Sun Ultra 27 Workstation Windows Operating System Installation Guide

Contents

Preface

This document contains instructions for installing the Microsoft Windows Vista Ultimate, Windows Server 2008, and Windows XP operating system onto a Sun Ultra™ 27 workstation.

Related Books

The document set for the Sun Ultra 27 workstation is described in the *Where To Find* at:

http://docs.sun.com/app/docs/prod/ultra27.ws#hic

Translated versions of some of these documents are available at the web site described above in Simplified Chinese, Japanese, Korean, Italian, French, German and Spanish. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

For all Sun hardware and other documentation, go to:

http://docs.sun.com

Related Third-Party Web Site References

Third-party URLs are referenced in this document and provide additional, related information.

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Typographic Conventions

The following table describes the typographic conventions that are used in this book.

TABLE P–1 Typographic Conventions

Typeface	Meaning	Example
AaBbCc123	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
AaBbCc123	What you type, contrasted with onscreen computer output	`machine_name%` **su** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. A *cache* is a copy that is stored locally. Do *not* save the file. **Note:** Some emphasized items appear bold online.

Shell Prompts in Command Examples

The following table shows the default UNIX® system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P–2 Shell Prompts

Shell	Prompt
C shell	`machine_name%`
C shell for superuser	`machine_name#`
Bourne shell and Korn shell	`$`
Bourne shell and Korn shell for superuser	`#`

Documentation, Support, and Training

The Sun web site provides information about the following additional resources:

- Documentation (http://www.sun.com/documentation/)
- Support (http://www.sun.com/support/)
- Training (http://www.sun.com/training/)

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. To share your comments, go to http://docs.sun.com and click Feedback.

Change History

The following changes have been made to the document.

- April 2009, initial document was published.
- July 2009, Chapter 6, Installing Windows XP, was added. Chapter 3, Preparing for Mass Storage Driver Delivery (Windows Vista Ultimate Only) was deleted.

1

Getting Started

This chapter provides important guidelines and information you need to know before installing the Microsoft Windows Vista Ultimate, Windows Server 2008, or Windows XP operating system on a Sun Ultra 27 workstation.

The following sections are included in this chapter:

About Windows Server Installation

The following chapters in this document describe how to install the Microsoft Windows Vista Ultimate, Windows Server 2008, and Windows XP operating systems. The installation procedures apply to both the 32-bit and 64-bit versions of the operating systems.

If you are installing Windows XP, note that the mass storage drivers are *not* included with the Windows XP distribution media. If you are installing Windows Vista Ultimate or Windows Server 2008, the required mass storage driver *are* included with the distribution media.

Important Installation Considerations

Note the following important considerations before beginning the Windows Server operating system installation on mass storage connected to your Sun workstation:

- When you install the Windows operating system, any data on the boot drive, including any preinstalled operating system, is overwritten.

- If you are using the on-board Intel® ICH10R AHCI SATA disk controller connected to mass storage, and you want to include your boot drive as part of a RAID configuration, you must first configure your system's SATA configuration setting for RAID using the system BIOS setup utility (accessible by pressing F2 during boot). Then, configure your RAID volumes using the Intel Matrix Storage Manager option ROM utility (accessible by pressing Ctrl-I during workstation boot) before you install the Windows operating system.

- If you have the optional LSI 3041E Host Bus Adapter connected to mass storage, and you want to include your boot drive as part of a RAID configuration, you must configure your RAID volumes using the controller's BIOS configuration utility (accessible by pressing Ctrl-C during workstation boot) before you install the Windows operating system.

Note – For configurations that require additional hardware, you must install the hardware before you can install the operating system. You might also need to configure the boot device priority in the workstation's BIOS setup program.

- Windows XP does not contain the mass storage drivers required for your workstation. The mass storage drivers can be delivered from a floppy disk, USB flash disk or CD/DVD.

- Check for any known issues with your workstation and the version of Windows you are installing by reviewing the appropriate sections in the *Sun Ultra 27 Workstation Product Notes*.

The installation procedures described in this document guide you through the process of selecting an installation method for the mass storage driver and operating system media.

Supported Windows Operating Systems

The Sun Ultra 27 workstation supports the following Microsoft Windows operating systems at the time of publication of this document:

- Microsoft Windows Vista, Ultimate (32-bit or 64-bit)
- Microsoft Windows Server 2008, Standard Edition (32-bit or 64-bit)
- Microsoft Windows XP, SP2 (32–bit or 64–bit)

The updated list of supported operating systems can be found on the Sun Ultra 27 workstation product page:

```
http://www.sun.com/desktop/index.jsp
```

Manual Installation

This section provides an overview to the steps required to manually install Microsoft Windows Vista Ultimate, Windows Server 2008, or Windows XP locally on your workstation.

Note – If you plan to use a Windows Deployment Services server to install Windows Vista Ultimate or Windows Server 2008 to your workstation, see Chapter 8, "Incorporating Sun Ultra 27 Workstation Drivers Into a WIM Image (Windows Vista Ultimate and Windows Server 2008 Only)."

To install Windows Vista Ultimate, Windows Server 2008, or Windows XP from CD media onto your workstation, complete the following procedures in order:

1. Download driver packages (see Chapter 2, "Downloading Driver Packages").
2. Prepare the mass storage drivers media for Windows XP installations. See Chapter 6, "Installing Windows XP" .
3. Prepare workstation internal storage for Windows installation (see Chapter 3, "Preparing Disks for the Operating System").
4. Install Windows. See one of these chapters:
   - Chapter 4, "Installing Windows Vista Ultimate"
   - Chapter 5, "Installing Windows Server 2008"
   - Chapter 6, "Installing Windows XP"
5. Update the critical workstation drivers (see Chapter 7, "Updating the Critical Drivers and Software").

After completing these procedures, you will have successfully installed the Windows operating system.

About Drivers

This section describes the types of drivers required for your workstation and when you would install them.

The OS itself or Sun provides drivers for your workstation. Some of these drivers need to be installed *during* OS installation and some of these can be installed and updated *after* OS installation. In some cases, you might need to prepare the drivers before you install the OS. Most of these drivers are found on the OS distribution media, the Tools and Drivers DVD, or from the windows.zip file that is downloadable from the Sun software download site.

In general, Windows Vista Ultimate and Windows 2008 OSs include drivers in the OS itself.

Some of the drivers for Windows XP are not included in the OS. You need to copy the drivers from the Tools and Drivers CD to diskette and then load the drivers during OS installation by pressing F6. , If you do not load the mass storage drivers, the workstation does not recognize the hard disk. After OS installation, you can load the Intel Storage Manager and configure RAID 0 or RAID 1. You can also use the Windows XP reburn CD to install the OS and drivers.

