TADPOLE

SPARCbook®

SPARCbook 5000 Product Family

User's Guide

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Disclaimer of Warranty Notice

Tadpole makes no representations or warranties with respect to this manual, and shall not be liable for technical or editorial omissions made herein; nor incidental or consequential damages resulting from the furnishing, performance, or use of this manual. Further, Tadpole reserves the right to make changes in the specifications of the product described within this manual at any time without notice and without obligation of Tadpole to notify any person of such revision or changes.

Copyright Notice

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Declaration of Conformity

We, Tadpole,
2300 Faraday Avenue
Carlsbad, California USA 92008
(760) 929-0992

Declare under our sole responsibility that the product

SPARCbook 5000

complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1) this device may not cause harmful interference, and

2) this device must accept any interference received, including interference that may cause undesirable operation.

Shielded Cables

Connections between the SPARCbook 5000 workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

The connection of unshielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels that exceed the limits established by the FCC for this equipment. It is the responsibility of the user to obtain and use a shielded equipment interface cable with this device. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Modifications

Modifications to this device not approved by Tadpole may void the authority granted to the user by the FCC to operate this equipment.

DOC Class B Notice

This digital apparatus does not exceed Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Avis

Le present appareil numerique ne met pas de bruits radio-electriques depassant les limites applicables aux appareils numeriques de la classe B prescrites dans le Reglement sur le brouillage radio-electrique edicte' par le ministere des Communications du Canada.

Safety Precautions

WARNING: Do not attempt to recharge alkaline or other non-rechargeable batteries with the SPARCbook 5000's AC adapter/charger. Alkaline batteries cannot be recharged. Attempting to recharge alkaline batteries may cause personal injury and/or damage to the SPARCbook 5000 workstation.

WARNING: To prevent fire, shock hazard, or damage to the equipment, do not expose the SPARCbook 5000 workstation to rain or moisture. Do not immerse the SPARCbook 5000 workstation in water. If water has entered the SPARCbook 5000 workstation cabinet, do not use the workstation until it has been inspected by Tadpole.

WARNING: Do not dispose of SPARCbook 5000 batteries in fire. Disposal of SPARCbook 5000 batteries in fire may cause personal injury.

WARNING: All service and upgrades to the SPARCbook 5000 workstation must be performed by a trained technician only. Otherwise, you may encounter personal injury and/or damage your workstation.

Sicherheitshinweise

WARNUNG: Beim Betrieb der SPARCbook 5000 Workstation treten hohe Spannungen innerhalb des Gehauses auf. Bitte befolgen Sie auf jeden Fall die Bedienungs- und Installationsanweisungen um jegliches Risiko einer Verletzung oder eines Personenschadens zu vermeiden.

WARNUNG: Versuchen Sie auf keinen Fall, Ihre SPARCbook 5000 Workstation mit Trockenbatterien (Primarzellen) zu betreiben oder solche mit dem Netz/Ladegerat zu laden. Versuche dieser Art konnen Personen-oder Sachschaden zur Folge haben.

WARNUNG: Betreiben Sie Ihre SPARCbook 5000 Workstation nicht bei feuchten oder nassen Umgebungsbedingungen. Falls Wasser oder Feuchtigkeit in das Gehause eingedrungen ist, sollten Sie Ihr Gerat vor Wiederinbetriebnahme von einem qualifizierten Servicetechniker uberprufen lassen.

Important Safety Instructions

The following instructions pertain to the risk of fire, electric shock or bodily injury. Please read all of these instructions carefully.

1. Follow all of the instructions and warnings marked on this workstation or included in this manual.
2. Do not use this workstation in unstable or unsupported conditions.
3. The workstation may fall, causing serious damage to the workstation and others around.
4. Slots and openings in the cabinet are for ventilation. To ensure reliable operation of the workstation, and to protect it from overheating, these openings must not be blocked or covered. Don't use this workstation on a bed, sofa, rug or other similar surface. This workstation should never be placed near an oven, a radiator, or heat register. This workstation should not be placed in a built-in installation unless proper ventilation is provided.
5. Never push objects of any kind into the workstation cabinet openings as they may touch dangerous voltage points or short out parts that could result in a fire or electrical shock. Keep liquids of any kind away from the workstation.
6. This workstation should only be connected to the AC power source indicated on your workstation system's information label. If you are not sure of the type of AC power available, consult your dealer or local power company. Only connect this workstation to a power outlet matching the power requirements of this workstation.
7. Do not allow anything to rest on the power cord. Do not locate this workstation where people will walk on the cord.
8. If you have to use an extension cord with this workstation, make sure that the total amperage rating of all equipment plugged into it does not exceed the amperage rating of the extension cord. Also, make sure that the total of all workstations plugged into the main AC power outlet does not exceed 15 amps.
9. Unplug your workstation from the main electrical power outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
10. Do not use this workstation near water.
11. This product is equipped with a 2-wire non-grounded type plug.

Battery Warning Instruction

WARNING: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equipment type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie de meme type ou d'un type recommande par le constructeur. Mettre au rebutles batteries usagees conformement aux instructions du fablicant.

VORSICHT: Explosionsgefahr bei unsachgemassem Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ahnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

Wichtige Sicherheitsvorschriften Unbedingt beachten

Die nachfolgenden Anweisungen betreffen die Gefahr von Verletzungen durch elektrische Spannung, Feuer und mechanische Einwirkung. Bitte lesen sie diese Anweisungen sorgfaltig.

1. Beachten Sie alle Hinweise, die am Gerat selbst angebracht oder in den zugehorigen Handbuchern vermerkt sind.
2. Stellen Sie das Gerat an einem sicheren, stabilen Arbeitsplatz auf.
3. Am Gerat angebrachte Offnungen (Schlitze und sonstige Offnungen) dienen der Beluftung des Gerates. Um ein zuverlassiges Arbeiten des Gerates zu gewahrleisten und um Uberhitzung zu vermeiden, mussen diese Offnungen unbedingt freigehalten werden. Betreiben Sie das Gerat nie auf Betten, Sofas oder anderen, weichen Unterlagen.
4. Stecken Sie keine Gegegenstande (Schraubenzieher, Buroklammern, etc.) in die Offnungen. Sie wurden damit Kurzschlusse herbeifuhren, die zur Zerstorung des Gerates fuhren, sich der Gefahr eines Stromschlages aussetzen oder das Gerat in Brand setzen.
5. Das Gerat darf nur an vorschriftsmassige Steckdosen mit der auf dem Gerat angegebenen Netzspannung angeschlossen werden. Wenn Sie nicht sicher sind, welche Netzspannung richtig ist, wenden Sie sich an den Lieferanten des Gerates oder an das zustandige Elektrizitatswerk.. Bitte nur an genugend stark abgesicherte Steckdosen anschliessen, die der Leistungsaufnahme des Gerates entsprechen.
6. Auf das Netzanschlusskabel durfen keine Gegenstande gestellt werden.
7. Legen Sie das Netzkabel so, dass niemand darauftreten oder daruber stolpern kann.
8. Wenn Sie Verlangerungskabel benutzen, mussen Sie sicher sein, dass die gesamte Leistungsaufnahme nicht grosser ist, als das Verlangerungskabel zulasst. Der gesamte Stromverbrauch aller angeschlossenen Gerate darf nicht mehr als 15A betragen.
9. Wenn Sie das Gerat reinigen, muss das Netzkabel aus der Steckdose gezogen werden.
10. Das Gerat durfen Sie nicht in der Nahe von Wasserleitungen benutzen.

Wartung der Workstation

Wenn Ihre Workstation nicht ordnungsgemass arbeitet, durfen Sie nur die Einstellungen vornehmen, die im Handbuch genannt werden. Andere Einstellungen oder Veranderungen konnen den Rechner beschadigen oder zerstoren. Umfangreiche und kostspielige Reparaturen wurden notwendig werden, um das Gerat wieder betriebsfahig zu machen.

Ziehen Sie den Netzstecker aus der Steckdose und verstandigen Sie den zustandigen Kundendienst bei folgenden Storungen:

1. Netzkabel ist defekt oder stark abgenutzt.
2. Flussigkeit ist in das Gerat gelangt.
3. Das Gerat war Regen oder Leitungswasser ausgesetzt.
4. Das Gerat ist heruntergefallen oder das Gerhause ist beschadigt.
5. Das Gerat arbeitet nicht mehr richtig.

Achtung!

Wenn Sie das Gerat offnen mussen (Abnahme der verschraubten Haube), ist unbedingt folgendes zu beachten:

1. Das Netzkabel muss aus der Steckdose gezogen werden und zwar bevor Sie das Gerat offnen.
2. Die Haube muss wieder montiert und verschraubt werden. Erst dann darf das Netzkabel wieder eingesteckt werden.

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Preface

Welcome to the SPARCbook 5000 Product Family User Guide.

Product Lines

This product family includes the SPARCbook 5000X, which has a color display supporting XGA graphics (1024 x 768 resolution) and the SPARCbook 5000SX, which has a color display supporting SXGA+ graphics (1400 x 1050 resolution).

Conventions in This User Guide

The following conventions are used in this Guide:

Symbols

The following symbols are used in this book:

NOTE: Special note for clarification.

CAUTION: Risk of personal injury and equipment damage.

WARNING: Danger of explosion if battery is incorrectly replaced.

Notes

Notes precede information that requires special attention. Example:

NOTE: For your convenience, you can attach an external keyboard and mouse.

Warnings and Cautions

Warnings highlight conditions of potential personal injury. Cautions point out possible equipment damage. Examples:

CAUTION: To avoid damage to the product, do not subject it to excessive shock.

WARNING: To reduce risk of electric shock, do not open unit. No user serviceable parts inside. Refer all servicing to qualified personnel only.

Procedures

Procedures are numbered. Example:

1. Turn on your workstation.

Keyboard Conventions

Keyboard keys are shown in initial upper-case type. Example:

1. Type ls and press the Enter key to list the contents of a directory.

Screen Messages

Screen messages appear in Helvetica type bounded by rules. Example:

After the SPARCbook 5000 passes its self-test, the following initial message appears:

```
SPARCbook 5000 (Ultraparc-IIe 500MHz),
OpenBoot x.xx Tadpole x.xx, xxxx MB memory Installed
Serial $134xxxx
Ethernet address x:x:xx:x:x:xx, Host ID: xxxxxxxx
```

Variables

Variables appear as a lower-case x. For example, the x's in the previous example are variables because the values shown for ROM Rev., serial number, Ethernet address, and host ID will vary from system to system.

Table of Figures

Supplemental Documentation

For more information about the Solaris operating system, refer to the Sun Solaris Operating Environment documentation shipped with your system.

For more information on related SPARCbook 5000 features, please visit theTadpole web site under the following url:

http://www.tadpole.com/html/support/

Overview

1

SPARCbook 5000 Product Line

The SPARCbook 5000 comes in two models: the 5000X and 5000SX. The SPARCbook 5000X is the standard configuration with a XGA color display offering 1024 x 768 resolution. The SPARCbook 5000SX is an optional configuration with an SXGA+ color display offering 1400 x 1050 resolution.

Your new SPARCbook 5000 features the most innovative advances in portable computing technology. It combines state-of-the-art ergonomics with sophisticated architecture to provide you with a personal computer that is compact, powerful, and easy to use.

The modular design of the SPARCbook 5000 provides maximum expandability without compromising portability. The high-performance UltraSPARC IIe ™ processor running at 500MHz and PCI hard drive provide you with the extra processing power needed to handle complex graphics and large sound files. Two PCMCIA/Cardbus slots give you the ability to use standard PCMCIA/Cardbus cards, such as a LAN adapter, SCSI adapter, or memory cards. The DVD/CD-ROM or DVD/CD-RW drive located on the front panel of the SPARCbook 5000 provides access to a large variety of graphics and multimedia software.

Before using your SPARCbook 5000 portable workstation, it is important to review the following topics:

- Unpacking your SPARCbook 5000 components
- A list of features for the SPARCbook 5000
- Customer Service and Support

SPARCbook 5000 Components

As you unpack your SPARCbook 5000, check the shipping carton and the components inside it for damage. Here are the items you should find in your shipping carton:

If either the shipping carton is damaged or the SPARCbook 5000 components are missing or damaged, please contact your shipper or dealer immediately.

Each carton contains:

1. SPARCbook 5000 portable workstation
2. Carrying case
3. AC adapter and power cord
4. Rechargeable battery pack
5. Removable hard drive
6. Tadpole Support Software (Installation) CD
7. *SPARCbook 5000 User Guide* (this manual) and other documentation on CDs
8. Solaris Operating Environment media kit of CDs and documentation (optional, not pictured)

SPARCbook 5000 Features

Your new SPARCbook 5000 includes the following features:

- An UltraSPARC-IIe-compatible motherboard, running at 500 MHz
- 256 MB of high-speed RAM, factory upgradeable to 2 GB
- 15.1 inch display supporting a 256K-color palette and 64-shades of gray
  - SPARCbook 5000X (1024 x 768 resolution)
  - SPARCbook 5000SX (1400 x 1050 resolution)
- Full-size, Sun Type 5 compatible integrated keyboard
- An integrated three-button trackpad
- Up to two removable hard disk drives (HDDs) of varying capacity
- Internal DVD/CD-ROM or DVD/CD-RW drive
- Audio input and output jacks that support:
  - Line Out, for connection to external stereo devices
  - Line In, for connection to external stereo audio sources
  - Mono/stereo microphone, for connection to an external microphone
- Internal stereo speakers
- 2 PCMCIA/Cardbus Type I or Type II cards, or 1 Type III slot
- 3 USB ports for connecting external devices such as an external keyboard, mouse, or floppy drive
- A port for connecting an AC power adapter
- A VGA port for attaching an optional external monitor
- 2 RJ45 ports that support both 10-Base T and 100-Base T twisted-pair Ethernet connections
- A standard 9-pin port that supports one serial interface for connecting industry-standard TIA/EIA-232-F devices
- A standard 25-pin parallel port for connecting a printer or other industry-standard parallel port device

For more information about the features listed , see "Detailed Hardware Description" on page 137. For tips on using the features listed here, see "Using SPARCbook 5000" on page 15.

Customer Service and Support

Europe
9:00 am to 5:00 pm, UK Time, Monday through Friday
Telephone number: +44 870 432 41 61 □□

North America
7:00 AM to 6:00 PM PST
Tel: 1-800 734-7030

E-mail: support@tadpole.com

Before you call, have the serial number for your SPARCbook 5000 nearby. This number appears on the bottom of the SPARCbook 5000.

If you received an error message, it will also help if you write down the following information:

1. The exact description of the problem.
2. The task you were performing when you encountered the problem.
3. The command you typed when the error occurred. You may want to check the command line to make sure you did not make a mistake.
4. The directory you were in. You can use "`pwd`" to obtain this information.
5. The account you were using. You can use "`whoami`" to obtain this information.
6. Version of the operating system you are using. You can use `uname -a` or `more /etc/release` to obtain this information. See "Customer Service and Support" on page 108 for more information about these commands.

Getting Started

2

Getting Started provides a brief, pictorial introduction to get you started. The next chapter, "Using SPARCbook 5000" on page 15, describes more detailed information about these features. A few minutes spent on these two chapters will ensure you get the most out of SPARCbook 5000.

For more detailed hardware descriptions, see "Detailed Hardware Description" on page 137 of this manual.

Steps to Follow

Once you've completed the following steps, you'll be ready to start working with your SPARCbook 5000.

1. Check the ambient air temperature to make sure it is between 41–104º F (5–40º C).

CAUTION: If your workstation has been exposed to temperature extremes (variations of more than 10 degrees of temperature or 10 percentage points of humidity), you will need to stabilize the workstation's temperature. Let your SPARCbook 5000 adjust to room temperature before proceeding.

2. Open the SPARCbook 5000

Open the SPARCbook 5000 display screen by sliding the display cover latches (one on each side) towards the front of the SPARCbook as shown in the following illustration.

Figure 2-1: SPARCbook cover latches

3. Install the SPARCbook 5000 Lithium-Ion battery into the battery bay, which is located on the front left side of the SPARCbook - the same side as the audio ports. Push it in until you hear it click into place.

   Figure 2.2 shows the bottom view of this procedure.

Figure 2-2: Installing the battery pack

WARNING: Use only SPARCbook 5000 batteries. Never insert a battery made for another model of UltraBook or for any other computer or appliance, even if its appearance is similar.

4. For AC power operation, plug in the AC power adapter. as shown below.

The battery need not be installed for AC operation. For more detailed instructions on the AC adapter, see "AC adapter" on page 158.

5. Identify the following ports on the left side of the SPARCbook 5000:

   1) Audio Line-In Port
   2) External Mic Port
   3) Audio Headphone-out Port
   4) Internal Stereo Speaker
   5) LCD Panel Release Button
   6) Hardware Master Volume Control

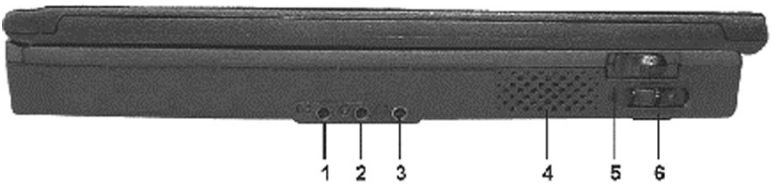

Figure 2-3: SPARCbook 5000 left side

6. Identify the following ports on the right side of the SPARCbook 5000:

   1) Kensington Lock
   2) LCD Panel Release Button
   3) Internal Stereo Speaker
   4) Power Kill Button
   5) PCMCIA/Cardbus Eject Buttons
   6) PCMCIA/Cardbus Socket (I, II, III)
   7) AC Power Jack

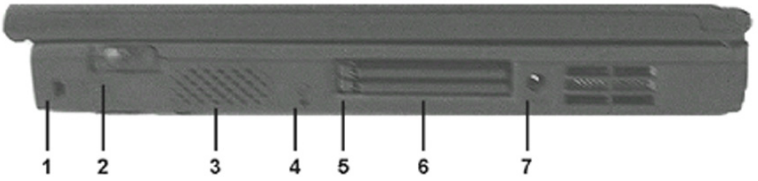

Figure 2-4: SPARCbook 5000 right side

7. Although the SPARCbook 5000 is completely self-contained, the back panel provides access for connecting the workstation to a wide variety of external devices, including Ethernet networks. Identify the following ports on the back-panel:

   1) Serial Port
   2) Parallel Port
   3) PS2 Connector
   4) External Video Port
   5) Dual Ethernet Ports
   6) USB Ports (horizontal orientation)
   7) USB Port (vertical orientation)
   8) PS2 Connector

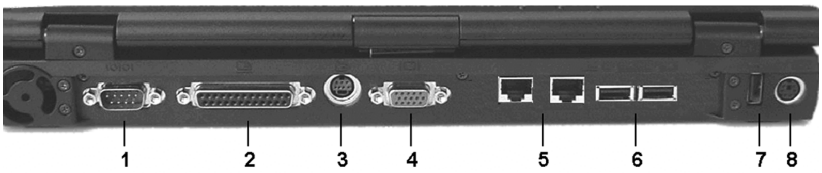

Figure 2-5: SPARCbook 5000 back panel

See Chapter 3, "Using SPARCbook 5000" for more information about connections.

