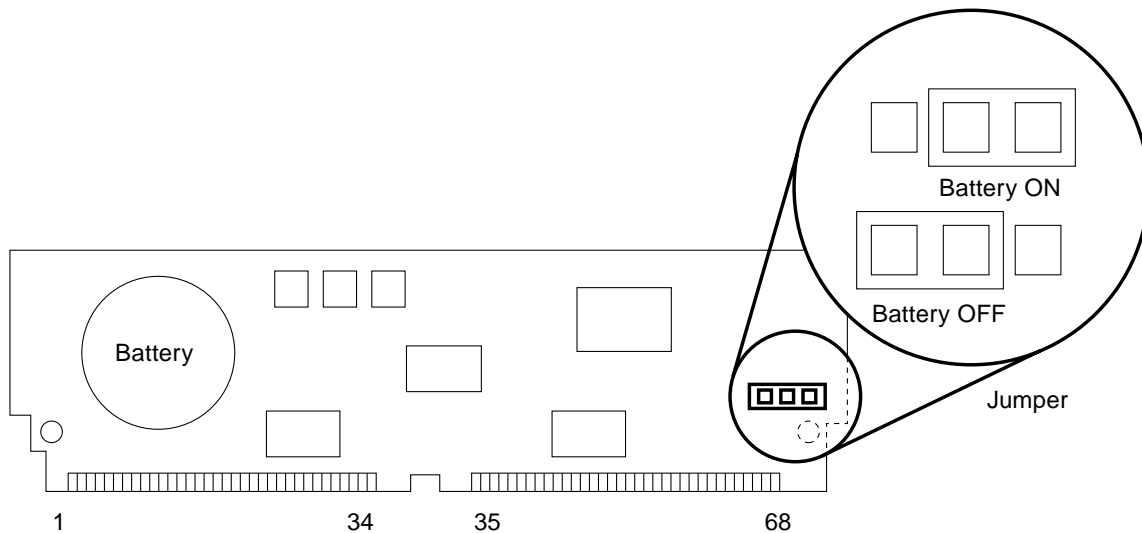


Figure 2-18 NVSIMM Jumper Locations



Caution – After you turn the battery ON do not move or remove the jumper. Moving the jumper will cause the lose of any data contained in the NVSIMM.

Once the jumper is in the ON position, proceed with the installation or removal as described in the preceding sections.

2.7 OpenBoot PROMs

Use this procedure for Boot PROM upgrades. Refer to Figure 2-19 for the PROM socket locations. Pin one is at the upper left corner for all the PROMs.

2.7.1 Removal

1. **To uncover the PROMs, remove the SuperSPARC module (if any) in module location B.**
2. **Use an IC extractor tool to remove the PROMs.**
Refer to Figure 2-19 to locate the OpenBoot PROMs.
3. **Place the PROMs on antistatic foam plastic in an antistatic package for storage or possible reuse.**

2.7.2 Replacement

To continue the OpenBoot PROM upgrade, proceed as follows:

1. **Verify the correct PROM location.**
Each boot PROM has a different socket location (refer to Figure 2-19) and part number.
2. **Position the PROM carefully on the socket, and partially seat the PROM.**
3. **Ensure that the PROM pins are not bent, then press firmly to seat the PROM in the socket.**



Caution – When inserting the PROM, do not flex the board or press it against a hard surface. Use a cushioned ESD mat to protect the board.

4. **Repeat steps 2 and 3 for the remaining OpenBoot PROMs.**
5. **Replace any SuperSPARC module that was removed for this procedure.**

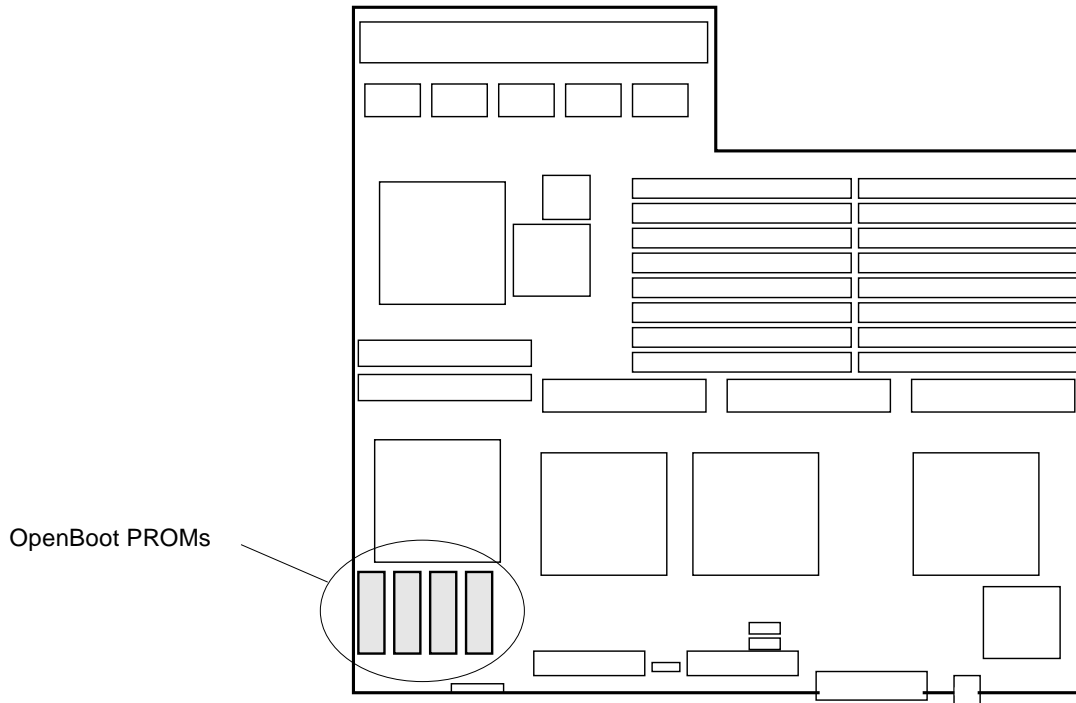


Figure 2-19 OpenBoot PROMs on the System Board

2.8 *TOD/NVRAM IC*

Use this procedure to replace the TOD/NVRAM IC. Refer to Figure 2-20 for the TOD/NVRAM IC location.

2.8.1 *Removal*

1. **To uncover the TOD/NVRAM IC, remove the SuperSPARC module (if any) in module location B.**
2. **Use an IC extractor tool to remove the IC.**
Refer to Figure 2-20 to locate the TOD/NVRAM IC.
3. **Place the IC on antistatic foam plastic in an antistatic package for storage or possible reuse.**

2.8.2 Replacement

1. Verify the correct IC location.
2. Position the IC carefully on the socket, and partially seat the IC.
3. Ensure that the IC pins are not bent, then press firmly to seat the IC in the socket.



Caution – When inserting the IC, do not flex the board or press it against a hard surface. Use a cushioned ESD mat to protect the system board.

