Sun Ultra™ 20 M2 Workstation Installation Guide

Sun Microsystems, Inc.
www.sun.com

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Contents

Preface

The *Sun Ultra 20 M2 Workstation Installation Guide* provides the information that you need to set up, power on, and configure the workstation hardware and software.

How This Book Is Organized

This guide is organized into the following chapters:

Chapter 1 contains instructions on unpacking, cabling, and powering the workstation.

Chapter 2 explains how to set up the preinstalled Solaris™ 10 Operating System and additional development software.

Chapter B discusses troubleshooting system issues and obtaining support.

Appendix C provides information regarding the Sun Ultra 20 M2 Workstation Tools and Drivers CD, supported operating systems, and system specifications.

Shell Prompts

Shell	Prompt
C shell	*machine-name*`%`
C shell superuser	*machine-name*`#`
Bourne shell and Korn shell	`$`
Bourne shell and Korn shell superuser	`#`

Typographic Conventions

Typeface*	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`%` **`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

* The settings on your browser might differ from these settings.

Related Documentation

The document set for the Sun Ultra 20 M2 Workstation is described in the *Where To Find Sun Ultra 20 M2 Workstation Documentation* sheet that is packed with your system. All documents are posted at the product's documentation site; see the following URL:

http://www.sun.com/documentation

Translated versions of some of these documents are available at the product's documentation site in Simplified Chinese, Traditional Chinese, French, German, Italian, Japanese, Korean, and Spanish.

English documentation is revised more frequently and might be more up-to-date than the translated documentation.

Documentation, Warranty, Support, and Training URLs

Sun Function	URL	Description
Hardware Documentation	http://www.sun.com/documentation	Sun hardware documentation
Software Documentation	http://docs.sun.com	Solaris OS and other software documentation
Warranty	http://www.sun.com/service/support/warranty/index.html	View specific details regarding your warranty
Support	http://www.sun.com/support/	Obtain technical support, including patches
Training	http://www.sun.com/training/	Learn about Sun courses and educational offerings

Ordering Components

You can order additional components and replacement parts for the Sun Ultra 20 M2 Workstation. Contact your local Sun sales representative for more information. For the most up-to-date component information, see the Sun Ultra 20 M2 Workstation components list at:

http://sunsolve.sun.com/handbook_pub/

Third-Party Web Sites

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Safety Information

Read the following documents for safety information:

- *Important Safety Information for Sun Hardware Systems*, 816-7190
- *Sun Ultra 20 M2 Workstation Safety and Compliance Guide*, 819-2149

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

http://www.sun.com/hwdocs/feedback/

Please include the title and part number of your document with your feedback: *Sun Ultra 20 M2 Workstation Installation Guide*, 819-6587-12.

CHAPTER 1

Introduction to the Sun Ultra 20 M2 Workstation Hardware

This chapter provides an overview of the Sun Ultra 20 M2 Workstation hardware.

This chapter includes the following sections:

1.1 Safety Information

Read the following documents for safety information:

- *Important Safety Information for Sun Hardware Systems*, 816-7190
- *Sun Ultra 20 M2 Workstation Safety and Compliance Guide*, 819-6585

1.2 Planning the Installation Process

Use the following flowchart as a process tool to assist you with installation of the Sun Ultra 20 M2 Workstation.

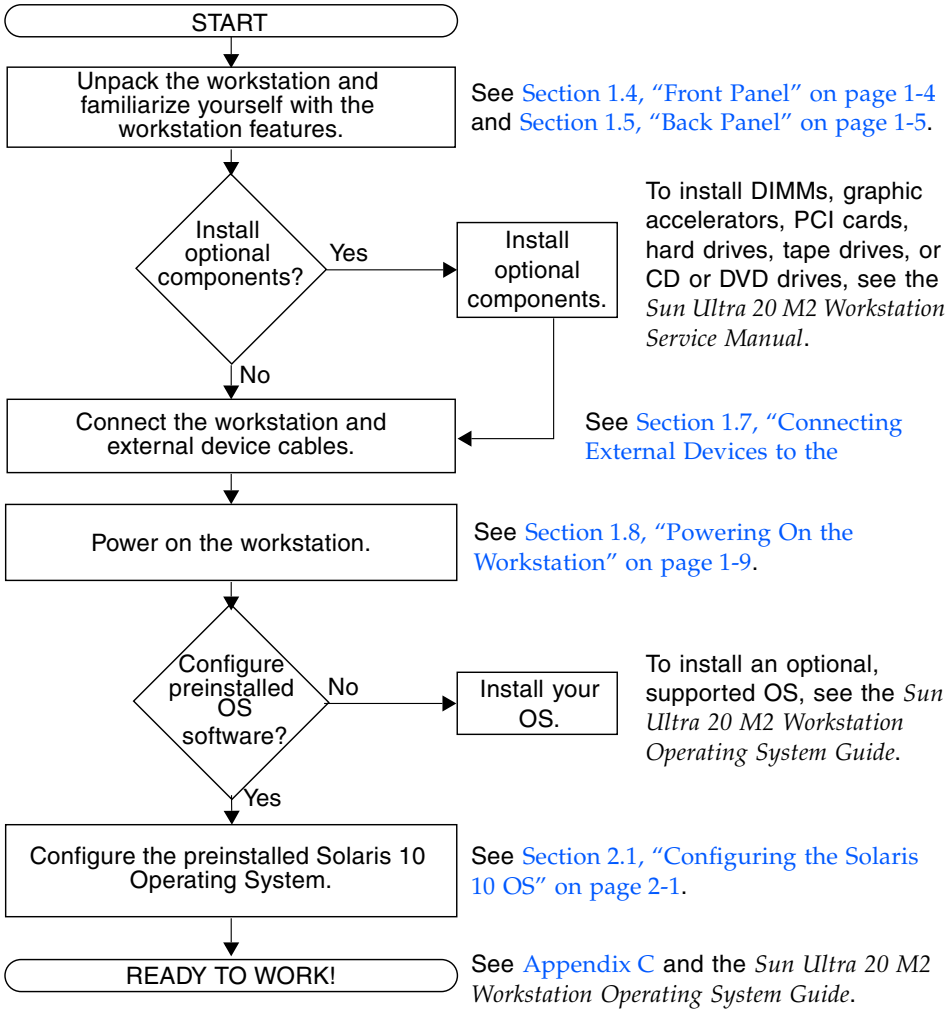

FIGURE 1-1 Process for Setting Up the Sun Ultra 20 M2 Workstation

1.3 Inventorying Package Contents

Carefully unpack all workstation components from the packing cartons. The following items are contained in the package.