8. Turn on all external devices, then turn on your SPARCbook 5000 with the **Power** switch as shown in the Figure 2-6.

Figure 2-6: SPARCbook 5000 power switch

9. View the initial system screens.

After the self-tests have successfully completed, an initial message appears. Then system messages scroll as the operating system loads.

If the system is booted with the factory software load intact, the Common Desktop Environment (CDE) login banner appears. (Note that the GNOME windowing environment may replace CDE as the standard Solaris windowing system in future Solaris operating environment releases.

10. Log on to the system and follow the prompts.

If the factory software load is altered, the CDE may not appear. If this is the case, after the last system message, the screen displays the login prompt and you can log into the system. At this point, you may start your application.

The next chapter, "Using SPARCbook 5000" on page 15, provides more detailed information about the various tasks involved in using your SPARCbook 5000.

Getting Started

Using SPARCbook 5000

3

This chapter provides more detailed information about the tasks described in Chapter 2, "Getting Started." A few minutes spent here will help you get the utmost benefit from your SPARCbook 5000.

Setting Up

The SPARCbook 5000 is designed to provide many years of error-free operation. The workstation will last longer by following these guidelines:

- Position the SPARCbook 5000 so you can easily access the connectors on the back and side panels.
- The area should be free of obstructions, allowing you to open the display screen completely, without hindrance.
- Adequate ventilation is required for the SPARCbook 5000. Do not cover or block the ventilation slots or fans on the case.

CAUTION: Never spray or directly apply strong cleaners or solvents to the SPARCbook 5000 case or LCD.

Opening the Display Cover

The display is located on the inside of the top cover. When you are not using the SPARCbook 5000, the cover should remain closed. This protects the display against damage.

To open the display cover:

1. Slide the two display cover latches forward. The latches are located on the left and right sides of the unit as shown in the illustration below.

Figure 3-1: Opening the display cover

2. Gently raise the cover to its full, upright position.

You can adjust the screen up to 30 degrees from vertical for a better viewing angle. Use the backlight intensity keys on the integral keyboard to adjust the brightness of the backlight to achieve the best viewing conditions.

At this point, you can connect the SPARCbook 5000 to your selected optional equipment and power up the workstation.

Closing the Display Cover

To close the display cover:

1. Gently pull the cover forward and down.
2. Carefully press the back of the cover down toward the keyboard until both case latches "click" into their closed positions.

Providing Power

The SPARCbook 5000 can operate from an AC power adapter or a rechargeable Lithium-Ion battery pack.

Using an AC adapter

You may use AC power to operate the SPARCbook 5000. The battery need not be installed for AC operation.

To power the SPARCbook 5000 from AC power:

1. Locate the SPARCbook 5000 near an AC outlet.
2. Make sure the outlet is not controlled by a wall switch, which can cause the workstation to be turned off accidentally.

WARNING: Use only the supplied AC adapter with the SPARCbook 5000. Do not use an AC adapter designed for use with another product.

3. Plug the connector from the AC adapter into the power input socket on the SPARCbook 5000 as shown in the right side of Figure 3-2. Then plug the AC cable plug into a near-by AC outlet.

Figure 3-2: AC adapter connector

NOTE: The AC adapter can be plugged into a 100 - 240-Volt source at 50 - 60 Hz. The AC adapter will automatically adjust to the AC input voltage and frequency. The only requirement is that the AC adapter/charger must correctly fit the AC outlet.

Unplugging the AC adapter

Unplug the AC cable from the AC outlet. Then slide the connector from the AC adapter out of the power input socket on the SPARCbook 5000.

Using Batteries

Battery pack LED power guage

The battery module contains a five element LED power gauge allowing you to check the charge status of the battery module before installing it in the SPARCbook 5000. The power gauge displays remaining capacity in increments of 20%.

The battery can be installed with the SPARCbook 5000 powered on or off. To install the battery pack:

1. Install the SPARCbook 5000 Lithium-Ion battery into the battery bay, which is located on the front left side of the SPARCbook - the same side as the audio ports. Push it in until you hear it click into place.

Figure 3-3: Inserting the battery pack

Recharging a new battery pack

After installing a new battery pack, use the AC adapter to recharge the battery pack. It takes about 2.5 hours to recharge a new battery when the SPARCbook 5000 is turned off. After fully charging the battery pack, you can operate the SPARCbook 5000 for about 2 hours, depending on your configuration and applications.

Removing the battery pack

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Turn the SPARCbook 5000 over.
3. Press the battery latch (see Figure 3-4), grasp the battery's faceplate and gently pull it out of the battery bay.

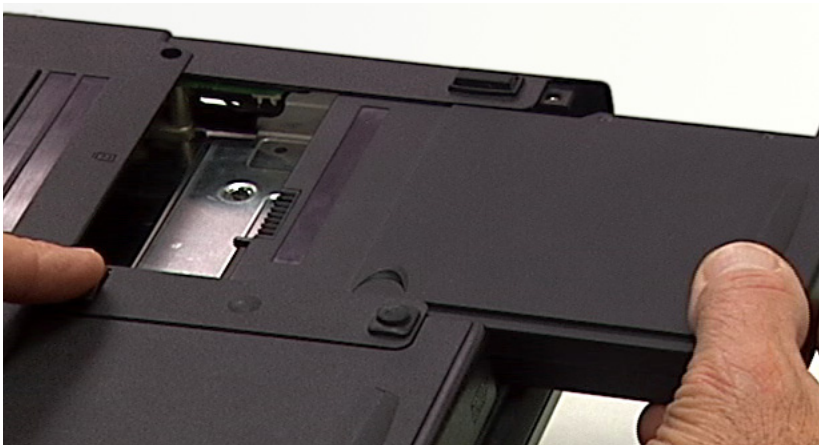

Figure 3-4: Removing the battery pack

Operating SPARCbook 5000

Before turning on your SPARCbook 5000 workstation and beginning your day, you will need to prepare the workstation. This includes acclimating the workstation to its environment and starting its operating system.

Starting SPARCbook 5000

To ensure long life and ease of operation, you need to follow a few general guidelines when starting up and shutting down your SPARCbook 5000 workstation.

CAUTION: Failure to start up and shut down the SPARCbook 5000 workstation properly can damage important system files and may affect your product warranty.

To start the SPARCbook 5000, make sure the wokrstation is at room temperature before powering up. This is particularly important when the workstation is brought from a very cold environment into a warm room. In such cases, moisture can condense on and inside the workstation and cause problems. Allow at least two hours for the SPARCbook 5000's temperature to stabilize after bringing it from a very cold or very warm environment before proceeding.

Starting the SPARCbook 5000 on an Ethernet Network

If you will be using the SPARCbook 5000 on an Ethernet network, you will need to:

1. Contact the person responsible for your computer network (the Network Administrator) to obtain the following applicable information:

    - A host name that does not duplicate an existing host name
    - An IP address
    - An optional Network Information Service (NIS) domain name
    - A user account and password if using NIS
    - I P address of gateway router
    - D NS nameserver IP address and DNS domain

2. Connect the Ethernet cable to the 10-Base T/100-Base T Ethernet connector.
3. Make sure that all cables attached to peripherals (such as printers, mouse and monitor) are securely plugged into the correct connectors.
4. Make certain that each device is plugged into an AC outlet or power strip.
5. Power on all attached peripherals.
6. Use the SPARCbook 5000's power switch to turn on your workstation.

NOTE: If the OK prompt appears during the boot process, type in "`Boot Disk`"

The SPARCbook 5000 begins its self-test diagnostics and starts to boot. It is normal for the screen to be blank for up to 20 seconds before displaying the following initial message:

```
SPARCbook 5000 (UltraSPARC-IIe xxxMHz),

OpenBoot x.xx Tadpole x.xx, xxxx MB memory installed,
Serial #xxxxxxx

Ethernet address x:x:xx:x:x:xx, Host ID: xxxxxxxx
```

A variety of system messages will be displayed on the screen as Solaris continues to boot. After the last system message, the screen will display the "hostname console login" prompt.

```
hostname console login:
```

First time log in is 'root' with no password

If the SPARCbook 5000 does not respond when the power switch is turned on, refer to Chapter 7 of this guide for troubleshooting suggestions.

NOTE: After powering-up the SPARCbook 5000 for the first time, you are ready to configure your workstation. Consult your system administrator for details.

Restarting SPARCbook 5000

Restarting an SPARCbook 5000 that has been halted and powered down is a simple procedure:

1. Verify that cables from all connected peripheral devices, such as an external monitor, are connected to the appropriate connectors on the back of the SPARCbook 5000.
2. Power-up the peripherals before powering-up the SPARCbook 5000 (see peripheral manuals for more information).
3. Turn on the SPARCbook 5000.

The SPARCbook 5000 begins its self-test diagnostics and starts to boot. It is normal for the screen to be blank for up to 20 seconds before displaying the following initial message:

```
SPARCbook 5000 (UltraSPARC-IIe xxxMHz),

OpenBoot x.xx Tadpole x.xx, xxxx MB memory installed,
Serial #xxxxxxx

Ethernet address x:x:xx:x:x:xx, Host ID: xxxxxxxx
```

Various system messages will appear on the screen during the boot process. After the last system message, the screen will prompt you for your login name and then your password.

4. Type your user ID at the user name prompt and click OK.
5. Type your user password at the password prompt and click OK.

Shutting SPARCbook 5000 Down

Before turning off your SPARCbook 5000 for the day, save your work, close all programs and databases, and shut down its operating system. You may also want to power down any peripheral devices you have connected to the SPARCbook 5000.

Using TADu2euts

If you have TADu2euts installed on your SPARCbook 5000, this power management software will automatically close your programs, shut down the operating system safely and power off simply by pressing the power button.

TADu2euts is included in our factory Operating System load. If you have reloaded Solaris, it is automatically installed with the Tadpole Installation Support CD.

CAUTION: If you are not certain TADu2euts is installed on your workstation, DO NOT simply turn off the power to your workstation as this can damage or destroy critical operating system files and data. Failing to properly shut down the operating system and workstation can also damage attached peripheral devices as well as the workstation itself.

To check if TADu2euts is installed:

1. At the "#" prompt, type

```
pkginfo | grep TADu2euts
```

2. If TADu2euts is present, this command will return the following information:

```
System TADu2euts Tadpole SPARCbook 5000 Utilities for Solaris x
```

3. If TADu2euts is not present, the "#" prompt will return with no response. Contact Tadpole Customer Support if you need assistance reloading TADu2euts from the SPARCbook 5000 Support Software (Installation) CD or downloading it via FTP from ftp.tadpole.com.

Shutting Down Without TADu2euts

To shut down the SPARCbook 5000 safely if TADu2euts is not installed:

1. Save your work and close any application or database that may have work in progress.
2. At the "#" prompt, type `init 0` to shut down the operating system.
3. Press the power switch at the ok prompt.
4. Power down peripherals as needed.

Shutting Down With TADu2euts

To shut down the SPARCbook 5000 with TADu2euts installed (normal shutdown):

1. Save your work.
2. Press the power switch.
3. Power down peripherals as needed.

Moving SPARCbook 5000

If you want to move the SPARCbook 5000 after shutting down, perform the following procedures:

1. Disconnect all cables and connectors (including the AC adapter cable) from the SPARCbook 5000.
2. Close and latch the rear panel cover, then fold the display cover down and close and latch the case.
3. You can now move the SPARCbook 5000 to a new location, reconnect, and restart.

Using SPARCbook 5000 Features

This section contains operational tips and other information unique to the SPARCbook 5000 feature set. For more detailed information on a listed feature, refer to "SPARCbook 5000 Specifications" on page 165.

Removing Hard Disk Drives

The SPARCbook 5000 comes equipped with up to two removable hard disk drives.

To remove the primary hard disk drive:

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Turn the SPARCbook 5000 over.
3. Remove the locking screw as shown in Figure 3-5.

Figure 3-5: Removing the hard drive locking screw

4. Grasp the drive's faceplate and gently pull it out of the drive bay.

Figure 3-6: Removing the internal hard drive

Inserting Hard Disk Drives

To insert a hard disk drive:

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Turn the system over and insert a drive into a drive bay.

Figure 3-7: Partially inserted hard disk drive

4. Secure the locking screw (shown in Figure 3-8).

Figure 3-8: Re-installing the hard drive locking screw

NOTE: A second hard drive may be installed in the center slot normally reserved for the DVD/CD-ROM or DVD/CD-RW drive as shown in the illustration below.

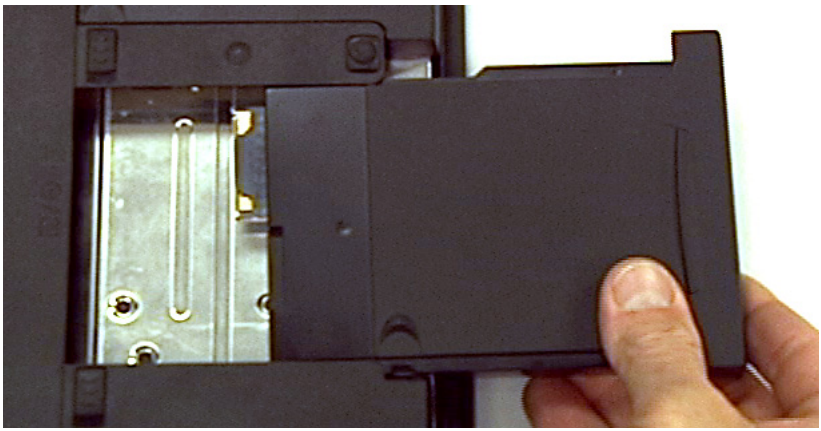

Figure 3-9: Installing a second hard drive

Using the DVD/CD Module

The DVD/CD module provides you with the hardware basics to turn your SPARCbook 5000 computer into a fully functioning multimedia computer. Beyond its audio and video capabilities, since many software packages are coming out solely on CD-ROM, the addition of this module gives the user more choices in the purchase of software applications.

DVD discs can hold up to 9.4 GB of data and/or video. CD-ROM discs can hold up to 700 MB of data. Because they are randomly accessible, data can be easily organized for quick retrieval during a search.

Systems equipped with the DVD/CD-RW drive can also record, or "burn," CDs, providing a high-capacity backup option.

Precautions to Follow when Handling DVD/CD-ROM Discs

- Always hold the disc by the edges
- Avoid touching the surface of the disc
- Use a clean, dry, cloth to remove dust, smudges, or fingerprints
- Wipe from the center outward
- Do not write on the surface of the disc
- Extremes in temperature may damage discs
- Store discs in a cool dry place
- Do not use benzene, thinners, or cleaners
- Do not bend or drop the discs
- Do not place objects on top of discs

Loading a Disc

To play a DVD/CD disc, follow the instructions listed below.

1. Press the eject button on the front panel. The tray ejects from the drive.

Figure 3-10: Ejected DVD/CD tray

2. Place the disc into the tray with the disc's label facing up.
3. Push the tray back into the drive.

Do not insert any foreign objects into the disc tray. Do not force the tray to open or close manually. When not in use, keep the tray closed to prevent dust or dirt from entering the drive unit.

Audio Volume Control

The following hot key combinations control audio output volume:

Key combinations	Function
[Fn] + [PgUp]	Increases audio output volume
[Fn] + [PgDn]	Decreases audio output volume
[Fn] + [F12]	Mutes stereo speaker output

Hardware Master Volume Control

In addition to the above hot key combinations, the SPARCbook 5000 is also equipped with a hardware master volume control on the front left side of the computer. This control regulates the audio volume output. Press the right side of the control to increase the volume by increments. Press the left side of the control to decrease the volume by increments.

Recording with the External Microphone

To use a microphone to record:

1. Make sure the microphone is plugged into the microphone jack (the center port in Figure 3-11) on your SPARCbook 5000.

Figure 3-11: Microphone jack (center port in illustration)

2. Make sure the recording source is sufficiently close to the microphone (1 to 2 ft).
3. Unplug any external audio input devices connected to the SPARCbook 5000.

Using PCMCIA/Cardbus Cards

Your SPARCbook 5000 computer features two PCMCIA/Cardbus expansion sockets designed to interface with two Type II cards or one Type III card. This sophisticated innovation allows you to expand and customize your SPARCbook 5000 computer to meet a wide range of computing needs without sacrificing portability. PC cards accommodate a number of expansion options. Memory cards, MODEMs, hard disks, SCSI adapter, and network (LAN) adapters are just a small sample of the PC card products available on today's market.

The PCMCIA (Personal Computer Memory Card International Association) Card Bus is a widely accepted industry standard that defines the design and operation of PC Card Bus cards. Most PC cards that conform to the PCMCIA/Cardbus standard are plug-and-play devices, i.e., they can be inserted into the PCMCIA/Cardbus expansion sockets while the computer is powered on. This type of hot insertion does not apply to all PC cards. Refer to the documentation that came with your PC card for detailed information on insertion and operation of PC cards.

Figure 3-12: PCMCIA/Cardbus eject buttons

Inserting and Ejecting PCMCIA/Cardbus Cards

Please refer to Figure 3-10 and the following instructions for inserting and ejecting a PCMCIA/Cardbus card:

1. Some PCMCIA/Cardbus cards do not support hot-plugging. Refer to your PCMCIA/Cardbus card's manual for verification. If hot-plugging is not supported, save your data and turn off the SPARCbook 5000 before inserting the PCMCIA/Cardbus card.
2. Hold the PCMCIA/Cardbus card with the arrow side up and the connector side toward the socket.
3. Align the card connectors with the appropriate socket and carefully slide the card into the socket until it locks into place.
4. Locate the two PCMCIA/Cardbus eject buttons. Note that there are two eject buttons, one per slot.
5. To remove a PC card simply push the respective eject button once; the eject button pops out. Push the button again to eject the PC card. The upper switch will eject a Type I or Type II PCMCIA/Cardbus card from the upper socket. The lower switch will eject a Type I, Type II, or Type III card from the lower socket.
6. Remove the card and store it properly.

When inserting a Type III PC card, make sure the connector is inserted in the lower socket. Before ejecting a PC card, ensure that it is not being accessed by the system. Memory card users must never change a card's write protect switch while the card is inserted into a PCMCIA/Cardbus socket. To change the switch setting, (a) eject the card, (b) change the switch setting, and (c) re-insert the card.

The eject buttons work each slot independently. To eject a card, push the applicable PCMCIA/Cardbus eject button. The card will release and move out so that it can be grasped and removed.

Using an External Keyboard or Pointing Device with a PS2 Port

To use an external keyboard or pointing device:

1. Simply connect the keyboard or pointing device to the PS2 port on the back panel. You do not need to power down your SPARCbook 5000 before connecting or disconnecting these devices when using the PS2 ports on the backpanel as shown in Figure 3-13.

Figure 3-13: PS2 (Keyboard/Mouse) port on backpanel

Using a USB Device

The SPARCbook 5000 is equipped with three Universal Serial Bus (USB) connectors. The USB connector and its supporting circuitry were designed in full compliance with the Universal Serial Bus Specification 1.0. Any device that uses this standard can be connected to this port.

