



Sun Ultra™ 20 M2 Workstation Operating System Installation Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

The *Sun Ultra 20 M2 Workstation Operating System Installation Guide* contains information required to configure the Solaris™, Linux, and Windows operating systems.

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
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 <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

* 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 Documentation* sheet that is packed with your system, and 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 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

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Installation Overview

This guide provides information about installing an operating system (OS) on your workstation, if you do not want to use the preinstalled Solaris OS.

- For Solaris and Linux OS installation instructions, see [Chapter 2](#).
- For Windows OS installation instructions, see [Chapter 3](#).
- For Windows OS RIS image creation and installation, see [Appendix A](#).
- For PXE-based Linux installation or Jumpstart-based Solaris OS installation, see [Appendix B](#).

[FIGURE 1-1](#) shows the process flow for installing an operating system on your workstation.

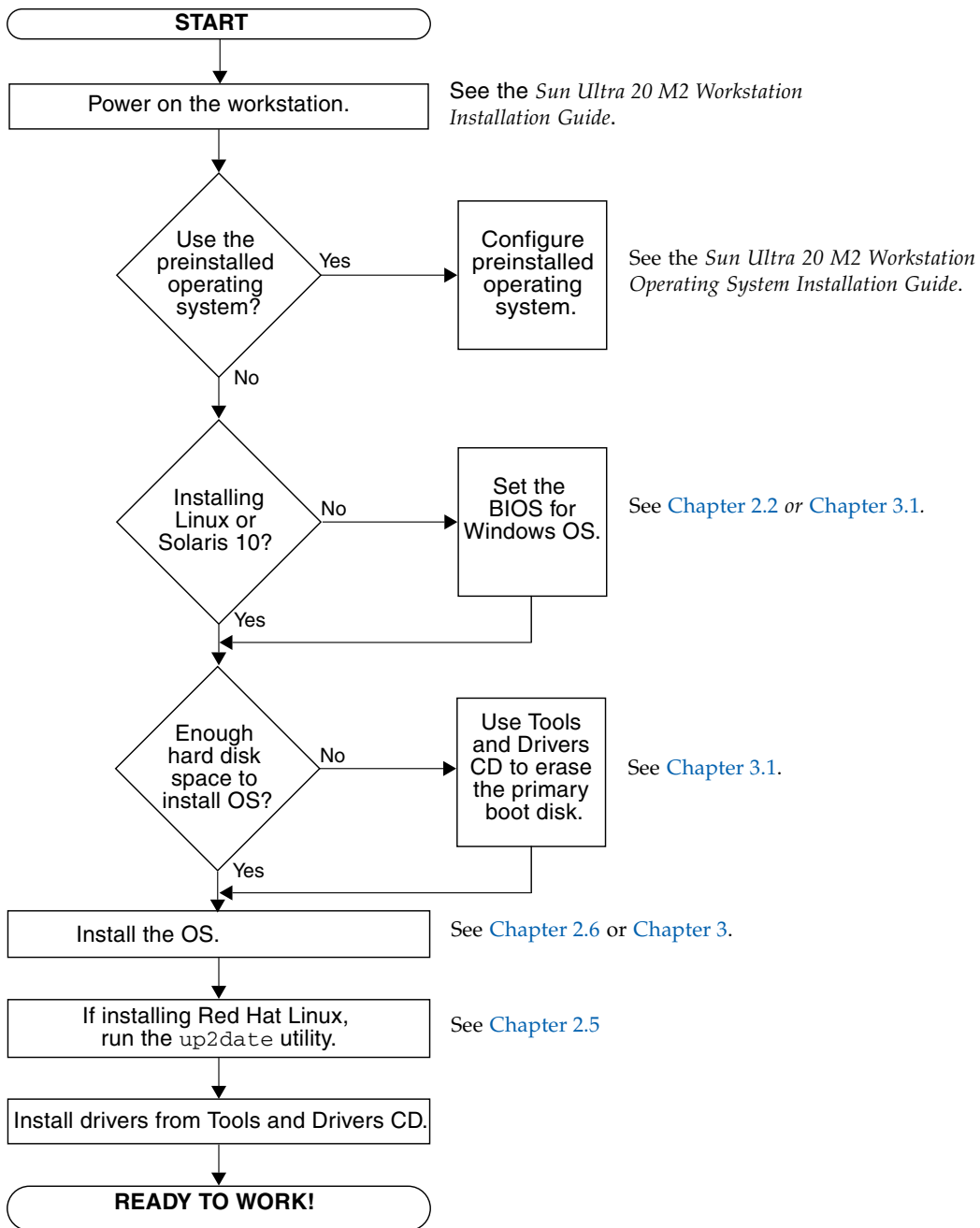


FIGURE 1-1 Installation Flow Diagram

Installing Solaris and Linux

This chapter provides information about installing the Solaris or Linux OS on your workstation, if you do not want to use the preinstalled Solaris OS.

This chapter includes the following sections:

- Section 2.1, “Choosing and Updating the Operating System” on page 2-2
- Section 2.2, “Setting the BIOS for Linux or Solaris” on page 2-2
- Section 2.3, “Understanding the Diagnostic Partition” on page 2-3
- Section 2.4, “Erasing Partitions on the Boot Hard Disk Drive” on page 2-3
- Section 2.5, “Running the `up2date` Utility” on page 2-4
- Section 2.6, “Installing Drivers and Mounting the Diagnostic Partition” on page 2-4

2.1 Choosing and Updating the Operating System

The Solaris OS is preinstalled on the Sun Ultra 20 M2 Workstation. Previous versions of the Solaris OS are not supported. You can download the Solaris OS from the following web site:

<http://www.sun.com/software/solaris/>

The following Linux OSES (or later versions) are 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

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://www.sun.com/software/linux/index.html>

2.2 Setting the BIOS for Linux or Solaris

The default for the Installed OS option in the BIOS is Others. If the default was not changed, you do not need to perform this setup for Linux or Solaris.