TABLE 1-1 Items Included in the Sun Ultra 20 M2 Workstation Box

Hardware	• Sun Ultra 20 M2 Workstation • DMS-59 cable (if the workstation is configured with an NVS285 graphics card)
Documentation	• *Sun Ultra 20 M2 Workstation Installation Guide* (this document) • *Where to Find Sun Ultra 20 M2 Workstation Documentation* (lists available online documents for this product) • Sun safety, warranty, and license documents
CD-ROM	• Sun Ultra 20 M2 Workstation Tools and Drivers CD (includes drivers and diagnostics software)

If you ordered an optional country kit, the kit ships in a separate package and includes a power cable, keyboard, and mouse.

Note – Use only a Type 7 keyboard and Type 7 mouse with the Sun Ultra 20 M2 Workstation.

1.4 Front Panel

FIGURE 1-2 illustrates the front panel of the Sun Ultra 20 M2 Workstation. TABLE 1-2 lists the components called out in the figure.

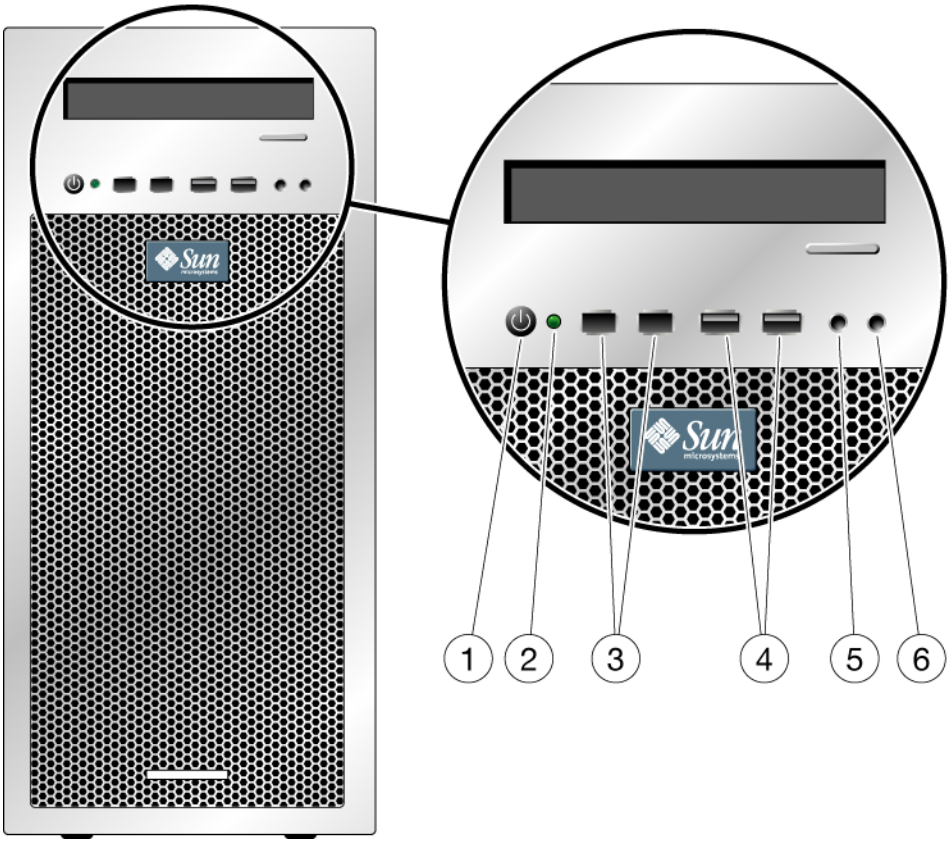

FIGURE 1-2 Front Panel Components

TABLE 1-2 Front Panel Components

Label	Button/LED/Port	Label	Button/LED/port
1	Power button	4	Two USB 2.0 ports
2	Power LED	5	Microphone-in jack
3	Two 1394 ports	6	Headphone-out jack

1.5 Back Panel

FIGURE 1-3 depicts the back panel of the Sun Ultra 20 M2 Workstation. TABLE 1-3 lists the components called out in the figure.

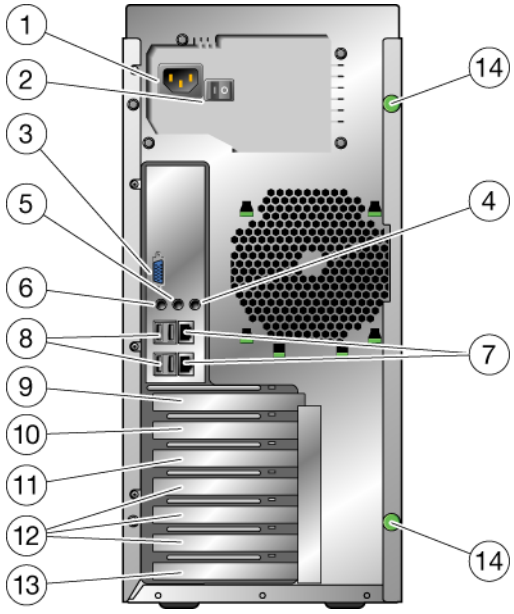

FIGURE 1-3 Back Panel Components

TABLE 1-3 Back Panel Components

Label	Connector/Slot	Label	Connector/Slot
1	Power connector	8	Four USB 2.0 connectors
2	Power switch	9	PCI Express x16 graphics slot
3	Onboard DB15 VGA graphics connector (for ES 1000 graphics controller)	10	PCI Express x1 slot
4	Line-in jack	11	PCI Express x16 mechanical slot (x8 electrical)
5	Line-out jack	12	Three PCI 33-MHz 32-bit slots
6	Microphone jack	13	Cover plate, no slot
7	Two Ethernet connectors		

1.6 Interior Components

FIGURE 1-4 illustrates some of the interior components of the Sun Ultra 20 M2 Workstation. TABLE 1-4 lists the items called out in the figure.