TABLE 1–1   Sun Ultra 27 Drivers

Driver	OS	When Installed	How Installed	Notes
Mass storage	Vista	During OS installation		Included in the OS distribution media.
	Windows Server 2008	During OS installation		Included in the OS distribution media.
	Windows XP	During OS installation	Prepare drivers ahead of time; installed through a local floppy disk , USB flash disk, or CD/DVD	Included in the Tools and Drivers CD; see Chapter 6, "Installing Windows XP."
Windows Imaging Format (WIM) files	Vista Windows Server 2008	During OS installation	Windows Deployment Services (WDS)	You can install many drivers into a WIM image and install them using WDS; see Chapter 8, "Incorporating Sun Ultra 27 Workstation Drivers Into a WIM Image (Windows Vista Ultimate and Windows Server 2008 Only)."
NVIDIA Graphics and Realtek Audio	Vista, Windows Server 2008, and Windows XP	After OS installation		If you use a WIM image (Vista/2008 only), these drivers are installed during landing of the image (see Chapter 8).

Deploying a Windows Image to Your Workstation

If you plan to deploy Windows Vista Ultimate or Windows Server 2008 to your workstation using a Windows Deployment Services (WDS) server, refer to Chapter 8, "Incorporating Sun Ultra 27 Workstation Drivers Into a WIM Image (Windows Vista Ultimate and Windows Server 2008 Only)," for information on creating and mounting a WIM image with the necessary drivers for your workstation.

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◆ ◆ ◆   **C H A P T E R   2**

Downloading Driver Packages

This chapter describes how to download the workstation-specific driver packages needed for Windows Vista Ultimate, Windows Server 2008, or Windows XP installation.

Note – If you have the latest Tools and Drivers DVD, you can proceed to the next chapter. To confirm you have the latest version of the Tools and Drivers DVD, check the available downloadable image on the Sun download site as described below.

Downloading Drivers

Download the required Windows mass storage drivers and optional software or a complete Tools and Drivers DVD image from the Sun software download site.

▼ To Download Drivers

1   **Go to the driver download site for your workstation.**

    http://www.sun.com/download/index.jsp

    Select **View by Category**, **x64 Servers & Workstations**, and then select Ultra 27 from the product list.

2   **Choose one of the following download options:**

    ■ **If you only need network drivers and the mass storage drivers required for Windows installation, download** windows.zip **to your hard disk.**

    ■ **To ensure that you have all of the drivers and supported software for your server, download the Tools and Drivers ISO image. The ISO image can be used in a system with a CD/DVD burner to create a DVD that will be accessible during the installation.**

3

Preparing Disks for the Operating System

To prepare a disk to allow Windows to access it, you need to configure the disk controller you are using. Your workstation comes with an Intel AHCI (Advanced Host Controller Interface) integrated disk controller or an optional LSI 3041E HBA. Tasks that need to be done are listed below. Follow the procedures that best meet your needs:

- If required, prepare your boot disk by removing the preinstalled Solaris partition. See "Removing a Preinstalled Partition Without Deleting the Diagnostic Partition" on page 15.

- If you are using the Intel AHCI integrated disk controller, you need to configure the system BIOS for AHCI or RAID. If you configure for RAID, you additionally need to set up your RAID volumes. See "Setting the System BIOS and Configuring Disks for Intel AHCI SATA or RAID" on page 16.

- If you are using the LSI 3041E Host Bus Adapter (HBA) and want to include your boot disk as part of a RAID, you need to set up your RAID volumes. See "Configuring Your Disks for RAID Using the LSI 3041E Host Bus Adapter (HBA)" on page 19.

- To learn more about configuring and managing your disks, see "Additional Information" on page 20.

Removing a Preinstalled Partition Without Deleting the Diagnostic Partition

Diagnostics (system test) software is included on the Tools and Drivers DVD for your workstation. A diagnostic partition is required for the diagnostic 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 27 Workstation. You do not need to reinstall the diagnostic partition unless you remove it. Instructions for using the diagnostics software are provided in the *Sun Ultra 27 Workstation Service Manual*

If you remove the diagnostic partition, you can re-create it using the Create Diagnostic Partition option on the Tools and Drivers DVD. See the *Sun Ultra 27 Workstation Service Manual* for instructions.

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

▼ To Remove a Preinstalled Partition

The Erase Primary Boot Hard Disk option erases all partitions and all user data on the hard drive, except the diagnostic partition.

Caution – Be sure to back up any data you want to save on the hard drive before performing this action.

1   Insert the Tools and Drivers DVD into the system.

2   When the main menu appears, select the Erase Primary Boot Hard Disk option from the Tools and Drivers DVD main menu.

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.

3   When prompted, confirm that you wish to delete the partitions.

4   When prompted, press any key to reboot the system.

Setting the System BIOS and Configuring Disks for Intel AHCI SATA or RAID

When using the workstation's Intel AHCI integrated disk controller, you must configure the SATA disks for AHCI or Intel RAID before installing Windows. For systems with SATA disks, performing this task is required for Windows to access the disks.

▼ To Set the System BIOS and Configure Your Disks for Intel SATA or RAID

1   Power on the system.

2   Press the F2 key at the Sun logo screen to enter the BIOS Setup menu.

3   In the BIOS Utility dialog, select Advanced -> IDE Configuration.

The IDE Configuration menu is displayed.

4   In the IDE Configuration menu, select `Configure SATA as` **and press Enter.**

A menu is displayed listing the SATA options.

5   In the SATA Options menu, select one of the following:

  ■ **AHCI for a system using SATA disks (non-RAID).**

  ■ **RAID to create an Intel Matrix RAID.**

6   Press F10 to save your changes, exit the BIOS Utility, and reboot the server. Then, do one of the following:

  ■ **If you are not planning to make your boot disk part of RAID, proceed to install your operating system (see Chapter 4, "Installing Windows Vista Ultimate," Chapter 5, "Installing Windows Server 2008," or Chapter 6, "Installing Windows XP."**

  ■ **If you are planning to make your boot disk part of a RAID, proceed to the next step.**

7   To make your boot disk part of a RAID, press Ctrl-I when prompted during the boot process to enter the Intel Matrix Storage Manager option ROM utility.

The Intel Matrix Storage Manager main menu is displayed.

8   At the main menu, select the `1. Create RAID Volume` **menu option.**

The Create RAID Volume menu is displayed.

9   In the Create RAID Volume menu, do the following:

  a. **Provide a name for the RAID volume and press Enter (or press Enter to accept the default).**

  b. **Select a RAID level (0, 1, 5, 10) and press Enter.**

  Use the up and down arrow keys to scroll through the available RAID level values.

  Note – RAID 0 provides no fault tolerance.

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  c. **Select the disks for the array.**

  d. **If prompted, select the strip size and press Enter (or press Enter to accept the default (128KB)).**

e. **Specify the volume capacity and press Enter (or press Enter to accept the default (total size of selected disks)).**

f. **Select** `Create Volume` **and press Enter.**

   The following warning message appears stating that all data could be lost:

   `Are you sure you want to create this volume? Y or N.`

g. **Press Y to confirm the volume creation.**

   The new RAID volume is created. Information describing the RAID volume appears (for example, the RAID ID, Volume Name, Level, Status).

