

A+ Guide to Managing and Maintaining Your PC, 7e

Chapter 12 *Installing Windows*

Objectives

- How to plan a Windows installation
- How to install Windows Vista
- How to install Windows XP
- How to install Windows 2000

How to Plan a Windows Installation

- Situations requiring a Windows installation
 - New hard drive
 - Existing Windows version corrupted
 - Operating system Upgrade
- Decisions
 - Version to purchase
 - Hardware compatibility
 - Installation method
 - Decisions needed after installation has begun

Choose the Version of Windows

- Purchase options
 - Retail
 - Original Equipment Manufacturer (OEM)
- Vista editions
 - Variety of consumer needs satisfied
 - All editions included on Vista setup DVD
 - Windows Anytime Upgrade feature

Feature	Starter	Home Basic	Home Premium	Business	Enterprise	Ultimate
Aero user interface			X	X	X	X
BitLocker hard drive encryption					X	X
Optional dual processors*				X	X	X
Complete PC backup				X	X	X
Encrypting File System (EFS)				X	X	X
IE parental controls	X	X	X			X
Network and Sharing Center	X	X	X	X	X	X
Scheduled and network backups			X	X	X	X
Tablet PC			X	X	X	X
Windows DVD Maker			X			X
Windows Media Center			X			X
Windows Movie Maker			X			X
Windows SideShow			X	X	X	X
Shadow Copy backup				X	X	X
Join a domain				X	X	X
Group Policy				X	X	X
Processor: 32-bit or 64-bit		X	X	X	X	X
Flip 3D display			X	X	X	X
Remote Desktop				X	X	X
Windows Meeting Space			X	X	X	X

*Multicore processors are allowed for all editions.

Table 12-1 Vista editions and their features

Choose the Version of Windows (cont'd.)

- Windows XP editions
 - Windows XP Home Edition
 - Windows XP Professional
 - Windows XP Media Center Edition
 - Enhanced edition of Windows XP Professional
 - Windows XP Tablet PC Edition
 - Designed for laptops and tablet PCs
 - Windows XP Professional x64 Edition

Choose the Version of Windows (cont'd.)

- Vista and XP 64-bit offerings
 - Ability to install more RAM
- Upgrade paths
 - Clean install or upgrade license

Operating System	32-Bit Version	64-Bit Version
Vista Ultimate	4 GB	128 GB
Vista Enterprise	4 GB	128 GB
Vista Business	4 GB	128 GB
Vista Home Premium	4 GB	16 GB
Vista Home Basic	4 GB	8 GB
Vista Starter	1 GB	NA
XP Professional	4 GB	128 GB
XP Home Edition	4 GB	NA

Table 12-2 Maximum memory supported by Windows editions

From This OS	To Vista Home Basic, 32-Bit	To Vista Home Premium, 32-Bit	To Vista Business, 32-Bit	To Vista Ultimate, 32-Bit	To Any 64-Bit Vista Edition
Vista Home, 64-bit	N/A	Clean install	Clean install	Clean install	Upgrade
XP Professional	Clean install	Clean install	Upgrade	Upgrade	Clean install
XP Home	Upgrade	Upgrade	Upgrade	Upgrade	Clean install
XP Media Center	Clean install	Upgrade	Clean install	Upgrade	Clean install
XP Tablet PC	Clean install	Clean install	Upgrade	Upgrade	Clean install
XP x64	Clean install	Clean install	Clean install	Clean install	Clean install
Windows 2000	Clean install	Clean install	Clean install	Clean install	Clean install

Table 12-3 Upgrade paths to Windows Vista

From This OS	To XP Home Edition	To XP Professional	To XP x64
Windows 98/Me	Upgrade	Upgrade	Clean install
Windows 95	Clean install	Clean install	Clean install
Windows 2000	Clean install	Upgrade	Clean install
Windows NT	Clean install	Upgrade	Clean install
XP Home Edition	NA	Upgrade	Clean install

Table 12-4 Upgrade paths to Windows XP

Choose the Version of Windows (cont'd.)

- Vista minimum hardware requirements
 - Processor rated at least 800 MHz
 - 512 MB of RAM
 - SVGA video
 - 20 GB hard drive with at least 15 GB free space
 - CD-ROM drive

Choose the Version of Windows (cont'd.)

- Windows Vista Home Premium, Business, Enterprise, Ultimate edition requirements
 - Processor rated at least 1 GHz (32-bit or 64-bit)
 - 1 GB of RAM
 - Video card or embedded video chip supporting:
 - DirectX 9 or higher
 - Windows Display Driver Model (WDDM)
 - 128 MB of graphics memory
 - 40 GB hard drive with at least 15 GB free space
 - DVD-ROM drive and Internet access

Choose the Version of Windows (cont'd.)