For further information about PCI slots, see "PCI-E and PCI Expansion Slots" on page 5. For component installation, removal, and replacement procedures, see the *Sun Ultra 20 M2 Workstation Service Manual.*

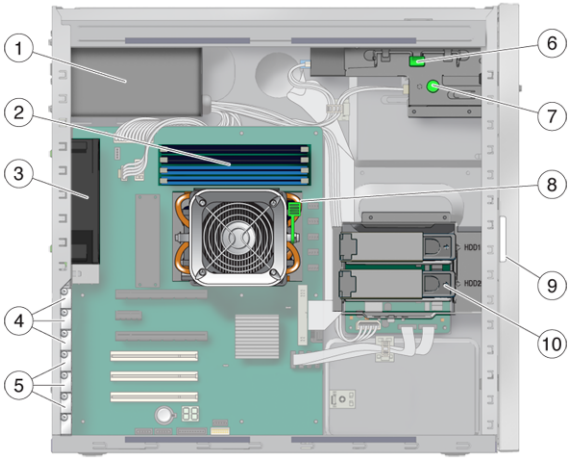

FIGURE 1-4 Internal System Components

TABLE 1-4 Internal System Components

Label	Component	Label	Component
1	Power supply	6	DVD release lever
2	Memory (DIMMs)	7	I/O board release thumbscrew
3	System fan	8	Heatsink release lever
4	PCI Express slots (3) numbered PCI-E slot 0 (top) to PCI-E slot 2	9	System serial number
5	PCI slots (3) numbered PCI slot 0 (top) to PCI slot 2	10	Hard disk drive(s)

1.7 Connecting External Devices to the Workstation

FIGURE 1-5 illustrates the external device cable connections to the workstation.

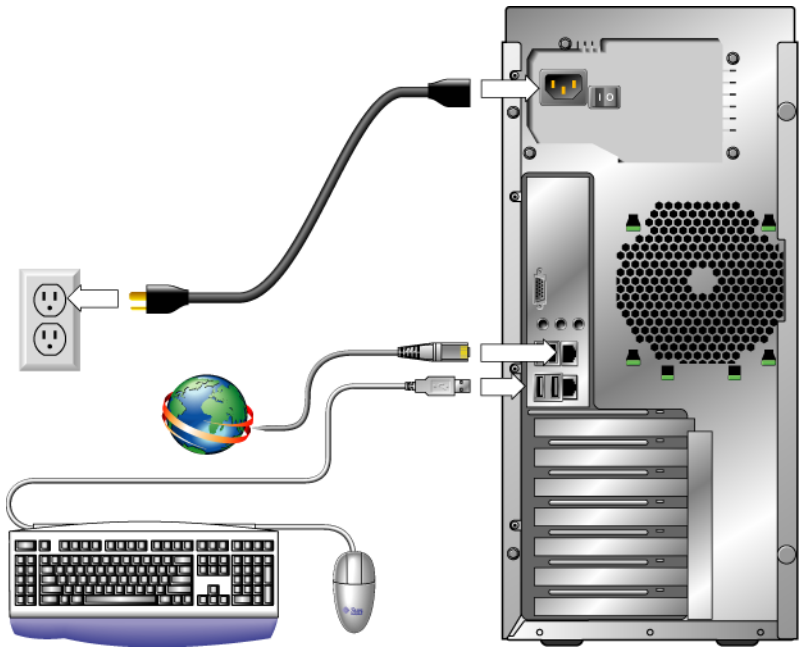

FIGURE 1-5 External Cable Connections

Perform this procedure to connect external devices to the workstation.

1. **Connect the workstation power cord to a grounded electrical outlet.**
2. **Connect the keyboard to a USB connector on the back or front panel.**
3. **Connect the mouse to the USB connector on the underside of the keyboard or to a USB connector on the front or back panel.**
4. **Connect the Ethernet cable to either Ethernet connector on the Sun Ultra 20 M2 Workstation, and connect the other end of the cable to an Ethernet RJ-45 jack.**

5. **Connect the monitor cable as follows:**
   - If a PCI Express graphics card is not installed in the top PCI-E slot, connect the monitor to the onboard video connector. See the top of FIGURE 1-6.
   - If a PCI Express graphics card is installed in the top PCI-E slot, connect the monitor to the graphics card connector. See the bottom of FIGURE 1-6.

     Your graphics card might require a DVI cable to connect to your monitor.

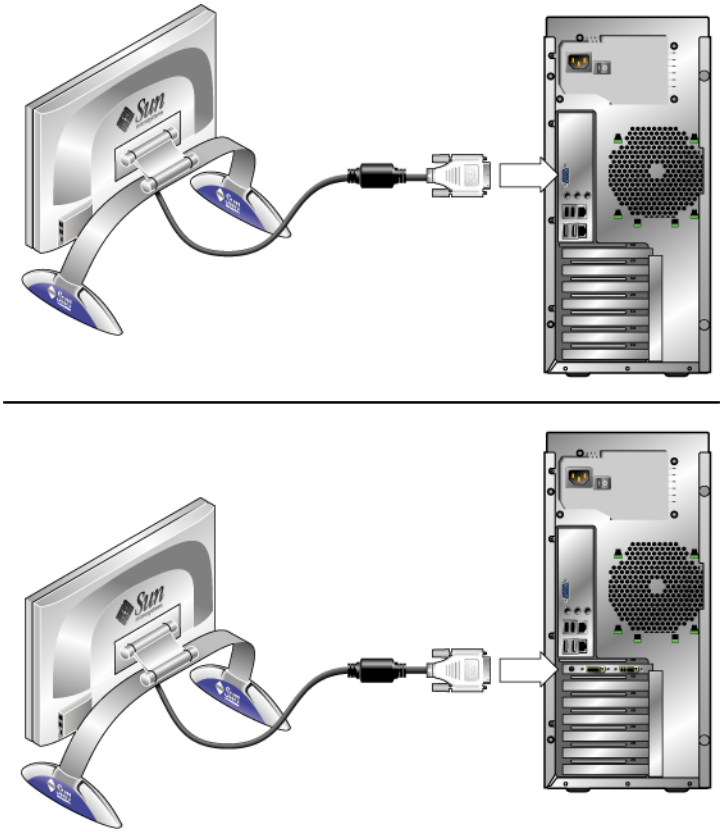

FIGURE 1-6 Connecting the Monitor to the System

6. **Connect any additional external devices to the workstation's other connectors.**

1.8 Powering On the Workstation

Perform this procedure to power on the workstation.

1. **Turn on the power to the monitor and to all external devices.**
2. **Turn the power switch on the rear of the workstation to the On (|) position.**
3. **Press and release the power switch on the front panel.**
4. **After several seconds, verify that the platform power LED next to the power switch is lit.**

   The platform power LED lights after the workstation begins the internal booting process.
5. **If you need to change the system parameters in the BIOS, press the F2 key during the POST process to access the BIOS Setup Utility.**

Caution – Be careful when making changes to the system BIOS, as some changes can cause your system to malfunction.

1.9 Powering Off the Workstation

1. **Save your data and close any open applications.**
2. **Read both of the following power-off options, and then follow one of the options to turn off the workstation.**
   - Power off the workstation by using the operating system shutdown command or menu option.