If the BIOS Installed O/S option *was* changed from the default, do the following:

1. **Power on the workstation and press the F2 key at the Sun logo screen to enter the BIOS Setup menu.**
2. **Select the Advanced BIOS Features menu.**
3. **Change the Installed O/S option to Others.**
4. **Press the F10 key to save your changes and exit the BIOS.**

2.3 Understanding the Diagnostic Partition

Diagnostics (system test) software is included on the Sun Ultra 20 M2 Workstation Tools and Drivers CD. Instructions for using the diagnostics software are provided in the *Sun Ultra 20 M2 Workstation Service Manual*.

A diagnostic partition is required for the test scripts to write their log files. Without a diagnostic partition, the only output is the display on the diagnostic screens.

The diagnostic partition is preinstalled on the Sun Ultra 20 M2 Workstation. You do not need to reinstall the diagnostic partition unless you removed it.

If you removed the diagnostic partition, you can re-create it using the Create Diagnostic Partition option on the Tools and Drivers CD. See the *Sun Ultra 20 M2 Workstation Service Manual* for instructions.

2.4 Erasing Partitions on the Boot Hard Disk Drive

To erase all partitions on the boot hard disk drive, except the diagnostic partition, use the Erase Primary Boot Hard Disk option on the Tools and Drivers CD main menu.



Caution – The Erase Primary Boot Hard Disk option erases all partitions and all user data on the hard drive, except the diagnostic partition. Be sure to back up all data on the hard drive before performing this action.

To erase the primary boot hard disk:

1. **Back up all data that you want to save on the hard disk drive.**
2. **Insert the Tools and Drivers CD into the workstation.**
3. **When the main menu appears, select the following option from the Tools and Drivers CD main menu:**

3. Erase Primary Boot Hard Disk

This option erases all partitions currently located on the primary hard drive, except for the diagnostic partition. The diagnostic partition, if it is present, remains untouched.

2.5 Running the up2date Utility

If you are installing the Red Hat Enterprise Linux software, run the `up2date` utility *after* installing the OS and *before* installing the video drivers from the Tools and Drivers CD.

Note – If you have already installed the NVIDIA drivers, you must reinstall them after running `up2date`, because the kernel is updated.

2.6 Installing Drivers and Mounting the Diagnostic Partition

After installing the OS, run the installation script provided on the Tools and Drivers CD to install the drivers that correspond to your OS.

The Tools and Drivers CD is included with your Sun Ultra 20 M2 Workstation. You can also download the Tools and Drivers CD from the downloads link at:

<http://www.sun.com/ultra20>

You also need to run this script to mount the diagnostic partition for all supported operating systems if you created a new diagnostic partition. (See the *Sun Ultra 20 M2 Workstation Service Manual* for information about how to create a diagnostic partition.) The diagnostic partition cannot be mounted on a Windows XP workstation.

This section covers the following topics:

- [Section 2.6.1, “Installing the Linux OS and Drivers” on page 2-5](#)
- [Section 2.6.2, “Installing the Solaris OS and Drivers” on page 2-7](#)

2.6.1 Installing the Linux OS and Drivers

Installation Process Flow

The order of installation for Linux OS and drivers is as follows:

1. Remove the preinstalled Solaris OS. See [Section 2.4, “Erasing Partitions on the Boot Hard Disk Drive”](#) on page 2-3.
2. If necessary, set up the BIOS for Linux OS installation. See [Section 2.2, “Setting the BIOS for Linux or Solaris”](#) on page 2-2.
3. Install the OS. If you wish to install a previously created remote image, see [Section B.1, “Installing LINUX from a PXE Server”](#) on page B-1.

Note – Make sure to keep the 55 MB diagnostic partition in place when doing the installation. If the diagnostic partition gets erased for some reason, use the Create Diagnostic Partition option in the Diagnostics section of the Tools and Drivers CD. See the *Sun Ultra 20 M2 Workstation Service Manual* for more details.

4. If you installed a Red Hat Linux OS, run the `up2date` utility as shown in [Section 2.5, “Running the up2date Utility”](#) on page 2-4.
5. Install the drivers as shown in the following procedure.

Performing the Installation

Perform this procedure to install drivers and mount the Tools and Drivers CD when running a Linux OS.

1. Log in to the system as superuser.
2. Insert the Tools and Drivers CD into the DVD drive and type:

```
# cd /mountpoint/drivers/linux/operating_system
```

Where */mountpoint* is the directory to which the CD is mounted and *operating_system* is the type of Linux installed on the workstation.

- If the directory does not exist, the CD did not automount. You will need to mount the CD and change to the correct directory as shown in [Step 3](#) and [Step 4](#).
- If you were able to access the *operating_system* directory, go to [Step 5](#).

