

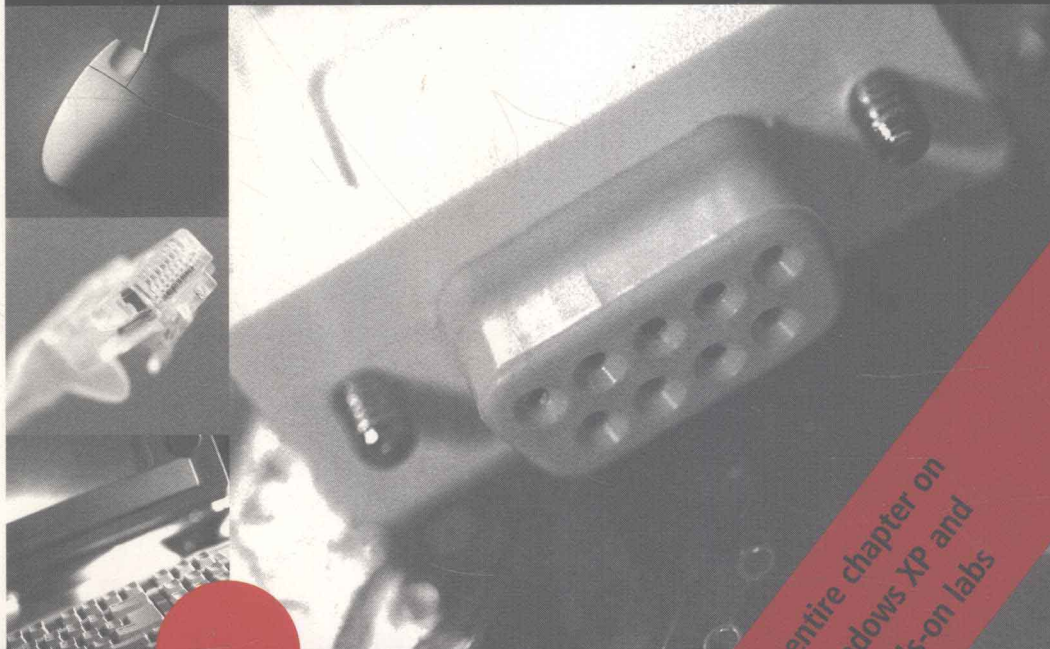
Microsoft® Windows®

XP Guide

Addendum to *Enhanced A+ Guide to Managing and Maintaining Your PC* [Enhanced Third Edition]

Jean Andrews

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**Microsoft® Windows® XP Guide: Addendum to Enhanced A+ Guide
to Managing and Maintaining Your PC, Enhanced Third Edition**

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Introduction

MICROSOFT® WINDOWS® XP GUIDE

ADDENDUM TO ENHANCED A+ GUIDE TO MANAGING AND MAINTAINING YOUR PC

The *Microsoft Windows XP Guide* contains a new chapter and lab exercises on Windows XP, and is meant to accompany *Enhanced A+ Guide to Managing and Maintaining Your PC*. The Windows XP guide is the next chapter—Chapter 21—of *Enhanced A+ Guide to Managing and Maintaining Your PC*. It builds upon the material in this core book and provides an in-depth look at installing, supporting, and troubleshooting Windows XP Professional. Plenty of screenshots and step-by-step instructions guide students through the installation and maintenance of Windows XP. In addition, there are five new hands-on labs using Windows XP. This updated coverage is written by best-selling author and instructor Jean Andrews.

For more information about *Enhanced A+ Guide to Managing and Maintaining Your PC*, please contact your sales representative or go to www.course.com/pcrepair.

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SUPPORTING WINDOWS XP PROFESSIONAL

In this chapter, you will learn:

- ◆ About the basic features, advantages, and disadvantages of Windows XP
- ◆ About the architecture of Windows XP
- ◆ How to install Windows XP
- ◆ How to use Windows XP
- ◆ How to install hardware and applications with Windows XP
- ◆ How to troubleshoot the Windows XP boot process
- ◆ About tools for troubleshooting and maintaining Windows XP

Windows XP is the latest generation of Microsoft operating systems. Windows XP currently comes as Windows XP Home Edition, Windows XP Professional, and Windows XP 64-bit Edition. Windows XP is expected to first replace Windows 9x and then replace Windows 2000. This guide focuses on Windows XP Professional, which is considered the next upgrade of Windows 2000 Professional, and builds the foundation you will need to understand and support the OS.

