



Sun Ultra™ 40 M2 Workstation Operating System Installation Guide

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Preface

The *Sun Ultra 40 M2 Workstation Operating System Installation Guide* contains the information required to configure the Solaris™ 10, Linux, and Windows operating systems on your workstation.

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; onscreen 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 onscreen 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 40 M2 Workstation is described in the *Where To Find Documentation*, 819-7576 sheet that is packed with your system.

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
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Operating System Setup and Installation

This chapter includes information about installing an operating system on your workstation if you do not want to use the preinstalled Solaris 10 Operating System.

It includes information about the following topics:

- [“Planning the Operating System Installation” on page 1](#)
- [“Setting Up the BIOS for Operating System Installation” on page 3](#)
- [“Installing the Operating System” on page 8](#)
- [“Running the up2date Utility” on page 9](#)
- [“Installing Drivers and Mounting the Diagnostic Partition” on page 9](#)
- [“Enabling SATA RAID Support” on page 4](#)
- [“Configuring SLI Support” on page 29](#)
- [“Downloading Sun N1 Grid Engine” on page 31](#)

Diagnostics software is also included on the Sun Ultra 40 M2 Workstation Tools and Drivers CD.

Planning the Operating System Installation

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

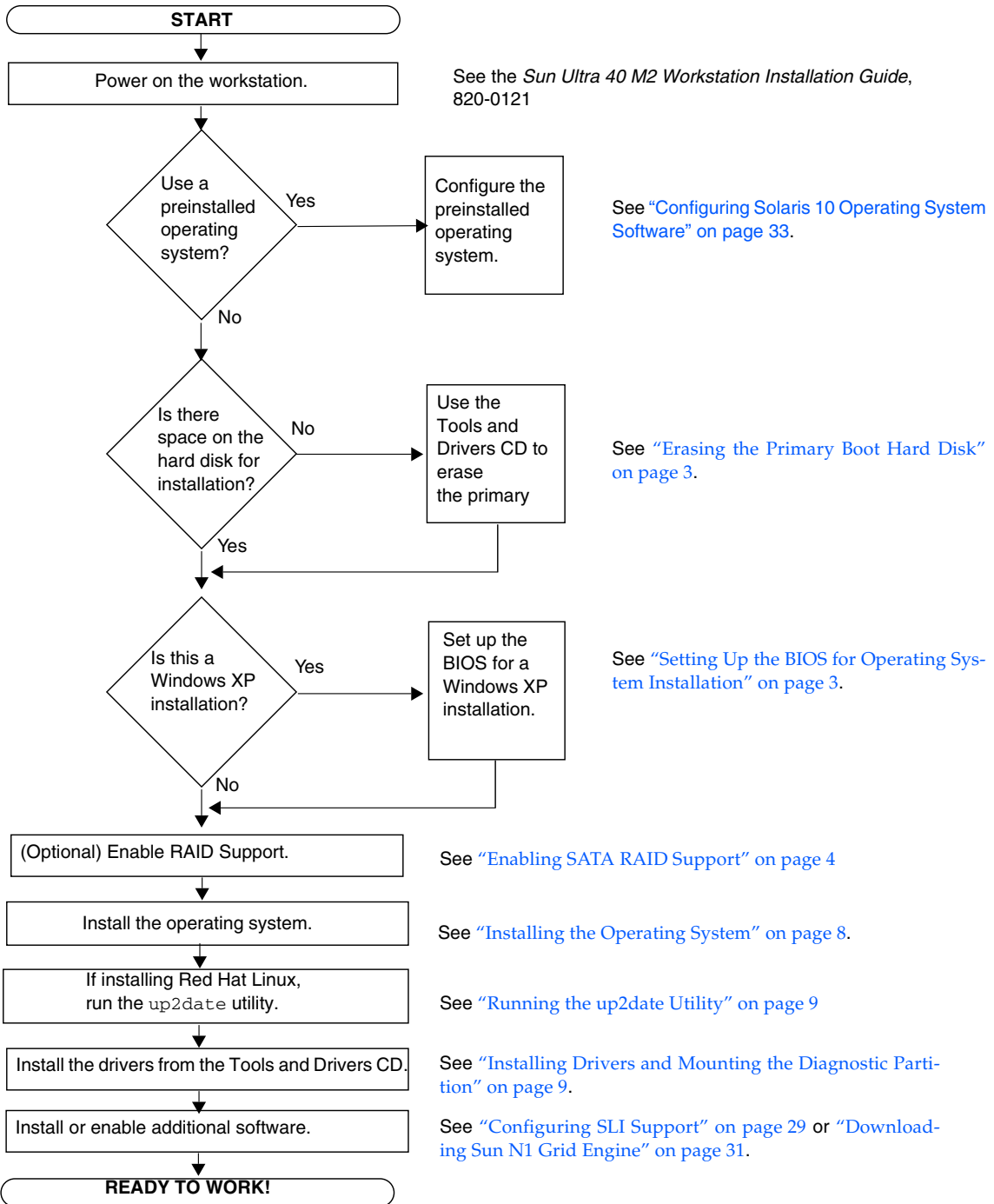


FIGURE 1-1 Operating System Installation Process

Erasing the Primary Boot Hard Disk

If you do not have enough space on the boot partition to install an operating system, or would like to remove the preinstalled operating system, there is an Erase Primary Boot Hard Disk option on the Sun Ultra 40 M2 Workstation Tools and Drivers CD. This enables you to erase other installed operating systems to make room for the new installation.



Caution – Selecting the Erase Primary Boot Hard Disk option from the Tools and Drivers CD erases all partitions on the hard drive, with the exception of the diagnostic partition. All user data is lost. 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 drive.**
2. **Insert the Tools and Drivers CD into the workstation.**
3. **When the main menu appears, select the following:**
 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.

Setting Up the BIOS for Operating System Installation

If you plan to install an operating system onto the Sun Ultra 40 M2 Workstation, you need to make sure that the BIOS is set up correctly before installing the software.

This section includes instructions for setting up the BIOS for the Windows XP, Linux, and Solaris 10.

Setting Up the BIOS for the Windows XP Operating System

If you are installing the Windows XP operating system, you will need to change the Installed O/S option to Windows.