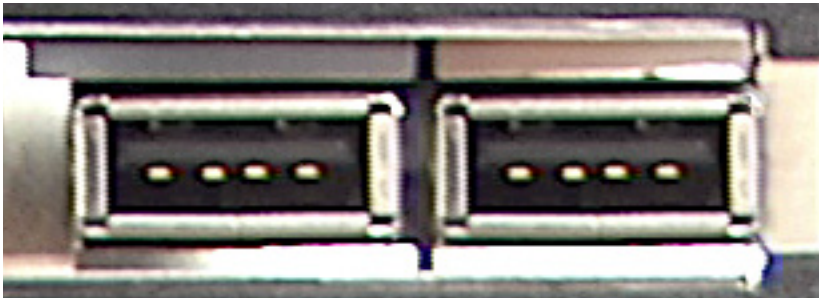

Figure 3-14: USB port connectors (showing 2 of 3)

Using an External Display

To connect an external monitor:

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Connect the cable from the monitor to the SPARCbook 5000's external 15-pin VGA video port. Refer to "External Monitor Matrix" on page 187 for more information about using external monitors.

Figure 3-15: External VGA video port

Using an Ethernet Cable

To connect the SPARCbook 5000 to an Ethernet network:

1. Set it on a work surface near the Ethernet twisted-pair cable or transceiver/MAU.
2. Attach a twisted-pair cable to one of the SPARCbook 5000's 10-Base T/100-Base T Ethernet LAN ports.

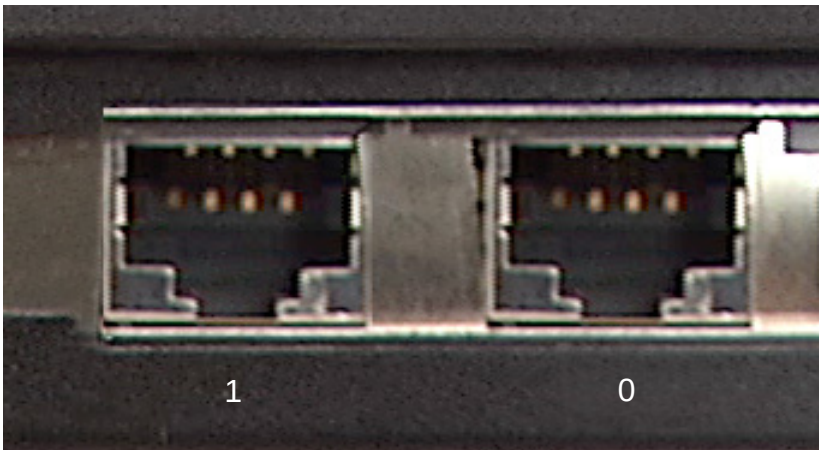

Figure 3-16: RJ-45 Ethernet ports

Using the Serial and Parallel Port

The SPARCbook 5000 back panel has a 9-pin connector for a single serial port (see Figure 3-17) and a 25-pin parallel port connector (see Figure 3-18).

To use your serial and parallel ports:

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Turn off the serial device you will be connecting to it.
3. Connect a serial device to the 9-pin connector.
4. Connect a parallel device to the 25-pin connector.

Figure 3-17: Serial port

Figure 3-18: Parallel port

For a list of pin assignments for SPARCbook 5000 connectors, see "Connector Pin Assignments" on page 171.

Upgrading Memory (RAM)

Your SPARCbook 5000 can support up to 2 GB of random access memory (RAM). To add memory to your SPARCbook 5000, refer to the table of supported memory configurations on page 141, and then following the procedure below.

1. Turn the SPARCbook 5000 over and locate the memory cover on the left rear side of the system.
2. Remove the two memory cover retaining screws as indicated in the illustration below.

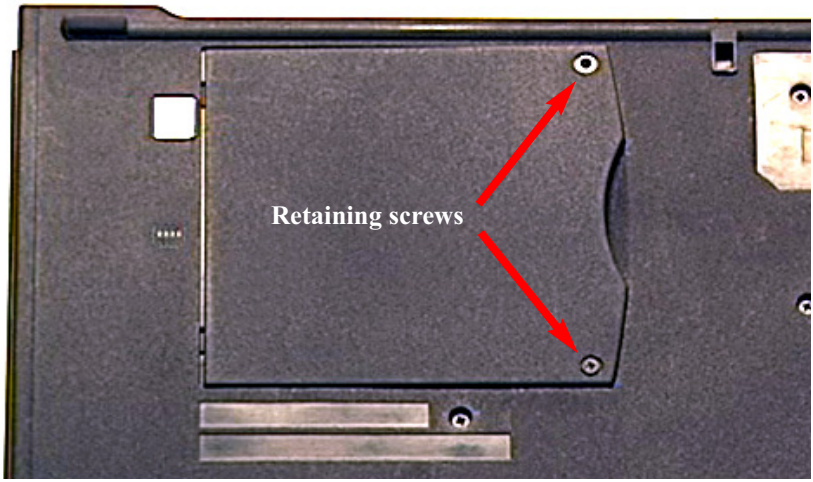

Figure 3-19: Memory cover retaining screws

It is recommended that a static strap is used when handling the memory boards.

3. Insert the bottom edge of the SODIMM upgrade into the onboard socket and then press the top edge down until the locking tabs are secured in the sides of the SODIMM as shown in the illustration below.

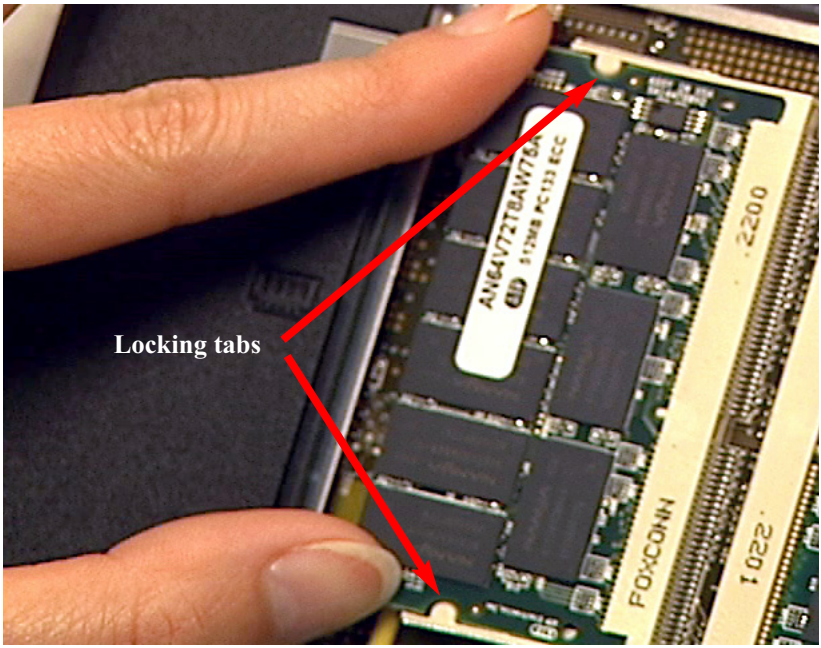

Figure 3-20: SODIMM installed

NOTE: Removal of the SODIMM upgrade is the reverse process as the installation.

System Status Indicator LEDs

The SPARCbook 5000 includes 6 System Status indicator LEDs, located on the lower left portion of the display and the upper left portion of the keyboard (See Figure 3-21). These indicators inform you of the SPARCbook 5000's current operating status at a glance.

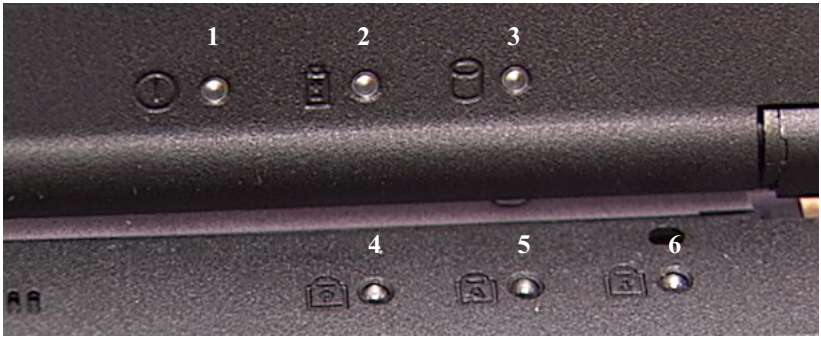

Figure 3-21: System status indicators

The different LED indicators display conditions for:

1 AC Power
2 Battery Power
3 Activity
4 Num Lock
5 Caps Lock
6 Compose

Integrated Keyboard

Your SPARCbook 5000 computer features a low-profile 87 key enhanced keyboard that emulates all the functions of a full-size 101/102 key keyboard including an embedded keypad and a full array of special function keys. This section covers the SPARCbook 5000's keyboard, and identifies several keys that are commonly used when working with either the Operating System or other software.

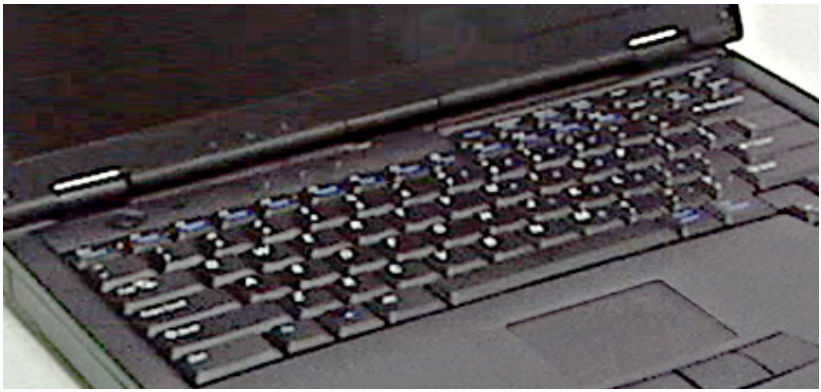

Figure 3-22: Integrated keyboard and Touch Pad

The alphanumeric keys located on the keyboard are in the same position as those found on a standard typewriter. The usage of these keys is straightforward. There are some keys such as the 12 Function keys, Scroll Lock, Print Screen, etc., whose functions may be unfamiliar to you. This section identifies some of these keys and discusses their functions when used with either the Operating System Software or other application software, such as word processors, spread sheet applications, or database management programs.

Special Keys

[Esc]

The Escape key allows you to cancel any specific command you may have just keyed in. For example, if you mistakenly hit the function key, [F1], in your word processor or spread sheet program, but want to "cancel" the command so that the computer will ignore the function key, just press [Esc].

[Enter]

While using application software, the purpose of this key is similar to a typewriter's return key, pressing this key will position the blinking cursor to the beginning of the next line on the display screen.

[PrntScrn/SysRq]

Pressing this key will cause whatever is on the screen at the time to be printed. Note that in some software programs this key may be used in conjunction with other keys for other specific functions.

Consult your software user's manual for more information.

[Num Lk/Scroll Lk]

When Scroll Lock is engaged, pressing the cursor control keys moves the cursor by fields of text. Strike the [Fn] + [Num Lk/Scroll Lk] keys to engage this mode. Striking these keys again will disengage the Scroll Lock function.

[Pause/Break]

The Break key is used in conjunction with the Control key ([Ctrl] + [Pause/Break]) to cancel a command.

[Fn]

This key is located in the lower left corner of the keyboard, next to the [Ctrl] key. Pressing this key engages the alternate function (labeled in blue) on selected keys. For example, simultaneously pressing the [Fn] + [Dn Arrow] keys decreases the display brightness.

[*]

Used by itself, the * key has no effect in carrying out any commands. Like the [Ctrl] and [Alt] keys, it is always used in combination with other keys.

[Caps Lock]

The [Caps Lock] key corresponds to a typewriter's Shift Lock key, but it only affects letter keys. The number keys and function keys are not affected. Even with the [Caps Lock] key engaged, if you want to generate the symbols and punctuation marks above the number keys, you must still use the [Shift] key. Note that when the [Caps Lock] key is engaged, the Caps Lock indicator comes on.

[Shift]

Similar to the typewriter's Shift key, this key allows you to type letters in "UPPER CASE."

[Ctrl]

Used by itself, the Control key has no effect in carrying out any commands. Like the [*] and [Alt] keys, it is always used in combination with other keys. Its function depends mainly upon the type of software you are currently using.

Refer to the user's manual of the software you are using for details on how to use this key.

[Alt]

Used by itself, the Alternate Key has no effect in carrying out any commands, but functions with other keys to perform special functions.

Refer to the user's guide of the software you are using for more details on how to use this key.

[Alt/Graph]

Used by itself, the Alt/Graph Key has no effect in carrying out any commands, but functions with other keys to perform special functions.

Refer to the user's guide of the software you are using for more details on how to use this key.

[Compose]

Used by itself, the Compose Key has no effect in carrying out any commands, but functions with other keys to perform special functions.

For example, the Compose key may be used in conjunction with other keys for generating foreign language characters.

Refer to the user's guide of the software you are using for more details on how to use this key.

Cursor Control Keys and Editing Keys

The keys listed in this section are specifically used to move the cursor on the LCD Display. When used in combination with other keys, these cursor control keys provide some very powerful editing functions.

The cursor's location indicates where you can type text on the screen. Having the ability to quickly move the cursor around the screen while editing text will significantly improve your efficiency.

The importance of these Cursor Control keys is more apparent when using application software such as word processors, spread sheet applications, and databases. In addition, while using your operating system software (OS), several of these keys play an important role in moving the cursor or editing.

Refer to your software manuals for details on how to use these keys.

Left and Right Arrow Keys

Pressing either of these keys will move the cursor one character at a time in the direction shown on the arrow key.

Up and Down Arrow Keys

Pressing either of these keys will move the cursor one line at a time in the direction shown on the arrow key.

[Page Up] or [Page Dn]

These keys allow you to quickly move the cursor on the screen page by page, or window by window, depending on the software you are using.

[Home]

Refer to your application software manual to find out how your software specifically uses the [Home] key to quickly move the cursor to either the beginning of a document or the beginning of a line.

[End]

Refer to your application software manual to find out how to use the End key to quickly move the cursor to the end of a line or to the end of a document.

[Insert]

The Insert key is used mainly for editing. It enables you to insert characters within the text while interacting with the OS. Some applications, however, automatically insert text while within a document, so depending upon the software you are using you may or may not need to use this key.

[Delete]

This key is used for editing text at either the OS command prompt or the text within a document. Pressing the Delete key will remove any characters to the right of the cursor and then pull from the right the remaining typed characters.

[Back Space]

While within a document, the Back Space Key allows you to move the cursor to the left and simultaneously erase characters in its path. Note that this is different from the left arrow key, which will not erase any typed characters.

The Function Keys

Notice the twelve function keys at the top of the keyboard. These keys appear in sequence ([F1], [F2], [F3], . . . [F11], [F12]) from left to right. The functions these keys perform vary with respect to the operating system and software in use.

Refer to the appropriate software user's guides for more detailed information on function key definitions.

Hot Keys for System Control

The following table lists the hot key functions for the SPARCbook 5000 computer.

Key Combinations	Definitions
[Fn] Up arrow	Increases display brightness
[Fn] Down arrow	Decreases display brightness
[Fn] + [PageUp]	Increases audio volume output
[Fn] + [PageDn]	Decreases audio volume output
[Fn] + [F12]	Toggles the mute function on and off. (no beep)

When using an external keyboard, the Fn key can be simulated by pressing the left-Ctrl + left-Alt keys.

The Touch Pad

The touch pad is a touch-sensitive pointing device that provides all the features of a mouse. Please refer to Figure 3-24 and the following explanation for the touch pad's operating instructions.

Figure 3-24: The Touch Pad

Using the Touch Pad

1. Place your fingers on the keyboard in the normal typing position.
2. The touch pad is easily accessible by moving either your left or right thumb off the space bar and on to the touch pad.
3. Gently move your thumb across the touch pad in the direction you want the cursor to move. The pad detects the change in pressure and moves the cursor in the corresponding direction.
4. With a conventional mouse, selections are usually made by double- clicking the mouse's left button. The touch pad also supports this feature. It is described in detail below. If you are familiar with the operations of a mouse you may only need to scan the information below as a review. The touch pad buttons have essentially the same function as mouse buttons. Clicking these buttons makes selections, drags objects, or performs a variety of other functions depending on the software. To select an object, first move the pointer over the object you want to select, and then press the lower button one time and release it. The functionality of these buttons depends on your software. Refer to your software user's manuals for specific information on the touch pad (mouse) functions.

Double-clicking

Double-clicking is a common technique for selecting objects or launching programs from icons. Move the pointer over the object you wish to select, then rapidly press the left button two times. This action is commonly referred to as "double-clicking on an object."

Double-tapping

Double-tapping is another technique for selecting objects or executing applications from icons. For the most part double-tapping is very similar to the double-clicking technique of a mouse. The difference is that instead of double-clicking on a mouse button, you double-tap on the pressure sensitive touch pad to make the selection. Once the cursor has been moved to the object you want to select, lightly double-tap the pressure sensitive touch pad itself. This double-tapping will select the desired item and prompt the software to perform the related operation.

Single-tapping

Many of the functions within the OS can also be launched by using Single-tapping. Once the cursor has been moved to the object you want to select, lightly single-tap on the pressure sensitive touch pad. This single- tapping will select the desired item and prompt the software to perform the related operation.

Dragging

When working with programs that employ a graphical user interface (GUI), dragging objects from one point on the screen to another is a technique you will have to master. To drag an object, first move the pointer over the object, then press and hold down the left button. Now without releasing the button, move the object to a new location on the screen by moving your finger across the touch pad. Once the object is in the desired position, release the button to drop the object in place.

NOTE: The integrated trackpad is disabled whenever an external pointing device is used.

Multimedia Sound System

The SPARCbook 5000's built-in audio capabilities allow you to take advantage of a wide range of education and entertainment multimedia software available on today's growing market without the additional costs of add-on cards and peripheral hardware. The multimedia sound system features a sophisticated on-board FM sound generator that produces realistic music in 16-bit stereo.

The integrated stereo speakers are located on the front sides of the SPARCbook 5000.

The SPARCbook 5000 is also equipped with both input and output audio ports for external audio units. They are located on the front left-hand side as shown in Figure 3-25 below.

Figure 3-25: Audio ports (from left to right: Line-in, External microphone, Line-out)

Audio Connection Options

An external audio source (such as a CD player) can be connected to the Line-in port. An external microphone can be connected to the microphone jack. External speakers or headphones can be connected to the SPARCbook 5000's Headphone/Line-out jack.

WARNING: The Audio jacks are three-terminal stereo jacks. They are not compatible with two-terminal mono plugs. Connecting a mono plug into the Speaker Out jack, may damage the SPARCbook 5000.

All audio features are software controlled. The master volume is both hardware and software controlled.