FEATURES OF WINDOWS XP

Windows XP attempts to accomplish integration of 9x and 2000 while providing added support for digital and networking technologies. Windows XP Home and Windows XP Professional share these features, among others:

- A new user interface that has a different look from the desktops for earlier Windows versions such as Windows 9x and Windows NT
- The ability for two users to be logged on simultaneously, both with their own applications open
- Windows Media Player for Windows XP, which provides a centralized application for working with digital media
- Windows Messenger for instant messaging, conferencing, and application sharing
- An expanded help feature
- Advanced security features

Here are some of the features that Windows XP Professional adds to the Home Edition:

- Features for remote access, including remote desktop and roaming user profiles
- Additional security features
- Multilingual capabilities
- Support for new higher performance processors

There is also Windows XP 64-bit Edition designed to be used with a high-end CPU such as the Intel Itanium. This version of Windows XP is designed mostly for servers or heavily technical workstation users who need greater amounts of memory and higher performance than standard desktop users, for example, for scientific and engineering applications. For instance, an aircraft designer who needs to simulate how various conditions affect aircraft materials might use Windows XP on a system supporting resource-intensive simulation and animation applications.

Windows Internet Explorer, Windows Media Player, a firewall, and other Microsoft products are tightly integrated with the XP operating system. Some users see this as a disadvantage and others see it as an advantage. Full evaluation of the integration of Microsoft software with the Windows XP operating system is beyond the scope of this overview.



Remember that the requirements of an OS will vary depending on which version you have installed and what applications and hardware you have installed with it.

Windows XP provides several enhancements over Windows 2000 and other earlier versions. Table 1-8 summarizes the advantages and disadvantages of Windows XP.

Table 21-1 Advantages and disadvantages of Windows XP

Advantages	Disadvantages
<ul style="list-style-type: none"> • Provides better integration of Windows 9x and NT than did Windows 2000. • Offers significant GUI enhancements over earlier versions of Windows. • Adds features but uses only slightly more total memory for the OS than does Windows 2000. • Adds advanced file sorting options, such as sorting pictures by resolution or sound files by artist. • Includes built-in support for compressed files. • Has improved troubleshooting tools and is generally more stable than previous Windows OSs. 	<ul style="list-style-type: none"> • Requires nearly a gigabyte of hard drive space for the operating system itself, and at least a 233 MHz processor with 64 MB of RAM. • Programs used with Windows XP may require more than the minimum system specifications for the operating system. • Nearly eliminates support for device drivers not approved by Microsoft. • Security concerns with centralized storage of online information in Microsoft Passport, a repository of the user IDs and passwords you use on the Internet.

THE WINDOWS XP ARCHITECTURE

Windows XP is an evolution of Windows NT and Windows 2000 and uses the same basic architecture. The look and feel of Windows XP is slightly different, and utilities and functions are organized differently under menus and windows. You'll see many of these differences later in this chapter.

Windows XP uses the same kernel architecture as Windows NT and Windows 2000. Figure 21-1 shows how the different OS components relate. Notice in the figure that some low-level device drivers such as those that access the hard drive have direct access to hardware, just as they do with Windows NT and Windows 2000. All 16-bit and 32-bit applications relate to the kernel by way of the Win32 subsystem operating in user mode. As you will see later in the chapter, the boot process is also the same, and the files needed for a successful boot are the same as those for Windows NT/2000.

Windows XP is generally more stable than Windows NT and Windows 2000. It was designed with the intention of avoiding situations with Windows NT/2000 that caused drivers and applications to bring these systems down. Installing Windows XP should also be an easier experience than installing either Windows NT or Windows 2000. In addition, Windows XP has increased security, including a built-in Internet firewall called Internet Connection Firewall that is designed to protect a home PC connected directly to the Internet by way of an always-on connection such as cable modem or DSL.