     In most cases, this initiates an orderly shutdown of the operating system and shuts off the workstation power.

Caution – To avoid data loss, use the first option whenever possible.

   - If the first option does not shut off the workstation power, press and hold the power button for approximately four seconds.

     This option shuts down the power to the workstation but does *not* initiate an orderly shutdown of the operating system. This option might result in data loss.

If the proceeding options do not power off the workstation, turn the power switch on the back panel to the Off (**0**) position.

After powering off the workstation, wait at least four seconds before powering on the workstation again.

1.10 Adding/Removing Devices To/From the Boot Menu

The boot menu lists the devices from which the system can boot. If you want to boot from a newly installed or attached device, you must add it to the boot menu.

To add or remove devices to/from the boot menu (accessed by pressing the F8 key during boot), perform the following steps:

1. **Press the F2 key during system boot.**

   The BIOS Setup screen displays.

2. **In the Boot Settings menu, add or remove the device from the boot device list.**

3. **Press the F10 key to save your settings and exit.**

CHAPTER 2

Configuring the Preinstalled Solaris OS and Using Preinstalled Developer Software

The Solaris™ 10 Operating System (OS) is preinstalled on the Sun Ultra 20 M2 Workstation, along with developer software. This chapter contains instructions for configuring the preinstalled Solaris 10 OS, and information regarding the developer software.

To install Linux, Windows, or a different version of the Solaris OS, see the *Sun Ultra 20 M2 Workstation Operating System Installation Guide*, available on the Sun documentation web site. Also, refer to Appendix C for a list of supported operating systems.

This chapter contains the following sections:

2.1 Configuring the Solaris 10 OS

The following topics are covered in this section:

2.1.1 Licensing Information

The Solaris 10 OS installed on your system requires no licensing fee. The Sun Ultra 20 M2 Workstation requires Solaris 10 6/06 or a subsequent compatible version of the Solaris OS. For more information, refer to the following web site:

http://wwws.sun.com/software/solaris/licensing/index.html

2.1.2 Disk Configuration

The exact disk configuration that is preinstalled is as follows:

- Hard drive root partition—14.0-GB
- Hard drive swap partition—2.0-GB
- Hard drive var partition—6.0-GB
- Hard drive export partition—remainder of the disk

2.1.3 Installation Flowchart

Use the flowchart in FIGURE 2-1 to assist with setting up your OS.

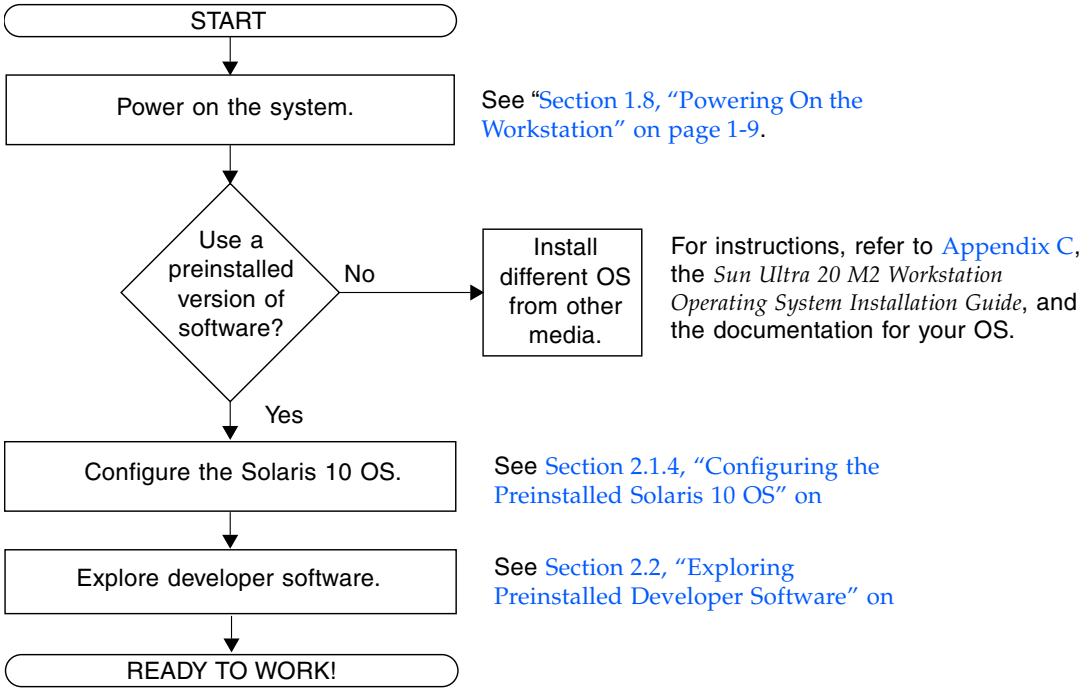

FIGURE 2-1 Installation Flow Diagram

2.1.4 Configuring the Preinstalled Solaris 10 OS

Complete the following steps to configure the preinstalled Solaris 10 OS.

1. **Power on the workstation. See** Section 1.8, "Powering On the Workstation" on page 1-9**.**

2. **Answer the setup prompts by following the on-screen instructions.**

   Use a copy of TABLE 2-1 to write down the information that you might need to collect before setting up the Solaris 10 OS.

   To help you fill out the information in the table, your system administrator (SA) should provide you with information specific to your site before you begin. Check with your SA about whether some of the information is available on your network.

Note – When you originally configure your system, under Xserver Selection, you will be given a choice of Xorg server or Xsun server. Choose Xorg server.

---

3. **When you finish the configuration, the system reboots.**

   The workstation displays the login window.

4. **Type your user name and password to log in and begin using the workstation.**

5. **Review the** *Solaris 10 Operating System Release Notes* **for any late-breaking information about your preinstalled software.**

   The *Solaris 10 Operating System Release Notes* documentation is located at the following web site:

   `http://docs.sun.com`

TABLE 2-1 Information for Preinstalled Solaris 10 OS Configuration

Setup Window	Explanation and Notes	Your Information
Select Language and Locale	Native language and locale to use for the workstation.	
Host Name	A name to give the workstation.	
Terminal Type	Type of terminal to use on the workstation.	
Network Connectivity (IP Address)	Network or standalone workstation protocols. A system administrator might be required to complete this section. **Note:** Depending on how you answer and what information is provided by your network, you might also be prompted for the workstation's IP address.	
IPv6	Option to enable IPv6 on the workstation.	
Security Settings	Security settings and protocols.	
Name Service	Name service to use: NIS+, NIS, DNS, LDAP, or None. **Note:** This window displays only if the workstation is connected to a network.	
Domain Name	NIS or NIS+ domain for this workstation. **Note:** This window displays only if you specify NIS or NIS+ as the Name Service.	
Name Server/ Subnet/ Subnet Mask	Name server (specify the server or have the workstation find one on a local subnet). **Note:** This window displays only if the workstation is connected to a network. **Note:** Depending on how you answer and what information is provided by your network, you might also be prompted for: • The subnet for the workstation • The subnet mask for the workstation	
Time Zone	Local time zone (select by geographic region, GMT offset, or a time zone file).	