Ergonomics

Ergonomics is the study of how people with their different physical characteristics and ways of functioning relate to their working environment (the furnishings and machines they use). The goal of Ergonomics is to incorporate comfort, efficiency, and safety into the design of keyboards, computer desks, chairs, and other items in an effort to prevent physical discomfort and health problems in the working environment. Because more and more people are spending large amounts of time in front of computer monitors, scientists from many fields including anatomy, psychology, and occupational safety are involved in the study of ergonomically sound work environments.

If your budget permits, buy ergonomically designed furniture such as chairs, shelves, and desks that fit your physical characteristics and work methods. Most furniture manufacturers have not considered the particular shape of your body when designing workstations. If you are going to be sitting for extended periods, an ergonomically designed chair may well be worth the extra expense. You can, however, create an ergonomically improved workstation without spending much money. Following are a few tips to help you work effectively without a lot of physical discomfort:

- Place the monitor so that it is a little above eye level to prevent neck strain.
- Try to place the monitor so that there is little glare from the sun on the monitor.
- Use a thick book as a footrest.
- Walk around the room every hour.
- Every half-hour, look away from the computer screen for a few minutes.
- Place everything that you need to work within easy reach.

Maintaining SPARCbook 5000

4

It is important to maintain the SPARCbook 5000. This chapter provides information for cleaning, packing, and storing the workstation, and battery maintenance.

Maintaining SPARCbook 5000

Cautions

WARNING: Any service and upgrades to the SPARCbook 5000 which require opening and removing the unit's case must be performed by a trained technician only. Otherwise, you may encounter personal injury, damage the SPARCbook 5000, and void your warranty.

WARNUNG: Das Offnen des Gehauses zum Zwecke der Reparatur oder zum Wechseln/Hinzufugen von Modulen darf nur von einem qualifizierten Servicetechniker durchgefuhrt werden. Es besteht Gefahr durch Elektroschock. Durch unsachgemasse Behandlung kann ihre SPARCbook 5000 Workstation beschadigt werden, ausserdem erlischt dadurch die Garantie.

CAUTION: Changes or modifications to the SPARCbook 5000 not expressly approved by Tadpole could void your authority to operate SPARCbook 5000.

If the product does not operate normally, adjust only those controls that are covered by the operating instructions. Unplug the SPARCbook 5000 from the power outlet and call Customer Service under any of the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the workstation or it has been exposed to rain or water.
- If the workstation has been dropped or the case has been damaged.
- If the workstation exhibits a distinct change in performance for the worse.
- If the display is cracked.

Removing the main system cover

CAUTION: After your warranty period, if you ever have to remove the main system unit cover, observe the following precautions:

The power supply cord must be unplugged and the battery pack removed from the system before the main system unit cover is removed. (Separe le cordon d'alimentation et puls enleve le couverde.)

Once removed, the cover must be replaced and screwed in position before the power supply is plugged back in. (Apres le couverde a encleve, visse le couverde en place et remettre le cordon d'alimentation.)

Cleaning SPARCbook 5000

As a portable workstation, the SPARCbook 5000 may collect dust and dirt, requiring occasional cleaning.

To clean the SPARCbook 5000:

1. Shut down the SPARCbook 5000 according to the instructions in "Shutting SPARCbook 5000 Down" on page 26.
2. Unplug the AC adapter/charger and remove the battery pack from the system before cleaning.
3. Once the SPARCbook 5000 is turned off, you may clean the cases and key tops with a soft cloth dampened only with mild soap and water.

CAUTION: Never use any water or water-based products on the display panel. Use only a dry, soft cloth. Screen damage could result.

4. Avoid getting any liquid directly on the SPARCbook 5000. Moisten a lint-free cloth with cleaner and use the damp cloth to clean the case.
5. Use cotton-tipped swabs, moistened with cleaner, to clean key tops, slots, and recesses. Do not use liquid cleaner on connectors or metal contacts. Use only a commercial contact cleaning spray on such parts.

CAUTION: Never use flammable or organic cleaning solvents or abrasive cleaners to clean the SPARCbook 5000. Such cleaners will damage the case's finish.

6. Do not use liquid cleaners on the interior of the SPARCbook 5000. Accumulated dust may be blown out of the interior using dry, low-pressure compressed air. Always wear eye protection when using compressed air to blow out dust.

Packing and Shipping

To pack the SPARCbook 5000 for shipment:

1. Disconnect all cables from connectors on the SPARCbook 5000 side and rear panel. Do not pack the SPARCbook 5000 with cables still attached to connectors.
2. Verify the connector panel on the back of the SPARCbook 5000 and the battery compartment are closed.
3. Close and lock the display cover.
4. Pack the SPARCbook 5000 in the **original** shipping container.

CAUTION: Damage caused by shipping the SPARCbook 5000 workstation in containers other than the original shipping container is not covered by the warranty. Keep and use the original shipping container.

NOTE: If the original materials are unavailable, contact Tadpole customer service for a new container. The original shipping containers are specifically designed for the SPARCbook 5000 workstation.

5. Ship with any commercial carrier.

Storage

If you intend to store the SPARCbook 5000 longer than 60 days:

1. Make a complete backup copy of the contents of the hard disk(s).
2. Fully discharge and remove the battery pack (see "Battery Pack Maintenance" on page 68). Do not store the SPARCbook 5000 for extended periods with the battery pack installed.
3. Disconnect all cables and pack the SPARCbook 5000 as described in "Packing and Shipping" on page 63.

Unpacking From Storage

When you want to start using the SPARCbook 5000 again:

1. Give the SPARCbook 5000 enough time to stabilize at room temperature before operating. This is particularly important when the workstation is brought from a very cold environment into a warm room. In such cases, moisture can condense on and inside the workstation and can cause problems. Allow at least two hours for the workstation temperature to stabilize after bringing it from a very cold or very warm environment before proceeding.
2. Reinstall the battery pack and charge it for three hours without operating the SPARCbook 5000 before attempting to operate the SPARCbook 5000 on battery power.

Low Battery Shutdown

The SPARCbook 5000's battery is uniquely designed to provide the longest possible duration. As with any battery, however, prolonged use will require the battery to be recharged. Typically, battery power lasts up to two hours, depending on the type and number of processes you are performing.

To prolong battery use, use the brightness push-buttons (**FN-Down Arrow**) on the integral keyboard to reduce the brightness of, and the power consumption by, the LCD.

As battery power decreases, the SPARCbook 5000 performs a sequence of events, described on the next page. During this sequence, the SPARCbook 5000 provides constant messages and an audible alarm informing you of the battery's current status. If you have CDE running, PowerTool also appears, which displays the current battery voltage. If you desire, you can use the PowerTool to turn off the alarm.

NOTE: The Duration period in the tables on the next page reflects approximate times during typical operating activities and conditions.

Low Battery Shutdown Events

Fully charged battery

Duration:	Up to 2 hours
System Actions:	None
User Actions:	None required

Low battery

Duration:	10 - 15 minutes
System Actions:	Warning message displayed on the Console; audible warning sounds; if CDE is running, PowerTool window pops up, displaying battery capacity
User Actions:	Attach AC adapter, or save and begin exiting processes; to complete jobs currently running, use dimmer switch to lower the LCD intensity and save battery power; use the PowerTool to turn off the alarm, if desired.

Critical battery condition

Duration:	2 minutes
System Actions:	Power management daemon starts system shutdown sequence, after which it enters PROM Monitor (OBP)
User Actions:	Solaris shutdown cannot be interrupted; attaching AC adapter will still require you to boot the SPARCbook 5000 after the shutdown.

Power Shutdown

Duration:	1-2 minutes
System Actions:	System remains in OBP until battery power is exhausted, causing automatic power shutdown.
User Actions:	Connect the AC adapter and reboot the SPARCbook 5000.

Battery Pack Maintenance

When operating the SPARCbook 5000 from battery power, pay particular attention to:

1. Low battery warning -When the battery reaches the end of its charge, a "battery low" message appears, a beeping alarm sounds, and a PowerTool window appears if CDE is running. These indications mean you have approximately 15 minutes to complete your work before the battery charge is exhausted.
2. When this occurs, follow the proper procedure to shut down the SPARCbook 5000 quickly and safely, or connect the AC adapter to maintain system operation. The SPARCbook 5000 will continue to remind you about the low battery status if you continue to use battery power.

Refer to "Shutting SPARCbook 5000 Down" on page 26 for more information on shutting down the SPARCbook 5000.

Battery Charging

When the AC Adapter is plugged in, the system automatically begins charging the battery. If an over 140º F (60º C) temperature condition occurs while charging the battery, the process will be stopped. If the battery temperature falls below 122º F (50º C), the system will resume the battery charging process.

Swapping battery packs

One way to obtain maximum use out of the SPARCbook 5000's portability is to pre-charge one or more rechargeable battery packs before operating the workstation from battery power. For example, you may purchase additional battery packs, charge them, and carry them with you into the field. As each battery pack becomes discharged, bring the SPARCbook 5000 to a halt, then remove the discharged pack and replace it with one that is fully charged.

NOTE: If you shut down the SPARCbook 5000 to swap batteries, follow the proper shutdown procedures; otherwise, important system files may be corrupted.

Replacing battery packs

When lithium-ion batteries reach the end of their service life, they indicate their impending failure by providing shorter and shorter intervals of service between recharging and finally by failing to hold a charge. When this occurs, you must replace the worn out battery pack with a new one. Replacement battery packs can be obtained from a SPARCbook 5000 sales representative.

CAUTION: Worn battery packs should be discarded in accordance with the disposal requirements for your area.

Maintaining SPARCbook 5000

Power Management

5

The SPARCbook 5000 PowerTool allows you to control the power management behavior of your system. The main program dialog provides a status information and control panel for critical power management areas such as displays of available battery capacity, estimated battery time remaining, current power source and power status.

Understanding the PowerTool

Figure 5-1 shows the main PowerTool dialog box.

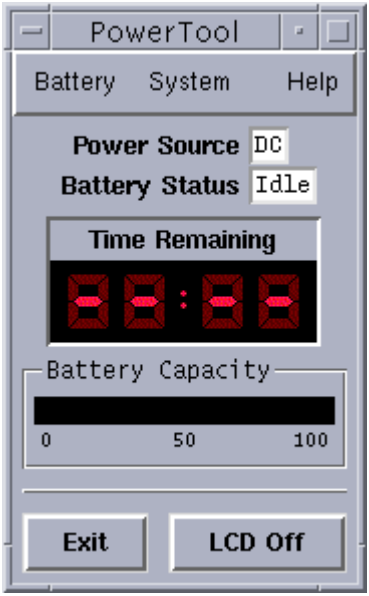

Figure 5-1: PowerTool dialog

The PowerTool is installed as `/usr/bin/pwrtool` when you install the power management utility.

By default, the PowerTool is configured to pop up automatically when the low battery condition configured in `/etc/pm/pm.cf` is reached. However, you can run the PowerTool at any time using the `/usr/bin/pwrtool` command or by clicking the PowerTool icon on the CDE (or GNOME) desktop.

CAUTION: If power to the SPARCbook 5000 is suddenly turned off and there is no available battery power, the unit's power management features will not be able to perform a graceful shutdown, which may damage important system files. For more information, see "Shutting SPARCbook 5000 Down" on page 26.

PowerTool Indicators

The main PowerTool dialog box, shown in Figure 5-1, provides access to the PowerTool power management features:

- Power Source
- Battery Status
- Time Remaining
- Battery Capacity
- Exit Button
- LCD Off Button

Power Source

The Power Source text area shows you whether your SPARCbook 5000 is currently drawing power from your wall outlet or internal battery.

- If the power is coming from the AC adapter and cord attached to your wall outlet, the Power Source text area displays **DC**.
- If the power is coming from the internal battery, the Power Source text area displays **Battery**.

Battery Status

The Battery Status text area tells you whether the internal battery is currently **Charging**, **Discharging**, **Idle** (fully charged), or **Calibrate**.

If a battery is not being discharged or charged, the battery state is shown as **Idle**, unless it requires calibration. If a battery requires calibration, the word **Calibrate** is displayed beneath the battery indicator.

NOTE: Batteries requiring calibration should be recalibrated at your earliest opportunity. Battery calibration requires connection to AC power. Refer to "Battery Calibration Dialog Box" on page 77 for instructions.

Time Remaining

If the system is currently being powered by the battery, the time remaining is an estimate of how long the system can continue to run before the battery is exhausted.

If the battery is charging, the time remaining is an indication of how long it will take to fully charge the battery. The time estimates are obtained from a controller chip within the battery itself.

Battery Capacity

The Battery Capacity slider resembles a fuel gauge on a car's dashboard. It shows approximately how much battery power remains available to your SPARCbook 5000.

After installing a new battery pack, use the AC adapter to recharge the battery pack. It takes about 2.5 hours to recharge a new battery when the SPARCbook 5000 is turned off. After fully charging the battery pack, you can operate the SPARCbook 5000 for about 2 hours with a single battery, depending on your configuration and applications.

Exit

Pressing **Exit** allows you to quit or halt the PowerTool dialog.

LCD Off

Pressing **LCD Off** blanks (turns off) the main LCD display panel and locks the keyboard. Press this button to reduce power consumption by turning off the main LCD display panel during critical computations. This feature also prevents you from inadvertently interrupting a lengthy process by blocking unwanted keyboard input. Press one of the buttons of your pointing device to turn the LCD display panel back on.

NOTE: The LCD display panel will not power up again until user input is detected from one of the buttons of your pointing device. Normal keyboard input and mouse movement *will not* power up the display panel. This functionality is designed to conserve critical computational resources where screen display is not immediately required and prevent interruptions to critical computations.

PowerTool Menus

The PowerTool dialog box's menus provide access to additional power management features by launching additional dialog boxes, which are described below.

- Battery
- System
- Help

Battery Menu

The Battery menu provides access to the Battery Calibration dialog box.

System Menu

The System menu provides access to the System Control dialog box.

Help Menu

The Help menu provides access to on-screen information about power management features.

Battery Calibration Dialog Box

Choose Calibrate Battery from the PowerTool dialog box's Battery menu to display the Battery Calibration dialog box. This dialog box enables you to calibrate a battery for use with the PowerTool dialog box's Battery Capacity slider.

The Battery Calibration dialog box explains the Calibration process and indicates approximately how long the process will take.

Click Yes to calibrate your battery.

Figure 5-2 shows the Calibration dialog box.

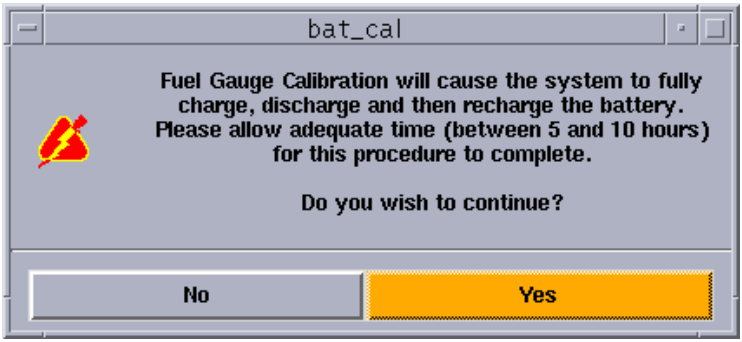

Figure 5-2: Battery calibration dialog

System Control Dialog Box

The System menu enables you to tailor other power management features such as an audible low power warning, and the behavior of the SPARCbook 5000 power button. Choose System Control from the PowerTool dialog box's System menu to display the System Control dialog box.

Figure 5-3 shows the System Control dialog box.

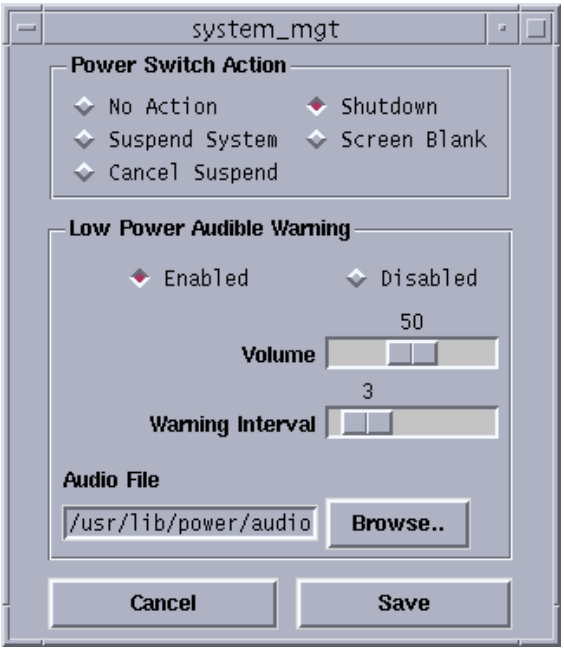

Figure 5-3: System control dialog

Changing Locations

6

This chapter explains how to use Tadpole's Locations software to customize system settings to accurately reflect conditions at the locations where you connect your SPARCbook 5000 to existing networks.

Introduction

The Locations dialog box enables you to control and manipulate the network interfaces and systems services that are normally only started or stopped during system boot or shutdown. Changing these interfaces and services on the fly is most useful on portable systems that incorporate Save and Resume functionality and are liable to require connection to different networks without having to reboot.

The Locations dialog box enables you to define as many different locations as you wish and to switch from one to the next whenever you wish.

A location consists of a set of system services and configurations for those services. Location information is stored in subdirectories of the `/etc/locations` directory. Files in these subdirectories perform the same functions as a number of standard Solaris configuration files normally found in the `/etc` and `/var` directories. Copies of the location configuration files are created when you define a new location.

The Locations software rewrites the contents of these configuration files, in a manner similar to the Solaris `admintool`, or copies their contents to a "mirror" file in a different directory. In this way a number of different locations can be stored, recalled, and used to specify the configuration information a system administrator would normally define for a static workstation. Refer to the `admintool(4)` man page for more information about how a single set of dialog boxes changes the configuration files that define your system's location.

A particular location is defined by a basic definition of services, but it can have numbered sublocations that define minor changes of service. For instance a sublocation could involve starting a PPP service. Changing between sublocations is considerably faster than changing between full locations.

You define a sublocation for a newly created or existing location by clicking the New Sublocation button on the dialog box that defines the services to be started and stopped when that location is invoked.

The Locations software maintains control over services with a set of scripts, in a manner very similar to the system control scripts in `/etc/init.d`. In fact, location scripts often call system control scripts to perform start or stop functions. Refer to the `init.d(4)` man page for more information.

The default directory for location scripts is `/usr/lib/locations/init.d`, but using the Locations dialog box does not require that you know where these files are stored.

When you double-click a location in the Locations dialog box's Locations list, the software shuts down the current system services and restarts the services associated with the new location, effectively changing location. If the given location is a sublocation of the current location, only the services associated with the sublocation is affected. This can be considerably quicker than a full location change.

Launching the Locations Dialog

To launch the Locations dialog box, Click the Location Tool icon on the CDE (or GNOME) SPARCbook 5000 Tools menu or type this command in a terminal window:

```
/usr/bin/loctool &
```

If you do not have root system administrator privileges, you will see an access-deny list message. This means that the `/etc/locations/access` file must be manually edited to add your user name.