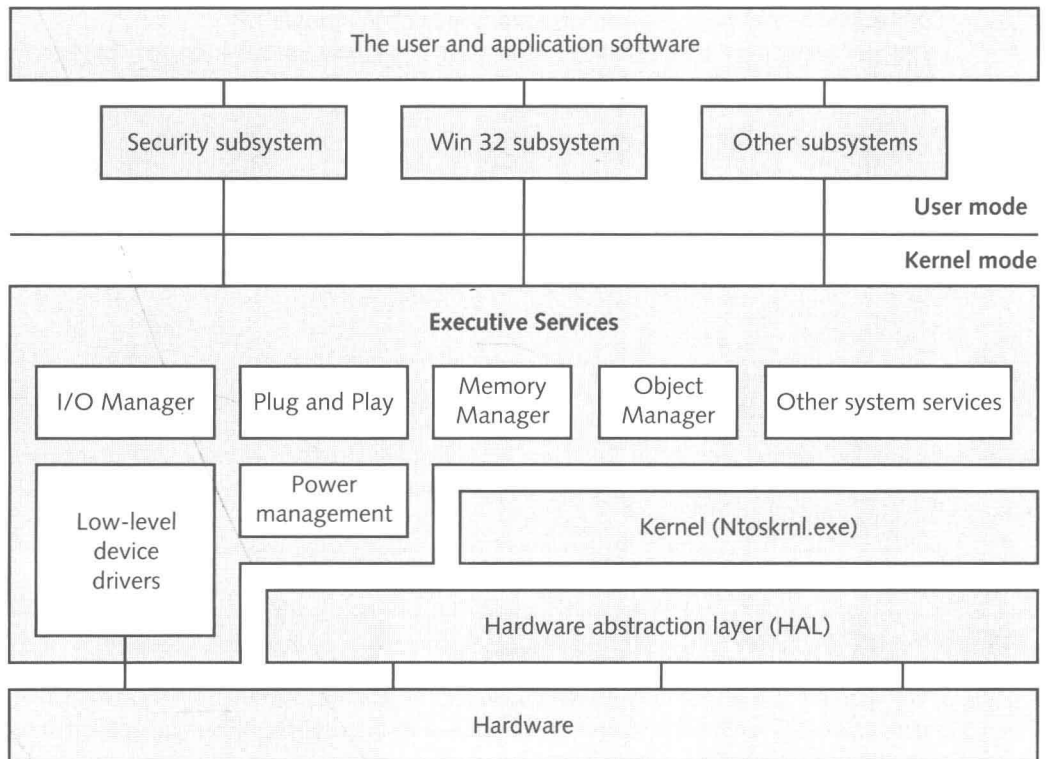


Figure 21-1 The Windows XP architecture uses the same basic structure and components as Windows NT and Windows 2000

INSTALLING WINDOWS XP

Installing Windows XP involves many of the same considerations and decisions that you learned about when installing Windows 2000. In this section, you will learn how to install Windows XP as a clean install and as an upgrade, including how to set up a dual boot.

Planning the Installation

Before installing Windows XP, do the following:

- Verify that the system meets the minimum and recommended requirements, shown in Table 21-2.
- Check the hardware compatibility list (HCL) to verify that all installed hardware components are compatible with Windows XP.
- Decide how you will partition your hard drive and what file system you will use.

- For a PC on a network, decide whether the PC will be configured as a workstation in a workgroup or as part of a domain.
- Make a final checklist to verify that you have done all the above and are ready to begin the installation.

Table 21-2 Minimum and recommended requirements for Windows XP Professional

Component or Device	Minimum Requirement	Recommended Requirement
One or two CPUs	Pentium II 233 MHz or better	Pentium II 300 MHz or better
RAM	64 MB	128 MB up to 4 GB
Hard drive partition	2 GB	2 GB or more
Free space on the hard drive partition	1.5 GB	2 GB or more
CD-ROM drive	12x	12x or faster
Accessories	Keyboard and mouse or other pointing device	Keyboard and mouse or other pointing device

Minimum Requirements and Hardware Compatibility

You can use the My Computer icon on the Windows desktop to determine the current CPU and available RAM. To see how much hard drive space is available, using Windows Explorer, right-click on the drive letter and select Properties from the shortcut menu. Part of the installation process for an upgrade is to clean up the hard drive, which might free up some hard drive space. Even though Windows XP requires only 640 MB to install, you will not be able to achieve acceptable results unless you have at least 1.5 GB of free hard drive space on the volume that holds Windows XP.