10 Select EXIT and press Enter to exit the Intel Matrix Storage Manager utility.

A confirmation message appears confirming that you want to exit the Intel Matrix Storage Manager utility.

11 Press Y to confirm the exit.

12 To create a partition on the RAID volume, insert the Tools and Drivers DVD into the workstation's CD/DVD drive.

13 Reboot the system.

The system boots to the Tools and Drivers DVD.

14 At the main menu, select `4. Exit to DOS`**.**

15 At the DOS prompt, enter the following command:

`fdisk`

16 When prompted that the hard disk sector zero has no boot sector ID, press Y to initialize the disk.

17 Do one of the following:

   ■ **To begin installing Windows Vista Ultimate, proceed to Chapter 4, "Installing Windows Vista Ultimate."**

   ■ **To begin installing Windows Server 2008 , proceed to Chapter 5, "Installing Windows Server 2008."**

   ■ **To begin installing Windows XP, proceed to Chapter 6, "Installing Windows XP."**

Configuring Your Disks for RAID Using the LSI 3041E Host Bus Adapter (HBA)

If you are using the LSI 3041E Host Bus Adapter and want to include your boot disk as part of a RAID, you need to set configuration information in the disk controller BIOS before installing Windows.

▼ To Configure Your Disks for RAID

1 **Power on the system.**

2 **During POST, press Ctrl-C when prompted to start the LSI Configuration utility.**

3 **At the Adapter List screen, use the arrow keys to select your adapter and press Enter.**
The Adapters properties screen is displayed.

4 **Select RAID properties.**

5 **Select a volume type, `IM` (Integrated Mirror (RAID 1)), or `IMe` (Integrated Mirror Enhanced—RAID 1E).**

6 **Select the volumes you would like to include in the RAID.**

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

---

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

Note – After you create IM and IME RAID arrays, the system performs an automatic reset to enable the write cache feature.

---

8 **Do one of the following:**

- **To begin installing Windows Vista Ultimate, proceed to Chapter 4, "Installing Windows Vista Ultimate."**

- **To begin installing Windows Server 2008, proceed to Chapter 5, "Installing Windows Server 2008."**

- **To begin installing Windows XP, proceed to Chapter 6, "Installing Windows XP."**

Additional Information

For more information on using your disk controller, refer to the following documents on the Sun documentation web site:

- For the LSI 3041E HBA, see the *Sun LSI 106x BIOS RAID User's Guide* (820-4933). To obtain this document, navigate to:

  http://docs.sun.com/app/docs/coll/sf-hba-lsi

- For the Intel ICH10R integrated disk controller, refer to the *Sun Ultra 27 Workstation Service Manual*).

Note – More information about using your workstation's BIOS setup utility is provided in the *Sun Ultra 27 Workstation Service Manual*.

4

Installing Windows Vista Ultimate

This chapter describes how to install the Windows Vista Ultimate operating system onto a Sun Ultra 27 workstation.

Installation Requirements

Before beginning the operating system installation, make sure that you have:

- Downloaded the latest software for your workstation. See Chapter 2, "Downloading Driver Packages."
- Configured the system BIOS and prepared disks as described in Chapter 3, "Preparing Disks for the Operating System."

Note – The complete Microsoft Windows Vista Ultimate installation process is not documented in this section. This section documents only the steps that are specific for installing Windows Vista Ultimate on your Sun workstation.

Installing the Operating System

Caution – The Windows installation formats the drive you designate as the boot disk. Any pre-existing data on that disk will be lost.

▼ To Install the Operating System

1 **Make sure that you have completed all of the requirements listed in "Installation Requirements" on page 21.**

2   Power cycle your workstation.

The BIOS POST process begins.

3   Press F8 when the `Press F8 for BBS POPUP` **prompt appears on the BIOS POST screen (see Figure 4–1).**

The BBS POPUP menu allows you to select a boot device.


```
Initializing USB Controllers .. Done.
Press F2 to run Setup (CTRL+E on Remote Keyboard)
Press F8 for BBS POPUP  (CTRL+P on Remote Keyboard)
Press F12 to boot from the network (CTRL+N on Remote Keyboard)
```

FIGURE 4–1   F8 BBS POPUP Prompt Example

Once the BIOS POST process is complete, the Boot Device menu appears (see Figure 4–2).

4   Insert the Windows media CD in the server's DVD drive now.


```
        Please select boot device:

USB:Virtual FDD
USB:Virtual DVD/CD-ROM
HDD:3M-LEXAR ATA FLASH
Network:IBA GE Slot 0600 v1242
Network:IBA GE Slot 0601 v1242
<Enter Setup>


     ↑ and ↓ to move selection
     ENTER to select boot device
       ESC to boot using defaults
```

FIGURE 4–2   Boot Device Menu Example

5   Select the `DVD/CD-ROM` **drive or the CD image from the Boot Device menu and press Enter.**

If prompted with `Press any key to boot from CD`, quickly press any key.

The Windows installation wizard starts.

6   Proceed through the installation wizard until you see the Installation Type page displayed (see Figure 4–3), and then click Custom (advanced).
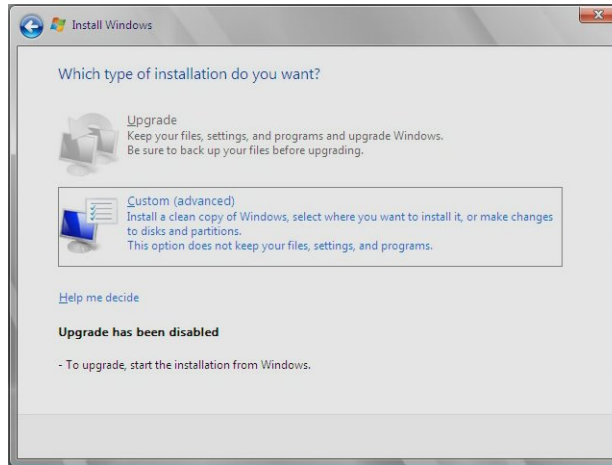
FIGURE 4–3 Select Installation Type Page

7 **At the Where Do You Want to Install Windows page (see Figure 4–4), do one of the following:**

- **If you** *do not* **want to override the Windows Default partition information, click Next and skip to Step 9.**

- **If you** *do* **want to override the Windows default partition information, click the Driver Options (advanced) option and proceed to the next step.**

Caution – Formatting or repartitioning a pre-existing partition destroys all data on the partition.

8 **At the Where Do You Want to Install Windows page with driver options (see Figure 4–4), do the following.**

FIGURE 4–4   Altering Partition Information

a. **Click Delete to delete the existing partition.**

b. **Click New to create the new partition.**

c. **Change size settings as needed, and then click Apply.**

d. **Click Next.**

9   **The Windows installation begins.**

The system will reboot multiple times during the installation process.