To set up the BIOS:

- 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 tab.**
- 3. Change the Installed O/S option to Windows.**
- 4. Press the F10 key to save your changes and exit the BIOS.**

Setting up the BIOS for a Linux Operating System or Solaris 10 Operating System

The default for the Installed O/S option is Others. If the default has not been changed, you do not need to perform this setup for a Solaris or Linux operating system.

If the BIOS Installed O/S option has been changed from the default, you will need to set up the BIOS for Linux operating systems (Red Hat Enterprise Linux 3 and 4 and SUSE Linux Enterprise SLED 10) or the Solaris 10 Operating System.

To set up the BIOS:

- 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 tab.**
- 3. Change the Installed O/S option to Others.**
- 4. Press the F10 key to save your changes and exit the BIOS Setup Utility.**

Enabling SATA RAID Support

The Sun Ultra 40 M2 Workstation can accommodate up to eight drives for the following Windows XP SP2 32-bit and Windows XP 64-bit RAID array configurations:

- Two drives with RAID 0 or 1
- Four drives or more with Spanning, Stripe-mirroring, and RAID5

To enable RAID support for the Sun Ultra 40 M2 Workstation, you need to configure the Sun Ultra 40 M2 Workstation BIOS and the NVRAID BIOS. This procedure also includes instructions for creating a diagnostic partition for a RAID configuration.

Configuring RAID

To configure RAID:

1. **Configure RAID in the Sun Ultra 40 M2 Workstation BIOS.**
 - a. **Reboot the workstation and press the F2 key at the Sun logo screen to enter the BIOS Setup menu.**
 - b. **Select the Advanced tab from the main menu.**
 - c. **Select Integrated Devices.**
 - d. **Select NVRAID configuration.**
 - e. **Change the NVRAID Configuration to Enable.**
 - f. **Enable RAID on the channels displayed that have disks.**
 - g. **Press the F10 key to save your change and exit the BIOS.**
2. **Configure RAID in the NVRAID BIOS.**
 - a. **Press the F10 key during POST to enter the NVRAID Setup utility.**
 - b. **Select 0, 1, 0+1, Spanning, or RAID5 to create a RAID array.**

During the configuration, a dialog box appears stating: "Would you like to clear the disk? Select Yes or No."
 - c. **Choose No and press Ctrl-X to save your changes.**

Creating the Diagnostic Partition on the RAID Disk

To create the diagnostic partition:

1. **Insert the Sun Ultra 40 M2 Workstation Tools and Drivers CD and reboot the workstation.**
2. **At the Tools and Drivers CD menu screen, select 1 to load the Pc-Check Diagnostics.**

3. **Once the diagnostics program is running, select Create a Diagnostic Partition, and click Yes.**

If the operation is successful, the diagnostic partition for the RAID configuration is created. Proceed to [“Configuring SAS RAID With an LSI SAS Card” on page 6.](#)

If you receive an error message stating "Unknown Partition on Disk," go to Step 4, and then repeat steps 2 and 3.