4. Replace any SuperSPARC module that was removed for this procedure.

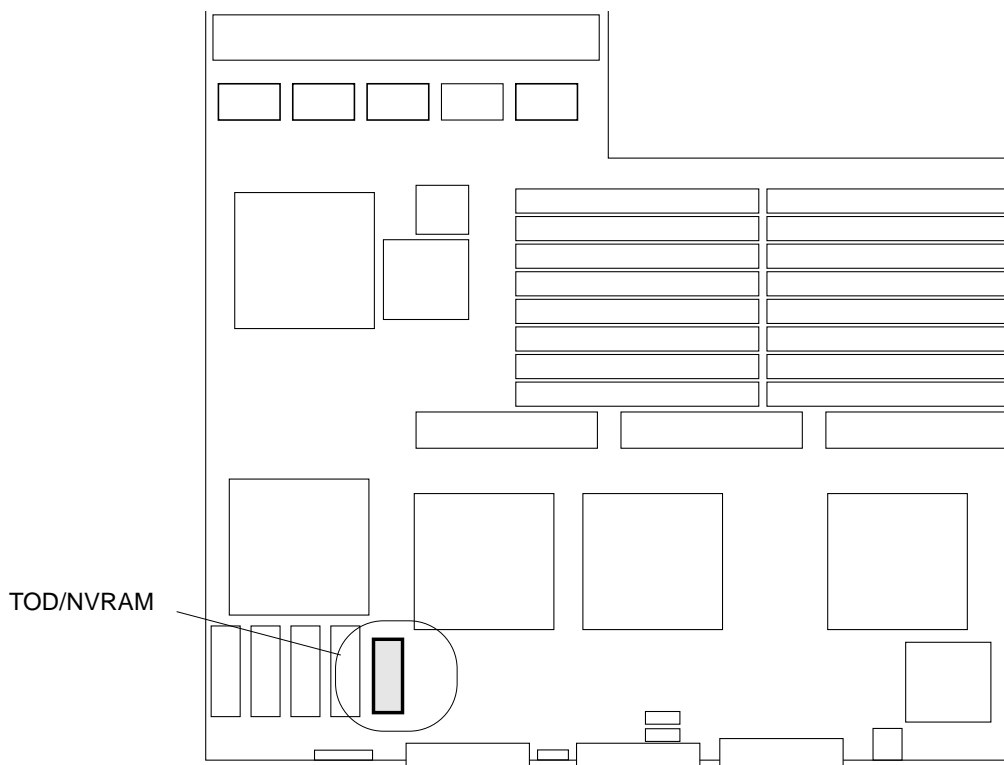


Figure 2-20 TOD/NVRAM Location

2.9 *Restarting the System*

To verify that the SBus cards, SuperSPARC modules, SIMMs, OpenBoot PROMs, system boards, or TOD/NVRAM were installed properly, run the power-on self-test (POST) program, as follows:

1. Turn on power to the monitor.

If the system does not have a monitor, connect an RS232 TTY terminal to serial port A on the system master. By convention, the system master is the system board occupying the lowest-numbered card cage slot (usually slot 0.)

2. Configure the terminal software.

The most commonly-used set-up is as follows:

- 9600 baud
- 1 stop bit
- 8 data bits
- Parity off
- Full duplex

Note – The listed setup parameters may differ from the customer site settings. These parameters can be changed in the NVRAM.

Refer to the instruction manual shipped with the terminal for configuration instructions.

3. Turn the server front panel key switch to 1 in order to boot the system and run normal system diagnostics.

Watch the diagnostics display for error messages about the newly installed or replaced hardware.

After testing is completed, POST configures the system to take advantage of all available processors and options.

4. Watch the boot display to confirm that all processors and the newly installed or replaced hardware are recognized.

5. After the system finishes booting, the login prompt is displayed.

Log in and resume operation.

Configuring SIMMs and Jumpers



Use this appendix to identify SIMM slot locations and to verify system board jumper settings.

A.1 SIMM Configuration

The SPARCserver 1000 system board has one bus, and all SIMM groups are attached to this bus. The SIMM slots on each board, sixteen in all, are divided into four groups of four slots each. The SIMM groups are numbered from 0 to 3. The SIMM slot locations are shown in Figure A-1, organized by groups.

A.1.1 SPARCserver 1000 and SPARCserver 1000E System Board Rules

- Each 64-bit data-word is distributed among four SIMMs, which make up a group.
- When SIMMs are installed onto a board they must be installed in sets of four, so that the lowest numbered group is completely filled first.
- SIMMs can only be installed in groups of four, hence you can have zero, four, eight, twelve, or sixteen SIMMs installed on a given system board.
- SIMM socket numbers (J-numbers) are printed on the back of the system board. (J-numbers refer to the socket locations. U-numbers refer to the corresponding devices that fit in the sockets.)
- Do not mix SIMM sizes within a group. All SIMMs installed in a given group must be of the same capacity, either 1 Mbyte (for NVSIMMs), 8 Mbyte, or 32 Mbyte. SIMMs from different manufacturers may be mixed together in a group, provided the SIMMs are of the same capacity.

- When additional memory is added to a system, the new SIMMs should be always be installed in the lowest available group, regardless of the board on which the SIMMs are installed.
- When adding memory to a system, begin with the system board in the lowest available card cage slot number and fill the lowest open group. Then fill the lowest available group on the system board in slot 1, etc.
- To optimize memory performance, keep the numbers of memory groups balanced across boards, in multiples of two or four boards (This allows the system to interleave memory across boards.) For example, if there are three boards in the system, and a total of four SIMM groups, fill both group 0 and group 1 on the first two boards. Memory added to the third board is usable, but it cannot be interleaved with memory on the first two boards (unless a fourth board with memory in a matching group location is also added.) If this memory is accessed often, performance will suffer.

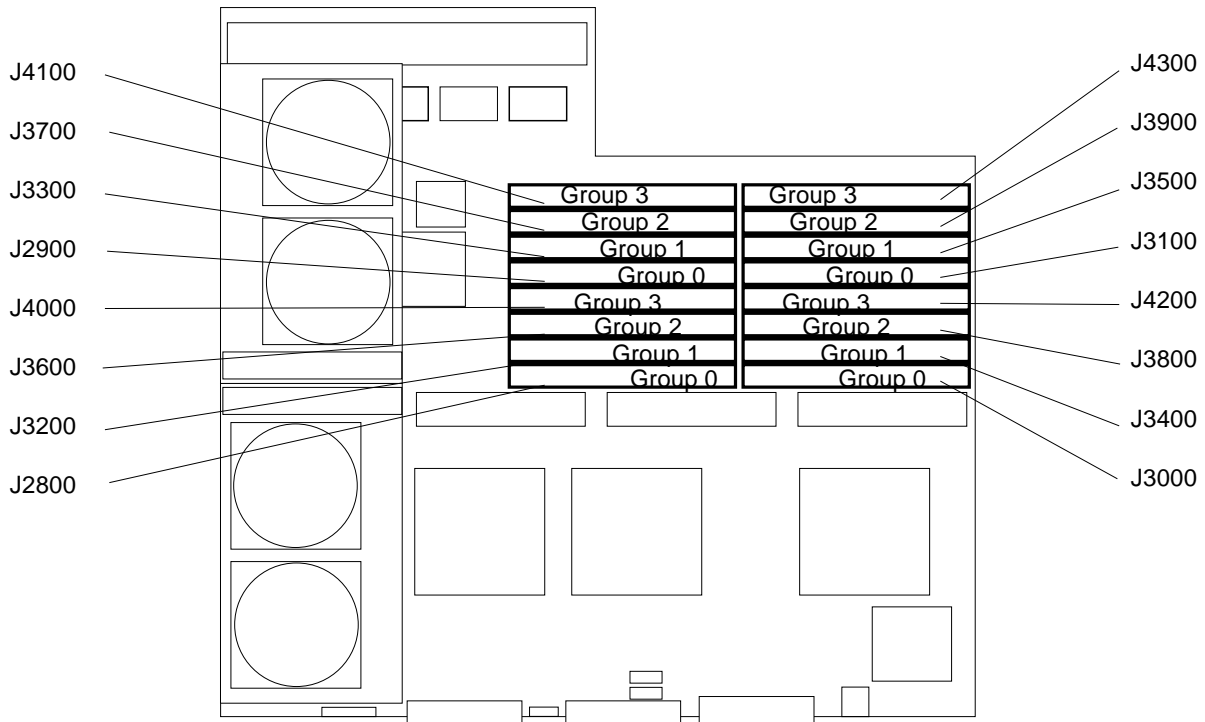


Figure A-1 SIMM Group Locations on the System Board

The SIMMs on a system board are divided into four groups, as summarized in Table A-1.