10   **When Windows installation is complete, Windows starts and prompts you to change the user password. Click OK and proceed to setup the initial user login account.**

Once the initial user account is created, the Windows Vista Ultimate desktop is displayed.

11   **When done, proceed to Chapter 7, "Updating the Critical Drivers and Software."**

◆ ◆ ◆ **C H A P T E R 5**

5

Installing Windows Server 2008

This chapter describes how to install the Windows Server 2008 operating system directly onto your server using the Windows Server 2008 media.

Windows Server 2008 Installation Requirements

Before beginning the operating system installation, make sure that you have:

- Downloaded the latest software for your workstation. See Chapter 2, "Downloading Driver Packages."
- Configured the system BIOS and prepared disks as described in Chapter 3, "Preparing Disks for the Operating System."

Note – The complete Microsoft Windows Server 2008 installation process is not documented in this section. This section documents only the steps that are specific for installing Windows Server 2008 on your workstation.

Installing the Windows Server 2008 Operating System

⚠ **Caution –** The Windows installation formats the drive you designate as the boot disk. Any pre-existing data on that disk will be lost.

▼ To Install the Operating System

1 **Make sure that you have completed all of the requirements listed in "Windows Server 2008 Installation Requirements" on page 25.**

2   Power cycle your server.

The BIOS POST process begins.

3   Press F8 when the `Press F8 for BBS POPUP` **prompt appears on the BIOS POST screen (see Figure 5–1).**

The BBS POPUP menu allows you to select a boot device.

```
Initializing USB Controllers .. Done.
Press F2 to run Setup (CTRL+E on Remote Keyboard)
Press F8 for BBS POPUP  (CTRL+P on Remote Keyboard)
Press F12 to boot from the network (CTRL+N on Remote Keyboard)
```

FIGURE 5–1   F8 BBS POPUP Prompt Example

4   Once the BIOS POST process is complete, the Boot Device menu appears (see Figure 5–2). Insert the Windows Server 2008 media DVD in the server's DVD drive now.

```
         Please select boot device:

USB:Virtual FDD
USB:Virtual DVD/CD-ROM
HDD:3M-LEXAR ATA FLASH
Network:IBA GE Slot 0600 v1242
Network:IBA GE Slot 0601 v1242
<Enter Setup>


    ↑ and ↓ to move selection
    ENTER to select boot device
     ESC to boot using defaults
```

FIGURE 5–2   Boot Device Menu Example

5   Select `CD/DVD` **from the Boot Device menu and press Enter.**

If prompted with `Press any key to boot from CD`, quickly press any key.

6   The Windows installation wizard starts. Proceed through the installation wizard until you see the Installation Type page displayed, and then click Custom (advanced).
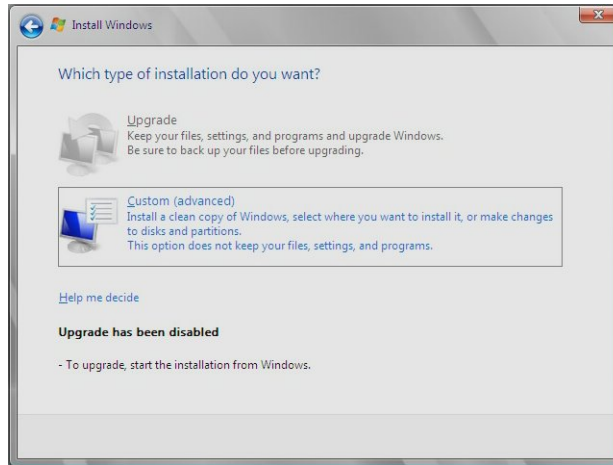
FIGURE 5–3   Select Installation Type Page

7   **When you see the Where to Install Windows page (see Figure 5–4), do one of the following.**
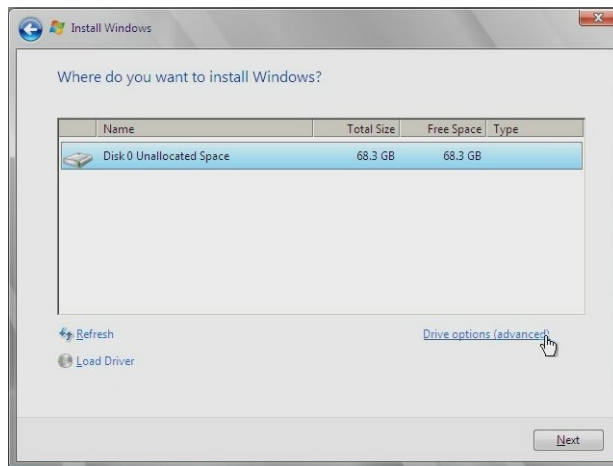
FIGURE 5–4   Where to Install Windows Page Example

- **If you** *do not* **want to override the Windows default partition settings, click Next and skip to Step 9.**

- **If you** *do* **want to override the Windows default partition settings, click Driver Options (advanced) and proceed to the next step.**

> ⚠️ **Caution** – Formatting or repartitioning a pre-existing partition destroys all data on the partition.

8 **At the Where Do You Want to Install Windows page with driver options (see Figure 5–5), do the following.**
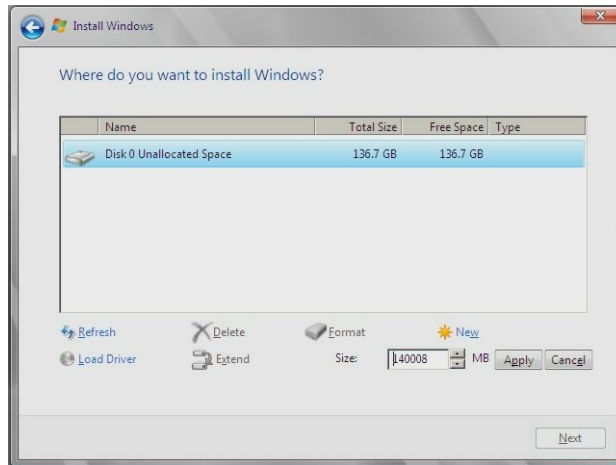
FIGURE 5–5   Altering Partition Information

 a. Click Delete to delete the existing partition.

 b. Click New to create the new partition.
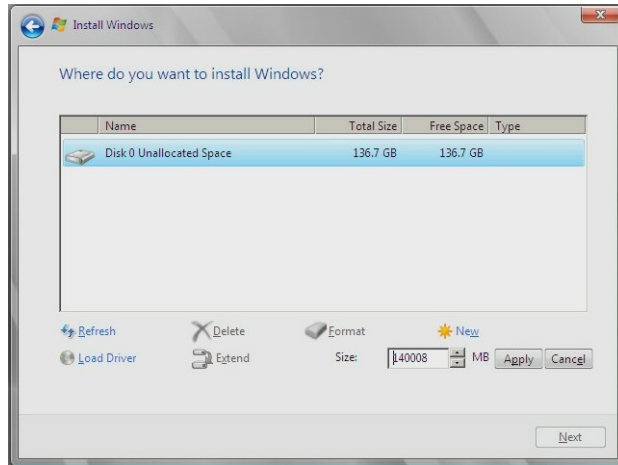
 c. Change size settings as needed, and then click Apply.

 d. Click Next.