4. **Erase the primary boot partition.**



Caution – Selecting the Erase Primary Boot Hard Disk option from the Tools and Drivers CD erases all partitions on the hard drive, with the exception of the diagnostic partition. All user data is lost. Be sure to use this option before installing the operating system.

- a. **Exit the diagnostics program and reboot the workstation with the Tools and Drivers CD inserted.**
- b. **At the menu screen, select 3 to run the Erase Primary Boot Hard Disk utility.**
This utility erases all partitions on the disk.
- c. **Return to [Step 2](#) above to create the diagnostic partition.**

Configuring SAS RAID With an LSI SAS Card

To configure SAS RAID with an LSI SAS card:

1. **Press Ctrl-C, to access the SAS controller configuration utility.**
You should access the SAS controller configuration utility upon system boot, and when the SAS controller card is initializing.
2. **Select the SAS Adapter from the menu list.**
3. **Select the RAID Properties from the menu list.**
4. **Select the RAID type from the menu list**
The following three options will display:
 - *Create IM Volume:* for creating a mirror array
 - *Create IME Volume:* for creating enhanced mirrors (three or more disks or hot spares)
 - *Create IS Volume:* for creating a Striping array
5. **Select the disks to be added to the RAID array.**
 - a. **Move the cursor over to the RAID Disk field.**

b. Select Yes, to change the RAID Disk field.

Do this for all disks you want to added to the RAID array.

Note – You will be receive a warning message about losing the data on the disk. If you are selecting a mirror, on the first disk you select you will be asked if you want to keep the data and have it synchronized in the mirror.

c. Press C to create the RAID array.

d. Select Save Changes, and then exit this menu.

6. Exit the configuration utility.

Installing the Operating System

Your Sun Ultra 40 M2 Workstation has the Solaris 10 Operating System preinstalled. You can also choose to install one of the other supported operating systems.

Note – For best results, make sure to run the latest operating system (OS) updates. Some OS installations might not run properly if the latest updates are not installed.

The following additional operating systems are supported for the Sun Ultra 40 M2 Workstation:

- Pre-installed Solaris 10, 6/06
- RHEL 4 32-bit/64-bit Update 4
- RHEL 3 32-bit/64-bit Update 8
- SUSE Linux Enterprise (SLED10) 64-bit
- Windows XP 32-bit SP2
- Windows XP 64-bit SP1

Instructions for installing these operating systems are packaged in the media sets that are provided with the operating system software.

If you are installing Windows XP software and you plan to set up a RAID configuration on your workstation, you will need to install the RAID drivers in conjunction with installing Windows XP. See [“Installing Windows XP Operating System Drivers” on page 12](#) and [“Enabling SATA RAID Support” on page 4](#).

Note – The diagnostic partition is preinstalled on the Sun Ultra 40 M2 Workstation. You can obtain information about how to reinstall the diagnostic partition from the Sun Ultra 40 M2 Workstation Tools and Drivers CD.

Running the `up2date` Utility

If you are installing the Red Hat Enterprise Linux software, run the `up2date` utility *after* installing the operating system and *before* installing the video drivers from the Sun Ultra 40 M2 Workstation 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.

Installing Drivers and Mounting the Diagnostic Partition

After installing the operating system, run the installation script provided on the Sun Ultra 40 M2 Workstation Tools and Drivers CD to install the drivers that correspond to your operating system.

You also need to run the installation script to mount the diagnostic partition for all supported operating systems if you have created a new diagnostic partition. The diagnostic partition cannot be mounted on a workstation running Windows XP software.

This section covers the following topics:

- [“Installing Linux Operating System Drivers” on page 10](#)
- [“Installing Solaris Operating System Drivers” on page 11](#)
- [“Installing Windows XP Operating System Drivers” on page 12](#)
- [“Installing NVIDIA Display and Chipset Drivers for Windows XP” on page 16](#)

Installing Linux Operating System Drivers

To install the video and chipset drivers and mount the diagnostic partition when running a Linux operating system:

1. **Log in to the Sun Ultra 40 M2 Workstation as superuser.**
2. **Insert the Sun Ultra 40 M2 Workstation Tools and Drivers CD into the DVD drive and type:**

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

Where */mountpoint* is the directory the CD is mounted to and *operating_system* is the type of Linux installed on the workstation (*red_hat* or *suse*).