The first time the Locations software is launched, you will see an initialization dialog box. This dialog box prompts you for the information necessary to configure the software and define an initial location, called Original, based on the information from a number of UNIX system files. Refer to "New" on page 88 for more information about defining a location.

When you see the `Initialize now?` prompt, confirm that you wish to configure the Location software by clicking OK.

The Initloc dialog box explains the Location initialization procedure. When you exit from this dialog box, you will see the Locations dialog box, which is your main interface with the Locations software.

The Locations dialog box enables you to use the following elements:

- Menus
- A toolbar
- A status bar
- A Locations list from which you choose locations

Locations Dialog Features

These features of the Locations dialog box are described below.

Menus

The Locations dialog box offers three menus:

- File menu
- Options menu
- Help menu

These menus and their options are described below.

File Menu Options

- New
- Modify
- Delete
- Copy
- Update
- Edit

Options Menu Option

- Toolbar 1 (checkbox)

Help Menu Option

- Location tool version

Toolbar

The toolbar contains icons which initiate actions corresponding to File menu options:

- Paper icon: Creates a new location
- Folder with arrow icon: Modifies an existing location
- Scissors icon: Deletes a location
- Dual paper icon: Duplicates a Location
- Suspend System button: Suspends the system when you click this button, so that when you power the system back on the current work session and location are restored. If the current location cannot be suspended, clicking this button changes to a location that can be suspended and then performs the Suspend procedure. See "Suspendible Locations" on page 91 for more information.

Status bar

The left panel shows the name of the current location in use.

The next panel shows the timezone being used at that location.

The next panel shows the IP address being used by your SPARCbook 5000 at that location.

The lower panel shows the description of the current location that was specified in the Information text area when the location was created or modified.

Locations list

Shows list of all locations that have been created for this machine.

Inside the list, double-click the location you wish to change to. This launches a Location change dialog box that prompts you to verify that you wish to change to the specified location.

Location Change Dialog

This dialog box prompts you to confirm that you want to change to the location you selected. Click OK to confirm your intentions and initiate the change of location.

A Location Change Output dialog box shows you what is happening as the location change takes place.

Location Change Output Dialog

The Location change output dialog box provides status information as it shows the steps that take place while the location is changed. Certain scripts will be halted and later restarted. Certain entries in configuration files will be deleted or modified. Certain interfaces will be unconfigured and then reconfigured. Warning messages will be displayed in red text.

When the location change procedure is finished, you will see this message:

```
Locations change complete.
```

At this point you can close the Location change dialog box. If there were no warning messages, the dialog box will close automatically after a short time.

Sublocations List

Underneath the Locations dialog box's Locations list you will see a sublocation checkbox. Make sure the sublocation checkbox is checked if you wish to select or change to a sublocation for the current location.

When the sublocation checkbox is checked, you will see a sublocations list that displays all sublocations that were defined when the current location was created or modified.

Click the name of a sublocation to select it. Double-click the name of a sublocation to change to it. The Location change output dialog box will show you the results of changing to that sublocation (and its parent location, if different from the current location).

Subdivisions are named by the parent location followed by a colon and the sublocation number. See "Defining a New Sublocation" on page 94 for more information about sublocation numbers.

Using the File Menu

This section shows you how to use the File menu options, or the corresponding Toolbar icons.

New

Choose the New option to create a new location. When you do, you'll see a Create a new location dialog box, which prompts you for the information necessary to create a new location.

In the Name text area, type the name of the location you wish to create.

In the Information text area, type a brief description of this location that will be displayed in the Locations dialog box when the location you are creating is made current.

Click the From current system settings checkbox if you want the new location you are defining to be configured the way your SPARCbook 5000 is currently configured. If this checkbox is checked, the SPARCbook 5000 "reads" itself and applies the appropriate values to the Location Editor dialog box. This is the same procedure that occurs when you first initialize the Locations software.

After you fill out these text areas, click OK to display the Location Editor dialog box, which you will use to specify which scripts will be started and stopped when this location is chosen, as well as configure other location-specific aspects of the location you are creating.

Modify

Choose the Modify menu option to edit a selected location.

Highlight a location in the Locations list and choose Modify from the File menu, or the equivalent tool from the toolbar, to display the Location Editor dialog box which enables you to modify a location you have selected in the Locations list.

Delete

Choose Delete to remove a selected location.

Highlight a location in the Locations list and choose Delete from the File menu or the corresponding icon from the Locations dialog box's toolbar to delete that location.

You will see a Remove location dialog box that prompts you to confirm that you want to delete the location you chose. Click OK if you wish to continue with the deletion.

Copy

Choose Copy to duplicate a selected location.

Highlight a location in the Locations list and choose Copy from the File menu or the corresponding icon from the Locations dialog box's toolbar to copy or duplicate that location to a location with a different name. You can then modify that location to make minor changes to it. This is often a faster and easier way to define a location that closely resembles another than to create it "from scratch."

Update

Choose Update to refresh the contents of the dialog box if you have changed any of the configuration files manually rather than by using the dialog box.

Exit

Choose Exit to close the Locations dialog box.

Using the Location Editor Dialog

Use the Location Editor dialog box when you are creating, copying, or modifying a location. You will see this dialog box when you choose New, Modify, or Copy from the Location dialog box's File menu, or the corresponding icons from the Location dialog box's toolbar.

The Location Editor dialog box shows you the name and description of the location you are creating or modifying. They were specified when the location was created or modified.

Suspendible Locations

Next to the location name and description is a suspendible icon, suspendible checkbox, and drop-down list of suspendible locations. These refer to the ability of the CDE (or GNOME) desktop environment to let you suspend the state of your SPARCbook 5000.

Normally, when you choose the Suspend System option from the CDE Workspace Menu, you see a Power Off Selection dialog box that enables you to suspend or shutdown your system. Suspending a system is similar to shutting it down, except that your working session is saved and reestablished when you power your system back on.

If you use the Locations software to define multiple locations, some of them represent sessions that are capable of being suspended, and some of them may represent sessions that cannot be suspended because of current network connections.

Make sure the Suspendible checkbox is clicked when you define or modify a location that you wish to be suspendible. This will ensure that a Suspend System button will appear on the Locations dialog box when this location is active so that a single click can suspend the system and restore that location when the system is powered back on.

The Suspendible checkbox shows which existing locations are capable of being suspended.

Starting and Stopping Scripts

The Available list shows you all the Solaris operating environment scripts that are available for you to start or stop when changing to this location. You may wish to stop and then start some of these scripts when you change to this location.

Click on the name of a script in the Available list if you wish to add it to the Start or Stop list, or both. When you click on a script in the Available list, its purpose will be briefly described and it will be highlighted in the Start and Stop list if it is contained there. In addition, the appropriate buttons in the Start and Stop lists become available for your use:

Click an ADD button to provide a Script index number that specifies the sequence in which this script will be started or stopped relative to the other scripts in the list. Scripts with lower numbers are started or stopped before scripts with higher numbers. Use the up and down arrows next to the Script index numeric area to assign a higher or lower number, or highlight the existing number and type in the number you wish to assign to this script. Click OK to add the script to the list.

Click a REM button to remove a script you have selected from the list in which you selected it. A script_chooser dialog box will confirm your choice and also offer you a checkbox to specify whether you want to remove the corresponding script from the other list. Click OK when you are ready to remove the script from one or both lists.

Click an ADA button to add all the scripts in the Available list to the corresponding Start or Stop list.

Click a CLR button to clear all the scripts from the corresponding Start or Stop list.

Click Save to save the location you have defined or modified.

Click Config to define or modify additional configuration information about this location. This will display the config dialog box, with tabs you can use to define information about the following aspects of this location. See "Using the config Dialog" on page 95 for more information.

Defining a New Sublocation

A sublocation of a particular location is usually a slightly different version of that location. For instance, you might define a sublocation of the location you typically use so that it merely starts one additional script but otherwise keeps the characteristics of the parent location.

Click New Sublocation to define one or more sublocations for the current location.

Use the Create a new sublocation dialog box to specify the necessary information about the sublocation you wish to create.

1. Click the Number up and down arrows to specify the sublocation number you want for this sublocation. All the sublocations of a particular location are numbered and displayed in the Sublocations list of the Location Editor dialog box. See "Sublocations List" on page 87 for information about how to change to a sublocation by double-clicking it from the Sublocations list.
2. Type information about the sublocation that you wish to be displayed in the Location Editor dialog box.
3. Click OK to define the sublocation.
4. Follow the instructions in "Starting and Stopping Scripts" on page 92 to specify the script or scripts you want to start or stop for this sublocation.

Closing the Location Editor Dialog

Click Close to close this dialog box.

Using the config Dialog

Timezone creates or modifies the appropriate entry or entries normally found in

`/usr/share/lib/zoneinfo/portabletime`.

TCP/IP defines or modifies network interfaces, including interface names, IP addresses, and hostnames, as well as the IP addresses of gateways. To define a network interface or gateway, type the information into the appropriate text areas or choose them from the drop-down menus and then click Add. The IP address must be valid for the network.

To delete an entry in the Network Interfaces list or Gateways list, select it and click Delete.

DNS creates or modifies the appropriate entry or entries normally found in `/etc/resolv.conf`. This file contains the name server configuration. Refer to the `resolv.conf(4)` man page for more information.

PPP creates or modifies the appropriate entry or entries normally found in `/etc/asppp.cf`.

AutoFS creates or modifies the appropriate entry or entries normally found in `/etc/auto_master` and `/etc/auto_home`.

Domain creates or modifies the appropriate entry or entries normally found in `/etc/defaultdomain`.

Printers creates or modifies the appropriate entry or entries normally found in `/etc/printers.conf(4)`. Refer to the `printers.conf(4)` man page for more information.

NFS creates or modifies the appropriate entry or entries normally found in `/etc/dfstab`. This file contains a list of local filesystems to be exported, allowing other NFS clients to access these filesystems. Refer to the `dfstab(4)man` page for more information.

In addition to the tabs described above, the config dialog box has three buttons:

Click Apply when you want to apply the configuration changes you have made so far without closing the config dialog box.

Click OK when you wish to apply the configuration changes you have made so far and close the config dialog box.

Click Cancel to close the config dialog box without applying any configuration changes you have made.

Troubleshooting

7

Use the suggestions in this chapter to diagnose and correct typical problems you may encounter.

To help you find the relevant information quickly, refer to the following Quick Fix Table.

Starting and Booting

Symptom: The SPARCbook 5000 will not power up from the AC adapter.

Make sure that:

- The AC LED on the lower left of the display housing is on after pushing the power button.
- The AC adapter is securely plugged into the SPARCbook 5000's power input socket, and the AC adapter's power cord is securely plugged into both the AC adapter and the AC outlet.
- Power is available at the wall outlet (use a lamp to test it).

Symptom: The SPARCbook 5000 will not power-up from the battery.

Make sure that:

- The AC LED on the lower left of the display housing is on after pushing the power button.
- The battery pack is correctly installed in the battery compartment. See Using Batteries on page 20, Battery Pack Maintenance on page 68, and Battery Technology on page 159 for complete information.
- The battery pack is fully charged. To be sure, remove the battery pack and press the QuickCheck button on the top. If the battery pack is fully charged, all the lights on the drawing of the battery will be green. If it is partially charged, the number of green lights indicates the relative amount of charge the battery pack carries. No green lights means the battery is not charged.

Symptom: The SPARCbook 5000 will not boot from the network.

Make sure that:

- The server is properly operating and the Ethernet link is functioning.
- The twisted-pair cable is securely plugged into the SPARCbook 5000 connector.
- The workstation's operating system is correctly configured for the network, if this is a new network node.

Symptom: The SPARCbook 5000 will not boot from the hard disk drive.

If the hard drive LED :

- Does not display, indicating a hard disk problem exists, contact Tadpole Customer Service and Support.
- Displays, but the SPARCbook 5000 fails to boot, boot from the Solaris CD-ROM and restore the boot file. You may need to have a Solaris system administrator do this for you. If this step fails to solve the problem, the boot files may be corrupted and you may have to reload the operating system.
- Displays, but the SPARCbook 5000 fails to boot, boot from the CD-ROM for further diagnostics.

Troubleshooting
Starting and Booting

Symptom: The SPARCbook 5000 halts during boot and displays the following messages:

```
boot device:/PCI Bus/dmfe@0,00000 File and args:

lost carrier (transceiver cable problem?)

ARP/RARP send failed.

Check Ethernet cable and transceiver.

Lost carrier (transceiver cable problem?)

ARP/RARP send failed.

Check Ethernet cable and transceiver.
```

1. The SPARCbook 5000 is trying to boot from a network server that is either not connected or unavailable. Hold down the **Stop** key and press **A**.
2. At the OK prompt, type: `boot disk.`
3. If Step 2 above fails, type: `set-defaults` to set the workstation to the default, then try Step 2 once more.

Symptom: The SPARCbook 5000 stops booting for several minutes and displays the following message:

```
Starting RPC and net services:
```

The system then displays one of the following error messages:

```
dmfe0: no carrier transceiver cable problem

NIS: server not responding to domain ???; still trying
```

- The SPARCbook 5000 is configured to use an NIS server that is not connected or is unavailable. Hold down the **Stop** key and press **A**.
- At the OK prompt, type: `boot -s`. Several system messages appear, followed by the # prompt (the single user prompt).
- At the # prompt, type

```
mv /var/yp /var/yp-
```

or

```
mv /var/nis /var/nis-
```

and

```
cp /etc/nsswitch.files
/etc/nsswitch.conf
```

- At the # prompt, type exit and press **Enter**.

Blank LCD Display Panel

Symptom: The LCD display panel goes blank and the system will not respond to the keyboard or to moving the pointing device.

- If the LCD Off feature has been activated in the PowerTool power management system, press one of the buttons of your pointing device to reactivate the LCD display panel. Refer to Exit on page 75 for more information about LCD Off.
- The LCD display will also be blank if the SPARCbook 5000 has shut down automatically due to low battery capacity or user inactivity. See Power Management on page 71 for more information on Power Management.
- A blank LCD display may also indicate a system failure if the system does not behave normally after shutting down and restarting.

Battery Operation

Symptom: Low battery warning occurs when the workstation is started, or shortly after power-up.

1. Connect the AC adapter, shut down the system according to the instructions in Shutting SPARCbook 5000 Down on page 26, and recharge the battery for 3 hours. Then try using the SPARCbook 5000 again.
2. If recharging fails to correct the problem, test the AC adapter by removing the battery pack from the SPARCbook 5000 and trying to operate from the adapter only.
3. Try to calibrate the battery. For more information about battery calibration, see Battery Calibration Dialog Box on page 77.
4. If the AC adapter is working and the battery still fails to hold a charge, replace the battery pack.

Replacement battery packs can be obtained from a SPARCbook 5000 Customer support representative.

CAUTION: Do not use an UltraBookII battery. They are not interchangeable with the SPARCbook 5000, even though their appearances are similar. Use only SPARCbook 5000 batteries; otherwise damage to your system may occur.

Ethernet

Symptom: The SPARCbook 5000 fails to access a network through the Ethernet connection.

1. If you have a console window active, the Ethernet cable can be removed or inserted any time. When inserted, the speed and duplex conditions of the connection are displayed.
2. Make sure the Ethernet cable is securely connected at both ends.
3. At the # prompt, type `ifconfig -a`, press Enter, and look for dmfe0 to verify the Ethernet connection. Your display should show a list of active flags, one of which must be "`up`". You should also see your Internet address.

If dmfe0 does not appear, try typing the following commands at the # prompt:

```
ifconfig dmfe0 plumb

ifconfig dmfe0 IPADDR up
```

4. Type `ping -s <hostname>` and press **Enter** to verify your connection to the host. The display should show the following information continuously:

   - `64 bytes returned`
   - Your Internet address
   - One ICMP sequence number
   - The round-trip time it takes data to travel from the workstation to the host and back

If <hostname> is not in your host file, use an IP address.

To stop this information from scrolling, hold down the Ctrl key and press C.

5. Run `watch-net` at OBP as a low level hardware port check.

Serial Port

Symptom: Serial device fails to function.

- Check that the device is connected to the serial port. Verify the port assignment by connecting the device cable to the other serial port and retrying the serial port.
- Port parameters may be configured incorrectly for the application or attached device. Refer to the manual that came with your application or device for more information.

External Video Port

Symptom: External monitor display remains blank.

- Check the monitor connection to the SPARCbook 5000. If you use an external monitor, be sure that your monitor cable uses a VGA-type connector. A VGA-to-J13W3 adapter is required to connect some Sun-type external monitors to the SPARCbook 5000.
- See External Monitor Matrix on page 187 for the correct combination of external monitor and OBP commands. SPARCbook 5000 will support only selected monitor resolution and refresh rates. Check the external monitor manual to make sure the monitor is compatible with the SPARCbook 5000 output.
- Be sure to provide the correct OBP PCI-Bus-probe-list parameters to enable or disable the external monitor. See External Monitor Matrix on page 187 for more information.

External Keyboard/Mouse Port

Symptom: The external keyboard or mouse fails to work.

- Make sure that the external keyboard or mouse is securely plugged into the appropriate SPARCbook 5000 connector before powering on the SPARCbook 5000.

Customer Service and Support

If the troubleshooting information in this chapter does not resolve the problem, you may contact Tadpole's Customer Service and Support staff.

North America
7:00 AM to 6:00 PM PST
Phone (800) 734-7030
Fax (760) 930-0762
Email: support@tadpole.com

Before you call, have the SPARCbook 5000 serial number nearby. This number appears on the bottom of the SPARCbook 5000.

If you received an error message, it will also help if you write down the following information:

- Serial number of your system.
- The exact description of the problem.
- The task you were performing when you encountered the problem.
- The command you typed when the error occurred. You may want to check the command line to make sure you did not make a mistake.
- The directory you were in. You can use pwd to obtain this information.
- The account you were using. You can use whoami to obtain this information.
- Version of the operating system you are using. You can use one or both of the two following commands to obtain different types of version information:

Use `uname -a` to obtain release information including the exact patch.

```
SunOS xxxxxxx x.x Generic_xxxxxx-xx sun4u sparc
TAD,SPARCbook 5000
```

Use `more /etc/release` to obtain release information including the release date on the install CD.

```
Solaris X xx/xx xxxxx_xx_xxxxx_xx SPARC

Copyright xxxx Sun Microsystems, Inc. All Rights
Reserved.

Assembled xx xxxxx xxxx
```

Troubleshooting

Installing the Solaris Operating System

8

The Sun Solaris™ operating system has been preinstalled on your SPARCbook 5000, along with special software enhancements from Tadpole. The operating system of any computer, sometimes called an operating environment, is the software that underlies the application software.

At any time you may choose to reinstall Solaris on your SPARCbook 5000, or to upgrade to a later version of Solaris. When you choose to install Solaris, you will generally need to reinstall the application software you use, and the data you have previously created. Before you can reinstall these files, you will need to back them up from your existing Solaris environment.