9 **The Windows installation begins.**

The server will reboot multiple times during the installation process.

10 **When Windows installation is complete, Windows starts and prompts you to change the user password. Click OK and proceed to set up the initial user account.**

> **Note** – Windows Server 2008 enforces stronger password schemes for user accounts than previous versions of Windows. Password standards include restrictions on length, complexity, and history. If you need more details, click the Accessibility link at the account creation page.

Once the initial user account is created, the Windows Server 2008 desktop is displayed.

11   **When done, proceed to Chapter 7, "Updating the Critical Drivers and Software."**

6

Installing Windows XP

This chapter describes how to install the Windows XP SP2, 32–bit and 64–bit, operating system directly onto your server using the Windows XP media.

Unlike with Windows Vista Ultimate and Windows Server 2008, you need to prepare mass storage drivers (Intel SATA AHCI driver) *before* installing the Windows XP operating system and then install the mass storage drivers during OS installation.

Windows XP Installation Requirements

Before beginning the operating system installation, make sure that you have:

- Located the Windows XP media.
- Downloaded the latest software for your workstation. See Chapter 2, "Downloading Driver Packages."
- Configured the system BIOS and prepared disks as described in Chapter 3, "Preparing Disks for the Operating System."

Note – The complete Microsoft Windows XP installation process is not documented in this section. This section documents only the steps that are specific for installing Windows XP on your workstation.

Installing the Windows XP Operating System

⚠ **Caution –** The Windows installation formats the drive you designate as the boot disk. Any pre-existing data on that disk will be lost.

You have two options for installing Windows XP:

- Install Windows by using a Windows CD and manually load drivers during and after the OS installation.
- Install Windows by using XpReburn scripts to create a Windows CD that includes the platform and Intel SATA and RAID drivers and then use the newly created CD to install the OS. (You must install video and audio drivers separately.)

▼ To Install the Windows XP Operating System

1   **Make sure that you have completed all of the requirements listed in "Windows XP Installation Requirements" on page 31.**

2   **Power cycle your server.**
    The BIOS POST process begins.

3   **Set the System BIOS as needed. If needed, set the System BIOS and configure disks for Intel AHCI SATA RAID. See "Setting the System BIOS and Configuring Disks for Intel AHCI SATA or RAID" on page 16.**

    - **If you are using the optional LSI 1041E HBA, set the hard disk mode to IDE.**

    - **The default mode is AHCI. If the mode was changed and you are using SATA or RAID, set the System BIOS and configure disks for Intel AHCI SATA RAID. See "Setting the System BIOS and Configuring Disks for Intel AHCI SATA or RAID" on page 16.**

4   **Do one of the following:**

    - **Install Windows XP manually**

    - **Install Windows XP using the XpReburn script**

Installing Windows Manually

This section describes a manual installation of Windows, including the optional NVRAID drivers, platform drivers, and display drivers. This section does not describe the complete Windows installation process.

Creating Media for the Mass Storage (Intel SATA and RAID) Drivers

Select a method listed in Table 6–1 that meets the need of your environment for providing the mass storage drivers. Make note of the method you select.

TABLE 6–1 Delivery Methods for Windows XP Mass Storage Drivers

Mass Storage Drivers Delivery Method	Additional Requirements
Floppy Disk Local: This is the recommended method. Uses a physical USB floppy drive externally connected to a USB port on the workstation. Do not connect it to a hub, this could cause the installation to fail.	■ External USB floppy drive listed as Designed for Windows [1] on the Windows Marketplace site (`http://www.windowsservercatalog.com/marketplace/`) ■ Floppy disk
Non-Floppy Media: Uses a USB flash disk or CD/DVD media inserted in the workstation.	CD/DVD and CD/DVD drive or USB flash drive media

[1] If you do not use a USB floppy drive designed for Windows, it might appear that the drivers are installed during the OS installation, but when you reboot the system, the graphical part of the Windows setup is unable to find the drivers again and the installation fails with an error message.

Requirements for Manual Installation of Mass Storage Drivers

To install the Intel SATA or RAID drivers using this method , you need the following:

- Windows system with a CD-ROM drive
- A blank diskette, CD/DVD, or USB flash drive
- A Sun Ultra 27 Workstation Tools and Drivers DVD
- A USB diskette drive if you create a diskette *or* an external CD/DVD drive if you create a CD/DVD
- A Windows XP Installation media (non-OEM version)

▼ To Create the Media

1 On a Windows workstation, insert the Tools and Drivers DVD.

The Sun Ultra 27 Workstation menu appears.

2 **Double-click the** DRIVERS **folder to open it.**

3 **Double-click the** WINDOWS **folder to open it.**

4 **The next steps depend on which disk controller you are using.**

- **If you are using the optional LSI 1041E HBA, go to the directory** \SAS\DRIVERS\XP**.**

- **If you are using the ACHI10 disk controller or using RAID, go to directory** \AHCI_RAID_XP**.**

5 **Insert a blank diskette, CD/DVD, or flash drive into the workstation.**

6 **Copy the file from** *xx***bit directory to the media where** *xx* **is 32 or 64 for 32-bit or 64-bit.**

▼ **To Install Windows Using the Media on the Ultra 27 Workstation**

1 **If your media is diskette, attach a USB diskette drive to the workstation. If your media is CD/DVD, attach an external CD/DVD drive to the workstation.**

2 **Insert the diskette or CD/DVD into the external drive or attach the USB flash drive.**

3 **Insert a Windows XP 32-bit or 64-bit installation CD into the DVD drive of the Ultra 27 workstation.**

4 **When prompted, press the F6 key to install third-party SATA or RAID drivers.**

5 **Press the S key and then Enter to specify additional drivers.**

6 **Select the appropriate driver: Intel ICH10R SATA AHCI Controller for SATA, Intel ICH10R SATA RAID Controller for RAID, or LSI SAS.**

7 **Press Enter to continue the Windows XP installation.**

8 **After the OS installation is complete, install the NVIDIA graphics and RealTek audio drivers described in** **.**

▼ **To Install the NVIDIA Graphics and RealTek Audio Drivers**

1 **Make sure the Windows OS is already installed.**

2 **Insert the Tools and Drivers DVD into the DVD drive.**

3   If required, perform the following steps to install the NVIDIA graphics drivers:

a.   **Change to the directory on the Tools and Drivers DVD by typing the following command:**

   `C:\> cd D:\drivers\windows\video\XP\`*xx*`bit` where *xx* is 32 or 64 for 32-bit or 64-bit.

b.   **Run the executable file.**

c.   **Follow the instructions in the installation software.**

4   If required, perform the following steps to install RealTek audio drivers:

a.   **Change to the Tools and Drivers DVD by typing the following command:**

   `C:\> cd D:\drivers\windows\audio\XP`

b.   **Run the executable file.**

c.   **Follow the instructions in the installation software.**

5   Reboot the workstation.

6   When done, proceed to Chapter 7, "Updating the Critical Drivers and Software."

Using the XpReburn Script to Create a Windows CD that Includes Drivers

The XpReburn script creates an installation CD-ROM for Windows, or an ISO CD image, that incorporates Intel platform-specific and Intel RAID drivers.

