Preparing to Work on the System

This chapter explains important steps to be performed before you replace field-replaceable units (FRUs). Topics covered in this chapter include the following:

- How to halt the system
- Tools needed
- How to disconnect the Desktop Storage Pack
- How to disconnect the Extended Storage Module
- How to open the system unit
- How to attach a wrist strap
- System unit and subassemblies

Halting the System

Caution – Before you replace FRUs, you must halt the system in an orderly manner. When the operating system or any other standalone program has already booted, do not use the L1-A keys to halt the system. Abruptly aborting program execution may cause damage to data files.

To halt the system:

1. **Save any files you are presently editing. Quit from any applications that will lose information when the system halts.**
   See the *Sun System User's Guide* for more information about ending a work session.

2. Enter `/bin/su` to become superuser.
Additional information about the superuser command is described in
Chapter 2 of the *Sun System & Network Manager's Guide.*

3. Enter the superuser password.

4. Enter /usr/etc/halt**.**
The system displays system halt messages followed by the Monitor
prompt, >.

```
tutorial% /bin/su
Password:
tutorial# /usr/etc/halt
Syncing file systems... done
Halted

Type b (boot), c (continue), or n (new command mode)
>
```

5. Turn off the power in this order:

  a. External module (if you have one)

  b. System unit

  c. Monitor

Caution – Make sure your system is shut off. The green LED at the front of the
system unit should not be lit, and the fan should not be running. Do not
disconnect the power cord from the system unit's power outlet or the wall
socket, unless and until you remove the power supply. This connection
provides the ground path necessary to safely remove and install the printed
circuit boards and components.

To halt a system that is hung, or frozen, and unresponsive to commands:

On some keyboards, L1 appears
on the front face of the Stop key.
On a system that has a terminal
as a console, rather than a Sun
keyboard and bitmapped monitor,
you must press Break instead of
L1-A to obtain a boot prompt.

1. Press L1-A**.**

The system displays the system boot prompt.

2. Enter n**.**

The system displays a help message and an ok prompt.

3. Enter `sync`.

The system displays panic and boot messages.

The sync command helps prevent the system from losing data that was not preserved when the system hung.

4. Wait until the system boots and displays a system login prompt.

5. Turn off the power in this order:

   a. External drive unit (if you have one)

   b. System unit

   c. Monitor

The following example shows how to halt a hung system:

```
(Press L1-A.)
>n
Type help for more information
ok sync
(System panic and boot messages.)
tutorial login:
```

For additional information on the halt procedure see Chapter 1 of the *Sun System & Network Managers Guide* and also the *System & Network Administration* manual.

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Caution – Make sure your system is shut off. The green LED on the front of the system unit should not be lit, and the fan should not be running. Do not disconnect the power cord from the system unit's power outlet or the wall socket. This connection provides the ground path necessary to safely remove and install the printed circuit boards and components.

Tools Needed

To remove and replace FRUs, you will need the following tools and materials:

- Phillips head screwdriver
- Flat blade screwdriver
- Hex head nutdriver, 3/16 inch
- Wrist strap
- SIMM extractor
- Container for screws
- Anti-static mat for the SIMMs and the main logic board
- A Volt-ohmmeter (VOM) for checking voltages and fuses

Disconnecting Desktop Storage Packs or External Storage Modules

If your system unit has Desktop Storage Packs connected to it, detach the Desktop Storage Pack's SCSI connector from the back of the system unit.

To detach the Desktop Storage Pack from the system unit:

♦ **Press in on the finger clips on the connector connecting the Desktop Storage Pack to the system unit and pull the connector off.**
This action disconnects the SCSI cable from the system unit.

Opening the System Unit

Figure 3-1 shows how to open the system unit. The latch buttons at the sides allow the unit top and unit bottom to disengage.

To open the unit and gain access to the FRUs inside the system unit:

1. **Make sure that the power is turned off to your system unit, but that the power cord remains plugged in to the system unit and to the power source.**
   See "Halting the System" earlier in this chapter.