To install a later version of Solaris, purchase it from Tadpole or from Sun Microsystems, Inc. If you are buying Solaris from a source other than Tadpole, make sure you buy the SPARC Platform version, and that you contact Tadpole to get the SPARCbook 5000 Support Software (Installation) CD that corresponds to the version of Solaris you are installing. You can refer to the Tadpole website for version information, files, and instructions.

Prerequisites

Before reinstalling or updating your Solaris operating system, make sure you have the following prerequisites on hand:

- This *SPARCbook 5000 User Guide*.
- A backup tape or CD-ROM (or other media) of your data.
- A backup tape or CD-ROM (or other media), or the original installation CD-ROMs, of any application software you use, including software from Tadpole.
- The SPARC™ Platform Edition for Sun™ Computer Systems media kit. From this box you are likely to need at least the following:
  -The SPARC Platform Edition media folder containing multiple installation CD-ROMs, including Solaris Installation, Solaris Software, and Solaris documentation.
  -The SPARC Platform Edition *Start Here* foldout guide.
  -The *Solaris (SPARC™ Platform Edition) Installation Release Notes*.

NOTE: Subsequent versions of Solaris may have somewhat different titles. If so, make sure that the Solaris installation media and any Solaris documentation that refers to installation are available before you begin installing Solaris.

Launching the Solaris Installation

1. If there is existing data on your SPARCbook 5000, back it up before beginning this procedure.

NOTE: For more information, refer to your Sun System Administration Manual or the Solaris man pages for *ufsdump* and *cpio*.

2. Read the Solaris Installation Release Notes for any information you should know before you begin.
3. Follow the instructions in the SPARC Platform Edition Start Here guide. (If your Start Here guide refers to both SPARC and Intel Architecture (IA) systems, remember that your SPARCbook 5000 uses a SPARC architecture.
   - Choose the Solaris Installation CD method rather than the Solaris Interactive Installation Program. This uses the newer and easier Solaris Web Start installation procedure and is normally accomplished by booting from the Solaris Installation CD rather than either of Solaris Software CDs 1 and 2. However you will be using the SPARCbook 5000 Support Software (Installation) CD rather than the Solaris Installation CD.
   - Follow the Start Here guide's instructions for that installation method, but make sure you use the SPARCbook 5000 Support Software (Installation) CD.
4. Follow the steps on the screen, using your SPARC Platform Edition Solaris Installation Guide as a guide, and the information in this chapter to answer the questions you are asked during the installation process.
5. Choose the language you want the Solaris Web Start Installer to run in. This will launch the installation program.

Choosing Initial Install Rather Than Upgrade

The Solaris installation program may detect an existing version of the Solaris operating environment and inform you that you have the option of upgrading your existing operating system rather than doing an Initial Install.

NOTE: This option is not recommended, and the upgrade procedure is outside the scope of this document. For information about upgrading a previous version of Solaris, refer to the Solaris Installation Guide.

If you are given the option of performing an Upgrade, choose Initial Install instead.

1. Choose **Initial Install**.
2. Respond appropriately to the prompts that follow until your SPARCbook 5000 automatically reboots and launches the Solaris Web Start installation wizard's Welcome screen. Accepting default values will usually provide acceptable results, but you may wish to consult your system administrator about swap size and partition sizes if your SPARCbook 5000 will be running applications with other requirements.
3. Indicate that you do not wish to format the drive, shown by its filename.
4. Specify the swap file size. A traditional formula for determining swap size is twice the amount of memory in the system. You can either accept the default or check with your system administrator for advice about the swap size to specify.

5. The system will reboot and then launch the Web Start installer, which will gather the information necessary to configure:
   - Network
   - Name Service
   - Date and Time
   - Root Password
   - Proxy Server Information
   - Power Management

6. When prompted, click **Next** so that you can answer the questions necessary for this system configuration procedure. They are described in the remainder of this chapter, but may vary somewhat depending on the version of the Solaris operating environment you are installing.

Configuring the Networking

The best way to install a portable workstation such as your SPARCbook 5000 is to install it as a networked, standalone system that does not run NIS or any other naming service and does not use DHCP. Then, once Solaris is installed, you can use SPARCbook 5000 software to configure networked states for this system.

A Network Connectivity dialog box prompts you to select the network option for your system.

1. Choose Networked unless your SPARCbook 5000 will never be connected to a network via an Ethernet or similar network adapter.
2. Click Next to proceed.

NOTE: Disregard any messages indicating that your system should be connected to a network during installation.

3. When you are asked if you want to use DHCP for your network interface configuration, choose No and click **Next**.

NOTE: If you use DHCP, you will not be able to specify static IP, hostname, or netmask entries until after Solaris has been installed.

System Identification

The Solaris installation now prompts you to provide the following information that you determined in step1 of the SPARC Platform Edition Start Here guide before installing:

- Your system hostname
- Your IP address
- Your subnet mask

You can change your hostname and IP address later if you want, using SPARCbook 5000 software.

Since you are installing your SPARCbook 5000 as a networked but standalone system, you will rely on your own local system files for password and host information.

1. When prompted, enter a hostname for your system and click Next.
2. Enter an IP address for your system. This example uses the address

```
192.9.200.1
```

NOTE: If you will always be using your SPARCbook 5000 on the same network and already have a specific IP address, you can type it here. But usually it is preferable to enter the "temporary" IP address shown above. This will restore the workstation to its preset factory defaults for network connectivity, which provide greater flexibility for most users.

3. Click Next to proceed.

The Netmask dialog box requires a subnet mask address, similar to an IP address. Unless you will always be using your SPARCbook 5000 on the same network and already have a specific subnet mask address, accept the default netmask; otherwise type in the subnet mask you will be using.

4. Click Next.

IPv6

During the Solaris installation sequence you will be asked whether you want to enable an enhanced version of the Internet Protocol called IPv6. You can safely enable

1. When prompted to enable IPv6, make sure the Yes radio button is checked and click Next.

Setting the Name Service

The Name Service dialog box prompts you for the name of the name service your SPARCbook 5000 will be using.

1. Make sure the None radio button is checked and click Next to proceed.

NOTE: If you selected any option other than None, your workstation will not boot successfully unless it is attached to the network with the server, or unless you have configured this machine as a server. This is normal behavior for Solaris.

Default Router

You must indicate whether you want to specify the default network route or let the operating environment software try to find it. Unless you will always be using your SPARCbook 5000 with the same physical network, choose the Find one option.

1. Make sure the Find one radio button is checked and click Next.

Warning Messages

From time to time, if your SPARCbook 5000 is not currently connected to an active network, you may see warning messages such as this:

```
dmfe0: No carrier - twisted pair cable problem or hub link
test disabled?
```

You can safely ignore these messages during the installation procedure.

Setting the Time Zone

The Time Zone dialog box prompts you for your default time zone.

1. Select the appropriate geographic location.
2. When you have specified your time zone, click Next to proceed.

Setting the Date and Time

The Date and Time dialog box prompts you for your default time zone.

1. Specify the correct date and time if the displayed values are not correct.
2. Click Next to proceed.

Adding a Root Password

The Root Password dialog box prompts you for the alphanumeric string you want to use for the root password, as described in the Solaris Installation Guide.

1. Type the root password you wish to use in both text areas.

Turning Off Power Management

Itis recommended that you turn off the Power Management feature.

1. Make sure the Turn Power Management Off radio button is checked.
2. Make sure the Don't ask... radio button is checked unless you prefer to see this dialog box each time you reboot.
3. Click Next to proceed.

Proxy Server Configuration

During the Solaris installation sequence you will be asked whether you want to connect directly to the Internet or prefer to specify a fixed proxy server host. You should choose a direct connection unless you will always be using your SPARCbook 5000 on the same network, and connecting to the Internet only through a specific proxy server on that network.

1. Make sure the Direct connection to the internet radio button is checked and click Next.

Confirming Host and Network Information

The Confirm Information dialog box displays a summary of the information you have specified and prompts you to confirm the information you have entered.

1. Verify that the information is correct.
2. If it is incorrect, choose Back and correct the information.
3. If the information is correct, choose Confirm to proceed.
4. Wait as your SPARCbook 5000 is configured the way you specified.

You may see an error message indicating that no network route could be detected at this time. This is normal, since you specified that you wanted the Solaris software to detect a route rather than specify one yourself. Accept this message so the software can attempt to detect a route upon rebooting.

5. Click Accept to proceed, and confirm your information again if prompted to do so.

The Solaris Web Start Welcome

The Solaris Web Start software displays the Solaris Web Start Installation Kiosk and Welcome to Solaris dialog box. From this point on, you can click on any link in the Kiosk menu.

NOTE: In some cases, the Kiosk might obscure a dialog box. To display an obscured dialog box, click Send Kiosk to Background from the Kiosk menu.

1. Click Next on the Solaris Web Start Welcome dialog box.

Specifying the Installation Media

Specify installing from CD media unless you are installing Solaris from a network.

1. Make sure the CD radio button is checked and click Next.
2. When prompted, insert the Solaris Software 1 of 2 CD in your SPARCbook 5000 DVD drive and click OK.

Selecting the Installation Type

You can safely choose the Default Install option rather than the optional Custom Install option. But since your SPARCbook 5000 is SPARC-compliant, you can choose any of the Solaris software options presented to you.

1. If you want a default Solaris software installation, make sure the Default Install radio button is checked and click Next.
2. If instead you choose a custom Solaris software installation, respond appropriately to any additional questions you see about the software you choose to install.

Installation Procedures

As the software is installed, informational messages inform you of the progress of the installation.

1. Follow the on-screen instructions and pay attention to the on-screen messages.

After installation from the first CD is complete, an Installation Summary dialog box shows you the status of the installation.

2. Click the Details button if you wish to see a log of the installation process.
3. Click Next when you are ready to proceed.
4. Repeat the steps in "Specifying the Installation Media" on page 130, using the Solaris Software 2 of 2 CD this time instead of the 1 of 2 CD.

After installation from the second CD is complete, an Installation Summary dialog box shows you the status of the installation.

5. Click the Details button if you wish to see a log of the installation process.
6. Click Next when you are ready for additional software to be installed.

After the additional software is installed, another Installation Summary dialog box shows you the status of the installation.

7. Click the Details button if you wish to see a log of the installation process, and then click Next.

Optional Documentation

You may see another Specify Media dialog box referring to European documentation.

1. If you do not need European documentation, click Skip to proceed.

Finishing Up

1. Click Reboot Now when you see the Reboot dialog box.

Logging In

After the system reboots, you'll see a dialog box that prompts you for a user name and password.

1. If you have chosen an Initial Install, specify root as the user name.
2. Specify the root password you assigned in "Adding a Root Password" on page 125.

Completing the Installation

To complete the installation, follow the on-screen prompts.

Notes on Custom Installations

If you chose Custom Install rather than Default Install, you will have to provide additional information during the installation procedure. Some of this information is described below:

Laying Out File Systems

If you chose to modify a file system on a disk, the Disk dialog box enables you to partition or allocate the disk you selected. The program can assume the requirements and do the allocation for you. This is called the auto-layout feature.

1. Follow the instructions in the Solaris Installation Guide.

The installation program continues and allows you to set sizes and mount points for each file system.

NOTE: While you can select any layout option applicable to this installation, Tadpole recommends that you also specify additional partitions for /opt and /var.

2. Select /opt and then /var and modify them as described in the Solaris Installation Guide.

NOTE: Tadpole recommends increasing the various partition sizes for best overall system performance. Please consult the README files on the SPARCbook 5000 Support Software (Installation) CD for more details.

3. When you've finished modifying the layout of file systems, click Next.

NOTE: Refer to the additional disk configuration requirements in the README file for your Solaris version on the SPARCbook 5000 Support Software (Installation) CD.

Detailed Hardware Description

9

This chapter provides a detailed description of the SPARCbook 5000 hardware.

Physical Packaging

The SPARCbook 5000 provides a slim, clamshell-style package, while maintaining full workstation capability. The SPARCbook 5000 laptop form-factor weighs less than 7 pounds and has a footprint of 1.8"H x 10.5"D x 13"W (46mm x 267mm x 330mm).

The keyboard is forward mounted in the base section of the SPARCbook 5000 and the base section is sloped to provide a comfortable palm rest for wrist support during extended use. The center positioning of the 66mm by 50mm integrated touchpad allows right- or left-handed usage.

The textured case of the SPARCbook 5000 provides non-slip carrying and scratch resistance. The hinged lid assembly allows 120º swivel for various viewing positions. The SPARCbook 5000 may operate with the lid closed when an external monitor and keyboard are attached.

Motherboard and CPU Technology

The system motherboard is a dual-sided, 12.4-inch by 10.6-inch PCBA. This PCBA contains the processor complex, and several embedded I/O controllers. Dual-sided surface mount technology and PGA (Pin Grid Array) packaging reduce physical requirements and improve reliability.

The basic motherboard architecture is based on the Sun Ultra AXe reference design. The Sun Ultra AXe reference design consists of a Sun UltraSPARCIIe processor and processor complex.

Various PCI devices connect the processor to low-level I/O functionality, including the E-bus and the Ethernet media access layer. The Ethernet media access layer bridges the Ethernet MDO layer with the Media Independent Interface (MII) layer.

The E-bus is a low-level peripheral interface providing connection to the flash boot memory, NVRAM, and SMBus bus interface. The SMBus bus provides connection to the system's intelligent power supply module.

An embedded EIDE controller provides all hard disk and DVD/CD-ROM or DVD/CD-RW capability and access.

The SPARCbook 5000 CPU uses the Sun UltraSPARCIIe processor operating at 500MHz. This PGA device resides on the motherboard and provides both the IU and FPU functions, as well as first-level caches. These caches contain 16KB for data and 16KB for instructions. The SPARCbook 5000 includes an integrated 256KB internal second-level cache. The processor interfaces directly with the memory subsystem and the PCI Bus.

At 500MHz, the CPU delivers 20 SPECint95 and 21 SPECfP95.

SPARC Compatibility

The SPARCbook 5000 uses a SPARC-compatible motherboard, based on the Sun UltraSPARCIIe processor, and runs at 500MHz. The SPARCbook 5000 also uses the Sun LSI chipsets for compatibility. As a result, any hardware or peripheral device compatible with Sun workstations is fully compatible with the SPARCbook 5000.

Memory

Flash Memory

The SPARCbook 5000 includes 1MB of flash memory for use during system bootup.

System Memory

Memory on the SPARCbook 5000 is accessed through a 64-bit data path (72-bit wide for ECC). SPARCbook 5000 memory includes ECC protection.

The SPARCbook 5000 comes with a minimum memory configuration of 256MB. There are four memory slots (two for user upgrades) and accepts 128MB, 256MB, 512MB, and 1GB PC133 SODIMM (100Mhz clock rate) expansion modules. Additional memory upgrades provide a maximum configuration of 2GB using the two empty SODIMM sockets that are accessible on the bottom of the case.

The table below lists some of the valid memory options.

Valid Memory Configuration	Memory Modules Required
256 MB	2 x 128MB
512 MB	2 x 256MB
1 GB	2 x 512MB 4 x 256MB
1.5 GB	2 x 256MB 2 x 512MB
2 GB	4 x 512MB 2 x 1GB

NOTE: 1GB SODIMMs will be available around October of 2002.

Display Technology

The SPARCbook 5000X provides XGA graphics at 1024 x 768 resolution. The SPARCbook 5000SX provides SXGA+ graphics at 1400 x 1050 resolution.

Standard Display Controller

The standard SPARCbook 5000 display controller is Sun PGX64 compatible.

Active Matrix Display

The SPARCbook 5000X is configured with a 15.1 inch 1024 x 768 active matrix color LCD. This display type supports 256 colors from a palette of 262,144 colors plus 64 shades of gray scale. It has a 60Hz refresh rate.

The display has a response time of 80ms and also makes use of two brightness push buttons to optimize display viewing. The brightness push buttons, FN-Up Arrow and FN-Down Arrow, are located on the SPARCbook 5000's keyboard. The display panel uses active matrix TFT technology. The LCD draws approximately 3 watts.

NOTE: As an added convenience, the SPARCbook 5000 provides a VGA port on the back panel for attaching an external monitor, as shown in the illustration on the next page.

External Monitor Support

VGA connectors plug directly into the external video port on the SPARCbook 5000 back panel, as shown below. If you have a different type of monitor, check your monitor manual and Chapter 13 for compatibility.

Figure 9-1: External monitor connector

When using the internal LCD, an external syncing monitor can also be attached, allowing simultaneous LCD and monitor operation. For Sun monitors you will need a VGA-to-J13W3 adapter. If external non-syncing monitors are used, the internal LCD will not operate during external monitor operation (it will be blanked).

NOTE: The SPARCbook 5000 supports simultaneous onboard and external video device display using VESA standard 1024 x 768 x 60Hz mode and timing.

The SPARCbook 5000 supports the following external monitor standards:

- SVGA (800 x 600)
- XGA (1024 x 768)
- Sun (1152 x 900)
- SXGA (1280 x 1024)
- Frame rates, 60Hz, 72Hz, 76Hz

For more information on using external monitors, see "External Monitor Matrix" on page 187.

Input-Output Devices

Input-output devices are supported through device bays and access panels. The SPARCbook 5000 has three device bays accessible from the front panel.

The SPARCbook 5000 accepts the following removable device modules:

- Removable hard disk drives
- Removable DVD/CD-ROM or DVD/CD-RW drives
- Lithium-ion battery module

Device bays are cavities in the unit into which you can install modular devices such as a hard disk drive, DVD/CD-ROM or DVD/CD-RW drive, or a single lithium-ion battery. Two device bays are located on the left side of the unit and are reserved for the hard disk drive module and the DVD/CD-ROM or DVD/CD-RW drive. The third device bay is located on the right side of the unit and is reserved for a lithium-ion battery module.

Access ports, connectors, and switches are located along the left and right sides and the rear of the unit.

Hard Disk Storage

The SPARCbook 5000 uses low-profile, high performance, 2.5-inch removable hard drive modules with an integrated EIDE controller conforming to ATA-4 PIO mode 4 and multi-word DMA modes 0, 1, and 2 specifications. These drives require a 5V input and dissipate approximately 2 Watts of power.

A single hard disk module can be installed in the left-side device bay in either a 30GB or 40GB capacity.

The 30GB IDE disk drive (UDMA timing mode 4) provides a 13ms average seek time, and a data transfer rate of 66MB/sec.

The 40GB IDE disk drive (UDMA timing mode 4) provides a 12ms average seek time, and a data transfer rate of 66MB/sec.