You can use the CD-ROM created by XpReburn to install the Windows OS without having to separately install platform-specific and RAID drivers.

The Tools and Drivers DVD includes the XpReburn scripts. Further information about XpReburn is available in the readme.txt file within the /utilities/XPReburn_*x.x*.zip file (where *x.x* is the version number).

XpReburn Script Requirements

To use XpReburn to create a Windows OS installation CD, you need the following:

- A system running Solaris 10, RHEL, or SUSE
- CD burner
- Blank CD-R or CD-RW
- Windows XP CD (retail media only - not OEM version)

■ The Sun Ultra 27 Workstation Tools and Drivers DVD

▼ To Create a Windows XP Installation CD with XpReburn

1 On a Solaris OS, Red Hat, or SUSE system, insert the Tools and Drivers DVD.

2 As superuser, create a temporary directory with at least 1.2 GB of space. For example:
```
# mkdir /files
```

3 Copy the Xp Reburn_*version*.zip file to that directory, for example:
```
# cp /utilities/XpReburn_version.zip /files
```

4 Eject the Tools and Drivers DVD and insert your retail Windows XP CD.

5 Unzip the Xp Reburn_*version*.zip file. For example:
```
# unzip -q XpReburn_version.zip
```

6 Run the XpReburn script. For example:
```
# ./files/XpReburn
```

7 After the ISO image is created, insert a blank CD-R or CD-RW to burn the image.

8 After the CD is created, insert the CD into the workstation and boot from it.

9 After the OS installation is complete, install the graphics and audio drivers as described in "To Install the NVIDIA Graphics and RealTek Audio Drivers" on page 34.

10 When done, proceed to Chapter 7, "Updating the Critical Drivers and Software."

◆ ◆ ◆ **C H A P T E R 7**

7

Updating the Critical Drivers and Software

After the initial installation of Windows, you need to update standard Windows drivers with the Sun Ultra 27 workstation-specific drivers to ensure proper operation of your system. This chapter contains the following sections:

- "Updating the Workstation Drivers" on page 37
- "Installing Supplemental Software" on page 41
- "Using Supplemental Software to Manage Your Workstation" on page 42

The procedures in this chapter assume that you have already done the following:

- Installed the Microsoft Windows Vista Ultimate, Windows Server 2008, or Windows XP operating system.
- Have the *latest* Tools and Drivers DVD for your workstation available.

  Or

- Downloaded windows.zip as described in Chapter 2, "Downloading Driver Packages."

Updating the Workstation Drivers

Sun provides drivers for your workstation that need to be installed *after* you install the operating system. These drivers are found on the Tools and Drivers DVD, or from the windows.zip file that is downloadable from the Sun software download site. A description of the required drivers can be found in the following table.

TABLE 7–1 Additional Sun Ultra 27 Drivers

Driver	Description
Chipset	Includes drivers required to support your workstation hardware, such as MBus, USB, PCI-Express root, and the LPC (Legacy PC) Interface Controller.

TABLE 7–1 Additional Sun Ultra 27 Drivers   *(Continued)*

Driver	Description
Video	Includes support for your NVIDIA Quadro FX (FX5800, FX3800, FX1800 or FX380) graphics accelerator.
Audio	Includes support for the RealTek audio processor.
Network Interface	Includes support for your Intel PRO/100, Intel PRO/1000, and Intel PRO/10GbE adapters and integrated network connections.
Trusted Platform Module (TPM)	Includes support for Infineon TPM . The Trusted Platform Module is an on-board component specifically designed to enhance security by providing a protected space for key operations and other security critical tasks. Using both hardware and software, the TPM protects encryption and signature keys at their most vulnerable stages.

Perform one of the following procedures to update your workstation drivers:

- To install drivers automatically, see "To Install the Workstation Drivers Using the Tools and Drivers Installation Wizard" on page 38.
- To install drivers manually, see "To Install the Workstation Drivers Manually" on page 39.

▼ To Install the Workstation Drivers Using the Tools and Drivers Installation Wizard

1 Insert the Tools and Drivers DVD into a USB external CD/DVD drive connected to the system. The CD starts automatically.

The Tools and Drivers Main Menu is displayed, see Figure 7–1.

FIGURE 7–1   Tools and Drivers Main Menu

2   At the main menu, click Install/Update Drivers.

Follow the onscreen instructions to install the required drivers.

▼ To Install the Workstation Drivers Manually

1   Do one of the following:

- **Insert the Tools and Drivers DVD into the CD/DVD drive. If the DVD autostarts, click the close icon on the main menu. Using Windows Explorer, navigate to the** drivers\windows **folder.**

- **If you downloaded the** windows.zip **file from the Sun download site (as described in Chapter 2, "Downloading Driver Packages"), extract it to a folder on the workstation.**

2   Install the chipset drivers:

a.   Using Windows Explorer, navigate to the windows\chipset **drivers folder.**

b.   Double-click the .exe **executable file to start the installation process.**

Follow the onscreen instructions to install the chipset drivers.

3   To install the Ethernet driver, do one of the following:

- **Using Windows Explorer, navigate to the** windows\nic **drivers folder. Double-click the** .exe **executable file.**

Follow the onscreen instructions to install the Ethernet driver.

Or

- **Install the driver using the Windows Device Manager:**

  a. **Open the Device Manager.**

  b. **Right-click on the NIC with the yellow bang (!) and choose Update Driver.**

  c. **Select No, not at this time, and click Next.**

  d. **Select Install from a List or Specific Location, and click Next.**

  e. **Click Browse, and navigate to the appropriate workstation Ethernet driver folder. For example:**

      ```
      windows\nic\pro1000
      ```

  f. **Update the Ethernet driver by choosing the file in the corresponding OS folder from the Tools and Drivers CD.**

4   Install the TPM driver:

  a. **Using Windows Explorer, navigate to the** `windows\TPM\driver\app` **folder.**

  b. **Extract the** `.zip` **file.**

  c. **Double-click on the** `.exe` **executable file.**
      Follow the installation wizard to install TPM driver.