2. **Remove the top section from the system unit.**
   Do the following in sequence (see Figure 3-1):

   a. **Remove the screw holding the lock block to the back panel.**

   b. **Position the system on the table so that there is enough space to lay the top section of the unit flat in front of the bottom.**

   c. **Grasp the unit top with your fingers over the latch buttons at the sides. Press down on the unit top and depress the latch buttons.**

   d. **Rotate the unit top up and toward the front panel. Lay the unit top flat on the table. The unit top and bottom are still connected by the power and data cables leading from the disk drive(s) and power supply in the unit top to the main logic board in the unit bottom.**

Note – The unit top contains the power supply and disk drives (see Figure 3-2) and is the heavier of the two sections.

Warning – Before powering up your system again, be sure to close the unit. See "Closing the System Unit" towards the end of Chapter 4.

Remove lock block
from back panel

Press down on
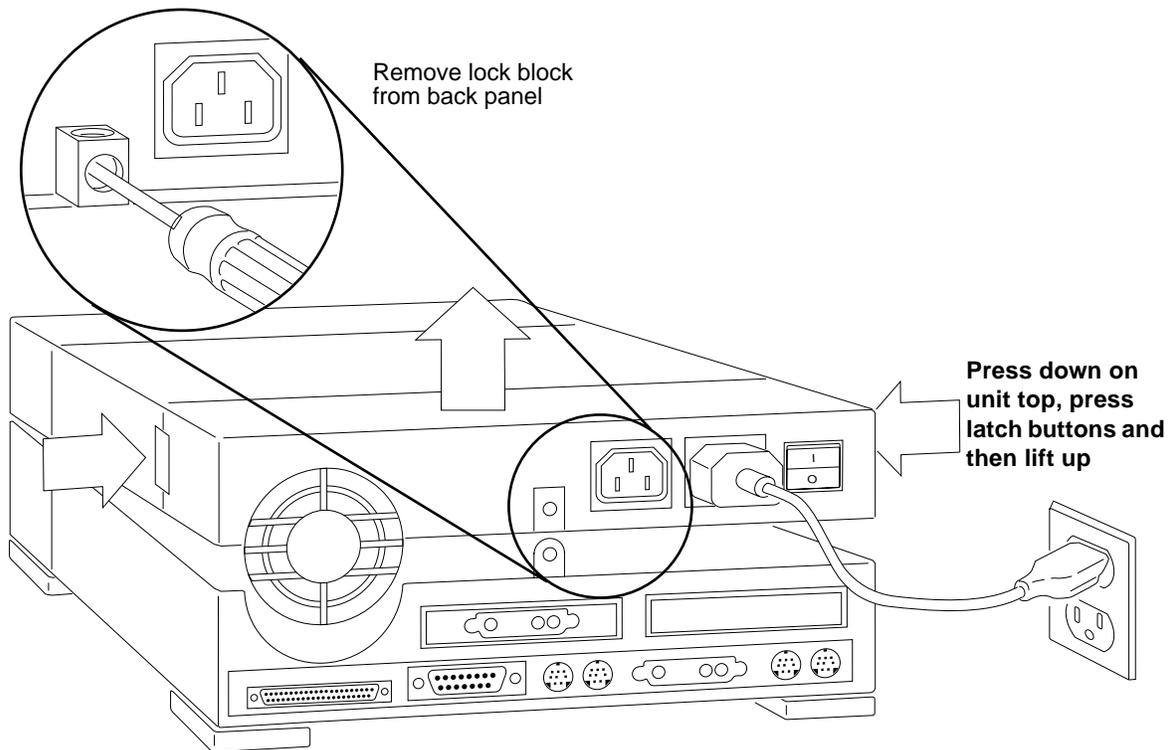unit top, press
latch buttons and
then lift up