There are several ways you can verify that software and hardware qualify for Windows XP. One way is to run the Readiness Analyzer. Use this command from the Windows XP CD, substituting the drive letter for your CD-ROM drive for D in the command line:

```
D:\I386\Winnt32 /checkupgradeonly
```

Depending on the release of Windows XP, your path might be different. The process takes about 10 minutes to run and displays a report that can be saved and later printed. The default name and path of the report is C:\Windows\compat.txt. The report is important if you have software you are not sure will work under Windows XP. If the analyzer reports that your software will not work under Windows XP, you might choose to upgrade the software or set up a dual boot with your old OS and Windows XP (dual-boot setup is covered later in the chapter).

Readiness Analyzer also checks hardware compatibility. Another way to verify your hardware is to go to the Microsoft Web site at www.microsoft.com/hcl. Search on each hardware device by type (see Figure 21-2). There might be a copy of the Windows XP Professional HCL in the hcl.txt file on the Windows XP CD in the support folder. But for the most up-to-date information, use the Microsoft Web site.

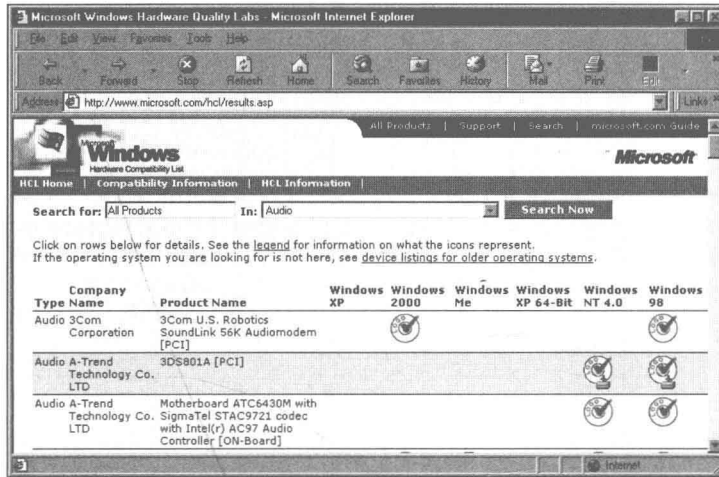


Figure 21-2 Search for each hardware component by type to determine if it qualifies for Windows XP

If your hardware does not qualify for Windows XP, check the hardware manufacturer's Web site for an upgrade and download the upgrade drivers before you begin the installation. If you plan to erase the hard drive as part of the installation, store these drivers on floppy disk or on a network drive until you're ready to install them under Windows XP. If you can't find an upgrade, sometimes a device will work if you substitute a Windows driver written for a similar device. Check the documentation for your device, looking for information about other devices it will emulate. It is especially important to know that your network card or modem card qualifies for Windows XP before you install the OS because you will need the card to access the Internet to get upgrades. If you are not sure an important hardware component qualifies, then install Windows XP as a dual boot with your current OS. Later, when you get the component working under Windows XP, you can uninstall the other OS.

Hard Drive Partitions and File Systems

Windows XP needs at least a 2-GB partition for the installation and should have about 1.5 GB of free space on that partition. You can install Windows XP on the same partition as another OS, but Windows XP will overwrite the existing OS on that partition. If you do not have a free 2-GB partition for the installation, you must delete smaller partitions and repartition the drive. Deleting a partition erases all data on that partition, so be sure to create backups first. Follow these general directions to ensure that partitions on the hard drive are adequate to install Windows XP:

- For Windows 9x, use Fdisk at the command prompt, and, for Windows 2000, use Disk Management to determine what partitions are on the drive, how large they are, what logical drives are assigned to them, and how much free space is on the drive that is not yet partitioned.

- If existing partitions are too small, look at the free space on the drive. If there is enough free space that is not yet partitioned, use that free space to create a new partition that is at least 2 GB.
- If you cannot create a 2-GB or larger partition, back up your data, delete the smaller partitions, and create a 2-GB active partition on the drive.
- If you have free space on the drive for other partitions, don't partition them at this time. First, install Windows XP and then use Disk Management under Windows XP to partition the remaining free space on the drive.