- 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 that the CD is mounted to and *operating_system* is the type of Linux installed on the workstation (*red_hat* or *suse*).

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 X server 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 steps 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.
9. To enable SLI support, follow the instructions in “[Configuring SLI Support](#)” on [page 29](#).

Installing Solaris Operating System Drivers

To install the drivers and mount the diagnostic partition when running the Solaris 10 Operating System (if the Solaris Operating System is not preinstalled):

1. Log in to the Sun Ultra 40 M2 Workstation as superuser.
2. Insert the Sun Ultra 40 M2 Workstation Tools and Drivers CD into the DVD drive. The CD is automounted by the Solaris 10 Operating System.
3. Change to the `/cdrom/cdrom0/drivers/sx86` directory by typing the following command:

```
# cd /cdrom/cdrom0/drivers/sx86
```

4. Run the install script by typing the following command:

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

The video drivers are now installed and the diagnostic partition is now mounted. The script prompts the user to reboot the system for changes to take effect.

5. Eject the CD.
6. Reboot the server.
7. When prompted for networking information on your system, enter the networking information for your server.

Installing Windows XP Operating System Drivers

The Sun Ultra 40 M2 Workstation Tools and Drivers CD contains NVRAID, NVIDIA display, and NVIDIA chipset drivers for Windows XP. If you are installing NVRAID drivers, you will need to use the XpReburn script to create a new Windows XP CD containing the necessary drivers or create a boot diskette to install the drivers *before* installing the Windows XP operating system.

The order of Windows 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 XpReburn Script” on page 13.](#)
 - [“Installing RAID Drivers Using a Boot Diskette” on page 14.](#)
2. Install the operating system.
3. Using the Tools and Drivers CD, install the display and chipset drivers as described in [“Installing NVIDIA Display and Chipset Drivers for Windows XP” on page 16.](#)
4. If necessary, install the Infineon TPM and RealTek audio drivers as described in [“Installing Infineon TPM and RealTek Audio Drivers” on page 17.](#)
5. If necessary, enable SLI support. See [“Configuring SLI Support” on page 29.](#)

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

Installing RAID Drivers Using the XpReburn Script

The Sun Ultra 40 M2 Workstation Tools and Drivers CD contains a script that enables you to create a new Windows XP CD with the needed RAID drivers. After the new CD is created, you can boot the CD and install Windows 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 XpReburn script, see the description at the top of the script which is located in `/drivers/utilities/XpReburn` on the Tools and Drivers CD.

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

- A system running Solaris Operating System for x86 Systems, Red Hat Enterprise Linux 3 or 4, or SUSE Linux Enterprise Server (SLED 10).
- Access to a CD burner
- A blank CD-R or CD-RW
- A Windows XP Professional installation CD (retail media only—not an OEM version)
- A Sun Ultra 40 M2 Workstation Tools and Drivers CD

To create a Windows XP CD with the Sun Ultra 40 M2 Workstation drivers:

1. **On a system Solaris x86, Solaris OS (SPARC Platform Edition), or Red Hat Enterprise Linux 3 or 4, or SLED 10 software, insert the Sun Ultra 40 M2 Workstation Tools and Drivers CD.**

2. **As superuser, create a temporary directory with at least 1.2 Gbytes of space.**

For example:

```
# mkdir /files
```

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

Where *version* is the current version of XpReburn.

For example:

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

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

5. Unzip the XpReburn_< i>version.zip file.

For example:

```
# unzip -q XpReburn_1.0.zip
```

6. Run the XpReburn 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 XP Professional software on the Sun Ultra 40 M2 Workstation.

8. After the OS installation is complete, install the NVIDIA display drivers described in [“Installing NVIDIA Display and Chipset Drivers for Windows XP”](#) on page 16.

Installing RAID Drivers Using a Boot Diskette

This section explains how to create a boot diskette for the NVIDIA RAID drivers using the Sun Ultra 40 M2 Workstation Tools and Drivers CD, 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 40 M2 Workstation Tools and Drivers CD
- A USB floppy drive
- A 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 15
- [“Installing Windows XP and NVIDIA RAID Drivers”](#) on page 15

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 40 M2 Workstation Tools and Drivers CD.
2. Change to the appropriate directory on the Tools and Drivers CD by typing the following:

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

Where OS is XP32 or XP64.