TABLE 2-1 Information for Preinstalled Solaris 10 OS Configuration *(Continued)*

Setup Window	Explanation and Notes	Your Information
Date and Time	Current date and time (accept the default or enter the current date and time).	
Root Password	Root (superuser) password for the workstation.	
Proxy Server Configuration	Workstation connection: direct to the Internet or through a proxy server.	

2.2 Exploring Preinstalled Developer Software

The following minimum versions of Sun's developer software are preinstalled or preloaded onto your Sun Ultra 20 M2 Workstation. An overview of each developer software package is presented in the following sections.

- Sun Studio 11 (see Section 2.2.1, "Sun Studio Software" on page 2-6)
- Sun Java Studio Creator 2 (see Section 2.2.2, "Sun Java Studio Creator" on page 2-7)
- Sun Java Studio Enterprise 8 (see Section 2.2.3, "Sun Java Studio Enterprise" on page 2-7)
- NetBeans IDE 5.0 (Section 2.2.4, "NetBeans IDE" on page 2-8)

Your system might have later versions of this software preinstalled.

2.2.1 Sun Studio Software

Sun Studio software provides a comprehensive, productive environment for developing reliable, scalable, high-performance applications using C, C++, and FORTRAN for the Solaris OS. The software package includes compilers, performance analysis tools, and a powerful debugger, as well as an integrated development environment (IDE).

The Sun Studio IDE provides modules for creating, editing, building, debugging, and analyzing the performance of C, C++, or FORTRAN applications. It includes a set of basic Java™ language support modules that can be enabled if needed for JNI (Java Native Interface) development.

The Sun Studio software consists of two major components:

- The Sun Studio component, which includes the IDE, compilers, tools, and core platform
- The Java 2 Platform, Standard Edition (J2SE) technology on which the core platform runs

For more information regarding the Sun Studio software, see the product documentation at the following web site:

http://developers.sun.com/sunstudio

2.2.2 Sun Java Studio Creator

The Sun Java Studio Creator development environment (formerly "Project Rave") is the next-generation tool for Java application development. This product combines the power of 100% Java standards with simplified visual development techniques to give developers the most effective, most productive way to build applications in Java.

The Java Studio Creator environment was designed and tested to meet the needs of skilled developers whose primary concern is rapid turnaround of business-critical applications. Java Studio Creator enables these developers to leverage the power of the Java platform to solve business problems, without forcing them to give up the highly-productive, visual style to which they are accustomed.

For additional information about Sun Java Studio Creator, see the product documentation at the following web site:

http://developers.sun.com/jscreator

2.2.3 Sun Java Studio Enterprise

Sun Java Studio Enterprise is a complete, cost-effective, unified platform of tools, support, and services designed to fully integrate with the capabilities of the Sun Java Enterprise System. Java Studio Enterprise enables you to develop applications in an environment carefully designed to:

- Improve productivity
- Simplify the creation of sophisticated network applications that are ready to be deployed on the Java Enterprise System

For additional information about Sun Java Studio Enterprise, see the product documentation at the following web site:

http://developers.sun.com/jsenterprise

2.2.4 NetBeans IDE

The NetBeans IDE 5.0 includes Java 2 Platform, Enterprise Edition (J2EE) development capabilities. This new release enables developers to not only develop applications in the web tier, but also includes Enterprise JavaBeans (EJBs) and web service development capabilities.

The NetBeans IDE is a single platform with out-of-the-box development capabilities and support for enterprise (J2EE 1.4) applications and web services, mobile/wireless Java 2 Platform, Micro Edition (J2ME) applications and services, and desktop Java 2 Platform, Standard Edition (J2SE) applications. The robust open source Java IDE, has everything that Java software developers need to develop cross-platform desktop, web, and mobile applications straight out of the box.

For more information about the NetBeans IDE, see the following website:

http://www.netbeans.org

2.3 Restoring, Reinstalling, and Backing Up Preinstalled Software

The hard disk drive for your system contains preinstalled software, including the Solaris 10 OS, developer software, and other applications. The preinstalled OS is preconfigured with drivers required to support the workstation's hardware.

The Solaris 10 6/06 OS (or a later, compatible version) is available for download, as are the developer applications, drivers, and other applications. However, if you reinstall the OS, you will need to follow the instructions in the *Sun Ultra 20 M2 Workstation Operating System Installation Guide* to configure the OS and install the drivers.

Instead of downloading software, you can purchase the Solaris 10 media from the following web site:

http://store.sun.com/

2.3.1 Backing-up and Restoring the Solaris OS

To restore the Solaris OS, make and keep a full backup of the OS. The *Solaris 10 System Administration Collection* includes instructions for backing up your OS and is available on the following web site:

http:/docs.sun.com/

2.3.2 Downloading Developer Software

You can download the developer software packages from the following web sites. The sites contain the software packages, updates, documentation, and more.

If you purchased the Solaris 10 media, some of the software is included on the media.

Software Package	Download Site
Sun Studio	http://developers.sun.com/sunstudio
Java Studio Enterprise	http://developers.sun.com/jsenterprise
Java Studio Creator	http://developers.sun.com/jscreator
NetBeans	http://www.netbeans.org

2.3.3 Hard Drive Mirroring

To perform hard drive mirroring using the Solaris 10 operating environment, use Solaris Volume Manager.

For information about Solaris Volume Manager, see the *Solaris Volume Manager Administration Guide* at the following web site:

http://www.sun.com/documentation/

APPENDIX **A**

Configuring the System for Dual Monitors

This chapter describes how to configure the following operating systems for dual monitors:

1.1 Solaris

To configure Solaris for dual monitors, follow these steps:

1. **Install the two video cards you intend to use, attach monitors to the cards, and boot the system.**

Note – X-windows may not start, initially, due to the change in configuration.

The system outputs to PCI-E slot 2 (lower slot) until X-windows comes up.

2. **When the system boots, insert the Tools and Drivers CD, and change directory to the following location:**

   `/cdrom/<T&D_disk_name>/drivers/solx86`

3. **Run the install.sh and the dual_monitor.sh scripts.**

4. **Reboot the system.**

   The dual monitors should come up.