- Vista Home Basic hardware requirements
 - Processor rated at least 800 MHz (32-bit or 64-bit)
 - 512 MB of RAM
 - Video card or embedded video chip supporting DirectX 9 or higher
 - 32 MB of graphics memory
 - 20 GB hard drive with at least 15 GB free space
 - DVD-ROM drive
 - Internet access

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	More than 2 GB
Free space on the hard drive partition	1.5 GB (bare bones)	2 GB or more
CD-ROM drive or DVD-ROM drive	12x	12x or faster
Video	Super VGA (800x600)	Higher resolutions are nicer
Input devices	Keyboard and mouse or other pointing device	Keyboard and mouse or other pointing device

Table 12-5 Minimum and Recommended Requirements for Windows XP Professional

Choose the Version of Windows (cont'd.)

- Windows 2000 hardware requirements
 - 650 MB of hard drive free space
 - 64 MB of RAM
 - 133-MHz Pentium-compatible CPU or higher

Choose the Version of Windows (cont'd.)

- Windows Vista hardware compatibility issue
 - Manufacturers not producing Vista drivers for older devices
 - Check Windows Vista Compatibility Center
 - Run Vista Upgrade Advisor to check system
 - Run XP Readiness Analyzer to check system
 - If unsure about devices working, dual boot
 - Before installing new operating system:
 - Verify device drivers for all critical devices

Choose the Method of Installation

- Installation method dependencies
 - Circumstances
 - Available hardware
- Installation choices
 - Boot media
 - Network installation
 - Hard drive image
 - Recovery CDs and DVDS
 - Factory recovery partitions
 - Repairs to existing installation

Choose the Method of Installation (cont'd.)

- Boot media for installation
 - Hard drive
 - OS not installed on hard drive:
 - Use any device PC can boot from (DVD or CD drive)
 - Access BIOS setup and set boot order as necessary
- Network installation
 - Use a distribution server
 - Copy Windows CD or DVD setup files to network file server
 - Saves time for multiple installations

Choose the Method of Installation (cont'd.)

- Unattended installation
 - Automated installation
 - Store installation question answers in an answer file
 - Works for both upgrades and clean installs
- Install from an image
 - Drive imaging, disk cloning, and disk imaging
 - Copy entire Windows volume to another bootable media (CDs or USB drive)
 - Image contains duplicate of all drive contents
 - Operating system, applications, and data

Choose the Method of Installation (cont'd.)

- Install from an image (cont'd.)
 - Steps to create original image
 - Original image created by Windows
 - Windows sysprep.exe utility removes configuration settings
 - All applications installed
 - Drive-imaging software used to clone entire hard drive to another media
 - Steps to use hard drive image
 - Boot from bootable media containing image
 - Follow directions on-screen to copy image to hard drive



Figure 12-5 Opening menu after booting from the Acronis bootable media
 Courtesy: Course Technology/Cengage Learning

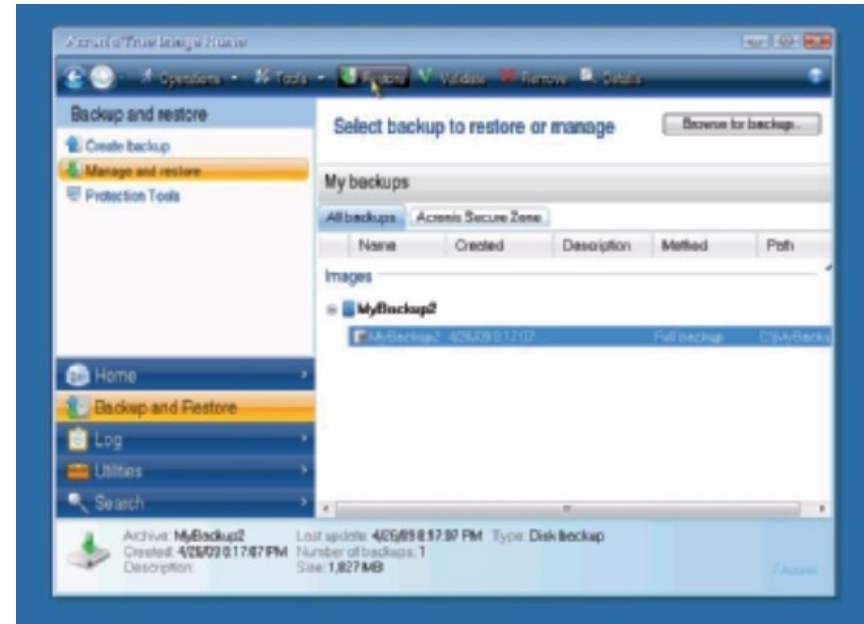


Figure 12-6 Select the image to copy to the hard drive
 Courtesy: Course Technology/Cengage Learning

Choose the Method of Installation (cont'd.)

- Recovery CDS and DVDS
 - Use recovery CD or DVD provided by computer manufacturer
 - Has drivers and build specific to the system



Figure 12-7 Windows Setup CD and Windows Recovery CDs for a notebook computer. Courtesy: Course Technology/Cengage Learning

Choose the Method of Installation (cont'd.)