3. If the CD does not automount, open a terminal window and mount the CD by typing the following command:

```
# mount -o ro /dev/cdrom /mountpoint
```

Where */mountpoint* is the appropriate mount point for the OS and optical drive type. For example:

```
# mount -o ro /dev/cdrom /mnt/dvdrom
```

4. Change to the */mountpoint/drivers/linux/operating_system* directory.

Where */mountpoint* is the directory to which the CD is mounted and *operating_system* is the type of Linux installed on the workstation.

For example:

```
# cd /mnt/dvdrom/drivers/linux/red_hat
```

5. Run the installation script by typing the following command:

```
# ./install.sh
```

This script does not execute if the Xserver is running.

- If the script exits and you receive an error message, go to [Step 6](#).
- If the script executes correctly, go to [Step 7](#).

6. If the script exits and you receive an error message, perform the following procedure to disable the X server:

- a. Type the following at the system prompt:

```
% init 3
```

- b. Log in as superuser.

- c. Repeat [Step 4](#) and [Step 5](#).

7. Eject the CD after the driver installation is complete.

8. Reboot the workstation.

2.6.2 Installing the Solaris OS and Drivers

Perform this procedure to install drivers if you are performing a new installation of the Solaris OS.

Note – You do not need to reinstall the drivers if you are restoring a backed-up copy of the preinstalled version of the OS.

Installation Process Flow

The order of installation for Solaris OS and drivers is as follows:

1. If necessary, set up the BIOS for Solaris OS installation. See [Section 2.2, “Setting the BIOS for Linux or Solaris”](#) on page 2-2.
2. Remove the currently installed OS. See [Section 2.4, “Erasing Partitions on the Boot Hard Disk Drive”](#) on page 2-3.
3. Install the OS. If you wish to install a previously created remote image, see [Section B.2, “Installing Solaris from a Jumpstart Server”](#) on page B-2.
4. Install the drivers as shown in the following procedure.

Performing the Installation

Perform this procedure to install the drivers and mount the diagnostic partition when running the Solaris OS.

2.6.3 Log in to the system as superuser.

1. **Insert the Tools and Drivers CD into the DVD drive.**
The CD is automounted by the Solaris OS.
2. **Change to the `/cdrom/cdrom0/drivers/solx86` directory by typing the following command:**

```
# cd /cdrom/cdrom0/drivers/solx86
```

3. Run the installation script by typing the following command:

```
# ./install.sh
```

The system drivers are installed.

The script prompts the user to reboot the system for changes to take effect.

4. Press the Y key to reboot, or the N key to allow a manual reboot.
5. Remove the CD from the DVD drive.
6. When prompted for networking information on your system, enter the networking information for your server.

Installing the Windows OS and Drivers

The Sun Ultra 20 M2 Workstation is supported to run Windows XP SP2 32-bit and XP 64-bit, Windows 2003 Enterprise SP2 32-bit/64-bit, Windows Vista Ultimate 32-bit/64-bit.

You have several options for installing Windows:

- Install Windows using a Windows CD, and manually load drivers during and after the OS installation.
- Use the `XpReburn` script to create a Windows CD that includes platform and NVIDIA RAID drivers, then use the newly created CD to install the OS. (You must install video drivers separately.)
- Create a RIS image of the Windows OS and drivers, then install the OS from a RIS server.

The order of Windows OS and driver installation is as follows:

1. If necessary, set the BIOS for Windows. See [Section 3.1, “Setting the BIOS for the Windows OS”](#) on page 3-2.
2. If required, remove the preinstalled Solaris OS. See [Section 3.2, “Understanding the Diagnostic Partition”](#) on page 3-4 and [Section 3.3, “Erasing Partitions on the Boot Hard Disk Drive”](#) on page 3-4.
3. Install the OS.
 - [Section 3.4, “Installing Windows 2003/Vista/XP OS Drivers”](#) on page 3-5
 - [Section 3.4.1, “Installing RAID Drivers Using the 2003Reburn/XPREburn Script”](#) on page 3-6 or [Section 3.4.2, “Installing RAID Drivers Using a Boot Diskette”](#) on page 3-7.
4. If desired, create a Windows OS RIS image on a RIS Server and install the image on a workstation (see [Appendix A](#)).

Note – Do not delete the diagnostic partition when you perform the OS installation. If the diagnostic partition is erased, the *Sun Ultra 20 M2 Workstation Service Manual* contains instructions on using the Create Diagnostic Partition option on the Sun Ultra 20 M2 Workstation Tools and Drivers CD.

Note – Windows XP cannot mount the diagnostic partition. A workaround is detailed in the *Sun Ultra 20 M2 Workstation Service Manual*.

3.1 Setting the BIOS for the Windows OS

This section describes how to set the system BIOS and NVRAID BIOS for the Windows OS and NVRAID.

3.1.1 Setting the System BIOS for Windows OS and NVRAID

To configure the system BIOS for a Windows OS and, optionally, NVIDIA RAID (NVRAID), perform the following procedure.

1. **Power on the workstation.**
2. **Perform the following steps to set the system BIOS for Windows:**
 - a. **Press the F2 key at the Sun logo screen to enter the BIOS Setup menu.**
 - b. **Select the Advanced BIOS Features menu.**
 - c. **Change the Installed O/S option to Win2k/XP.**
3. **If you will use the onboard NVIDIA RAID controller, perform the following steps to set the system BIOS for NVRAID. Otherwise, go to [Step 4](#).**
 - a. **Select the Advanced BIOS Features Menu.**
 - b. **Select the Integrated Peripherals menu.**
 - c. **Change the setting for NVRaid Configuration to Enable.**
 - d. **Enable RAID on the channels displayed that have disks.**
4. **Press the F10 key to save your changes and exit the system BIOS.**

3.1.2 Setting the NVIDIA RAID BIOS

To configure the NVRAID BIOS, perform the following procedure.