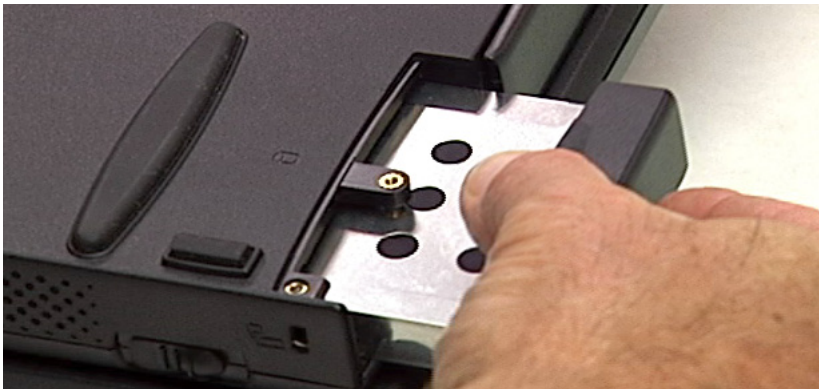

Figure 9-2: Internal hard drive

DVD/CD-ROM and DVD/CD-RW Drives

The SPARCbook 5000 contains a built-in DVD/CD-ROM or DVD/CD-RW drive There are two drive options:

- DVD/CD-ROM: 8X DVD/24x CD-ROM (3.5MB/sec)
- DVD/CD-RW: 8X DVD/24x CD-ROM Read, 8x Write

Figure 9-3 shows the DVD/CD-ROM bay on the front panel.

Figure 9-3: DVD/CD-ROM drive bay

PCMCIA (PC Card)

The SPARCbook 5000 has two PCMCIA/Cardbus slots, as shown in Figure 9-4. The PCMCIA/Cardbus slots are located on the right side of the workstation. The workstation supports two Type I or Type II cards or one Type III card.

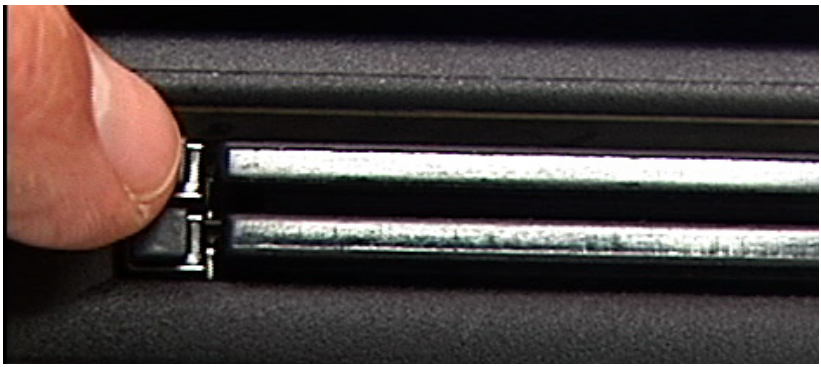

Figure 9-4: PCMCIA/Cardbus Card Slots

NOTE: Always refer to the PCMCIA/Cardbus device manual for information about the device you are using.

Keyboard and Touch Pad

The SPARCbook 5000's 97-key internal keyboard provides all the functions of a Sun Type 5 US keyboard. The SPARCbook 5000 also provides an integrated touch pad for operations that require a pointing device.

Internal Keyboard

A full-sized, 87-key, 12-function key enhanced keyboard is standard for the SPARCbook 5000. The keyboard includes an integrated 3-button touchpad for applications that require a pointing device.

When an external USB keyboard (Sun Type 5 or higher) is connected, the built-in keyboard does not function.

NOTE: Power the SPARCbook 5000 down before adding or removing an external keyboard. For more information, see page 149.

Touch Pad

An integrated micro touch pad facilitates mouseless operation. The touch pad is 66 x 50 mm in size, has three buttons, and is pixel-accurate. The touch pad is disabled when an external mouse or an external keyboard with a mouse is connected to the SPARCbook 5000.

The internal keyboard and touch pad are shown in the following illustration.

Figure 9-5: Keyboard and Touch Pad

External Keyboard or Mouse

The SPARCbook 5000 provides 2 PS2 and 3 USB connectors for connecting external devices such as an external keyboard or mouse.

The SPARCbook 5000 supports Sun Type 5 or higher USB external keyboards and any PS2 external keyboard.

You can connect an International keyboard to the keyboard connector port. Doing so will disable the internal keyboard.

You can connect an external mouse to another USB connector. An external mouse or other pointing device will disable the on-board touchpad.

NOTE: If you want to plug in a USB keyboard you will need to powerdown and reboot.

If you want to plug in a PS/2 keyboard or mouse the detection will be automatic and can be dynamic *without* having to powerdown and reboot the SPARCbook 5000.

System Status Indicator LEDs

Located above the keyboard, the System Status LED Indicators inform you of the SPARCbook 5000's current operating status at a glance.

Figure 9-6 shows the System Status Indicator LEDs with all of the indicator icons. The different LED indicators display conditions for:

1 AC Power
2 Battery Power
3 Hard Disk Activity
4 Num Lock
5 Caps Lock
6 Compose

A description of each of the icons is listed below.

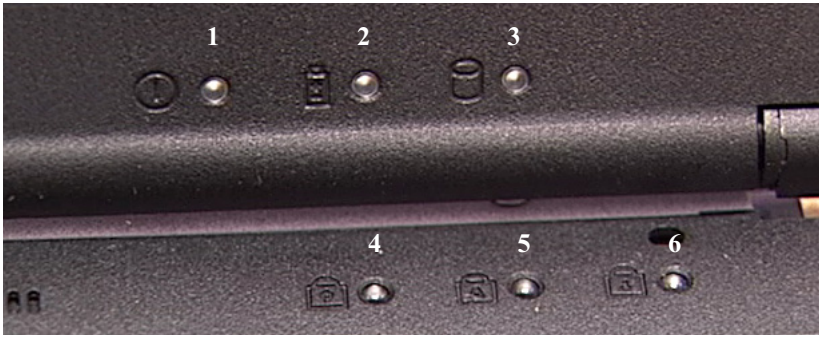

Figure 9-6: The system status indicator LEDs

SYSTEM ON Power LED

This indicator lights when the Sparcbook 5000 is being powered by press power button.

LED State: Off

If the LED is OFF, the system is off.

LED State: Green/On

If the icon is green and ON, the system is on and the battery is being charged.

LED State: Orange/Blinking

When the SYSTEM ON Power indicator is orange and blinking, the system is in Sleep or Suspend to RAM mode.

Battery Status LED

This indicator is a single dual-color LED: green and amber. Green indicates the battery is charging from the AC source. Amber indicates the battery discharging state.

LED State: Green/On

This condition indicates that the battery is fully charged.

LED State: Green/Blinking

This condition indicates that the battery is charging from the AC source.

LED State: Green/Off

This condition indicates that the battery is discharging or an abnormal stop charge due to bad cell or over temperature state.

LED State: Amber/Blinking

When the indicator is blinking (at a rate of once every second), it indicates that the battery is in the critical low state with approximately 3 minutes of battery power remaining. System beeps when the critical low state is first reached.

LED State: Amber/On

This condition indicates the battery is in the low state with approximately 12 minutes of battery power remaining.

LED State: Amber/Off

This condition indicates that the battery is charging from the AC source.

HDD/FDD/CD-ROM/PCMCIA-CARDBUS LED

When this indicator lights, it indicates that the HDD, DVD/CD-ROM or DVD/CD-RW drive, or a PCMCIA/Cardbus card is being accessed.

Num Lock LED

Upon pressing the [Scroll Lk/Num Lk] key, this LED lights indicating the embedded keypad's numeric feature is activated. Press the [Scroll Lk/Num Lk] key again to deactivate this feature and turn off the indicator.

Caps Lock LED

Upon pressing the [Caps Lock] key, this LED lights indicating that the Caps Lock feature is engaged. Press the [Caps Lock] key again to deactivate this feature and turn off the indicator.

Compose LED

Upon pressing the [Compose] key, this LED lights indicating the scroll lock is engaged. Press the [Compose] key again to deactivate this feature and turn off the indicator.

Onboard Audio

The SPARCbook 5000 provides a variety of onboard audio services and connectors, including:

- Audio and microphone jacks
- Internal stereo speakers

The left front panel contains audio input and output jacks for connecting external audio devices, as shown in Figure 9-7. Audio line input and output jacks are standard 1/8" stereo jacks. The microphone jack is a standard 1/8" stereo/monophonic jack.

Figure 9-7: Onboard audio

The SPARCbook 5000 provides the following audio functionality:

- Line In
- Microphone
- Line Out
- Internal speaker

Line n

The Line-in jack allows you to connect the system to external stereo signals and other audio sources, e.g., compact disk or audio tape players.

Microphone

The microphone jack allows you to connect an external mono/stereo microphone to the system. The SPARCbook 5000 accepts a Sun microphone or other Positron™ compatible recording device for recording audio input.

NOTE: For Solaris 8, use only AudioTool in OpenWin not the CDE AudioTool for recording and playback.

Line out

The Line-out jack allows you to connect the system audio output to external stereophonic devices, e.g., external amplifiers or amplified speakers.

Internal Stereo Speakers

The SPARCbook 5000 includes built-in stereo audio speakers which reproduces sound generated by application programs.

External Connections

This section describes the SPARCbook 5000's available external connections. For information on external devices, see "Input-Output Devices" on page 144.

The access ports support a wide variety of input-output options, including:

- Ethernet
- Serial
- Parallel
- Video
- DC power
- USB

Ethernet

The SPARCbook 5000 rear panel provides a built-in twisted-pair (10-Base T/100-Base T) Ethernet network port as shown in Figure 9-8. This industry-standard RJ-45 telephone-type connector allows connection to twisted-pair Ethernet networks. A twisted-pair Ethernet cable is similar in appearance to a modular telephone cord.

Serial and Parallel

The SPARCbook 5000 provides a single 9-pin serial port and a single 25-pin parallel connector on the rear panel. Use these connectors for attaching industry-standard serial and parallel devices.

The serial port supports asynchronous communications at speeds from 300 to 115,000 bps. It supports a complete set of EIA RS-232C modem signals.

Video

The SPARCbook 5000 supports monitors equipped with VGA connectors. For more information on external display capabilities, see "External Monitor Support" on page 187.

DC Power

The SPARCbook 5000 receives 19 volts of continuous DC power at a maximum of 50 watts using the supplied AC adapter. Additionally, the SPARCbook 5000 may receive 10V DC nominal from an onboard battery module with a rated capacity of 4500 mAh when not tethered using the AC adapter.

Universal Serial Bus (USB)

The rear panel of the SPARCbook 5000 includes 3 USB ports for connecting input and output devices. The USB connector and its supporting circuitry were designed in full compliance with the Universal Serial Bus Specification 1.0. Any device that uses this standard can be connected to this port. These devices are PnP compliant.

Power Supply

The SPARCbook 5000 gets power from the internal battery module or by connecting the external AC power adapter/charger.

AC Adapter

The adapter operates from 100-240 volts AC. The adapter is a switcher-type power supply operating at a nominal frequency of 75KHz. It provides DC power input for running the system. The adapter provides 19 volts DC to the main system. The SPARCbook 5000 supports full desktop functionality when tethered to the AC adapter. The AC adapter also supports simultaneous workstation usability and battery charging.

Battery charge management follows a constant-current, constant-voltage (CCCV) scheme, with a charge-time cutoff. A maximum absolute temperature shutoff ensures that the maximum charge is provided to the battery, but does not reach temperatures high enough to cause damage or limit lifetime.

Battery Technology

The SPARCbook 5000 uses a lithium-ion battery module to power the workstation when AC power is not available.

The lithium-ion battery module has a gravimetric power density 100% higher than NiMH or NiCd batteries and suffers no memory effect from the recharge cycle. The battery device bay is located at the front-right side of the workstation.

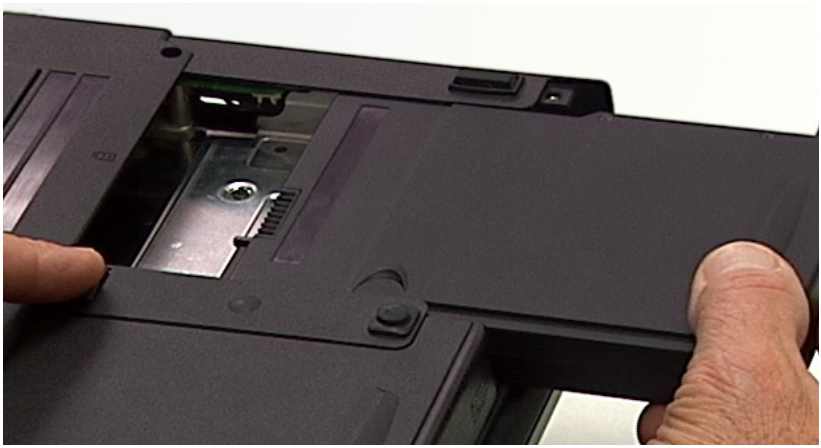

Figure 9-8: Battery and battery device bay

The 4500 mAh battery module provides approximately two hours of continuous-use battery operation, depending on system configuration. The battery module has nine cells, supplying 11.1 volts nominal to the internal DC power converter.

The battery module contains a five element LED power gauge allowing you to check the charge status of the battery module before installing it in the SPARCbook 5000. The power gauge displays remaining capacity in increments of 20%.

As battery power decreases, the workstation monitors performance and warns you of low battery power. You should then save your work before the battery charge is exhausted. Battery life updates continue as long as the low-battery condition exists.

During a low-battery condition, switch to AC power or halt the SPARCbook 5000 and power-down. Continued battery use will eventually lead to an automatic shut-down. For information about halting and powering-down the SPARCbook 5000, see "Shutting SPARCbook 5000 Down" on page 26.

NOTE: If you switch to AC power instead of shutting down the SPARCbook 5000, you can remove and replace battery modules while the system is connected to AC power.

CAUTION: Follow the proper shut down procedures for the SPARCbook 5000 described in "Shutting SPARCbook 5000 Down" on page 26. Otherwise, you may corrupt important system files on your workstation.

WARNING: Never use nickel cadmium or nickel metal hydride batteries with the SPARCbook 5000 or try to recharge such batteries with the AC adapter. Use only the lithium-ion battery module supplied with the SPARCbook 5000.

WARNING: Ihre SPARCbook 5000 Workstation wird mit einer aufladbaren Lithium Ionen Batterie geliefert. Versuchen Sie auf keinen Fall, Ihre SPARCbook 5000 Workstation mit Trockenbatterien (Primarzellen), Nickel Kadmium- oder Nickel Metall Hydrid Akkus zu betreiben oder solche mit dem Netz/Ladegerat zu laden.

NOTE: For information on installing the battery module, refer to "Using Batteries" on page 20.

Battery Recharging

You can use the AC adapter to recharge the battery module. The battery module recharges automatically when the battery module is installed and the workstation is connected to its AC adapter. It takes approximately 2.5 hours to recharge the battery module with the workstation powered off. When powered up, the workstation dynamically calculates the difference between the AC adapter capacity and the power required to operate the workstation. Any remaining capacity is automatically applied to background charging.

NOTE: Background charging requires 3-4 hours to fully recharge the battery module, depending on battery condition and workstation power requirements.

The battery module can be discharged and recharged from 500 to 1,000 times before it needs replacing. When you need to replace the battery module, obtain a replacement battery module from your authorized Tadpole representative.

The battery charger circuit has two modes of operation, fast and background charge. Fast charge is enabled when the external AC power adapter/charger is connected and the system is powered off. Fast charge provides a full recharge of the batteries within 2.5 hours.

SPARCbook 5000 Options

The following sections describe the options available for the SPARCbook 5000 workstations.

Languages

Standard C, C++, FORTRAN, ADA, and a wide selection of other languages are available from SunPro or third parties for use on the SPARCbook 5000.

Sources

SPARCbook 5000 replacement parts and options are available from your authorized SPARCbook 5000 dealer. Contact your local dealer or Tadpole for a listing of the dealers in your area.

The following items are available from your SPARCbook 5000 representative:

- AC adapter
- Rechargeable battery pack
- 56K fax/modem PCMCIA/Cardbus card
- Nylon carrying case
- Hard carrying case
- User-installable hard disk modules
- Additional memory modules
- Three-button USB mouse
- Additional manuals on CD
- Information regarding supported third-party PCMCIA/Cardbus card devices

The following items are available from Sun Microsystems dealers:

- Solaris operating systems on CD-ROM
- Three-button mouse (USB only)
- High-performance color, monochrome, and grayscale video monitors
- Video monitor cables and adapters
- Laser printers
- Serial port cables
- Documentation CDs
- USB Sun Type 6 keyboards

The following items are available from third-party suppliers:

- Ethernet transceiver cables
- High-performance color, monochrome, and grayscale video monitors
- Video monitor cables
- Laser printers
- External modems
- Serial port cables
- USB
- Audio input/output devices (amplifiers, microphones, etc.)

SPARCbook 5000 Specifications

10

SPARCbook 5000 Specifications

Operating system	Solaris 8 or later. CDE version 3.x or later
Network support	Tadpole software tools, plus NTP, NIS+, DHCP, NFS, DNS
Java tools	Java virtual machine
IU processor	500MHz UltraSPARCIIe
FPU processor	Combined
Performance	500MHz
	20 SPECint95
	21 SPECfp95
Memory	256MB to 2GB DRAM with ECC Memory expansion using daughter boards (factory-installed only)
Cache	256KB on-chip secondary cache
	16KB data and 16KB instruction on CPU chip
Removable Hard Drive	EIDE (ATA4) 30 or 40GB 13ms average seek time
PCMCIA/Cardbus	One or two Type I and/or Type II, One Type III

SPARCbook 5000 Specifications

Display	15.1 in XGA 1024 x 768 active matrix LCD (for model 5000X)
Color Palette	262,144
Grayscale Palette	64
Pixel aspect ratio	1:1
Screen aspect ratio	4:3
Dot pitch	.28 mm
Dots per inch	90.7
Display height	8.36 in (214 mm)
Display width	11.14 in (286 mm)
Display diagonal	15.1 in (358 mm)
Keyboard	87 full-travel keys Sun Type 5 compatible keyboard
Touchpad	Three-button integrated
I/O ports	Ethernet (10/100 Mbps) twisted pair standard (10 Base T/100 Base T)
	RS-232C serial port
	Centronics-compatible parallel port
	3 USB ports
	One 16-bit audio port (48KHz)
	Internal stereo speakers
	Microphone
	External video: VGA port
	External keyboard: PS2 or USB port
	External mouse: PS2 or USB port

Controls	Power on/off switch
	Display brightness (FN-Up Arrow/Down Arrow-keyboard function keys)
Other features	Time-of-day clock with separate battery backup
	Nylon carrying case
	Simultaneous display capabilities when connecting SPARCbook 5000 1024 x 768 model to XGA resolution external monitor
Approx. Height	1.8 inches (46 mm)
Approx. Width	13 inches (330 mm)
Approx. Length	10.5 inches (267 mm)
Approx. Volume	0.14 cu. ft. (0.04 cu. m)
Approx. Weight	>7.0 pounds (3.2 kg) fully configured with battery, CD-ROM and one hard disk drive
Environmental Altitude	0 to 10,000 ft. (0 to 3048 m) non-pressurized
Operating temperature	+41 to +104 degrees F (5 to + 40 degrees C)
Storage temperature	- 4 to +140 degrees F (-20 to + 60 degrees C)
Operating humidity	20-80% RH non-condensing: 27C max wet bulb
Storage humidity	93% RH non-condensing: 35C max wet bulb

SPARCbook 5000 Specifications

Battery/power supply	Lithium-Ion battery, 11.1 V nominal, 4.5 Amp-hour capacity
Discharge time	Approximately 2 hour in continuous use (application-dependent)
Recharge time	2.5 hours charging only with system power off
Background recharge time	3-4 hours with system power on Varies due to operating power draw
AC adapter/charger	Compact AC-DC auto-sensing power adapter, 90-264 VAC, 47-63Hz
Voltage	100-240 VAC
Frequency	50-60 Hz
Power supply	50 W continuous
DC output	19V DC@3.16A
Length	5.24 in (133.10 mm)
Width	2.28 in (57.10 mm)
Height	1.15 in (29.21 mm)
Weight	9.3 oz (0.263 kg)
AC cord	Two wire, UL/CSA approved IEC 320/c8 connector, 6 ft (1.8 m)
DC cord	SPT1 type cable with right angle, 3 ft (.9m)

Safety/Regulatory	UL 1950, CSA C22.2 No. 950, FCC Class B Part 15, CE (EN55022 Class "B", EN50081-1, EN50082-1, IEC 801-2, IEC 801-3, IEC 801-4), NOM

SPARCbook 5000 Options	Floppy Drive (1.44 - 240MB media)
	Sun Type 5 compatible Keyboard and Mouse
	56K fax/modem
	SCSI
	Power Adapters (Automobile, Airline)
	Country Power cords
	DB-15 to 13W3 video cable adapter
	Soft laptop bag
	Hard-cases
	Kensington Lock attachment

SPARCbook 5000 Specifications

Connector Pin Assignments

A

This chapter describes the pin assignments for the SPARCbook 5000 connectors listed in the table below. The connectors are listed in the order they appear on the SPARCbook 5000, beginning with the front-most access port on the left side of the unit.