5   Install the NVIDIA Quadro FX video driver:

  a. **Open the Windows Device Manager.**

  b. **Right-click the display driver, and choose Update.**
      The Hardware Update Wizard appears.

  c. **Select No, not at this time, and click Next.**

  d. **In the dialog box that follows, select Install from a list or specific location and click Next.**

  e. **Click Browse and navigate to the** `windows\video\`*os*`\`*version* **folder (where** *os* **is Vista or 2008, and** *version* **is 32-bit or 64-bit.**

    f. **Double-click on the** `.exe` **executable file.**

      Follow the installation wizard to install the video driver.

6 **Install the RealTek HD audio driver:**

    a. **Using Windows Explorer, navigate to the** `windows\video\`*os* **folder (where** *os* **is Vista or 2008).**

    b. **Double-click the** `.exe` **executable file.**

      Follow the installation wizard to install RealTek HD audio driver.

7 **Reboot the workstation.**

Installing Supplemental Software

The following supplemental software components are available for your Sun workstation running Windows Vista Ultimate, Windows Server 2008, or Windows XP.

- **MegaRAID Storage Manager**: Allows you to configure, administer and monitor RAID on your Sun workstation using the optional LSI 3041E HBA. Refer to "Managing RAID Using the MegaRAID Storage Manager" on page 42 for more information.
- **Intel ASF Agent**: If your workstation will be monitored using Intel's (Alert Standard Format) management solution, you need to install the ASF agent software. You must also install the Intel ME driver described in "Updating the Workstation Drivers" on page 37.

▼ To Install Sun Supplemental Software

1 **Do one of the following:**

- **Insert the Tools and Drivers DVD into the CD/DVD drive. If the DVD autostarts, click the close icon at the main menu. Using Windows Explorer, navigate to the** `drivers\windows` **folder.**
- **If you downloaded the** `windows.zip` **file from the Sun download site (as described in Chapter 2, "Downloading Driver Packages"), extract it to a folder on the workstation.**

2 **Install the MegaRAID Storage Manager software:**

    a. **Navigate to the** `windows\SAS\MSM` **drivers folder.**

    b. **Double-click the** `.exe` **executable file to start the installation process.**

      Follow the onscreen instructions to install the software.

3   **If you use Intel ASF to manage your workstation, install the Intel ASF agent software:**

a.   **Use Windows Explorer, navigate to the** `windows\me\ASF\`*version*`\agent` **drivers folder (where** *version* **is either 32–bit or 64–bit Windows).**

b.   **Double-click the** `.exe` **executable file to start the installation process.**
Follow the onscreen instructions to install the software.

4   **When done, reboot the workstation.**

Using Supplemental Software to Manage Your Workstation

This section lists additional information about Sun supplemental software for your server. This information includes:

- "Managing RAID Using the MegaRAID Storage Manager" on page 42
- "Managing the Workstation Using Intel ASF" on page 43

Managing RAID Using the MegaRAID Storage Manager

The MegaRAID Storage Manager (MSM) program enables you to configure the LSI-based integrated RAID controller, physical disk drives, and virtual disk drives on your system. The Configuration wizard in the MSM program simplifies the process of creating disk groups and virtual disk drives by guiding you through several simple steps to create your storage configurations.

MSM works with the appropriate operating system (OS) libraries and drivers to configure, monitor, and maintain storage configurations attached to x64 servers. The MSM GUI displays device status in the form of icons, which represent the controllers, virtual disk drives, and physical disk drives on your system. Special icons appear next to the device icons on the screen to notify you of disk failures and other events that require immediate attention. System errors and events are recorded in an event log file and are displayed on the screen.

For information on using MSM, refer to the *Sun LSI 106x RAID User's Guide* for your server on the Sun product documentation web site at:

http://docs.sun.com/app/docs/coll/sf-hba-lsi

Managing the Workstation Using Intel ASF

Intel ASF (Alert Standard Format) provides standards-based alerting and remote control, which can be implemented on mobile, desktop, and workstation systems, or on server platforms. Both the alerting and remote control capabilities of ASF are hardware-based and local to the networking solution on managed systems. This allows these solutions CPU and OS independence, providing a persistent connection with the management console.

Installing the ASF agent on your workstation enables an ASF management console to use the workstation's Ethernet controller to collect information from various components in the system (including the CPU, chipset, BIOS, and sensors on the motherboard) and sends this information to a remote server running a management console. Use ASF as a tool for monitoring workstation health, asset management, and remote control.

For more information about managing client systems using Intel ASF, see the Intel web site:

http://www.intel.com/design/network/papers/ASF_whitepaper.htm

8

Incorporating Sun Ultra 27 Workstation Drivers Into a WIM Image (Windows Vista Ultimate and Windows Server 2008 Only)

This chapter is intended for advanced system administrators who need to incorporate the workstation-specific drivers into a Windows Imaging Format (WIM) image.

WIM files are installed using Windows Deployment Services (WDS), which is supported for Windows Vista Ultimate and Windows Server 2008 only.

This chapter is not a tutorial on WDS. Instead it provides guidance on how to incorporate the workstation-specific drivers into a WIM image.

Determining Required Drivers

The workstation-specific drivers that must be incorporated into a WIM image are shown in Table 8–1.

TABLE 8–1   Workstation-Specific Drivers Required for a WIM Image

Driver/Device	Incorporate for Windows Vista Ultimate		Incorporate for Windows Server 2008	
	32-bit	64-bit	32-bit	64-bit
Intel Pro/1000 P Ethernet driver	Yes	Yes	Yes	Yes
Intel x58 Chipset drivers	Yes	Yes	Yes	Yes
Infineon Trusted Platform Module driver	Yes	Yes	Yes	Yes
Disk controller driver (choose yours):				
Intel ICH10R AHCI SATA integrated disk controller	Yes	Yes	Yes	Yes

TABLE 8–1 Workstation-Specific Drivers Required for a WIM Image   *(Continued)*

Driver/Device	Incorporate for Windows Vista Ultimate		Incorporate for Windows Server 2008	
	32-bit	64-bit	32-bit	64-bit
LSI Logic Fusion-MPT SAS RAID HBA	Yes	Yes	Yes	Yes
RealTek audio driver	Yes	Yes	No	No

Adding Drivers to a WIM Image

This section contains information on adding Windows drivers for your Sun Ultra 27 workstation to a WIM image.

Before You Begin

Before creating a WIM image, you need to do the following:

- Install the Windows Automated Installation Kit (Windows AIK or WAIK). The kit can be downloaded from Microsoft. Sun recommends using version 2.0 or later of the WAIK.
- Read the Windows AIK documentation.
- Ensure that Windows Remote Installation Services are running on a Windows Server. Read the Windows Deployment Services snap-in documentation.
- Locate the windows.zip file or the latest Tools and Drivers DVD for your workstation. See Chapter 2, "Downloading Driver Packages."

▼ To Add Drivers to the WIM Image

1   Copy all of the appropriate files for a 32-bit or 64-bit Windows installation out of the version folders on the Tools and Drivers DVD to the appropriate folder structure on a network share.

a.   Identify the appropriate version files.