The same concerns about selecting a file system for Windows 2000 apply to Windows XP. The file systems supported by Windows XP are the same as those supported by Windows 2000: FAT16, FAT32, and NTFS. Recall that the NTFS file system used by Windows 2000 was incompatible with the Windows NT NTFS file system, making for a potential problem when installing Windows 2000 and Windows NT on the same PC as a dual boot. Because the Windows XP NTFS file system is the same as that of the Windows 2000 NTFS file system, a dual boot between these two OSs should not be a problem. Here are the general directions for selecting a file system:

- Use the NTFS file system if you are interested in file and folder security, file compression, control over how much disk space a user is allowed, or file encryption.
- Use the FAT16 or FAT32 file system if you are setting up a dual boot with Windows XP and Windows 9x, and each OS must access all partitions.
- Use the FAT16 file system if you are setting up a dual boot with MS-DOS or Windows NT and each OS must access all partitions.

Joining a Workgroup or a Domain

If you are installing Windows XP on a network, you must make decisions about how you will access the network. If you have less than 10 computers networked together, Microsoft recommends that you join these computers in a workgroup where each computer controls its own resources. In this case, each user account is set up on the local computer, independently from user accounts on other PCs. There is no centralized control of resources. For more than 10 computers, Microsoft recommends that you use a domain controller running a network operating system such as Windows 2000 Server to control resources on the network. (Windows XP Professional installed on a workstation can then be a client on this Windows network. Also, it is expected that Microsoft will soon release Windows XP Server.) You will also want to use a domain controller if you want to administer and secure the network from a centralized location or if there are several centralized resources on the network that are shared by many users.

Upgrade or Clean Install

If you plan to set up a dual boot, then you will perform a clean install for Windows XP. If you already have an OS installed and you do not plan a dual boot, then you have a choice between an upgrade and a clean install. Things to consider when making this decision are:

- You can use the less-expensive upgrade version of Windows XP Professional to upgrade from Windows 98, Windows Me, Windows NT 4.0, and Windows 2000 to Windows XP Professional.
- You can use the less expensive upgrade version of Windows XP Home Edition to upgrade from Windows 98 or Windows Me to Windows XP Home Edition. (Recall that Windows XP Home Edition uses the same core as Windows XP Professional without some of its features.)
- If you currently have Windows 95 installed, you must do a clean install using the more expensive For a New PC version of Windows XP Professional or Windows XP Home Edition.
- Regardless of whether you have an OS currently installed, you can still choose to do a clean install if you want a fresh start. Unless you erase your hard drive, reformat it, or delete partitions before the upgrade, data on the hard drive is not erased even if you convert to a new file system during the installation. OS settings and installed software will not carry forward into the new installation.

Final Checklist

Before you begin the installation, complete the final checklist shown in Table 21-3 to verify that you are ready to begin.

Table 21-3 Checklist for use before installing Windows XP

Things to Do	Further Information
Does the PC meet the minimum or recommended hardware requirement?	CPU: RAM: Hard drive size: Free space on the hard drive:
Have you run the Readiness Analyzer or checked the Microsoft Web site to verify that all your hardware and software qualify?	List hardware and software that need to be upgraded:
Do you have the product key available?	Product key:
Have you decided how you will join a network?	Workgroup name: Domain name:
Will you do an upgrade or clean install?	Current operating system: Does the old OS qualify for an upgrade?

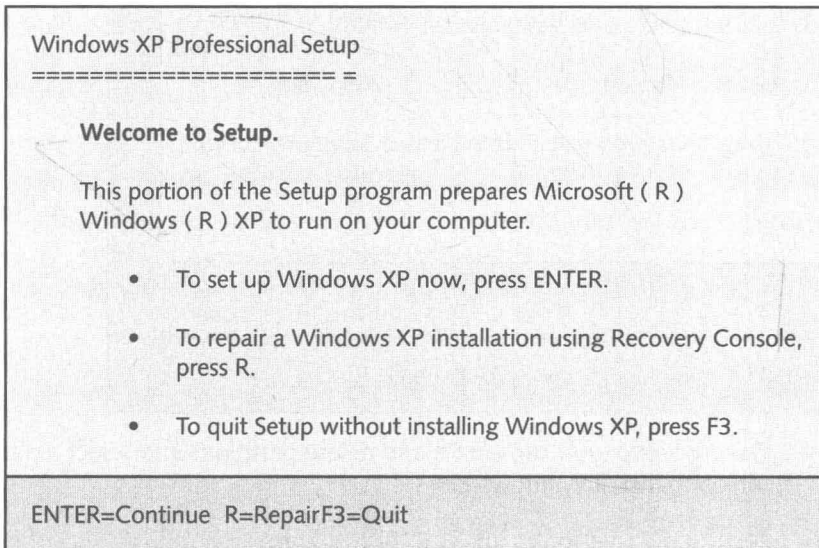
Table 21-3 Checklist for use before installing Windows XP (continued)