5. **To change from Clone to Xinerama modes, edit the file /etc/X11/xorg.conf and turn the appropriate settings in the file *on* or *off*.**

1.2 Windows

To configure Windows for dual monitors, follow these steps:

1. **Install the two cards which you wish to use, attach monitors to the cards, and boot the system.**

   The system outputs to PCI-E slot 2 (lower slot) until X-windows comes up.

2. **When the system boots, insert the Tools and Drivers CD, and change directory to the following location:**

   `/cdrom/<T&D_disk_name>/drivers/winxp`

3. **Change to the appropriate OS (32- or 64-bit) and load the video drivers.**

4. **Reboot the system.**

5. **Open Control Panel > Display > Settings to adjust the parameters of the two screens.**

   You may have to choose **Extend Desktop to this monitor** for the secondary screen.

6. **Adjust the parameters as desired.**

   A second reboot may be necessary for the system to see both screens.

1.3 Linux

To configure Linux for dual monitors, follow these steps:

1. **Install the two cards which you wish to use, attach monitors to the cards, and boot the system.**

   Note – X-windows may not start, initially, due to the change in configuration.

   The system outputs to PCI-E slot 2 (lower slot) until X-windows comes up.

2. **When the system boots, insert the Tools and Drivers CD, and change directory to the following location:**

   `/cdrom/<T&D_disk_name>/drivers/linux/<OS>`

   where OS can be either *redhat* or *suse*.

3. **Run the install.sh script.**

4. **Change directory to the following location:**

   `/etc/X11`

5. **Copy the current xorg.conf (or XF86Config) file to a backup file.**

6. **Edit the xorg.conf file to add the new screens and cards.**

   Note – The top card is at PCI address (2,0,0) and the bottom is at (7,0,0).

An example xorg.conf file is shown below:

```
# nvidia-xconfig: X configuration file generated by nvidia-xconfig
# nvidia-xconfig: version 1.0 (buildmeister@builder26) Mon Oct 16 22:13:48 PDT 2006
# XFree86 4 configuration created by pyxf86config
#Section "ServerLayout"
#        Identifier     "Default Layout"
#        Screen      0  "Screen0" 0 0
#        InputDevice    "Mouse0" "CorePointer"
#        InputDevice    "Keyboard0" "CoreKeyboard"
#EndSection
Section "ServerLayout"
    Identifier     "Default Layout"
    Screen      0  "Screen 0"
    Screen      1  "Screen 1" RightOf "Screen 0"
#   Screen      2  "Screen 2" LeftOf "Screen 1"
    InputDevice    "Mouse0" "CorePointer"
    InputDevice    "Keyboard0" "CoreKeyboard"
EndSection
Section "Files"
# RgbPath is the location of the RGB database.  Note, this is the name of the
# file minus the extension (like ".txt" or ".db").  There is normally
# no need to change the default.
# Multiple FontPath entries are allowed (they are concatenated together)
# By default, Red Hat 6.0 and later now use a font server independent of
# the X server to render fonts.
    RgbPath         "/usr/X11R6/lib/X11/rgb"
    FontPath        "unix/:7100"
EndSection
Section "Module"
    Load           "dbe"
    Load           "extmod"
    Load           "fbdevhw"
    Load           "glx"
    Load           "record"
    Load           "freetype"
    Load           "type1"
EndSection
```

```
Section "InputDevice"
# Specify which keyboard LEDs can be user-controlled (eg, with xset(1))
#           Option     "Xleds"           "1 2 3"
# To disable the XKEYBOARD extension, uncomment XkbDisable.
#           Option     "XkbDisable"
# To customise the XKB settings to suit your keyboard, modify the
# lines below (which are the defaults).  For example, for a non-U.S.
# keyboard, you will probably want to use:
#           Option     "XkbModel"        "pc102"
# If you have a US Microsoft Natural keyboard, you can use:
#           Option     "XkbModel"        "microsoft"
#
# Then to change the language, change the Layout setting.
# For example, a german layout can be obtained with:
#           Option     "XkbLayout"       "de"
# or:
#           Option     "XkbLayout"       "de"
#           Option     "XkbVariant"      "nodeadkeys"
#
# If you'd like to switch the positions of your capslock and
# control keys, use:
#           Option     "XkbOptions"      "ctrl:swapcaps"
# Or if you just want both to be control, use:
#           Option     "XkbOptions"      "ctrl:nocaps"
#
    Identifier     "Keyboard0"
    Driver         "kbd"
    Option         "XkbModel" "pc105"
    Option         "XkbLayout" "us"
EndSection
Section "InputDevice"
    Identifier     "Mouse0"
    Driver         "mouse"
    Option         "Protocol" "IMPS/2"
    Option         "Device" "/dev/input/mice"
    Option         "ZAxisMapping" "4 5"
    Option         "Emulate3Buttons" "yes"
EndSection
```

```
Section "Monitor"
    Identifier     "Monitor0"
    VendorName     "Monitor Vendor"
    ModelName      "Unprobed Monitor"
    HorizSync       31.5 - 67.0
    VertRefresh     50.0 - 75.0
    Option         "dpms"
EndSection
Section "Monitor"
    Identifier     "Monitor1"
    VendorName     "Sun Microsystems"
    ModelName      "X7198A"
    HorizSync       31.5 - 67.0
    VertRefresh     50.0 - 75.0
    Option         "dpms"
EndSection
Section "Device"
    Identifier     "Videocard0"
    Driver         "nvidia"
    VendorName     "Videocard vendor"
    BoardName      "VESA driver (generic)"
        BusID       "PCI:2:0:0"
EndSection
Section "Device"
    Identifier     "Videocard1"
    Driver         "nvidia"
    VendorName     "Videocard vendor"
    BoardName      "VESA driver (generic)"
        BusID       "PCI:7:0:0"
EndSection
Section "Screen"
    Identifier     "Screen 0"
    Device         "Videocard0"
    Monitor        "Monitor0"
    DefaultDepth    24
        Option         "TwinView" "True"
        Option         "TwinViewOrientation" "LeftOf"
        Option         "UseEdidFreqs" "True"
        Option         "MetaModes" "800x600,800x600"
```

```
    SubSection     "Display"
        Viewport    0 0
        Depth       24
        Modes      "800x600" "640x480"
    EndSubSection
EndSection
Section "Screen"
    Identifier     "Screen 1"
    Device         "Videocard1"
    Monitor        "Monitor1"
    DefaultDepth    24
        Option         "TwinView" "True"
        Option         "TwinViewOrientation" "LeftOf"
        Option         "UseEdidFreqs" "True"
        Option         "MetaModes" "1024x768, 1024x768"
    SubSection     "Display"
        Viewport    0 0
        Depth       24
        Modes      "800x600" "640x480"
    EndSubSection
EndSection
```