The following examples are from the Tools and Drivers DVD. In the examples below, cdromdrive is the driver letter of the CD/DVD drive that contains the Tools and Drivers DVD:

Tools and Drivers DVD Windows Vista Ultimate 32-bit files:

```
cdromdrive:\drivers\windows\Chipset
                    ...\SAS\driver\32bit
                    ...\sata\32bit
                    ...\TPM\driver\32bit
                    ...\audio\Vista
                    ...\nic\pro1000\win32
```

Tools and Drivers DVD Windows Vista Ultimate 64-bit files:

```
cdromdrive:\drivers\windows\Chipset
                        ...\SAS\driver\64bit
                        ...\sata\64bit
                        ...\TPM\driver\64bit
                        ...\audio\vista64
                        ...\nic\pro1000\winx64
```

Tools and Drivers DVD Windows Server 2008 32-bit files:

```
cdromdrive:\drivers\windows\Chipset
                        ...\SAS\driver\32bit
                        ...\sata\32bit
                        ...\TPM\driver\32bit
                        ...\nic\pro1000\win32
```

Tools and Drivers DVD Windows Server 2008 64-bit files:

```
cdromdrive:\drivers\windows\Chipset
                        ...\SAS\driver\64bit
                        ...\sata\64bit
                        ...\TPM\driver\64bit
                        ...\nic\pro1000\winx64
```

b. **Copy the files identified in** *Step a* **out of their version folders and into the appropriate folder structure on your network share.**

In the examples below, \\yourshare\share is the share path you have set up on the network, DriverPack\x64 is for 64-bit Windows, and DriverPack\x86 is for 32-bit Windows. All files must reside directly under the x64 or x86 folder or component subfolder (there should be no version subfolders as found on the Tools and Drivers DVD). See examples below:

Windows Vista Ultimate 32-bit WIM folder structure:

```
\\yourshare\share\DriverPack\x86\Chipset
                        ...\SAS
                        ...\sata
                        ...\TPM
                        ...\audio
                        ...\nic
```

Windows Vista Ultimate 64-bit WIM folder structure:

```
\\yourshare\share\DriverPack\x64\Chipset
                        ...\SAS
                        ...\sata
                        ...\TPM
```

```
                                        ...\audio
                                        ...\nic
```

Windows Server 2008 32-bit WIM folder structure:

```
\\yourshare\share\DriverPack\x86\Chipset
                                  ...\SAS
                                  ...\sata
                                  ...\TPM
                                  ...\nic
```

Windows Server 2008 64-bit WIM folder structure:

```
\\yourshare\share\DriverPack\x64\Chipset
                                  ...\SAS
                                  ...\sata
                                  ...\TPM
                                  ...\nic
```

2   Select the service image to update and export the image.

    a.   Click Start, click Administrative Tools, and then click Windows Deployment Services.

    b.   Find the image to service. Right-click the image and then click Disable.

    c.   Right-click the image and click Export Image. Use the wizard to export the image to the location of your choice.

3   Mount the Windows image you just exported. For example,

`imagex /mountrw C:\windows_distribution\sources\install.wim 1 C:\win_mount`

The first Windows image in the `Install.wim` file is mounted to `C:\wim_mount`

4   Use Windows System Image Manager (Windows SIM, available in Windows AIK) to create an answer file that contains the paths to the device drivers that you intend to install. See the Microsoft documentation for the Windows Automated Installation Kit for the details of starting the Windows SIM application.

5   Add the `Microsoft-Windows-PnpCustomizationsNonWinPE` **component to your answer file in the** `offlineServicing` **pass.**

6   Expand the `Microsoft-Windows-PnpCustomizationsNonWinPE` **node in the answer file. Right-click** `DevicePaths`**, and then select Insert New PathAndCredentials.**

A new PathAndCredentials list item appears.

7 **In the** `Microsoft-Windows-PnpCustomizationsNonWinPE` **component, specify the path to the architecture folder in the DriverPack folder on the network share, and the credentials used to access the network share.**

For example, the path and credentials for a 64-bit image might be:

```
<Path>\\yourshare\share\DriverPack\x64</Path>
    <Credentials>
        <Domain>MyDomain</Domain>
        <Username>MyUserName</Username>
        <Password>MyPassword</Password>
    </Credentials>
```

8 **Save the answer file and exit Windows SIM. The answer file must be similar to the following sample. The sample assumes the architecture is 64-bit (for the** `processorArchitecture` **component ID parameter, supported values are** `x86` **for 32-bit Windows, or** `amd64` **for 64-bit Windows).**

```
<?xml version="1.0" ?>
<unattend xmlns="urn:schemas-microsoft-com:asm.v3" xmlns:wcm=
"http://schemas.microsoft.com/WMIConfig/2002/State">
    <settings pass="offlineServicing">
        <component name="Microsoft-Windows-PnpCustomizationsNonWinPE"
processorArchitecture="amd64" publicKeyToken="31bf3856ad364e35"
language="neutral" versionScope="nonSxS">
            <DriverPaths>
                <PathAndCredentials wcm:keyValue="1">
                    <Path>\\yourshare\share\DriverPack\x64</Path>
                    <Credentials>
                        <Domain>MyDomain</Domain>
                        <Username>MyUserName</Username>
                        <Password>MyPassword</Password>
                    </Credentials>
                </PathAndCredentials>
            </DriverPaths>
        </component>
    </settings>
</unattend>
```

9 **Use Package Manager to apply the unattended installation answer file to the mounted Windows image. Specify a location for the log file to create. For more information about using Package Manager, see the Microsoft Windows AIK documentation. For example,**

```
pkgmgr /o:"C:\wim_mount\;C:\wim_mount\Windows" /n:"C:\unattend.xml"
/l:"C:\pkgmgrlogs\logfile.txt"
```

The `.inf` files referenced in the path in the answer file are added to the Windows image. A log file is created in the directory `C:\Pkgmgrlogs\`.

10   **Review the contents of the** `%WINDIR%\Inf\` **directory in the mounted Windows image to ensure that the** `.inf` **files were installed. Drivers added to the Windows image are named** `oem*.inf`**. This is to ensure unique naming for new drivers added to the computer. For example, the files** `MyDriver1.inf` **and** `MyDriver2.inf` **are renamed** `oem0.inf` **and** `oem1.inf`**.**

11   **Unmount the** `.wim` **file and commit the changes. For example:**

```
imagex /unmount /commit C:\wim_mount
```

12   **Replace the service image and enable the updated image, as follows:**

   a.   **If the Windows Deployment Services snap-in is not running, click Start, click Administrative Tools, and then click Windows Deployment Services.**

   b.   **Find the image to service. Right-click the image and then click Replace Image. Use the wizard to replace the service image with the Windows image that was updated.**

   c.   **Right-click the service image and then click Enable.**

The service image is now available and all the workstation-specific drivers are added to the image.

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