Table A-1 SIMM Group Organization

Group	Location
Group 0	J2800, J2900, J3000, J3100
Group 1	J3200, J3300, J3400, J3500
Group 2	J3600, J3700, J3800, J3900
Group 3	J4000, J4100, J4200, J4300

A.1.2 Locating a Failing SIMM

When a SIMM (or NVSIMM) fails during the power on self-tests (POST), the SIMM location number (also known as J or U-number) and system board card cage slot number are displayed on the TTY terminal and saved in `/usr/adm/<filename> messages`.

A.2 Jumper Configuration

Note – Jumpers are set at the factory and should not be changed except for use with factory diagnostic equipment and software.

Use Table A-2 and Figure A-2 to verify that jumper settings are correct. Pin 1 of each location is identified by a square solder pad.

Table A-2 System Board Jumpers

Label	Jumper	Default Setting	Function
J1200	Pins 2, 3	In	Connects +12V to RS232 line driver. (Pin 1 = ground, pin 2 = line driver input, pin 3 = +12 V supply.) Used to power the RS232 ports.
J1201	Pins 2, 3	In	Connects -12V to RS232 line driver. (Pin 1 = ground, pin 2 = line driver input, pin 3 = -12 V supply.) Used to power the RS232 ports.
J1100	Pin 1 to ground	Out	Holds processor A in reset so the other processor can be tested.
J1101	Pin 1 to ground	Out	Holds processor B in reset so the other processor can be tested.

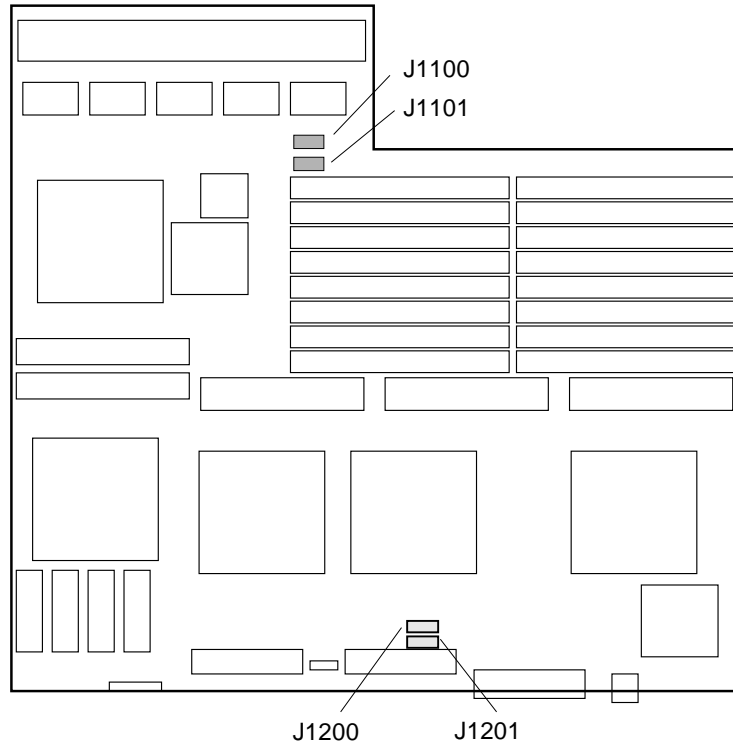


Figure A-2 Jumper Locations on the System Board

Connector Pinouts



This appendix lists pinouts of connectors on the system board:

- Keyboard and mouse connector
- Serial port connectors A and B
- SBus slots 1, 2, and 3
- Backplane connector
- SuperSPARC module slots A and B

B.1 Connector Locations

Figure B-1 shows the backpanel and the top of the system board. The backplane has diagnostic LEDs, cable connectors, and SBus card openings. The top of the board has connectors for three SBus cards, two SuperSPARC modules, and 16 SIMMs.