Audio Line- n Connector

The Audio Line-in Connector is a standard female, 1/8", audio miniature jack. The following table lists the pin assignments for this connector. For illustration purposes, Figure 11-1 shows the 1/8" male connector.

Pin	Signal
Tip	LEFT CHANNEL
Ring	RIGHT CHANNEL
Shield	GND

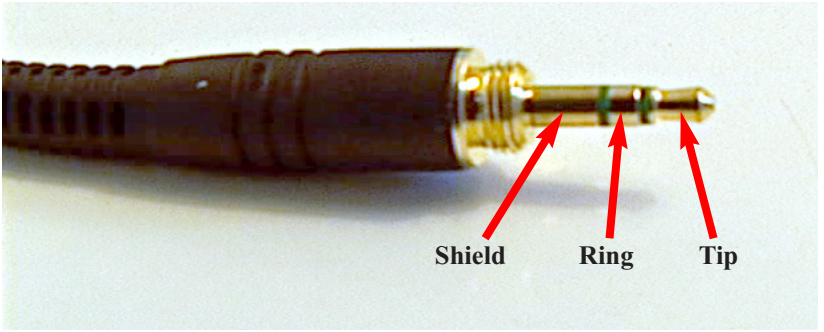

Figure 11-1: Audio line-in mating connector

Audio Line- ut Connector

The Audio Line-out Connector is a standard female, 1/8", audio miniature jack. The following table lists the pin assignments for this connector. For illustration purposes, Figure 11-2 shows the 1/8" male connector.

Pin	Signal
Tip	LEFT CHANNEL
Ring	RIGHT CHANNEL
Shield	GND

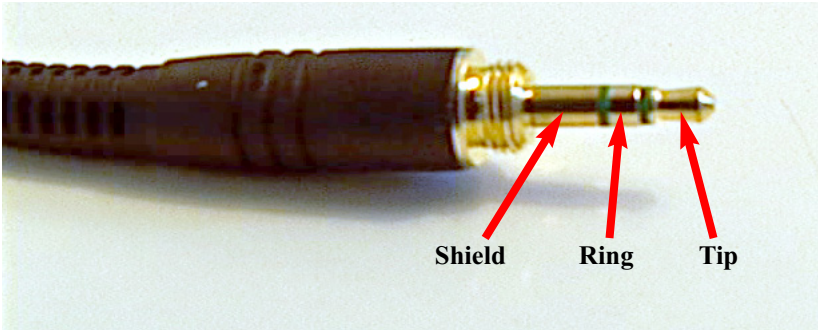

Figure 11-2: Audio line -out mating connector

Microphone Connector

The Microphone Connector is a standard female, 1/8", audio miniature jack. The following table lists the pin assignments for this connector. For illustration purposes, Figure 11-3 shows the 1/8" male connector.

Pin	Signal
Tip	LEFT CHANNEL
Ring	RIGHT CHANNEL
Shield	GND

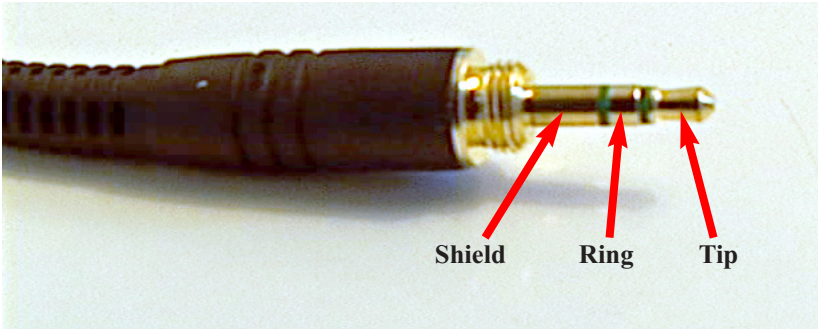

Figure 11-3: Microphone mating connector

Serial Port Connector

The Serial Port Connector is a male, 9-pin (DB9) connector. The following table lists the pin assignments for this connector.

Pin	Signal
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RIA

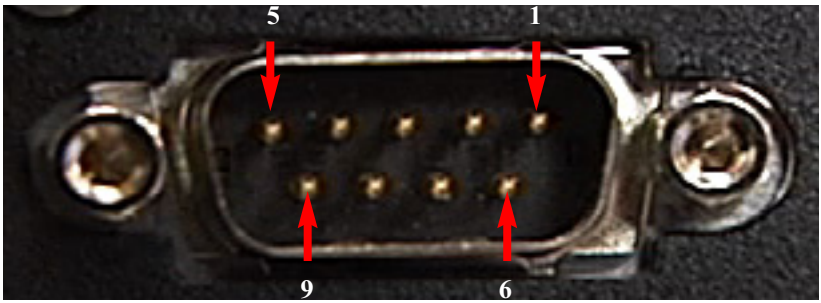

Figure 11-4: Serial port connector

Parallel Port Connector

The Parallel Port Connector on the I/O break-out cable is a female, 25-pin (DB25) connector. The following table lists the pin assignments for this connector. Figure 11-5 shows this connector.

Pin	Signal	Pin	Signal
1	P_DATA-STROBE-L	10	P_ACKNOWLEDGE_L
2	P_DATA_<0>	11	P_BUSY
3	P_DATA<1>	12	P_PE
4	P_DATA<2>	13	P_SLCT
5	P_DATA<3>	14	P_AUTO_FEED_L
6	P_DATA<4>	15	P_ERROR_L
7	P_DATA<5>	16	P_INIT_L
8	P_DATA<6>	17	P_SELECT_IN_L
9	P_DATA<7>	18-25	GND

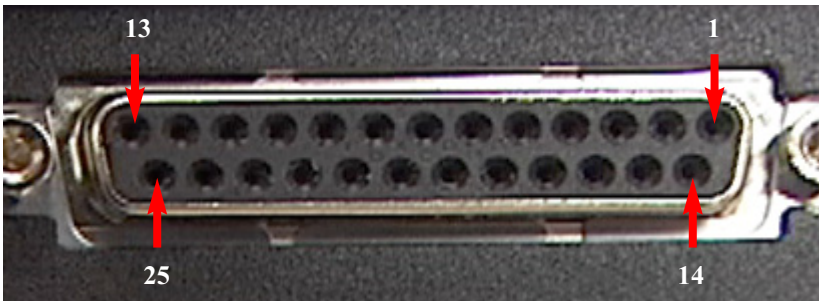

Figure 11-5: Parallel port connector

USB Port Connector

The USB Connector is a standard female connector. The following table lists the pin assignments for this connector.

Pin	Signal
1	VCC +5V
2	DATA NEGATIVE
3	DATA POSITIVE
4	GND

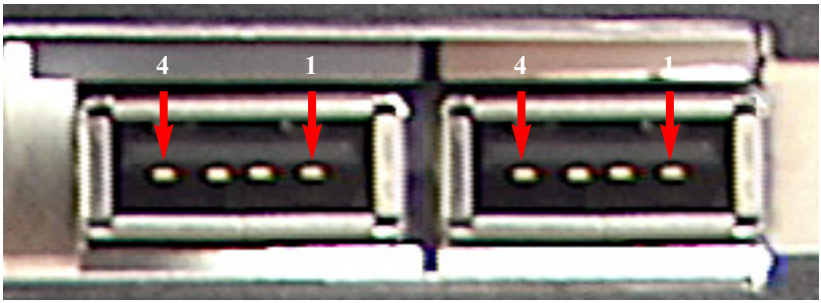

Figure 11-6: USB port connectors (showing 2 of 3)

DC Input Connector

The DC Input Connector provides DC power to the unit. Figure 11-7 shows this connector.

Figure 11-7: DC input connector

External Monitor Connector

The External Monitor Connector is a female, 15-pin VGA connector. The following table lists the pin assignments for this connector.

Pin	Signal	Pin	Signal
1	RED	9	N/A
2	GREEN	10	GND
3	BLUE	11	N/A
4	N/A	12	ID1
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	ID2
8	GND		

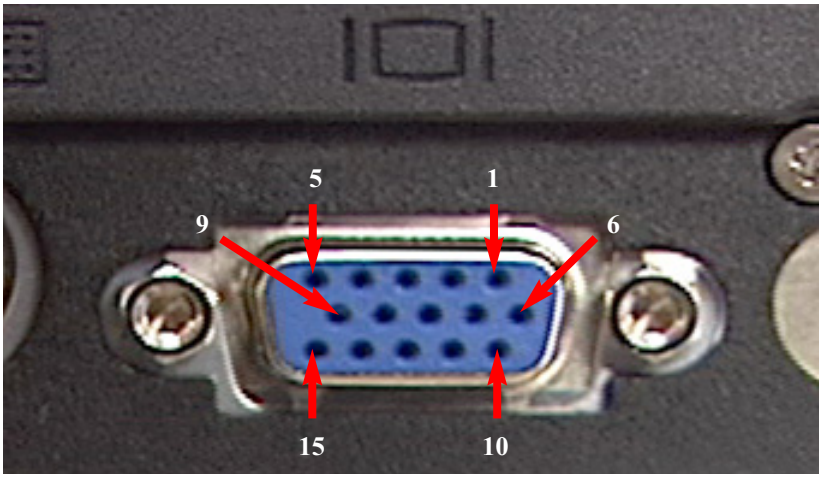

Figure 11-8: External monitor connector

Ethernet Twisted-Pair Connector

The Ethernet Twisted-Pair Connector is a female, 8-pin miniature RJ-45 telephone jack. The following table lists the pin assignments for this connector. Figure 11-9 shows this connector.

Pin	Signal
1	TXD+
2	TXD-
3	TXD- RXD+
4	TXD_COM
5	TXD_COM
6	RXD-
7	RXD_COM
8	RXD_COM

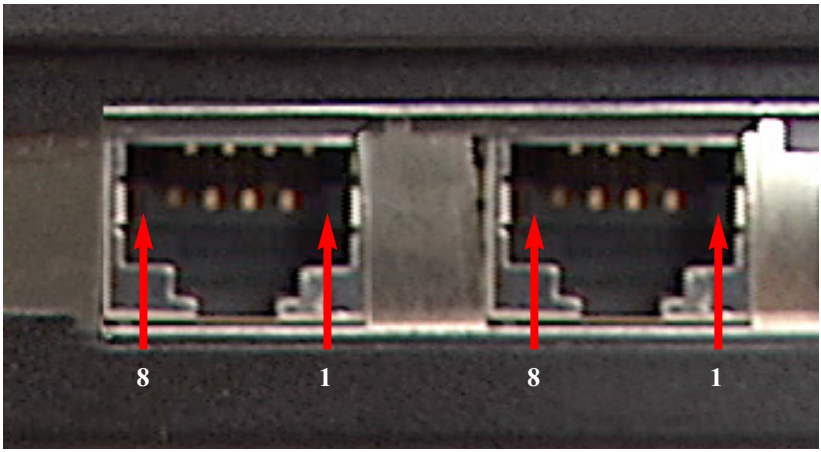

Figure 11-9: Ethernet twisted-pair connector

NVRAM Settings

B

This chapter lists typical SPARCbook 5000 NVRAM settings. When you receive your SPARCbook 5000, the factory-preset values are configured to their default settings using the OBP `set-defaults` command.

NVRAM Settings

Variable	Value	Default Value
#power-cycles	123	No default
system-board-serial#	f8 f7 75 f1 7f 7f 55 fb . . .	No default
system-board-date	df 75 f7 fb fd f5 da df . . .	No default
ttyb-rts-dtr-off	false	false
ttyb-ignore-cd	true	true
ttya-rts-dtr-off	false	false
ttya-ignore-cd	true	true
ttyb-mode	9600, 8, n, 1, -	9600, 8, n, 1, -
ttya-mode	9600, 8, n, 1, -	9600, 8, n, 1, -
pci-probe-list	7,11,1,3,8,14,d,13	7,11,1,3,8,14,d,13
mfg-mode	off	off
diag-level	max	max
fcode-debug?	false	false
output-device	screen	screen
input-device	keyboard	keyboard
load-base	16384	16384
auto-boot-retry?	false	false
boot-command	boot	boot
auto-boot?	true	true
watchdog-reboot?	false	false
diag-file		
diag-device	disk	net
boot-file		
boot-device	disk	disk net
local-mac-address?	false	false
net-timeout	0	0
ansi-terminal?	true	true
screen-#columns	80	80
screen-#rows	34	34
silent-mode?	false	false
use-nvramrc?	false	false
nvramrc		
security-mode	none	No default
security-password		
security-#badlogins	0	No default
oem-logo		No default
oem-logo?	false	false
oem-banner		No default
oem-banner?	false	false
hardware-revision		No default
last-hardware-update		No default
diag-switch?	false	false

Additional Environment Variables

In addition to the default NVRAM environment variables shown above, the following environment variables can be set with `setenv` and viewed with `printenv`.

backlight-brightness

Takes a decimal value between 1 and 99, and sets the startup brightness to this value. The setting chosen by the user with the FN-Up Arrow/Down Arrow keys is not currently stored over system resets.

battery-reporting?

Takes a true or false value, and if set to false will not display the summary of battery charge/run time remaining after the banner is displayed.

startup-noise

If set to zero, the system will not give a low/high startup noise (default is 1 and noisy). Error conditions signalled by the system PIC will always make a noise.

input-device

keyboard

If set to this (the default), any external USB keyboard will be used in preference to the internal PS/2 keyboard.

usbkey

If set to this, will use the USB keyboard instead of PS/2 keyboard, even if there is no USB keyboard available at bootup

ps2key

If set to this, will use the internal PS/2 keyboard instead of any external USB keyboard

output-device

screen

Will default to the LCD if no external monitor, or go to the external monitor and choose a refresh rate to suit, and disable the LCD.

crt

Will drive the external display and disable the internal LCD, even if there is no monitor connected.

lcd

Will drive the LCD at its chosen refresh rate and disable any external monitor.

dual

Will drive both external monitor and internal LCD at the LCD's preferred refresh rate, regardless of the presence of an external display.

NVRAM Settings

External Monitor Matrix

C

The SPARCbook 5000 ATI Display controller is used to display on the built-in screen as well as on an external display if you choose to use one.

To connect an external monitor, please follow these steps:

1. Turn off the external monitor and your computer.
2. Set the monitor on a monitor stand, desk top, or other level surface near the computer.
3. Connect the external monitor's video cable to the matching video connector at the back of the computer. If the cable is not permanently attached to the monitor, connect it to the monitor also.
4. Tighten all the screws on the monitor cable connector(s) to eliminate RFI radio frequency interference.
5. Connect your external monitor to a grounded electrical outlet.

Ensure that if you use an external monitor it is capable of operating within the following parameters.

SPARCbook 5000 ATI Display Controller

The SPARCbook 5000 is delivered with a 1024 x 768 pixel resolution 14.1 inch Liquid Crystal Display (LCD). It also has the option to drive an external monitor. In some combinations, the SPARCbook 5000 can drive both the LCD and an external monitor simultaneously.

This list charts the various combinations and the OBP commands to activate them.

OBP/CDE Command	LCD Resolution	External Monitor
800-mon *	NOT SUPPORTED	800x600 60Hz
800-vesa *	NOT SUPPORTED	800x600 60Hz
1024-mon *	OFF	1024x768 60Hz
1024-vesa *	OFF	1024x768 60Hz
1152-mon	NOT SUPPORTED	1152x900 66Hz
1152-vesa	NOT SUPPORTED	1152x900 66Hz
1280-mon	NOT SUPPORTED	1280x1024 67Hz
1280-vesa	NOT SUPPORTED	1280x1024 67Hz
1280-fastmon	NOT SUPPORTED	1280x1024 76Hz
1280-fastvesa	NOT SUPPORTED	1280x1024 76Hz
lcd-only	1024x768 60Hz	OFF
lcd+monitor	1024x768 60Hz	1024x768 60Hz
lcd+vesa	1024x768 60Hz	1024x768 60Hz
lcd-off	OFF	NO CHANGE
lcd-on	1024x768 60Hz	NO CHANGE
monitor-off	NO CHANGE	OFF
monitor-on	NO CHANGE	ENABLED AT CURRENT RESOLUTION
csync-on	OFF	COMPOSITE SYNC ENABLED
csync-off	OFF	COMPOSITE SYNC DISABLED

* = Not supported by window manager display control

NOTE: The SPARCbook 5000 supports simultaneous on-board and external video device display using VESA standard 1024 x 768 x 60 Hz mode and timing.

Changing Resolutions

Changing the display resolution is best done during the boot sequence, either during start-up or rebooting specifically to change the resolution.

1. To enter the command string, press "**Stop**" and "**A**" together during the boot sequence, right after the memory test and before the hard disk begins accessing.

The workstation will then be in "Open Boot PROM" (OBP) mode.

NOTE: You can now execute OBP commands. Enter the command for the desired resolution corresponding to the type of display you have.

2. After entering the command string, type `go` or `boot`, depending on any messages given at the command line.
3. Press **Enter** to resume using the SPARCbook 5000.

Configuring the Display Using Boot PROM Commands

In some cases, you may need to configure the LCD display and external port manually.

To change the configuration:

1. Disconnect the external device from the SPARCbook 5000.
2. Power on the system according to the instructions in "Starting SPARCbook 5000" on page 22.
3. Stop the boot sequence by entering `stop-A` after the LCD display illuminates.
4. Disable the automatic boot feature by typing `setenv auto-boot? false` at the OK prompt.

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