APPENDIX **B**

Troubleshooting Setup and Obtaining Technical Assistance

This chapter contains information to help you troubleshoot minor system problems, and includes information on the following topics:

2.1 Troubleshooting the Sun Ultra 20 M2 Workstation Setup

If you experience problems while setting up your system, refer to the troubleshooting information in TABLE 2-1. For additional troubleshooting information, see the *Sun Ultra 20 M2 Workstation Service Manual.*

TABLE 2-1 Troubleshooting Procedures

Problem	Possible Solution
System powers on, but the monitor does not.	• Is the Power button for the monitor turned on? • Is the monitor power cord connected to a wall outlet? • Does the wall outlet have power? Test by plugging in another device. • Is the monitor connected to the onboard video connector or PCI Express video connector?
CD or DVD does not eject from the media tray when you press the Eject button.	• Move the mouse or press any key on the keyboard. The drive might be in low-power mode. • Use the utility software installed on your system to eject the CD.
No video displays on the monitor screen.	• Is the monitor cable attached to the onboard video connector or PCI Express video connector? • Does the monitor work when connected to another system? • If you have a known-good monitor, does it work when connected to this system? • Verify that the BIOS settings are correct. • Review the Sun Ultra 20 M2 Workstation Product Notes for any issues that might impact your specific software and hardware configuration.
System does not power on when the front panel Power button is pressed.	Keep notes on the following situations in case you need to call service: • Is the power switch on the back of the system turned on (see FIGURE 1-3)? • Is the Power button LED illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.) • Does the wall outlet have power? Test by plugging in another device. • Do you hear a beep when the system is powered on? (Ensure that the keyboard is plugged in.) • Test with another keyboard that you know is functional. Do you hear a beep when you connect the keyboard and power on the system? • Does the monitor synchronize within 5 minutes after power on? (The green LED on the monitor stops flashing and remains illuminated.)

TABLE 2-1 Troubleshooting Procedures *(Continued)*

Problem	Possible Solution
Keyboard or mouse does not respond to actions.	• Verify that the keyboard cable is connected to an on-board USB 2.0 connector on the system, and that the mouse is connected to a USB connector on the keyboard or on the system. • Verify that the system is powered on and the front Power LED is illuminated.
System appears to be in low-power mode, but the Power button LED does not blink.	The power-indicator LED blinks only when all system components are in low-power mode. A tape drive might be connected to your system. Because tape drives do not enter low-power mode, the power-indicator LED does not blink.
Hung or frozen system: No response from mouse, keyboard, or any application.	Are the keyboard and mouse Type 7? (Verify the model on the underside of the keyboard). Try to access your system from another system on the network. 1. From a terminal window, type **`ping`** *hostname* 2. If there is no response, remotely log in from another system using `telnet` or `rlogin`, and type the **`ping`** *hostname* command again. 3. Attempt to terminate processes until the system responds. If the above procedure does not work: 1. Press the Power button to power off the system. 2. Wait 20 to 30 seconds and power on the system.

2.2 Technical Assistance

If the troubleshooting procedures in this chapter fail to solve your problem, use TABLE 2-2 to collect information that you might need to communicate to the support personnel.

TABLE 2-3 lists Sun web sites and telephone numbers for additional technical support. You can also refer to the web sites listed in "Documentation, Warranty, Support, and Training URLs" on page vii.

TABLE 2-2 System Information Required for Support

System Configuration Information Needed	Your Information
Sun service contract number	
System model	
Operating system, including service pack number or update number	
System serial number	
Peripherals attached to the system	
Hardware configuration information, including the following: • Graphics card installed • PCI or PCI Express cards installed • Amount of memory • Processor speed • Optical disk type	
Email address and phone number for you and a secondary contact	
Street address where the system is located	
Superuser password	
Summary of the problem and the work being done when the problem occurred	
Output of diagnostics test, if applicable	
Other useful information	
IP address	

TABLE 2-2 System Information Required for Support *(Continued)*

System Configuration Information Needed	Your Information
Workstation name (system host name)	
Network or Internet domain name	
Proxy server configuration	

TABLE 2-3 Sun Web Sites and Telephone Numbers

Workstation Documents and Support Resources	URL or Telephone Number
Discussion and troubleshooting forums	http://supportforum.sun.com/
Support, diagnostic tools, and alerts for all Sun products	http://www.sun.com/bigadmin/
Software patches, lists of system specifications, troubleshooting and maintenance information, and other tools	http://www.sunsolve.sun.com/handbook_pub/
Service support phone numbers	1-800-872-4786 (1-800-USA-4Sun) Select Option 1
International telephone numbers for SunService Support	http://www.sun.com/service/contacting/solution.html
Warranty and contract support contacts; Links to other service tools	http://www.sun.com/service/warrantiescontracts/
Warranties for every Sun product	http://www.sun.com/service/warranty

APPENDIX C

Tools and Drivers CD, Supported Operating Systems, and System Specifications

This appendix contains the following sections:

For maximum reliability and performance, install your system into an appropriate environment and ensure correct configuration as discussed in this document.

C.1 Tools and Drivers CD Software

The Sun Ultra 20 M2 Workstation Tools and Drivers CD, included with the workstation, contains the following software:

- Supplemental drivers to support preinstalled, or supported and user-installed, operating systems. See the *Sun Ultra 20 M2 Workstation Operating System Guide* for information on installing these drivers.
- Eurosoft Pc-Check diagnostics software, which provides various diagnostics testing options for the Sun Ultra 20 M2 Workstation. See the *Sun Ultra 20 M2 Workstation Service Manual* for more information.
- Erase Primary Boot Hard Disk utility to erase the preinstalled operating system.
- XpReburn utility to add drivers to an existing XP installation CD.
- Open DOS.

C.2 Supported Operating System Software

The Solaris 10 6/06 OS is preinstalled on the Sun Ultra 20 M2 Workstation. Previous versions of the Solaris OS are not supported.

The following operating systems (or later versions) are also supported for this workstation:

- Red Hat Enterprise Linux 3 WS Update 7, 32-bit and 64-bit
- Red Hat Enterprise Linux 4 WS Update 3, 32-bit and 64-bit
- SUSE Linux Enterprise Server 9 SP 3, 64-bit only
- Windows XP, 32-bit (SP2) and 64-bit (WHQL certified)

For an updated list of supported operating systems, refer to the following web site:

http://www.sun.com/ultra20

You can order Red Hat Enterprise Linux WS or SUSE Linux Enterprise Server for the Sun Ultra 20 M2 Workstation from the following Sun web site:

http://wwws.sun.com/software/linux/index.html

Follow the installation instructions provided with the operating systems. The *Sun Ultra 20 M2 Workstation Operating System Guide* contains instructions and information relating to driver installation for supported operating systems.