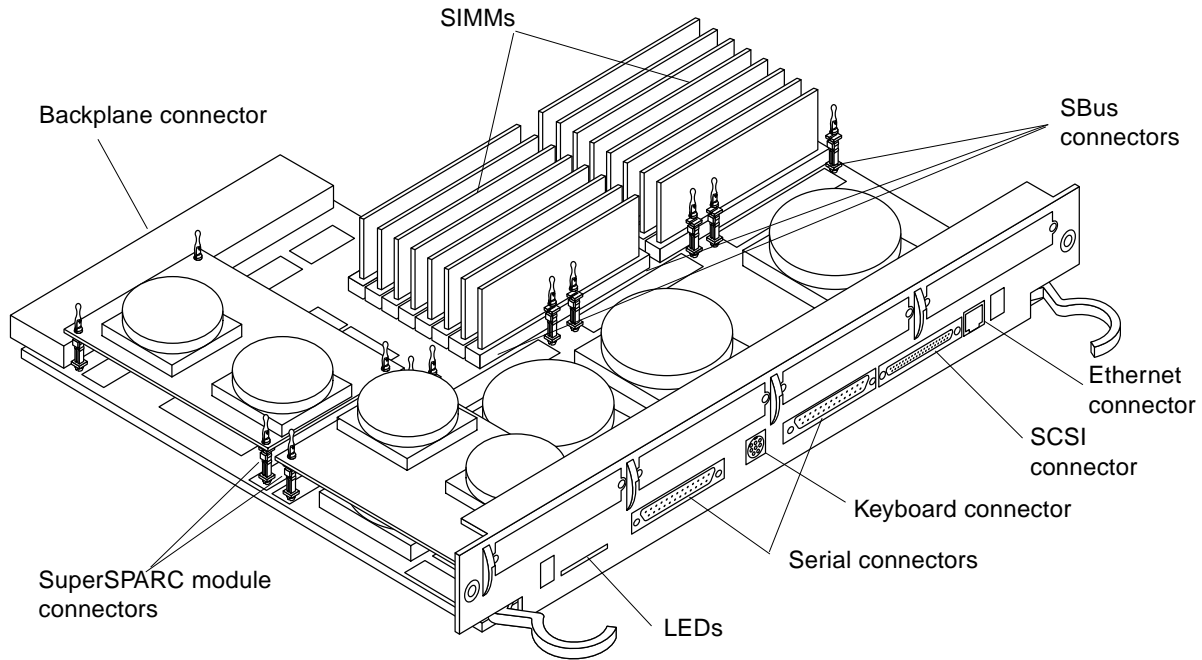


Figure B-1 Back and Top Views of the System Board

B.2 Keyboard and Mouse Connector

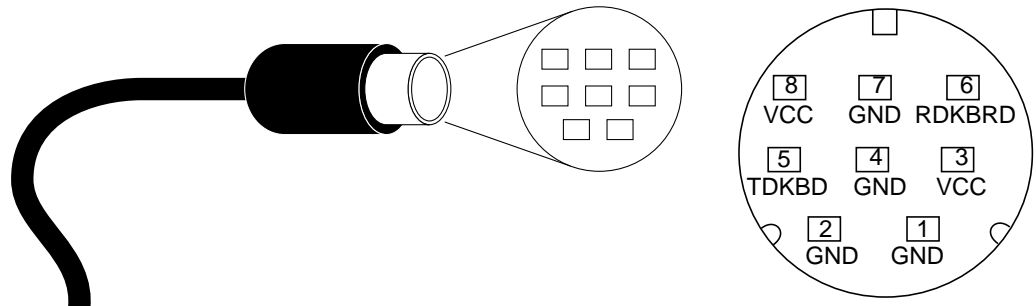


Figure B-2 Keyboard/Mouse Connector Pinout

B.3 Serial Port Connectors

		1			1	
	14	2	TXDA	DBB	14	2 TXDB
DBA	15	3	RXDA	DBB	15	3 RXDB
	16	4	RTSA	DBB	16	4 RTSB
DDA	17	5	CTSA	DDB	17	5 CTSB
	18	6	DSRA		18	6 DSRB
	19	7	GND		19	7 GND
DTRA	20	8	DCDA	DTRB	20	8 DCDB
	21	9			21	9
	22	10			22	10
	23	11			23	11
DAA	24	12		DAB	24	12
	25	13			25	13

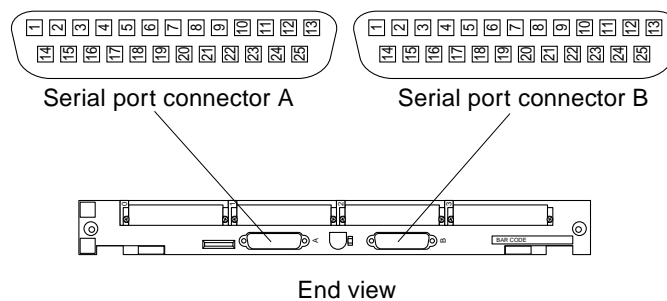
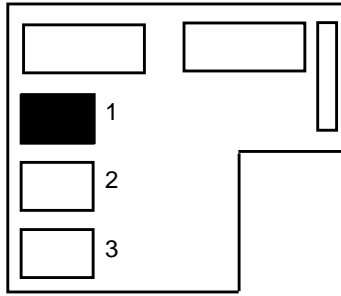


Figure B-3 Serial Port A and B Connector Pinouts

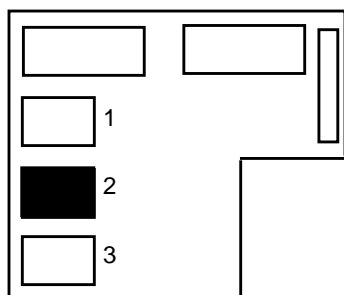
B.4 SBus Connectors

Table B-1 SBus Connector 1 (Connector J4901)



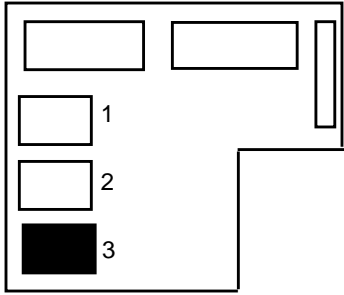
Section 1		Section 2		Section 3	
1	GND	33	SB_PA<6>	65	SB_D<18>
2	SB_BR_L<0>	34	SB_PA<8>	66	SB_D<20>
3	SB_Sel_L<0>	35	SB_PA<10>	67	SB_D<22>
4	SBIntR_L<0>	36	SB_Ack<0>	68	GND
5	SB_D<0>	37	SB_PA<12>	69	SB_D<24>
6	SB_D<2>	38	SB_PA<14>	70	SB_D<26>
7	SB_D<4>	39	SB_PA<16>	71	SB_D<28>
8	SBIntR_L<1>	40	SB_Ack<1>	72	VCC
9	SB_D<6>	41	SB_PA<18>	73	SB_D<30>
10	SB_D<8>	42	SB_PA<20>	74	SB_Siz<1>
11	SB_D<10>	43	SB_PA<22>	75	SB_Rd
12	SBIntR_L<2>	44	SB_Ack<2>	76	GND
13	SB_D<12>	45	SB_PA<24>	77	SB_PA<1>
14	SB_D<13>	46	SB_PA<26>	78	SB_PA<3>
15	SB_D<16>	47	SB_DPar	79	SB_PA<5>
16	SBIntR_L<3>	48	FS_VBB	80	VCC
17	SB_D<19>	49	SB_Clk<0>	81	SB_PA<7>
18	SB_D<21>	50	SB_SBG_L<0>	82	SB_PA<9>
19	SB_D<23>	51	SB_A_L	83	SB_PA<11>
20	SBIntR_L<4>	52	GND	84	GND
21	SB_D<25>	53	SB_D<1>	85	SB_PA<13>
22	SB_D<27>	54	SB_D<3>	86	SB_PA<15>
23	SB_D<29>	55	SB_D<5>	87	SB_PA<17>
24	SBIntR_L<5>	56	VCC	88	VCC
25	SB_D<31>	57	SB_D<7>	89	SB_PA<19>
26	SB_Siz<0>	58	SB_D<9>	90	SB_PA<21>
27	SB_Siz<2>	59	SB_D<11>	91	SB_PA<23>
28	SBIntR_L<6>	60	GND	92	GND
29	SB_PA<0>	61	SB_D<13>	93	SB_PA<25>
30	SB_PA<2>	62	SB_D<15>	94	SB_PA<27>
31	SB_PA<4>	63	SB_D<17>	95	SB_Rst_L<0>
32	SBLErr_L	64	VCC	96	FS_VDD

Table B-2 SBus Connector 2 (Connector J4902)



Section 1	Section 2	Section 3
1 GND	33 SB_PA<6>	65 SB_D<18>
2 SB_BR_L<1>	34 SB_PA<8>	66 SB_D<20>
3 SB_Sel_L<1>	35 SB_PA<10>	67 SB_D<22>
4 SBIntR_L<7>	36 SB_Ack<0>	68 GND
5 SB_D<0>	37 SB_PA<12>	69 SB_D<24>
6 SB_D<2>	38 SB_PA<14>	70 SB_D<26>
7 SB_D<4>	39 SB_PA<16>	71 SB_D<28>
8 SBIntR_L<8>	40 SB_Ack<1>	72 VCC
9 SB_D<6>	41 SB_PA<18>	73 SB_D<30>
10 SB_D<8>	42 SB_PA<20>	74 SB_Siz<1>
11 SB_D<10>	43 SB_PA<22>	75 SB_Rd
12 SBIntR_L<9>	44 SB_Ack<2>	76 GND
13 SB_D<12>	45 SB_PA<24>	77 SB_PA<1>
14 SB_D<13>	46 SB_PA<26>	78 SB_PA<3>
15 SB_D<16>	47 SB_DPar	79 SB_PA<5>
16 SBIntR_L<10>	48 FS_VBB	80 VCC
17 SB_D<19>	49 SB_Clk<1>	81 SB_PA<7>
18 SB_D<21>	50 SB_SBG_L<0>	82 SB_PA<9>
19 SB_D<23>	51 SB_A_L	83 SB_PA<11>
20 SBIntR_L<11>	52 GND	84 GND
21 SB_D<25>	53 SB_D<1>	85 SB_PA<13>
22 SB_D<27>	54 SB_D<3>	86 SB_PA<15>
23 SB_D<29>	55 SB_D<5>	87 SB_PA<17>
24 SBIntR_L<12>	56 VCC	88 VCC
25 SB_D<31>	57 SB_D<7>	89 SB_PA<19>
26 SB_Siz<0>	58 SB_D<9>	90 SB_PA<21>
27 SB_Siz<2>	59 SB_D<11>	91 SB_PA<23>
28 SBIntR_L<13>	60 GND	92 GND
29 SB_PA<0>	61 SB_D<13>	93 SB_PA<25>
30 SB_PA<2>	62 SB_D<15>	94 SB_PA<27>
31 SB_PA<4>	63 SB_D<17>	95 SB_Rst_L<1>
32 SBLErr_L	64 VCC	96 FS_VDD