1. Reboot the workstation.
2. Press the F10 key to enter the NVRAID BIOS.
3. Select the type of RAID array you want to create (mirroring, striping, and so on).
4. Add the appropriate disks to the array.
5. Press the F7 key to complete this part of the configuration.
6. Select Yes when asked if you want to Clear Disk Data.
7. If desired, set the array to be the Boot Array (this is typically the desired configuration).
8. Press Ctrl-X to exit the NVRAID BIOS.

3.1.3 Setting the LSI RAID Configuration

To configure a RAID Array in LSI:

1. During the BIOS portion of the boot, type ctrl-C to open the LSI configuration tool.
2. Select the desired SAS controller and press Enter.
3. Select RAID properties.
4. Select the type of RAID array you would like.
5. Choose the volumes you would like to include in the RAID.

Note – Do not mix SAS and SATA volumes within a given RAID.

6. When the array is set up, save changes and exit.

3.2 Understanding the Diagnostic Partition

Diagnostics (system test) software is included on the Tools and Drivers CD. Instructions for using the diagnostics software are provided in the *Sun Ultra 20 M2 Workstation Service Manual*.

A diagnostic partition is required for the test scripts to write their log files. Without a diagnostic partition, the only output is the display on the diagnostic screens.

The diagnostic partition is preinstalled on the Sun Ultra 20 M2 Workstation. You do not need to reinstall the diagnostic partition unless you removed it.

If you removed the diagnostic partition, you can re-create it using the Create Diagnostic Partition option on the Tools and Drivers CD. See the *Sun Ultra 20 M2 Workstation Service Manual* for instructions.

Note – Windows XP cannot mount the diagnostic partition. A workaround is detailed in the *Sun Ultra 20 M2 Workstation Service Manual*.

3.3 Erasing Partitions on the Boot Hard Disk Drive

To erase all partitions on the boot hard disk drive, except the diagnostic partition, use the Erase Primary Boot Hard Disk option on the Tools and Drivers CD main menu.



Caution – The Erase Primary Boot Hard Disk option erases all partitions and all user data on the hard drive, except the diagnostic partition. Be sure to back up all data on the hard drive before performing this action.

Follow this procedure to erase the primary boot hard disk.

1. **Back up all data that you want to save on the hard disk drive.**
2. **Insert the Tools and Drivers CD into the workstation.**

3. **When the main menu appears, select the following option from the Tools and Drivers CD main menu:**
 3. Erase Primary Boot Hard Disk
This option erases all partitions currently located on the primary hard disk drive, except for the diagnostic partition. The diagnostic partition, if it is present, remains untouched.
4. **When prompted, confirm that you wish to delete the partitions.**
5. **When prompted, press any key to reboot the system.**

3.4 Installing Windows 2003/Vista/XP OS Drivers

The Sun Ultra 20 M2 Workstation Tools and Drivers DVD contains NVRAID, NVIDIA display, and NVIDIA chipset drivers for Windows 2003/Vista/XP. If you are installing NVRAID drivers, you will need to use the 2003Reburn/XpReburn script to create a new Windows 2003/XP CD containing the necessary drivers, or create a boot diskette to install the drivers *before* installing the Windows 2003/XP operating system.

The order of Windows 2003/Vista/XP driver installation is as follows:

1. If you plan to use the workstation RAID functionality, install the NVRAID drivers *before* installing the operating system by using one of the following methods:
 - [“Installing RAID Drivers Using the 2003Reburn/XpReburn Script” on page 6.](#)
 - [“Installing RAID Drivers Using a Boot Diskette” on page 7.](#)
2. Install the operating system.
3. Using the Tools and Drivers DVD, install the display and chipset drivers as described in [“Installing Display and Chipset Drivers for Windows 2003, Vista or XP” on page 9.](#)
4. If necessary, install the RealTek audio driver as described in [“Installing RealTek Audio Driver” on page 10.](#)

Note – The Tools and Drivers DVD does not mount the diagnostic partition for Windows XP software.

3.4.1 Installing RAID Drivers Using the 2003Reburn/XPReburn Script

The Sun Ultra 20 M2 Workstation Tools and Drivers DVD contains a script that enables you to create a new Windows 2003 or Windows XP CD with the needed RAID drivers. After the new CD is created, you can boot the CD and install Windows 2003 or XP normally. This new CD automatically installs the drivers, making it unnecessary to use a USB diskette drive and to install the NVRAID drivers.

For specific and current information about the Reburn scripts, see the description at the top of the script which is located in the XpReburn or 2003Reburn directory under the `/drivers/utilities/` directory on the Tools and Drivers DVD.

To install Windows 2003 or XP using a RAID configuration, you need the following:

- A system running Solaris Operating System for x86 Systems, RHEL 3, RHEL 4, RHEL 5, or SUSE Linux Enterprise Server (SLED 10)
- Access to a CD burner
- A blank CD-R or CD-RW
- A Windows 2003 or Windows XP Professional Installation CD (retail media only—not an OEM version)
- A Sun Ultra 20 M2 Workstation Tools and Drivers DVD

To create a Windows CD with the Sun Ultra 20 M2 Workstation drivers:

1. **On a system Solaris x86, Solaris OS (SPARC Platform Edition), or RHEL 3, RHEL 4, RHEL 5, or SLED 10 software, insert the Sun Ultra 20 M2 Workstation Tools and Drivers DVD.**
2. **As superuser, create a temporary directory with at least 1.2 Gbytes of space.**

For example:

```
# mkdir /files
```

3. **Copy the `OSReburn_version.zip` file to that directory.**

Where *OS* is either 2003 or XP and *version* is the current version of XpReburn.