Things to Do	Further Information
Verify that your hard drive is ready.	Size of the hard drive partition: Free space on the partition: File system you plan to use:
For a clean install, will you set up a dual boot?	List reasons for a dual boot: For a dual boot Size of the second partition: Free space on the second partition: File system you plan to use:
Have you backed up important data on your hard drive?	Location of backup:

Installation Process

Follow these general directions to perform a clean install of Windows XP on a PC that does not already have an OS installed:

1. Boot from the Windows XP CD, which displays the menu in Figure 21-3. This menu might change slightly from one Windows XP build to another. If your PC does not boot from a CD, go to a command prompt and enter the command **D:\i386\Winnt.exe**, substituting the drive letter for your CD-ROM drive for D. (The path might vary depending on the release of Windows XP.) The End User License Agreement appears. Accept the agreement.

**Figure 21-3** Windows XP Setup opening menu

2. Setup lists all partitions that it finds on the hard drive, the file system of each partition, and the size of the partition. It also lists any free space on the drive that is not partitioned. From this screen, you can create and delete partitions and select the partition on which you want to install Windows XP. If you plan to have more than one partition on the drive, only create one partition at this time. The partition must be at least 2 GB in size and have 1.5 GB free. After the installation is done, you can use Disk Management to create the other partitions. Figure 21-4 shows an example of the list provided by Setup when the entire hard drive has not yet been partitioned.

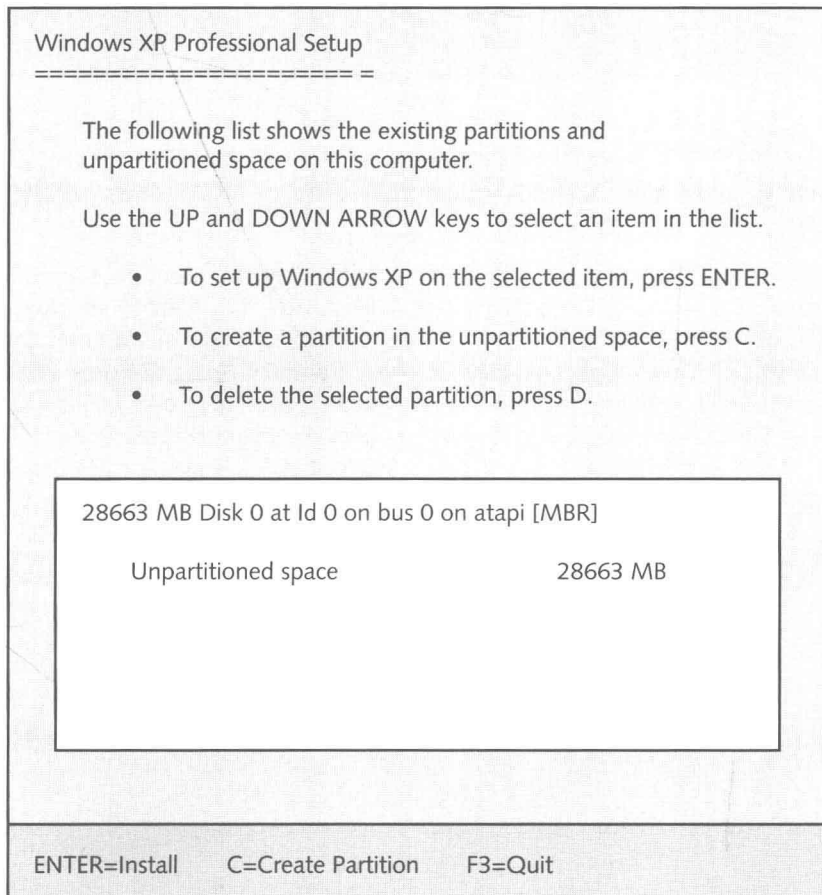


Figure 21-4 During Setup, you can create and delete partitions and select a partition on which to install Windows XP

3. In the previous step, if you created a new partition, Setup asks you which file system you want to use to format the partition, NTFS or FAT. If the partition is at least 2 GB in size, the FAT file system will be FAT32. Select a file system for the partition. The Setup program completes the text-based portion of setup and loads the graphical interface for the rest of the installation. The PC then restarts.