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

Installing Windows XP and NVIDIA RAID Drivers

To install Windows XP with the NVIDIA RAID drivers:

1. Ensure that the system BIOS and NVIDIA BIOS is configured for RAID operation. See [“Enabling SATA RAID Support” on page 4](#).
2. Attach a USB diskette drive to the workstation.
3. Insert a Windows XP 32-bit or 64-bit 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 15](#).
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 XP installation.
10. After the OS installation is complete, install the NVIDIA display and chipset drivers as described in [“Installing NVIDIA Display and Chipset Drivers for Windows XP” on page 16](#).

Installing NVIDIA Display and Chipset Drivers for Windows XP

Note – If you have created a Windows XP 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 XP:

1. Insert the Sun Ultra 40 M2 Workstation Tools and Drivers CD into the DVD drive.
2. (If necessary) Install the chipset drivers:
 - a. Change to the appropriate directory on the Tools and Drivers CD by typing the following command:

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

Where OS is XP32 or XP64.

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

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

Where OS is XP32 or XP64.

- b. Double-click the executable file.
 - c. Follow the instructions in the installation software.
4. Eject the CD from the workstation.
5. Reboot the workstation.

Installing Infineon TPM and RealTek Audio Drivers

Trusted Platform Computing (TPM) 1.2 and RealTek digital audio (SPDIF) are included on the Tools and Drivers CD. To use these features, you need to install the drivers.

Note – If the Infineon TPM drivers are not installed, a yellow exclamation mark will appear in the device manager.

Installing Infineon Drivers

To install the Infineon drivers:

1. **Insert the Tools and Drivers CD into the DVD drive.**
2. **Change to the Tools and Drivers CD directory by typing the following:**

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

Where OS is XP32 or XP64.

3. **Unzip the tpm_sp1_x.x.x.zip file.**
4. **Double-click the setup.exe file**
5. **Follow the instructions in the wizard to install the drivers.**

Installing RealTek Audio Drivers Installation

To install the RealTek Audio drivers:

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

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

Where OS is XP32 or XP64.

3. **Unzip the file and 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 section contains the instructions for creating Sun Ultra 40 M2 Workstation specific images on the Remote Installation Service (RIS) server for the following operating systems:

- Windows XP SP2 32-bit
- Windows XP 64-bit

Note – For best results, once created you can install the images on a client workstation.

This section covers the following topics:

- [Section , “Creating a 32-bit Windows XP \(Service Pack 2\) RIS Image” on page 1-19](#)
- [Section , “Creating a 64-bit Windows XP RIS Image” on page 1-24](#)
- [Section , “Installing a RIS Image onto a Client Workstation” on page 1-28](#)

Creating a 32-bit Windows XP (Service Pack 2) RIS Image

This section describes how to create a Windows XP 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 CD, version 1.2 or later.

Note – Before using this procedure, you must install the RIS onto a Windows 2003 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>

Creating the Windows XP SP2 32-bit Image on the RIS Server

To copy Windows 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 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 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 XP SP2 32-bit CD image you are creating. For example:

```
Ultra_40_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.

Adding the NVIDIA Ethernet Drivers to the Windows Image

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

1. Insert the Tools and Drivers CD into the RIS server's CDROM drive.
2. Type the commands below to accomplish the following actions:
 - Copy the Windows 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\XP32\NVRIS.ZIP C:\temp\  
c:\ unzip c:\temp\nvriz.zip -d c:\temp\nvriz  
c:\ copy c:\temp\nvriz\*. * ris_partition:\RemoteInstall\Setup\English\Images\image_dir\  
i386
```

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

Adding Other Drivers and Modifying Settings Files

To modify settings files, create driver directories, and copy drivers to their directories in the Windows 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\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
    nic
    sata_ide
    smb
  $$
  OemDir
```

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

Note – The drivers are located in the following directory on Tools and Drivers CD.
cdrom_drive:
`\drivers\windows\xp32\chipset\`

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

```
c:\ copy cdrom_drive:\drivers\windows\xp32\chipset\*.zip c:\temp
```

b. To unzip the package, type the following command:

```
c:\ unzip c:\temp\nfref_918_wxp.zip c:\temp\nfref_918_wxp
```

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

```
c:\ copy c:\temp\nfref_918_wxp\ide\winxp\sataraid\*.dll ris_partition:\remoteinstall\
setup\english\images\image_dir\%oem%\$$\OemDir

c:\ copy c:\temp\nfref_918_wxp\ide\winxp\sataraid\* ris_partition:\remoteinstall\setup\
english\images\image_dir\%oem%\textmode

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

c:\ copy c:\temp\nfref_918_wxp\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\
```

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
```

Creating a 64-bit Windows XP RIS Image

This section describes how to create a 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 CD, version 1.2 or later.