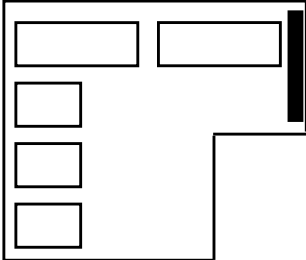
Table B-3 SBus Connector 3 (Connector J4903)

	Section 1	Section 2	Section 3
	1 GND	33 SB_PA<6>	65 SB_D<18>
	2 SB_BR_L<2>	34 SB_PA<8>	66 SB_D<20>
	3 SB_Sel_L<2>	35 SB_PA<10>	67 SB_D<22>
	4 SBIntR_L<4>	36 SB_Ack<0>	68 GND
	5 SB_D<0>	37 SB_PA<12>	69 SB_D<24>
	6 SB_D<2>	38 SB_PA<14>	70 SB_D<26>
	7 SB_D<4>	39 SB_PA<16>	71 SB_D<28>
	8 SBIntR_L<15>	40 SB_Ack<1>	72 VCC
	9 SB_D<6>	41 SB_PA<18>	73 SB_D<30>
	10 SB_D<8>	42 SB_PA<20>	74 SB_Siz<1>
	11 SB_D<10>	43 SB_PA<22>	75 SB_Rd
	12 SBIntR_L<16>	44 SB_Ack<2>	76 GND
	13 SB_D<12>	45 SB_PA<24>	77 SB_PA<1>
	14 SB_D<13>	46 SB_PA<26>	78 SB_PA<3>
	15 SB_D<16>	47 SB_DPar	79 SB_PA<5>
	16 SBIntR_L<17>	48 FS_VBB	80 VCC
	17 SB_D<19>	49 SB_Clk<2>	81 SB_PA<7>
	18 SB_D<21>	50 SB_SBG_L<2>	82 SB_PA<9>
	19 SB_D<23>	51 SB_A_L	83 SB_PA<11>
	20 SBIntR_L<18>	52 GND	84 GND
	21 SB_D<25>	53 SB_D<1>	85 SB_PA<13>
	22 SB_D<27>	54 SB_D<3>	86 SB_PA<15>
	23 SB_D<29>	55 SB_D<5>	87 SB_PA<17>
	24 SBIntR_L<19>	56 VCC	88 VCC
	25 SB_D<31>	57 SB_D<7>	89 SB_PA<19>
	26 SB_Siz<0>	58 SB_D<9>	90 SB_PA<21>
	27 SB_Siz<2>	59 SB_D<11>	91 SB_PA<23>
	28 SBIntR_L<20>	60 GND	92 GND
	29 SB_PA<0>	61 SB_D<13>	93 SB_PA<25>
	30 SB_PA<2>	62 SB_D<15>	94 SB_PA<27>
	31 SB_PA<4>	63 SB_D<17>	95 SB_Rst_L<2>
	32 SBLerr_L	64 VCC	96 FS_VDD

B.5 Backplane Connector

The system board has one backplane connector. Table B-4 shows the connector location and lists the function of each connector pin.

Table B-4 Backplane Connector (Connector J0200) (1 of 2)



Section 1		Section 2		Section 3		Section 4	
A1	VBB	B1	MSTRPR_L	C1	SYTAS	D1	SYTCK
A2	SYTDO	B2	SYTMS	C2	GND	D2	VCC
A3	SYTDI	B3	GND	C3	LEDGN_1	D3	SysOn
A4	LEDYEL_L	B4	LEDREC_L	C4	GND	D4	VCC
A5	VTT	B5	SY1D_L<0>	C5	SY1D_L<1>	D5	VCC
A6	SY1D_L<2>	B6	GND	C6	GND	D6	SY1D_L<3>
A7	VTT	B7	SY1D_L<4>	C7	SY1D_L<5>	D7	VCC
A8	SY1D_L<6>	B8	GND	C8	GND	D8	SY1D_L<7>
A9	SyClk	B9	GND	C9	SY1DP_L<0>	D9	VCC
A10	VTT	B10	SyEClk	C10	GND	D10	SY1D_L<8>
A11	SyClk_L	B11	GND	C11	SY1D_L<9>	D11	VCC
A12	VTT	B12	SyEClk_L	C12	GND	D12	SY1D_L<10>
A13	SY1D_L<11>	B13	GND	C13	SY1D_L<12>	D13	VCC
A14	SY1D_L<13>	B14	GND	C14	GND	D14	SY1D_L<14>
A15	VTT	B15	SY1D_L<15>	C15	SY1DP_L<1>	D15	VCC
A16	SY1D_L<16>	B16	GND	C16	GND	D16	SY1D_L<17>
A17	VTT	B17	SY1D_L<7>	C17	SY1D_L<17>	D17	VCC
A18	SY1D_L<20>	B18	GND	C18	GND	D18	SY1D_L<21>
A19	SY1D_L<22>	B19	GND	C19	SY1D_L<23>	D19	VCC
A20	VTT	B20	SY1DP_L<2>	C20	GND	D20	SY1D_L<24>
A21	SY1D_L<25>	B21	GND	C21	SY1D_L<26>	D21	VCC
A22	VTT	B22	SY1D_L<27>	C22	GND	D22	SY1D_L<28>
A23	SY1D_L<29>	B23	GND	C23	SY1D_L<23>	D23	VCC
A24	SY1D_L<31>	B24	GND	C24	GND	D24	SY1DP_L<3>
A25	VTT	B25	SY1D_L<32>	C25	SY1D_L<33>	D25	VCC
A26	SY1D_L<34>	B26	GND	C26	GND	D26	SY1D_L<35>
A27	VTT	B27	SY1D_L<36>	C27	SY1D_L<37>	D27	VCC
A28	SY1D_L<38>	B28	GND	C28	SY1D_L<39>	D28	SY1DP_L<4>
A29	SY1D_L<40>	B29	GND	C29	GND	D29	VCC
A30	VTT	B30	SY1D_L<41>	C30	SY1D_L<42>	D30	SY1D_L<43>
A31	SY1D_L<44>	B31	GND	C31	GND	D31	VCC
A32	VTT	B32	SY1D_L<45>	C32	SY1D_L<46>	D32	SY1D_L<47>

Table B-4 Backplane Connector (Connector J0200) (2 of 2)