4. Select your geographical location from the list provided, which will be used by Windows XP to decide how to display dates, times, numbers, and currency. Select your keyboard layout. Different keyboards can be used to accommodate special characters for other languages.
5. Enter your name, the name of your organization, and your product key.
6. Enter the computer name and the password for the Administrator account. This password is stored in the security database on this PC. If you are joining a domain, the computer name is the name assigned to this computer by the network administrator managing the domain controller.



It is very important that you not forget the Administrator password. You will not be able to log onto the system without it.

7. Select the date, time, and time zone. The PC will reboot.
8. If you are connected to a network, you will be asked to choose how to configure your network settings, Typical or Custom. The Typical setting installs Client for Microsoft Networks, File and Printer Sharing, and TCP/IP using dynamically assigned IP addresses. The Custom setting allows you to configure the network differently. If you are not sure which to use, use the Typical settings. You can change them later.
9. Enter a workgroup or domain name. If you are joining a domain, the network administrator will have given you specific directions on how to configure user accounts on the domain.

For a clean install on a PC that already has an OS installed, follow these general directions:

1. Close any open applications. Disable any boot management software or antivirus software running.
2. Insert the Windows XP CD in the CD-ROM drive. Autorun launches the opening window shown in Figure 21-5.
3. Select the option to **Install Windows XP**. On the next screen, under Installation Type, select **New Installation**. Read and accept the licensing agreement. The installation process works the same as described above, picking up with Step 3.

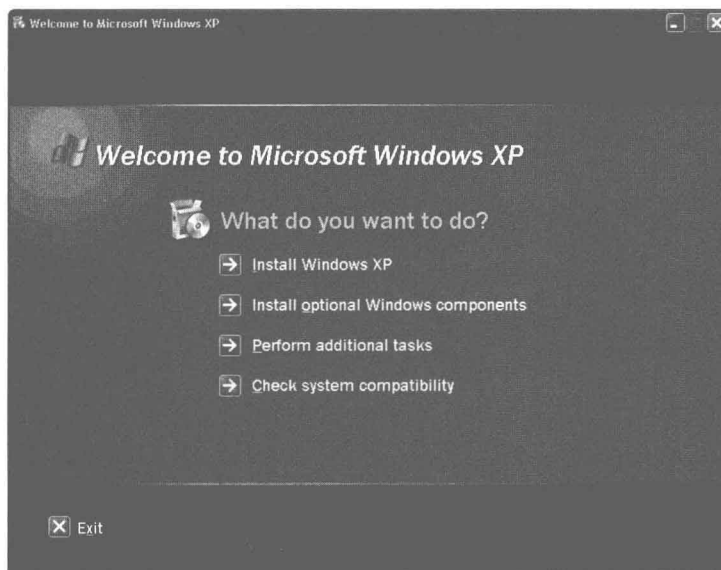


Figure 21-5 Windows XP Setup menu

When performing an upgrade to Windows XP, follow these general directions:

1. Before you begin the installation, do the following to prepare the system:
 - Clean up the hard drive: erase unneeded or temporary files, empty the Recycle Bin, run Disk Defragmenter, and do a ScanDisk of the drive.
 - If you have determined that you must upgrade hardware or software and that these upgrades are compatible with your old OS, perform the upgrades and verify that the hardware or software is working.
 - If you do not have the latest BIOS for your motherboard, flash your BIOS.
 - Back up important files.
 - Scan the hard drive for viruses using a current version of antivirus software.
 - If you have a compressed hard drive, uncompress the drive. The only exception to this is that if you are using Windows NT file compression on an NTFS drive, you do not need to uncompress it.
 - Uninstall any hardware or software that you know will not be compatible with Windows XP and for which you do not have an upgrade available.
2. Insert the Windows XP Upgrade CD in the CD-ROM drive. The Autorun feature should launch the Setup program, with the menu shown in Figure 21-5.
3. If the Setup menu does not appear, you can enter the Setup command in the Run dialog box. Select the option to **Install Windows XP**.