Note – Before using this procedure, you must install RIS onto a Windows 2003 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>

Installing Windows XP 64-bit onto the RIS Server

To copy the Windows 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 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:\ rissetup.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 XP 64-bit CD, and then click Next.
7. In the Windows Installation Image Folder Name screen, type a descriptive name for the Windows XP 64-bit CD image you are creating. For example:

```
Ultra_40_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.

Adding the NVIDIA Ethernet Drivers to the Windows Image

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

1. Insert the Tools and Drivers CD 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\XP64\NVRIS64.ZIP C:\temp\  
c:\ unzip c:\temp\NVRIS64.zip -d 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, *image_dir* is the image directory, and *ris_partition* is the drive where the RIS image is stored on the RIS server.

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 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\nic;\drivers\sata_ide;\drivers\smbus"

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

[OEMBootFiles]
    nvatax64.sys
    nvraid.cat
    nvr64.inf
    nvr64.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
    nic
    sata_ide
    smbush
$$
  OemDir
```

5. To copy Windows 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 CD:

```
cdrom_drive:\drivers\windows\xp64\chipset\
```

- a. To copy the zip package to the RIS server, type the following command:

```
c:\ copy cdrom_drive:\drivers\windows\xp64\chipset\*.zip c:\temp
```

- b. To unzip the package, type the following command:

```
c:\ unzip c:\temp\nfref_918_wxp64.zip c:\temp\nfref_918_wxp64
```

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

```
c:\ copy c:\temp\nfref_918_wxp64\ide\winxp\sata_raid\*.dll ris_partition:\remoteinstall\setup\english\images\image_dir\$oem$\$$\OemDir

c:\ copy c:\temp\nfref_918_wxp64\ide\winxp\sata_raid\* ris_partition:\remoteinstall\setup\english\images\image_dir\$oem$\textmode

c:\ copy c:\temp\nfref_918_wxp64\ide\winxp\sata_ide\* ris_partition:\remoteinstall\setup\english\images\image_dir\$oem$\$1\drivers\sata_ide

c:\ copy c:\temp\nfref_918_wxp64\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\
```

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
```

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.

Configuring SLI Support

Refer to www.slizone.com for more information on Scalable Link Interface (SLI) and the latest supported drivers.

NVIDIA SLI (Scalable Link Interface) is a high-performance technology that intelligently combines and scales graphics performance and visual quality by having multiple NVIDIA GPUs in a single system. SLI technology can scale both geometry and fill rate performance for two GPUs.

In order to enable SLI functionality, you need two of same cards installed. The following graphics cards are supported for Sun Ultra 40 M2 Workstation SLI operation:

- FX3500
- FX5500

If these cards are already installed in your workstation, the SLI connector will be already installed.

Enabling SLI for Windows XP

To enable SLI for Windows XP:

1. **Install the NVIDIA graphics driver located on the Tools and Drivers CD if it is not previously installed.**
See [“Installing Windows XP Operating System Drivers”](#) on page 12.
2. **Right click on the desktop or click on the NVIDIA setting icon located on the taskbar and select nvidia display -> *the attached monitor type*.**
3. **Select SLI-Multi GPU and select the enable SLI multi-GPU checkbox.**
A message will appear stating SLI is enabled and that a reboot is required.
4. **Reboot the workstation.**

Enabling SLI for Linux

To enable SLI for Linux operating systems:

1. **Log in to the workstation as root (superuser).**
2. **Install the Linux display drivers, if you have not already done so.**
See [“Installing Linux Operating System Drivers”](#) on page 10.
3. **Type the command:**