Section 1		Section 2		Section 3		Section 4	
A33	SY1DP_L<5>	B33	GND	C33	SY1D_L<48>	D33	VCC
A34	SY1D_L<49>	B34	GND	C34	GND	D34	SY1D_L<50>
A35	VTT	B35	SY1D_L<51>	C35	SY1D_L<52>	D35	VCC
A36	SY1D_L<53>	B36	GND	C36	GND	D36	SY1D_L<54>
A37	VTT	B37	SY1D_L<55>	C37	SY1DP_L<6>	D37	VCC
A38	SY1D_L<56>	B38	GND	C38	GND	D38	SY1D_L<57>
A39	SY1D_L<59>	B39	GND	C39	SY1D_L<58>	D39	VCC
A40	VTT	B40	SY1D_L<61>	C40	GND	D40	SY1D_L<60>
A41	SY1D_L<63>	B41	GND	C41	SY1D_L<62>	D41	VCC
A42	VTT	B42	SY1DQ_L<0>	C42	GND	D42	SY1DP_L<7>
A43	STS1R0_L<2>	B43	GND	C43	SY1RQ_L<1>	D43	VCC
A44	VTT	B44	SY1RQS_L	C44	GND	D44	SY1RQO_L
A45	SY1GT_L	B45	GND	C45	SY1RQP_L	D45	VCC
A46	VTT	B46	SY1GTT_L<1>	C46	GND	D46	SY1GTT_L<0>
A47	SY1GT0_L	B47	GND	C47	SY1GTT_L<2>	D47	VCC
A48	VTT	B48	SY1GTP_L	C48	GND	D48	SY1GTS_L
A49	BDID<0>	B49	BDID<1>	C49	SYSECT	D49	VCC
A50	Fan_Fail	B50	GND	C50	AC_Fail	D50	DiagMode_L
A51	SyPwrRst_L	B51	TXDA	C51	GND	D51	VCC
A52	SYSRST_L	B52	GND	C52	SYRST_L	D52	TPIM
A53	TPOP	B53	TPOM	C53	TPIP	D53	VCC
A54	SCRST	B54	GND	C54	GND	D54	SCSD<0>
A55	SCSEL	B55	SCIO	C55	SCSD<1>	D55	VCC
A56	SCSD<2>	B56	GND	C56	SCSD<3>	D56	SCSD<4>
A57	SCSD<5>	B57	SCSD<6>	C57	GND	D57	VCC
A58	SCSD<7>	B58	SCDP	C58	SCMSG	D58	VCC
A59	VDD	B59	SCATN	C59	SCBSY	D59	SCACK
A60	VDD	B60	SCREQ	C60	SCCD	D60	TERMPWR

B.6 SuperSPARC Module Connectors

SuperSuperSPARC module connectors A and B have identical pinouts.

Table B-5 SuperSPARC Module Connectors (Connectors J2000 and J2300) (1 of 2)

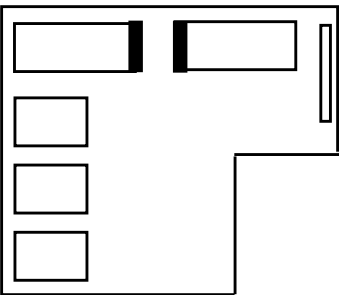
Name	Name	Blade	Name		
	1	BWBdTdo	51	BdTms	
	2	BdTdo	Gnd	52	BdPwrRst_L
	3	BDTck		53	BootData<7>
	4	BootData<6>	Gnd	54	BootData<5>
	5	BootData<4>		55	BtStrb_L
	6	XData<0>	Gnd	56	XData<1>
	7	XData<2>		57	XData<3>
	8	XData<4>	Gnd	58	XData<5>
	9	XData<6>		59	XData<7>
	10	XData<8>		60	XData<9>
	11	XData<10>		61	XData<11>
	12	XData<12>	+5V	62	XData<13>
	13	XData<14>		63	XData<15>
	14	XData<16>	+5V	64	XData<17>
	15	XData<18>		65	XData<19>
	16	XData<20>	+5V	66	XData<21>
	17	XData<22>		67	XData<23>
	18	XData<24>	+5V	68	XData<25>
	19	XData<26>		69	XData<27>
	20	XData<28>		70	XData<29>
	21	XData<30>		71	XData<31>
	22	XGnt0_L	Gnd	72	XReq1_L<1>
	23	XPar<3>		73	XReq1_L<0>
	24	VkClk	Gnd	74	XPar<2>
	25	CcClk		75	XPar<1>
	26	XGtyp_L	Gnd	76	XPar<0>
	27	XCCAF_L		77	XReq0_L<1>
	28	Gnd	Gnd	78	XReq0_L<0>
	29	VREF\G		79	Spare
	30	XData<32>		80	XData<33>
	31	XData<34>		81	XData<35>
	32	XData<36>	+5V	82	XData<37>
	33	XData<38>		83	XData<39>

Table B-5 SuperSPARC Module Connectors (Connectors J2000 and J2300) (2 of 2)

Name	Name	Blade	Name
	34 XData<40>	+5V	84 XData<41>
	35 XData<42>		85 XData<43>
	36 XData<44>	+5V	86 XData<45>
	37 XData<46>		87 XData<47>
	38 XData<48>	+5V	88 XData<49>
	39 XData<50>		89 XData<51>
	40 XData<52>		90 XData<53>
	41 XData<54>		91 XData<55>
	42 XData<56>	Gnd	92 XData<57>
	43 XData<58>		93 XData<59>
	44 XData<60>	Gnd	94 XData<61>
	45 XData<62>		95 XData<63>
	46 BootCmd<2>	Gnd	96 BootData<3>
	47 BootData<2>		97 BootData<1>
	48 BootData<0>	Gnd	98 CCErr_L
	49 BdRst_L		99 BootCmd<1>
	50 BootCmd<0>		100 XGnt_L

General Rules for System Configuration



This appendix lists recommended priorities and locations for:

- System boards
- SuperSPARC modules
- SBus cards
- SIMMs
- Drive IDs
- SCSI cables
- Ethernet cables
- Video cables

C.1 Selecting Installation Locations

Each component described in this appendix has a specific recommended location. The following sections describe the locations for each component.

C.1.1 System Board Slots

System boards are factory installed from the lowest card cage slot number (0 — top slot) to the highest slot number (3 — bottom slot). When you look into the backplane opening at the rear of the system, slot 0 is on the top and slot 3 is on the bottom. Air restrictor boards must be installed in all empty slots. Slot 0 is the system master. If the system has an RS232 console or TTY terminal, it must be plugged into port A of the system master. A console is not required if the system is in auto-boot mode.

C.1.2 SuperSPARC Modules

When installing or replacing a SuperSPARC module, use the following guidelines to verify that you have selected a valid location.

Each system board has two SuperSPARC module connectors, designated A and B (location A is closest to the backplane connector). Refer to Figure C-1. The modules mount above the system board on standoffs. Modules should first be installed in the A connectors on consecutive system boards starting with the system board in slot 0. After all of the A connectors have been filled, begin filling the B connectors, starting with the system board in slot 0.