For example:

```
# cp /drivers/utilities/XpReburn_1.0.zip /files
```

4. **Eject the Tools and Drivers DVD and insert your retail Windows 2003 or XP 32 Professional Installation CD.**

5. **Unzip the `OSReburn_version.zip` file.**

For example:

```
# unzip -q XPReburn_1.0.zip
```

6. **Run the Reburn script.**

For example:

```
# ./files/XpReburn
```

The script displays the driver files it expects to be located in the current directory. When all four driver files have been downloaded into that directory, the script creates a new ISO image and then automatically burns that ISO image onto a CD if the system has a CD burner.

7. **After the CD has been created, install Windows OS software on the Sun Ultra 20 M2 Workstation.**

8. **After the OS installation is complete, install the NVIDIA display drivers described in [“Installing Display and Chipset Drivers for Windows 2003, Vista or XP”](#) on page 9.**

3.4.2 Installing RAID Drivers Using a Boot Diskette

Note – This step is not required with Windows Vista.

This section explains how to create a boot diskette for the NVIDIA RAID drivers using the Sun Ultra 20 M2 Workstation Tools and Drivers DVD, and how to install the drivers onto your workstation.

To install the NVIDIA RAID drivers using a boot diskette, you need the following:

- A system running Microsoft Windows software, which has a CD and diskette drive
- A blank diskette
- A Sun Ultra 20 M2 Workstation Tools and Drivers DVD
- A USB floppy drive
- A Windows 2003 or Windows XP Professional Installation CD (retail media only—not an OEM version)

This section contains the following subsections:

- [“Creating a Boot Diskette for NVIDIA RAID Drivers”](#) on page 8
- [“Installing Windows 2003 or XP and NVIDIA RAID Drivers”](#) on page 8

3.4.2.1 Creating a Boot Diskette for NVIDIA RAID Drivers

To create a boot diskette for NVIDIA RAID drivers:

1. On a system running Microsoft Windows software, insert the Sun Ultra 20 M2 Workstation Tools and Drivers DVD.
2. Change to the appropriate directory on the Tools and Drivers DVD by typing the following:

```
C:\> cd/D D:\drivers\windows\OS\chipset\IDE\OS\SATARAID
```

Where OS is the directory for Windows 2003, XP 32-bit or XP 64-bit.

3. Insert a blank diskette into the workstation.
4. Select all files in the directory and copy them to the diskette drive (a:).

3.4.2.2 Installing Windows 2003 or XP and NVIDIA RAID Drivers

To install Windows 2003 32-bit/64-bit or Windows XP 32-bit/64-bit with the NVIDIA RAID drivers:

1. Ensure that the system BIOS and NVIDIA BIOS is configured for RAID operation. See [Section 3.1, “Setting the BIOS for the Windows OS”](#) on page 3-2.
2. Attach a USB diskette drive to the workstation.
3. Insert a Windows 2003, or XP Installation CD into the DVD drive.
4. Press the F6 key to install the third-party RAID driver.
5. Press the S key and the Enter key to specify additional drivers and insert the diskette created in [“Creating a Boot Diskette for NVIDIA RAID Drivers”](#) on page 8.

Note – The Tools and Drivers DVD does not mount the diagnostic partition for Windows 2003/Vista/XP software.

6. Select the NVIDIA NForce Storage Controller.
7. Press the S key and the Enter key to specify additional drivers.

8. Select the NVIDIA RAID CLASS DRIVER.
9. Press the Enter key to continue the Windows installation.
10. After the OS installation is complete, install the NVIDIA display and chipset drivers as described in [“Installing Display and Chipset Drivers for Windows 2003, Vista or XP”](#) on page 9.

3.4.2.3 Installing Display and Chipset Drivers for Windows 2003, Vista or XP

Note – If you have created a Windows CD containing NVRAID drivers using the XpReburn option, you do not need to install the chipset drivers, you need to install only the display drivers.

To install the NVIDIA display and chipset drivers after installing Windows:

1. Insert the Sun Ultra 20 M2 Workstation Tools and Drivers DVD into the DVD drive.
2. Install the chipset drivers (If necessary):
 - a. Change to the appropriate directory on the Tools and Drivers DVD by typing the following command:
3. Install the NVIDIA display drivers:
 - a. Change to the appropriate directory on the Tools and Drivers DVD by typing the following command:

```
C:\> cd/D D:\drivers\windows\OS\chipset
```

Where *OS* is the directory for Windows 2003, Vista, or XP.

- b. Double-click the executable file.
 - c. Follow the instructions in the installation software.
3. Install the NVIDIA display drivers:
 - a. Change to the appropriate directory on the Tools and Drivers DVD by typing the following command:

```
C:\> cd/D D:\drivers\windows\OS\video
```

Where *OS* is the directory for Windows 2003, Vista, XP 32-bit or XP 64-bit.

- b. Double-click the executable file.
 - c. Follow the instructions in the installation software.