Figure 3-1   Opening the System Unit

Warning – The lithium battery molded into the NVRAM, located on the main logic board next to the Boot PROM, may explode if mishandled or attempts are made to recharge it or disassemble it. In addition, electronic parts may be damaged by static electricity if touched by a person not wearing a properly grounded wrist strap.
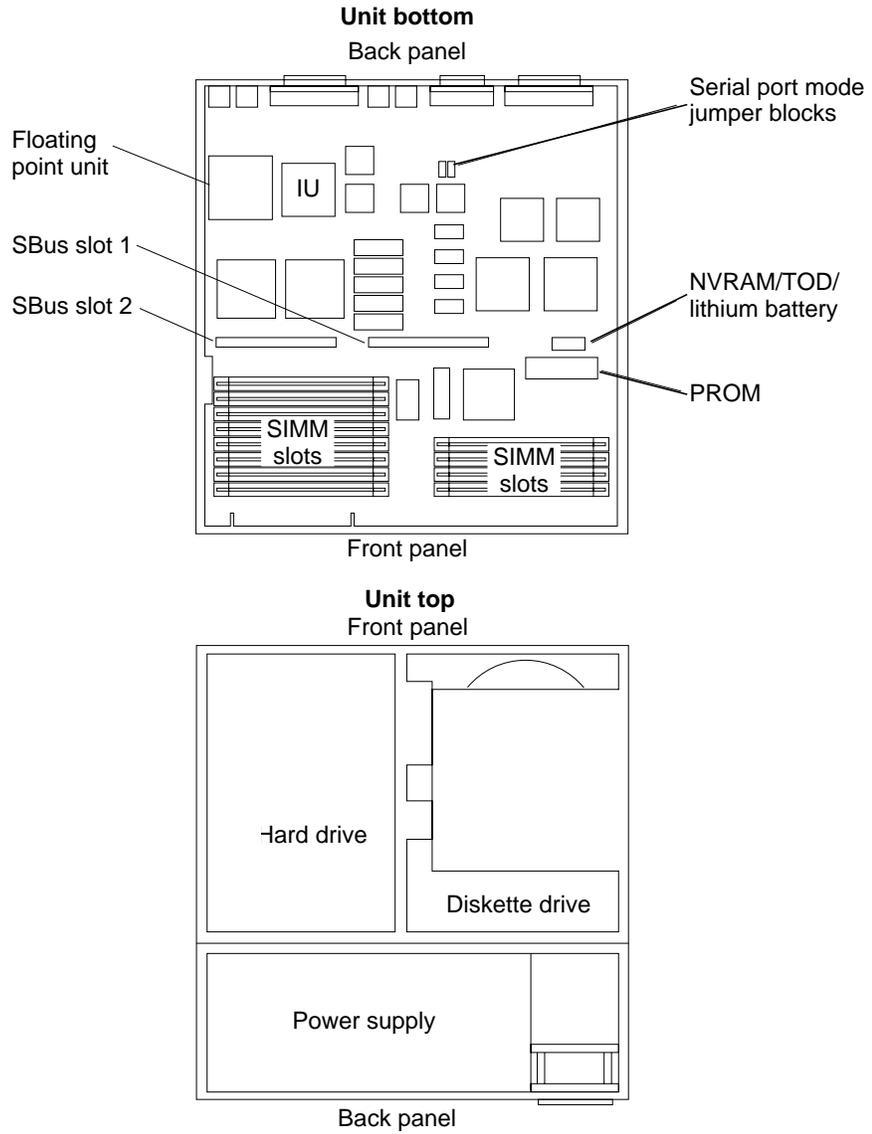
Unit bottom
Back panel