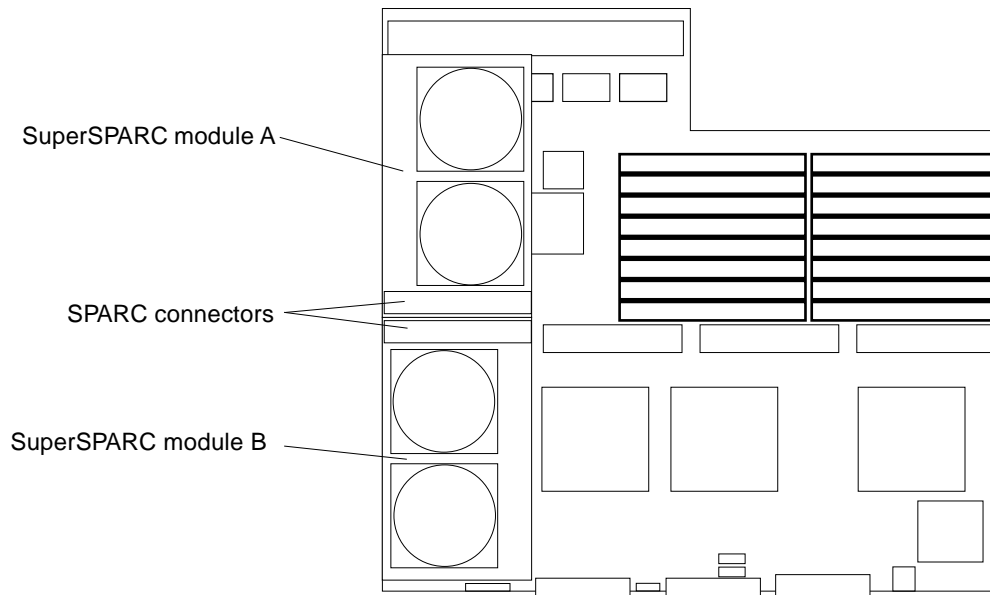


Figure C-1 Locations of SuperSPARC Modules

The example in Table C-1 shows how to distribute four SuperSPARC modules on three system boards.

Table C-1 Example of Connector and Slot Priorities

	System Board Slot 0	System Board Slot 1	System Board Slot 2
Connector A	Full	Full	Full
Connector B	Full	-	-

C.1.3 SBus Cards

Each system board has three SBus slots. Each SBus card mounts on standoffs above the system board. Refer to Figure C-2.

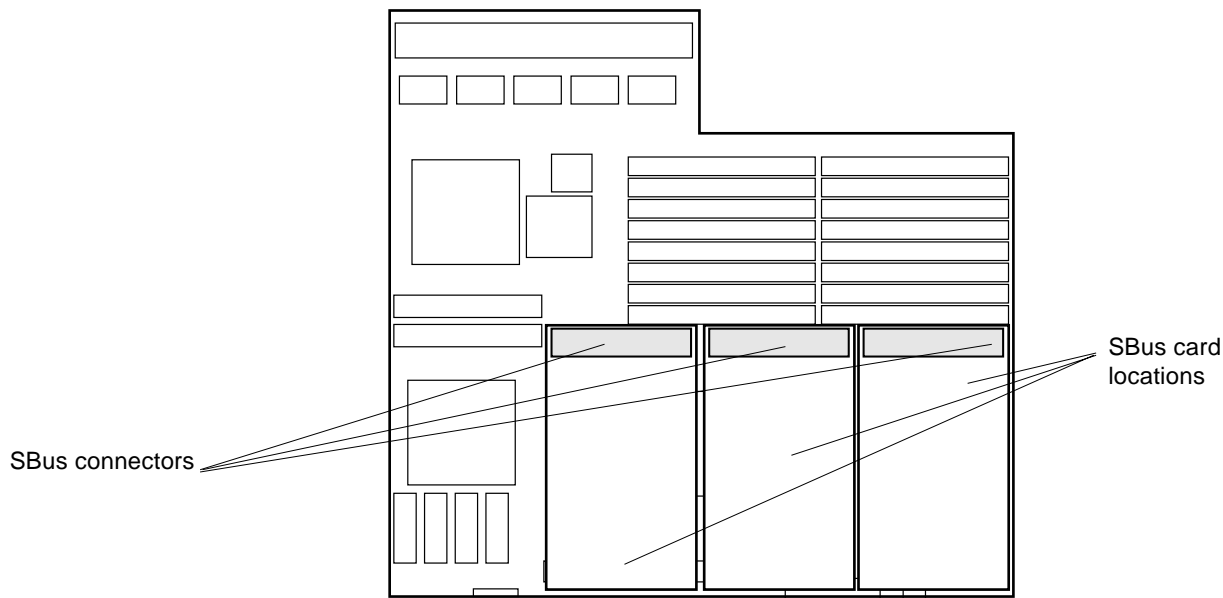


Figure C-2 SBus Card Locations

The system board in slot 0 is the system master and has a minimum required configuration. The SCSI bus on the system master board must be terminated. All other SBus slots are available. Each type of SBus card should be distributed evenly between the available system boards.

If video is required, the CGSIX SBus card should be installed in slot 1 (first available) on the system master board installed in slot 0 of the server.

The example in Table C-2 shows how to distribute five FSBE/S and two SPIFFs on three system boards.

Table C-2 Example of SBus Card Distribution

System Board Location	SBus Cards Installed
Slot 0	2 FSBE/S and 1 SPIFF
Slot 1	2 FSBE/S and 1 SPIFF
Slot 2	1 FSBE/S

C.1.4 SIMMs

The SPARCserver 1000 system has three SIMM options. Two types of DRAMs, high-density and low-density, are available as well as nonvolatile NVSIMMs.

The 8 Mbyte (low-density) SIMMs use 1 Mbit by 4 bit DRAMs. Two vendors are used, so there is a slight variation in physical appearance between the two products. Refer to Figure C-3.

The 32 Mbyte (high-density) SIMMs use 4 Mbit by 4 bit DRAMs. Each vendor uses the same printed circuit card for both the 8 Mbyte and 32 Mbyte SIMMs, so there is no major difference in appearance between a given vendor's high- and low-density SIMMs.

There is only one type of 1 Mbyte NVSIMM, which uses 128 Kbit by 8 bit SRAMs. Refer to Figure C-3.