4. Eject the CD from the workstation.
5. If you are using the onboard ATI graphics controller, install the ATI drivers.
 - a. Change to the directory on the Tools and Drivers CD by typing the following command:

```
C:\> cd D:\drivers\windows\OS\ati\version
```

- b. Double-click the executable file.
 - c. Follow the instructions in the installation software.
6. Reboot the workstation.

3.4.2.4 Installing RealTek Audio Driver

RealTek digital audio (SPDIF) is included on the Tools and Drivers DVD. To use this feature, you need to install the driver.

To install the RealTek Audio driver:

1. Insert the Tools and Drivers DVD into the DVD drive.
2. Go to the Tools and Drivers DVD directory by typing the following

```
C:\> cd/D D:\drivers\windows\audio\OS
```

Where *OS* is the directory for Windows 2003, Vista, or XP.

3. Double-click the executable.
 4. Follow the instructions in the wizard to install the drivers.
 5. Reboot the workstation.

Creating Windows Images on a RIS Server and Installing RIS Images

This appendix describes how to create Sun Ultra 20 M2 Workstation specific images on the Remote Installation Service (RIS) server for the following operating systems:

- Windows XP SP2 32-bit or Windows XP 64-bit
- Windows Server 2003 32-bit or 64-bit

Once created you can install the images on a client workstation.

This appendix contains the following sections:

- [Section A.1, “Creating a Windows Server 2003 or Windows XP SP2 32-bit Image on the RIS Server” on page A-2](#)
- [Section A.2, “Creating a Windows Server 2003 or Windows XP 64-bit Image on the RIS Server” on page A-7](#)
- [Section A.3, “Installing a RIS Image onto a Client Workstation” on page A-12](#)

A.1 Creating a Windows Server 2003 or Windows XP SP2 32-bit Image on the RIS Server

This section describes how to create a Windows 2003 Enterprise 32-bit or Windows XP SP2 32-bit image on a RIS server and then add platform specific drivers to the image. All drivers for this procedure are located on the Tools and Drivers DVD, version 1.2 or later.

Note – Before using this procedure, you must install the RIS onto a Windows 2003 Enterprise server. See the following URL for complete instructions on how to install the RIS.

<http://support.microsoft.com/default.aspx?scid=kb;en-us;325862>

To copy Windows 2003 Enterprise and XP SP2 32-bit onto the RIS server, do the following steps.

Note – Click Next or Finished in each screen to advance to the next screen.

1. Insert the Windows 2003 Enterprise or XP SP2 32-bit CD into the RIS server's CDROM drive.
2. In the Start menu, select Run.
3. To start the RIS setup program, type the following command:

```
c:\ risetup.exe
```

Note – In all commands, c:\ is shown as the DOS command prompt.

4. In the Welcome to the Remote Installation Services Setup Wizard screen, click Next.
5. In the Remote Installation Services Options screen, choose Add a new OS image to this remote installation server, and then click Next.
6. In the Installation Source Files Location screen, choose the CDROM drive with the Windows 2003 Enterprise or XP SP2 32-bit CD, and then click Next.

7. In the Windows Installation Image Folder Name screen, type a descriptive name for the Windows 2003 Enterprise or XP SP2 32-bit CD image you are creating. For example:

```
Ultra_20_Windows_XP_SP2_32-bit
```

8. Click Next.
9. In the Friendly Description and Help Text screen, type a description and help text (for future end-user reference), and then click Next.
10. In the Previous Client Installation Screens Found screen, choose "Use the old client installation screens, and then click Next.
11. In the Review Settings screen, verify your settings, and then click Finished.
12. After the image installs to the server, click Done.

A.1.1 Adding the NVIDIA Ethernet Drivers to the Windows Image

To add the NVIDIA Ethernet drivers to the Windows 2003 Enterprise or XP SP2 32-bit CD image on the RIS server:

1. Insert the Tools and Drivers DVD into the RIS server's CDROM drive.
2. Type the commands below to accomplish the following actions:
 - Copy the Windows 2003 Enterprise or XP SP2 32-bit RIS NVIDIA Ethernet driver zip package to the RIS server.
 - Unzip the Ethernet driver zip package.
 - Copy the files to the Windows XP image.

```
c:\ copy cdrom_drive:\drivers\windows\ris\OS\* C:\temp\nvris  
c:\ copy c:\temp\nvris\*. * ris_partition:\RemoteInstall\Setup\English\Images\image_dir\  
i386
```

Where *cdrom_drive* is the CDROM drive on the RIS server, *OS* is 2003 or XP, *image_dir* is the image directory, and *ris_partition* is the drive where the RIS image is stored on the RIS server.

A.1.2 Adding Other Drivers and Modifying Settings Files

To modify settings files, create driver directories, and copy drivers to their directories in the Windows 2003 Enterprise or XP SP2 32-bit image on the RIS server:

Note – The `ristndrd.sif` file is located in the following directory on the RIS server:*ris_partition*:

```
\RemoteInstall\Setup\English\Images\image_dir\i386\templates
```

1. Change these entries in the `ristndrd.sif` file to read as follows:

```
[Unattended]
  OemPreinstall = yes
[GuiUnattended]
  AdminPassword = "desired password"
```

2. Remove the following entry from the `ristndrd.sif` file:

```
[Identification]
  JoinDomain = %MACHINEDOMAIN%
  DoOldStyleDomainJoin = Yes
```