```
# nvidia-xconfig --sli=on
```

This will modify the X configuration file automatically

4. **Reboot the workstation.**

Refer to the readme for more information on configuring the different operation modes in either of the following locations:

- On the hard drive after the display drivers are installed:
`/usr/share/doc/NVIDIA_GLX-1.0/readme.txt`
- On the Tools and Drivers CD at: `/drivers/linux/OS/display/readme.txt`.
Where OS is `red_hat` or `suse`.

Downloading Sun N1 Grid Engine

Included with the Sun Ultra 40 M2 workstation are two fully licensed RTUs for the Sun's N1 Grid Engine. To purchase support, no additional licenses are required. These RTUs can only be used with the Sun Ultra 40 M2 workstation that it came with. The RTUs are non-transferable and cannot be used on other hardware.

By using N1 Grid Engine's market leading functionality you can increase your systems' productivity by leveraging unused compute cycles for power-hungry applications. The ability to incorporate thousands of workstations with N1 Grid Engine enables enterprises to significantly increase the utilization of compute resources for enhanced productivity, increased utilization, and to save money by stretching existing IT assets.

For more information on Sun N1 Grid Engine software, see the following web site:
<http://www.sun.com/gridware>

Click the Get the Software button to download the software.

Setting Up the Preinstalled Software

The Solaris 10 Operating System and additional development software are preinstalled on all Sun Ultra 40 M2 Workstations. This chapter contains instructions on configuring the operating system and using the software installed on the system.

This chapter includes the following topics:

- [“Configuring Solaris 10 Operating System Software” on page 33](#)
- [“Setting Up Preinstalled Development Software” on page 37](#)
- [“Restoring and Backing Up Preinstalled Software” on page 39](#)

Configuring Solaris 10 Operating System Software

This section describes how to configure the Solaris 10 operating system.

The following topics in this section include:

- [“Licensing Information” on page 34](#)
- [“Disk Configuration” on page 34](#)
- [“Planning the Solaris Installation” on page 34](#)
- [“Configuring the Preinstalled Solaris 10 Operating System” on page 35](#)

Licensing Information

The Solaris 10 Operating System version installed on your workstation requires no licensing fee. If you install a different version of Solaris software, you might be required to pay a licensing fee for the new software version. The Sun Ultra 40 M2 Workstation requires the Solaris 10 HW 6/06 operating system or a compatible version. For more information, see:

<http://www.sun.com/software/solaris/licensing/index.html>

Disk Configuration

The exact configuration that has been preinstalled is as follows:

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

Planning the Solaris Installation

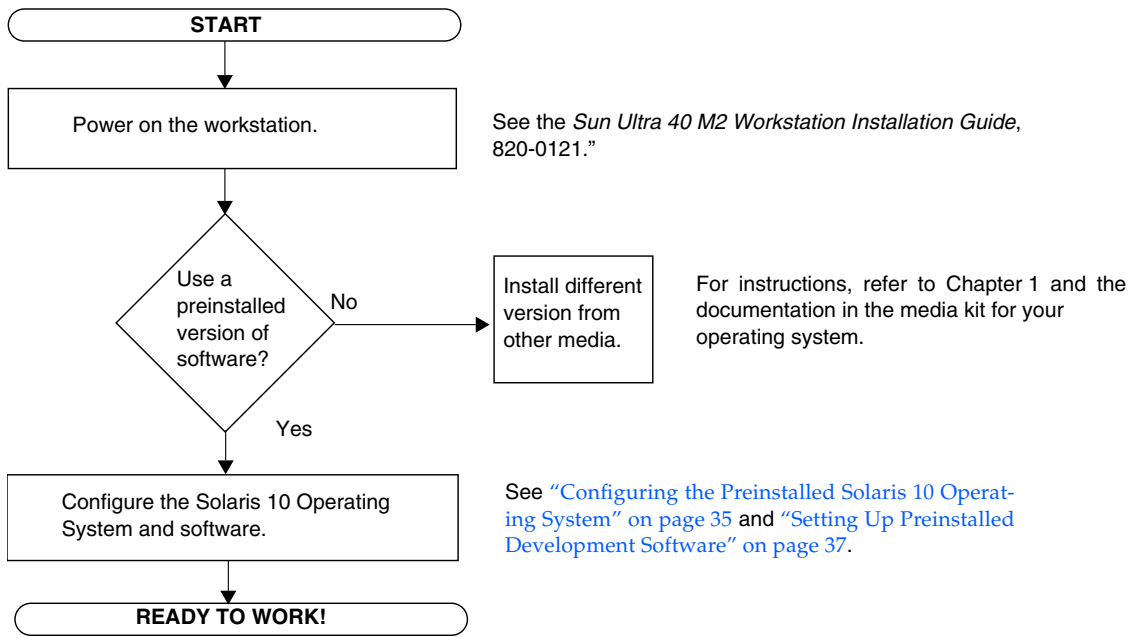


FIGURE 2-1 Solaris Software Installation Process

Configuring the Preinstalled Solaris 10 Operating System

To configure the preinstalled Solaris 10 Operating System:

1. Power on the workstation.

See the *Sun Ultra 40 M2 Workstation Installation Guide*, 820-0121.

2. Answer the setup prompts by following the onscreen instructions.

Use a copy of [TABLE 2-1](#) to record the information that you might need before setting up the Solaris 10 Operating System.

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

3. When you have finished with the configuration, the workstation reboots.

The workstation displays the login window, in which you can enter your user name and password to log in and begin using the workstation.

Note – In order to access the icons for the preinstalled development software, you will need to choose the Java Desktop System (JDS) desktop option before logging in. (See [“Setting Up Preinstalled Development Software”](#) on page 37 for more information on the development software.)

4. 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 available at:
<http://docs.sun.com>

TABLE 2-1 Information for Preinstalled Solaris 10 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 for 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.	
Security Settings	Security settings and protocols.	
Name Service	Name service to use: NIS+, NIS, DNS, LDAP, or None. Note: This window is not displayed if the workstation is not connected to a network.	