SIMM – Vendor 1

Capacity	Type	P/N
8 Mbyte	DRAM	501-1817
32 Mbyte	DRAM	501-2196

SIMM – Vendor 2

Capacity	Type	P/N
8 Mbyte	DRAM	501-1817
32 Mbyte	DRAM	501-2196

NVSIMM

Capacity	Type	P/N
1Mbyte	NVSIMM	501-2197

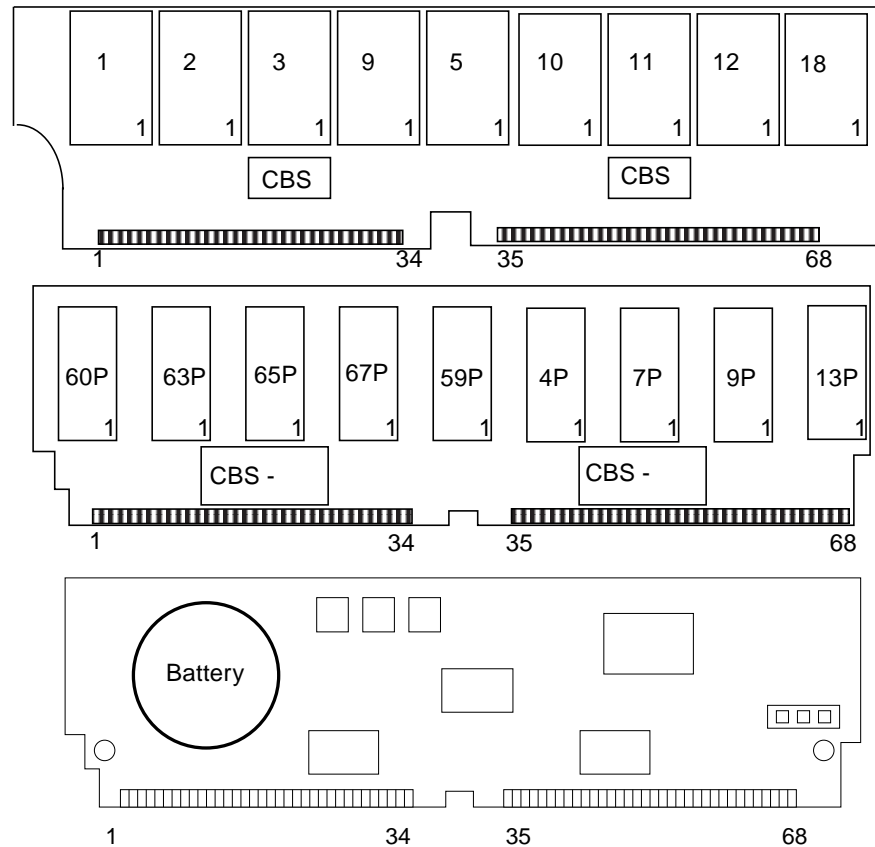


Figure C-3 SIMMs and NVSIMM

The system board has 16 SIMM sockets physically divided into two rows of eight. The SIMMs are also logically divided into four groups of four, known as group 0, 1, 2, and 3. Figure C-4 shows SIMM locations and identifies groups.

A system board can be installed with zero memory or from one to four groups filled. For example, 0 SIMMs, 4 SIMMs, 8 SIMMs, 12 SIMMs or 16 SIMMs.

When installing memory, first install all group 0 SIMMs on all system boards, from the lowest board slot number to the highest. Then, install group 1 SIMMs in the same order, followed by groups 2 and 3 for the remaining SIMMs.

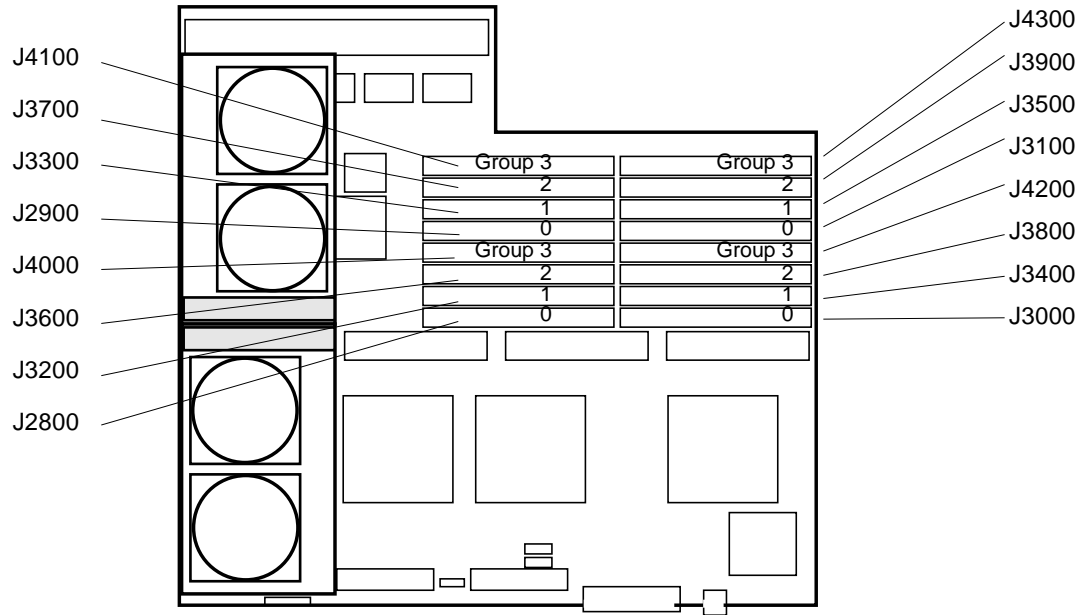


Figure C-4 SIMM Locations on the System Board

C.1.4.1 NVSIMMs

Before installing NVSIMMs, first activate the battery to insure data retention.

To activate the battery:

1. **Locate the jumper on the right side of the NVSIMM.**
Refer to Figure C-5.
2. **Move the jumper to the battery on position.**

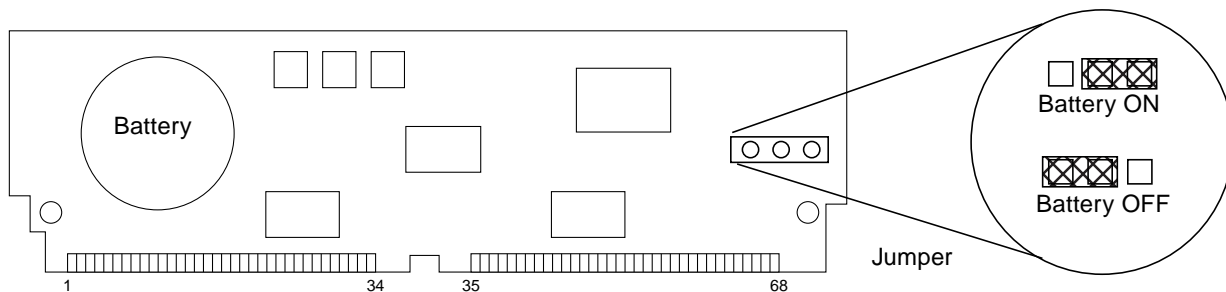


Figure C-5 NVSIMM Jumper Locations



Caution – Once you turn the battery on do not move or remove the jumper. Any data contained in the NVSIMM will be lost if the jumper is moved.

C.2 Connecting Cables

C.2.1 SCSI Cables

SCSI cables for internal devices are factory connected. If installing additional devices, refer to the installation instructions provided with the storage device.

C.2.2 Ethernet Cables

The main network cable must be connected to the on-board Ethernet connector on system board 0. Refer to instructions provided with your Ethernet transceivers for additional connection information. The SPARCserver 1000 system supports twisted-pair Ethernet installations.

C.2.3 Video Cables

Only one CGSIX interface is allowed per system. It must be installed in SBus slot 1 of system board 0. The keyboard must be plugged into the keyboard connector of system board 0 and the video cable into the GCSIX card. The diagnostic program requires a monitor or terminal. If the system lacks a monitor, plug an RS232 TTY terminal into port A of the system board in slot 0.

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Revision History

Revision	Dash	Date	Comments
801-2900-12	-A	October 1994	Second Revision to FCS
801-2900-11	-A	August 1993	First Revision to FCS
801-2900-10	-A	June 1993	First Customer Ship (FCS)

Reader Comments

We welcome your comments and suggestions to help improve the *SPARCserver 1000 System Board Manual*, part number 801-2900-12. Please take time to let us know what you think about this manual.

- The tasks were well documented and easy to follow.

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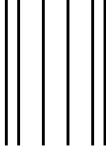
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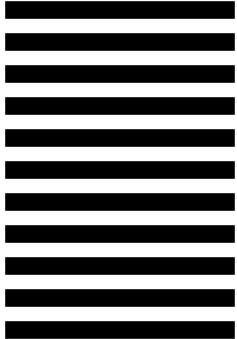
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