3. Add the following entries to the ristndrd.sif file:

```
[Unattended]
    DriverSigningPolicy = Ignore
    OemPnPDriversPath = "\drivers\video;\drivers\audio;\drivers\nic;\
drivers\sata_ide;\drivers\smbus"

[MassStorageDrivers]
    "Nvidia RAID CLASS DRIVER (required)"="OEM"
    "Nvidia nForce Storage Controller (required)"="OEM"

[OEMBootFiles]
    nvatabus.sys
    nvraid.cat
    nvraid.inf
    nvraid.sys
    txtsetup.oem

[UserData]
    ProductKey = XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

[Identification]
    JoinWorkgroup = WORKGROUP
```

4. To create the \$oem\$ directory for the RIS image, type the following command:

```
c:\ mkdir ris_partition:\RemoteInstall\Setup\English\Images\image_dir
```

The \$oem\$ directory will have a subdirectory tree structure with the following directory names:

```
textmode
$1
  drivers
    audio
    nic
    sata_ide
    smb
    video
      ati
      nvidia
  $$
  OemDir
```

5. To copy Windows 2003 Enterprise or XP 32-bit driver files from the Tools and Drivers DVD to the \$oem\$ directory tree, type the following commands:

Note – The drivers are located in the following directory on Tools and Drivers DVD.
cdrom_drive:
\drivers\windows\OS\chipset\

a. To copy the chipset drivers to the RIS server, type the following command:

```
c:\ copy cdrom_drive:\drivers\windows\OS\chipset\* c:\temp
```

6. To copy the chipset drivers to the proper directories, type the following commands:

```
c:\ copy c:\temp\ide\winxp\sataraid\*.dll ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$\$\OemDir

c:\ copy c:\temp\ide\winxp\sataraid\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\textmode

c:\ copy c:\temp\ide\winxp\sata_ide\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$1\drivers\sata_ide

c:\ copy c:\temp\ethernet\* ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\nic

c:\ copy c:\temp\nfref_918_wxp\smbus\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$1\drivers\smbus\

c:\ copy c:\temp\video\ati ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\video

c:\ copy c:\temp\video\nvidia ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\video
```

7. The `txtsetup.oem` file is located in the following directory:

```
ris_partition:\RemoteInstall\Setup\English\Images\image_dir\%oem%\
textmode\
```

Add a semicolon to the beginning of each line for files that are of type `*.dll` in the `[Files.scsi.RAIDCLASS]` and `[Files.scsi.BUSDRV]` sections.

8. To enable the RIS server to distribute the RIS image you created, type the following commands:

```
c:\ net Stop binlsvc  
c:\ net Start binlsvc
```

A.2 Creating a Windows Server 2003 or Windows XP 64-bit Image on the RIS Server

This section describes how to create a Windows 2003 Enterprise 64-bit or Windows XP 64-bit image on a RIS server and then add platform specific drivers to the image. All drivers for this procedure are located on the Tools and Drivers DVD, version 1.2 or later.

Note – Before using this procedure, you must install RIS onto a Windows 2003 Enterprise server. See the following URL for complete instructions on how to install the RIS.

<http://support.microsoft.com/default.aspx?scid=kb;en-us;325862>

To copy the Windows 2003 Enterprise or XP 64-bit CD onto the RIS server:

Note – Click Next or Finished in each screen to advance to the next screen.

1. Insert the Windows 2003 Enterprise or XP 64-bit CD into the RIS server's CDROM drive.
2. In the Start menu, select Run.
3. To start the RIS setup program, type the following command:

```
c:\ risetup.exe
```

4. In the Welcome to the Remote Installation Services Setup Wizard screen, click Next.

5. In the Remote Installation Services Options screen, choose Add a new OS image to this remote installation server, and then click Next.
6. In the Installation Source Files Location screen, choose the CDROM drive with the Windows 2003 Enterprise or XP 64-bit CD, and then click Next.
7. In the Windows Installation Image Folder Name screen, type a descriptive name for the Windows 2003 Enterprise or XP 64-bit CD image you are creating. For example:

```
Ultra_20_Windows_XP_64-bit
```

8. In the Friendly Description and Help Text screen, type a description and help text (for future end-user reference), and then click Next.
9. In the Previous Client Installation Screens Found screen, choose "Use the new client installation screens, and overwrite the old ones, and then click Next.
10. In the Review Settings screen, verify your settings, and then click Finished.
11. After the image installs to the server, click Done.

A.2.1 Adding the NVIDIA Ethernet Drivers to the Windows Image

To add the NVIDIA Ethernet drivers to the Windows 2003 Enterprise and XP 64-bit CD image on the RIS server:

1. Insert the Tools and Drivers DVD into the RIS server's CDROM drive.
2. Type the commands below to accomplish the following actions.
 - Copy the Windows XP 64-bit RIS NVIDIA Ethernet driver zip package to the RIS server.
 - Unzip the Ethernet driver zip package.
 - Copy the files to the RIS image.

```
c:\ copy cdrom_drive:\drivers\windows\ris\OS\* C:\temp\nvris64  
c:\ copy c:\temp\NVRIS64\*. * ris_partition:\RemoteInstall\Setup\English\Images\  
image_dir\amd64
```

Where *cdrom_drive* is the CDROM drive on the RIS server, *OS* is 2003 or XP, *image_dir* is the image directory, and *ris_partition* is the drive where the RIS image is stored on the RIS server.