C.3 Sun Ultra 20 M2 Workstation Features and Specifications

C.3.1 System Components and Features

TABLE C-1 shows the system's key components.

TABLE C-1 Sun Ultra 20 M2 Workstation Components

Component	Description
CPU	• One dual-core AMD Opteron processor • Processor frequencies: 1.8 GHz and faster • 1 MB Level 2 Cache per processor core
Memory	• Four DIMM slots • 512 MB, 1 GB, 2 GB unbuffered DDR2-667, unbuffered, ECC DIMM modules supported (see Section C.3.2, "Memory Configurations" on page C-4)
Media storage	DVD-ROM or DVD-Dual
Hard disk drives	Up to two SATA disk drives
Power supply	400W PSU
Network I/O	Onboard 10/100/1000BASE-T Gigabit Ethernet controller providing 2 RJ45 connectors on the back panel
Video	Onboard ATI graphics controller with DB15 VGA graphics connector
PCI-E I/O and PCI I/O (see Section C.3.3, "PCI-E and PCI Expansion Slots" on page C-5**)**	• One PCI Express x16 graphics slot • One PCI Express x1 expansion slot • One PCI Express x16 mechanical connector slot (PCI-E x8 electrical) • Three PCI 33 MHz 32-bit slots
Other I/O	• Six USB 2.0 connectors (two on the front and four on the back of the workstation) • Two IEEE 1394 connectors on the front panel • Line-in/line-out jacks on the back panel • Microphone-in jack on the front and back panels • Headphone-out jack on the front panel

C.3.2 Memory Configurations

TABLE C-2 lists the possible memory configurations for the Sun Ultra 20 M2 Workstation.

The system requires DDR2-667, unbuffered, ECC DIMMs installed in pairs (except the base 512 MB configuration). You can purchase DIMM kits at:

http://store.sun.com

DIMM slots are numbered from DIMM 0 to DIMM 3. Populate DIMM slots starting farthest from the CPU (that is, starting with slot 3).

TABLE C-2 Sun Ultra 20 M2 Workstation Memory Configurations

Total Memory	Supported DIMM Configuration 1	Supported DIMM Configuration 2
512 MB	1 x 512 MB	
1 GB	2 x 512 MB	
2 GB	2 x 1 GB	4 x 512 MB
3 GB	2 x 1 GB and 2 x 512 MB	
4 GB	2 x 2 GB	4 x 1 GB
5 GB	2 x 2 GB and 2 x 512 MB	
6 GB	2 x 2 GB and 2 x 1 GB	
8 GB	4 x 2 GB	

C.3.3 PCI-E and PCI Expansion Slots

TABLE C-3 lists the characteristics of the available PCI-E and PCI expansion slots.

TABLE C-3 Internal Expansion Slots

Slot	Connector Type	Length	Height	Description	Position
0	PCI-Express x16 (x16 electrical)	x16	Full	Nearest to power supply. For FX 3500, FX 1500, FX 560, or NVS 285 graphics accelerator, or any PCI-Express expansion cards such as NIC adapters.	Top
1	PCI-Express x1	x1	Full	Not for graphics accelerators. Intended for PCI-Express expansion cards such as NIC.	Middle
2	PCI-Express x16 mechanical (x8 electrical)	x16	Full	Not for graphics accelerators. Intended for PCI-Express expansion cards such as NIC.	Bottom
0	Conventional PCI (PCI v2.3 32-bit/33 Mhz, 5V)	Full	Full	Open slot. Accommodates only 32-bit cards. 64-bit cards will not fit on the motherboard.	Top
1	Conventional PCI (PCI v2.3 32-bit/33 Mhz, 5V)	Full	Full	Open slot. Accommodates 64-bit PCI cards, but cards operate in 32-bit mode.	Middle
2	Conventional PCI (PCI v2.3 32-bit/33 Mhz, 5V)	Full	Full	Open slot (farthest from power supply). Accommodates 64-bit PCI cards, but cards operate in 32-bit mode.	Bottom

C.3.4 Physical Specifications

TABLE C-4 lists the physical specifications for the Sun Ultra 20 M2 Workstation.

TABLE C-4 Sun Ultra 20 M2 Workstation Physical Specifications

Specification	British	Metric
Width	7.9 in.	200 mm
Depth	18.5 in.	470 mm
Height	17.1 in.	435 mm
Weight (max with packaging)	34 lb	15.4 kg

C.3.5 Power Specifications

The maximum continuous power for the Sun Ultra 20 M2 Workstation is 400W.

TABLE C-5, TABLE C-6, and TABLE C-7 list additional power specifications for the system.

TABLE C-5 Input Voltage Range

Input Voltage	Minimum	Nominal	Maximum	Units
Range 1	90	115	132	Vrms
Range 2	180	230	264	Vrms

TABLE C-6 Input Frequency Range

Input Frequency	Minimum	Nominal	Maximum	Units
Range 1	57	60	63	Hz
Range 2	47	50	53	Hz

TABLE C-7 Input Current

Input Voltage	Maximum Input Current	Maximum Inrush Current
Range 1	10A	50 A_{peak}
Range 2	5A	100 A_{peak}

C.3.6 Environmental Specifications

TABLE C-8 lists the environmental specifications for the Sun Ultra 20 M2 Workstation.

TABLE C-8 Sun Ultra 20 M2 Workstation Environmental Specifications

Specification	State	British	Metric
Humidity	Operating	7%–93% RH noncondensing, 100.4° F max wet bulb	7%–93% RH noncondensing, 38° C max wet bulb
	Nonoperating	93% RH, noncondensing, 109.4° F max wet bulb	93% RH, noncondensing, 43° C max wet bulb
Vibration	Operating	0.25G in all axes, 5–500 Hz sine	
	Nonoperating	1.2G in all axes, 5–500 Hz sine	
Shock	Operating	4.5G, 11 msec. half-sine	
Temperature	Operating	41° F to 95° F	5° C to 35° C
	Nonoperating	–40° F to 149° F	–40° C to 65° C
Maximum operating temperature rating		–1.8° F for every 985 ft in altitude	–1° C for every 300 m in altitude
Altitude	Operating	max 9,843 ft	max 3,000 m
	Nonoperating	max 39,370 ft	max 12,000 m