Domain Name	NIS or NIS+ domain for this workstation. Note: This window is not displayed if the workstation is not using the NIS or NIS+ service.	
Name Server/ Subnet/ Subnet Mask	Name server (specify the server or have the workstation find one on a local subnet). Note: This window is not displayed if the workstation is not connected to a network. Note: Depending on how you answer and what information is provided by your network, you might also be prompted for: <ul style="list-style-type: none">• The subnet for the workstation• The subnet mask for the workstation	
Time Zone	Local timezone (select by geographic region, GMT offset, or a timezone file).	
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.	

Setting Up Preinstalled Development Software

To launch one of the preinstalled development programs, double-click on the appropriate icon on the JDS desktop.

The following sections describe the development software that is preinstalled or preloaded on your Sun Ultra 40 M2 Workstation:

- [“Sun Studio 11 Software” on page 37](#)
- [“Sun Java Studio Creator 2” on page 38](#)
- [“Sun Java Studio Enterprise 8 Software” on page 39](#)
- [“NetBeans IDE 5.0 ML” on page 39](#)

Sun Studio 11 Software

Sun Studio™ 11 software provides a comprehensive, productive environment for developing reliable, scalable, high-performance applications using C, C++, and Fortran for the Solaris Operating System. The software package includes compilers, performance analysis tools, and a powerful debugger, as well as an integrated development environment (IDE).

The Sun Studio 11 IDE provides modules for creating, editing, building, debugging, and analyzing the performance of a C, C++, or Fortran application. 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 11 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

More information about the Sun Studio 11 software is available at the following locations:

- Release Notes for Solaris Platforms are available on the developer portal at:
<http://developers.sun.com/prodtech/cc/documentation/ss11/index.html>

Information in the release notes updates and extends information in all readme files.

- Sun Studio documentation is available at:
<http://docs.sun.com>

Sun Java Studio Creator 2

The Sun Java Studio™ Creator development environment 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 the Java environment.

The Java Studio Creator environment has been designed and tested to meet the needs of skilled developers whose primary concern is rapid turnaround of business-critical applications. Java Studio Creator lets these developers leverage the power of the Java platform to solve business problems, using the highly productive visual style to which they are accustomed.

Additional information about Sun Java Studio Creator can be found in the product documentation at:

<http://developers.sun.com/prodtech/javatools/jscreator/reference/docs/index.jsp>

Sun Java Studio Enterprise 8 Software

Sun Java Studio Enterprise software 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. Sun Java Studio Enterprise enables you to develop applications in an environment carefully designed to improve productivity while simplifying the creation of sophisticated network applications that will be readily deployed on the Java Enterprise System.

Additional information about Sun Java Studio Enterprise 8 can be found in the product documentation at:

<http://docs.sun.com>

NetBeans IDE 5.0 ML

See the following web site for more information on NetBeans™ IDE 5.0:

<http://www.netbeans.org/kb/50/index.html>

Restoring and Backing Up Preinstalled Software

Your workstation comes preconfigured with the Solaris 10 Operating System, 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 this document to configure the OS and install the drivers.

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/>

Restoring Solaris Preinstalled Software

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

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

Backing Up the Preinstalled Image to Another Hard Drive

Information about hard drive backups can be found in the *Solaris 10 System Administration Guide*. To obtain this guide, refer to the following web site:

<http://docs.sun.com/>

Hard Drive Mirroring

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

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

<http://docs.sun.com/>