A.2.2 Adding Other Drivers and Modifying Settings Files

Note – The `ristndrd.sif` file is located in the following directory on the RIS server:*ris_partition*:

```
\RemoteInstall\Setup\English\Images\image_dir\i386\templates
```

To modify settings files, create driver directories, and copy drivers to their directories in the Windows 2003 Enterprise or XP 64-bit image on the RIS server, do the following steps.

1. **Change these entries in the `ristndrd.sif` file to read as follows:**

```
[Unattended]
  OemPreinstall = yes
[GuiUnattended]
  AdminPassword = "<desired password>"
```

2. **Remove the following entry from the `ristndrd.sif` file:**

```
[Identification]
  JoinDomain = %MACHINEDOMAIN%
  DoOldStyleDomainJoin = Yes
```

3. Add the following entries to the ristndrd.sif file:

```
[Unattended]
    DriverSigningPolicy = Ignore
    OemPnPDriversPath = "\drivers\video;\drivers\audio;\drivers\nic;\
drivers\sata_ide;\drivers\smbus"

[MassStorageDrivers]
    "Nvidia RAID CLASS DRIVER (required)"="OEM"
    "Nvidia nForce Storage Controller (required)"="OEM"

[OEMBootFiles]
    nvatax64.sys
    nvraid.cat
    nvrpx64.inf
    nvrpx64.sys
    txtsetup.oem

[UserData]
    ProductKey = XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

[Identification]
    JoinWorkgroup = WORKGROUP
```

4. To create the \$oem\$ directory for the RIS image, type the following command:

```
c:\ mkdir cdrom_drive:\RemoteInstall\Setup\English\Images\image_dir
```

The \$oem\$ directory will have a subdirectory tree structure with the following directory names:

```
textmode
$1
    drivers
        audio
        nic
        sata_ide
        smb
        video
            ati
            nvidida
$$
    OemDir
```

5. To copy Windows 2003 Enterprise or XP 64-bit driver files into the \$oem\$ directory tree, type the following commands.

The drivers are located in the following directory on the Tools and Drivers DVD:

```
cdrom_drive:\drivers\windows\OS\chipset\*
```

a. To copy the drivers to the RIS server, type the following command:

```
c:\ copy cdrom_drive:\drivers\windows\OS\chipset\* c:\temp
```

b. To copy the driver files to the proper directories, type the following commands:

```
c:\ copy c:\temp\ide\winxp\sataraid\*.dll ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$\$\OemDir

c:\ copy c:\temp\ide\winxp\sataraid\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\textmode

c:\ copy c:\temp\ide\winxp\sata_ide\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$1\drivers\sata_ide

c:\ copy c:\temp\ethernet\* ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\nic

c:\ copy c:\temp\nfref_918_wxp64\smbus\* ris_partition:\remoteinstall\setup\english\
images\image_dir\%oem%\$1\drivers\smbus\

c:\ copy c:\temp\video\ati ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\video

c:\ copy c:\temp\video\nvidia ris_partition:\remoteinstall\setup\english\images\image_dir\
%oem%\$1\drivers\video
```

6. The `txtsetup.oem` file is located in the following directory.

```
ris_partition:\RemoteInstall\Setup\English\Images\image_dir\%oem%\
textmode\
```

Add a semicolon to the beginning of each line for files that are of type `*.dll` in the `[Files.scsi.RAIDCLASS]` and `[Files.scsi.BUSDRV]` sections.

7. To enable the RIS server to distribute the RIS image you created, type the following commands:

```
c:\ net Stop binlsv
c:\ net Start binlsv
```

A.3 Installing a RIS Image onto a Client Workstation

This section describes how to install a RIS image onto a client workstation using PXE boot.

To install a RIS image onto a client workstation:

- 1. Power on or reboot the workstation.**
- 2. During POST, press the F12 key to enter PXE.**
The workstation looks for the RIS server on the network.
- 3. Type your name and password when the Windows RIS install screen appears.**
- 4. Choose the RIS image to install.**

Once selected, the OS installation begins and automatically continues until it completes.

Installing Linux and Solaris OS Remote Images

B.1 Installing LINUX from a PXE Server

The following procedure assumes that a PXE server is set up on the same network as the system and that PXE images are loaded on the server.

Note – Red Hat 3 Update 7 does not include NVIDIA Ethernet drivers; you cannot perform a PXE installation of this OS. However, the following can be booted with PXE: RHEL3_U8, RHEL4_U3, and SLES 9 SP2.

Perform this procedure to boot from a PXE server.

1. **During the BIOS portion of the system boot, press the F8 key to bring up the boot menu.**
2. **Select the NVIDIA boot option.**
3. **Select the image that you want to install.**
4. **Reboot when the installation completes.**
5. **Follow the directions for manually installing drivers from the Tools and Drivers CD.**

B.2 Installing Solaris from a Jumpstart Server

Note – Before you begin, build and place on the Jumpstart server a Solaris image that includes the nVidia Ethernet Drivers (nge). Solaris does not include nge drivers. For more information about Jumpstart installations, see *Solaris 10 6/06 Installation Guide: Custom JumpStart and Advanced Installations*, 819-5778-xx.

Perform this procedure to install Solaris. If you want to reinstall the preinstalled Solaris OS, see the *Sun Ultra 20 M2 Workstation Service Manual*.

1. During the BIOS portion of the boot, press the F8 key to bring up the boot menu.
2. Select the NVIDIA boot option.
3. The system automatically starts the installation process and reboots when it completes.
4. Follow the directions for configuring the server found in the Solaris section of this document.