Serial port mode
jumper blocks

Floating
point unit

IU

SBus slot 1

SBus slot 2

NVRAM/TOD/
lithium battery

PROM

SIMM
slots

SIMM
slots

Front panel

Unit top
Front panel

Hard drive

Diskette drive

Power supply

Back panel

Figure 3-2   Top View of System Unit and Subassemblies
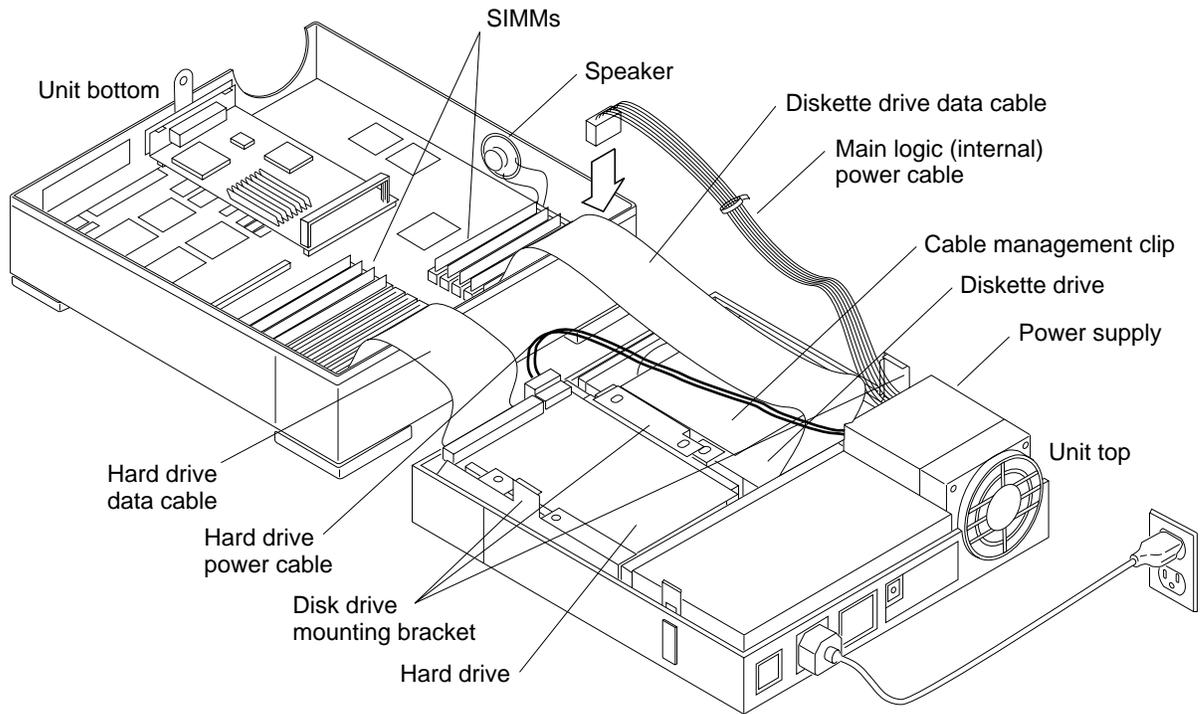
Figure 3-3 System Unit and Subassemblies

Attaching a Wrist Strap

Figure 3-2 and Figure 3-3 show the various components of the system unit. The main logic board occupies the unit bottom. The SBus cards plug into the main logic board. Twelve slots on the main logic board accept the Single Inline Memory Modules (SIMMs).

The unit top contains the power supply in the rear of the top section. Mounted just in front of the power supply is the bracket for both the hard disk drive and the diskette drive.

The wrist strap is a device that provides grounding for static electricity between your body and the system unit's chassis. Electric current and voltage do not pass through the wrist strap. Attach the wrist strap to your wrist and to the metal casing of the power supply. Parts that require the use of a wrist strap are packed with one.
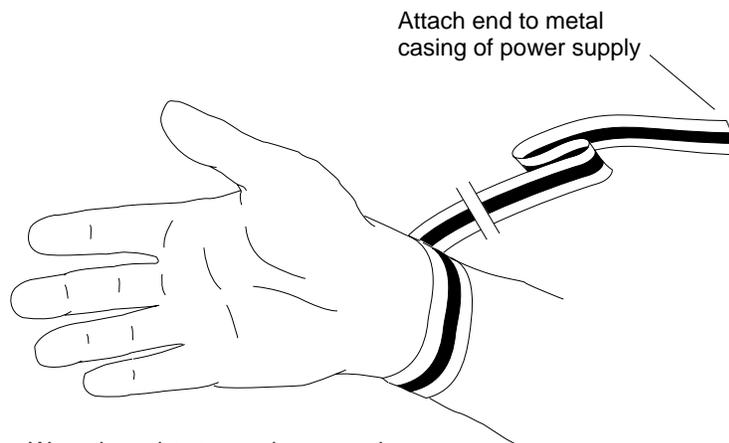
Caution – Boards, cards, PROMs, and modules can be damaged by harmful electrical charges if you do not wear a wrist strap.

To attach the wrist strap:

1. **Wrap the grounding strap with the conductive adhesive tape twice around your wrist.**
Make sure the adhesive side is against your skin.

Attach end to metal
casing of power supply

Wrap the wrist strap twice around your
wrist (adhesive against your skin).

2. **Attach the end with the adhesive copper strip to the metal casing of the power supply in the unit top.**
Make sure the internal power cable from the power supply to the main logic board and the external power cord between the power supply and the wall remain connected when you work on the main logic board components.