- Factory recovery partition
 - Some brand-name computers have hidden recovery partition
 - Contains a utility to create a recovery CD
 - Recovery CD must be created before drive failure
 - To access hidden partition, press a key during startup
- Repair an existing installation
 - For computers using off-the-shelf Windows installations
 - Several different ways to repair the installation
 - Dependent on seriousness of problem

Choose the Method of Installation (cont'd.)

- Installation in a virtual computer
 - Virtual computer or virtual machine
 - Software simulating hardware of a physical computer
 - Allows installation and running of multiple operating systems at the same time on a PC
 - Reason to use a virtual machine
 - Train users, run legacy software, and support multiple operating systems
 - Can capture screen shots of boot process in a virtual machine

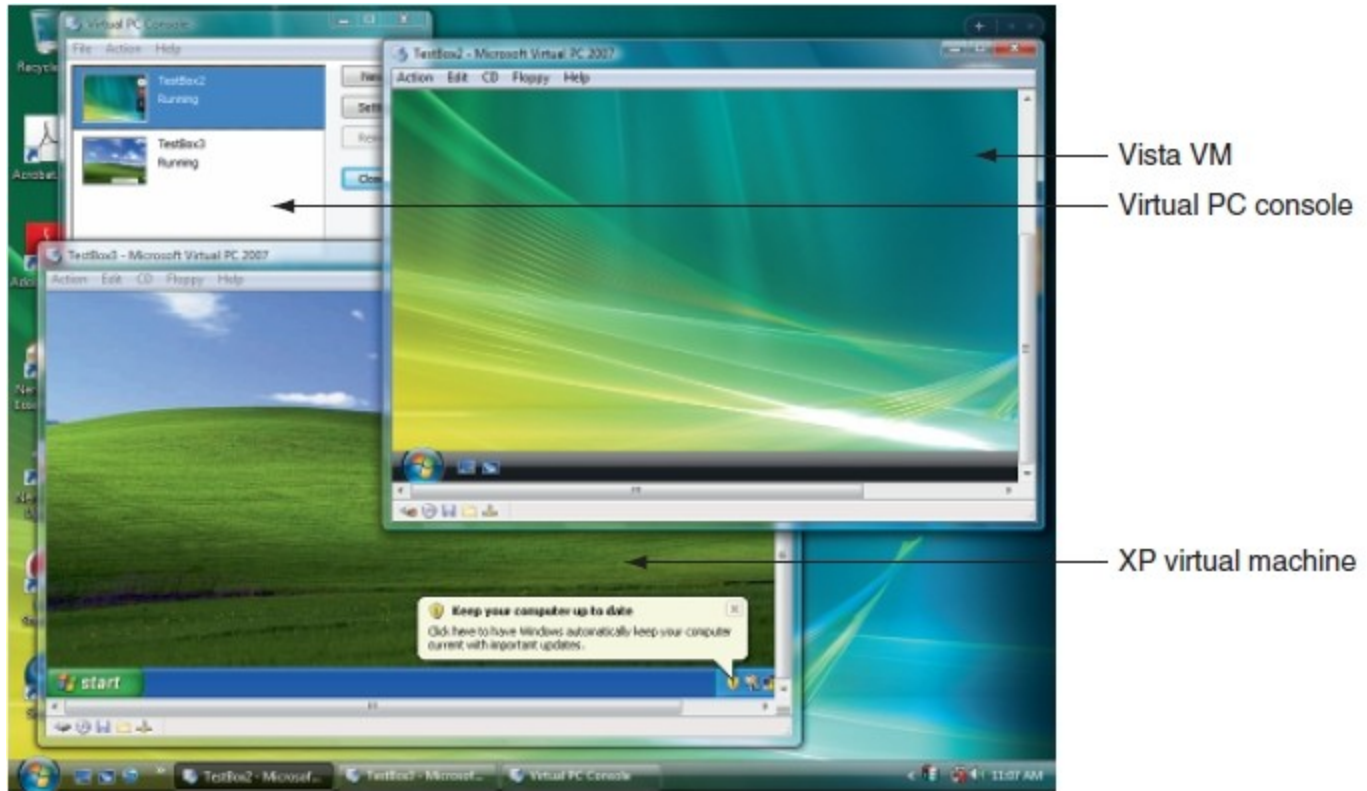


Figure 12-8 Two virtual machines running under Virtual PC
Courtesy: Course Technology/Cengage Learning

Choose the Method of Installation (cont'd.)

- Installation in a virtual computer (cont'd.)
 - Installing an OS in a virtual machine
 - 1. Install virtual machine software
 - 2. Set up a virtual machine
 - 3. Start the virtual machine
 - 4. Boot from Windows setup CD or DVD
 - 5. Install OS as if a normal PC
 - 6. Requires valid Windows license and product key
 - Popular virtual machine programs
 - Virtual PC and Vmware
 - Mac OS: VMware Fusion

Choose the Type of Installation: Upgrade, Clean Install, or Dual Boot

- Installing Windows on a new hard drive
 - Perform a clean install
- Windows already installed on hard drive
 - Clean install
 - Overwrite existing operating system and applications
 - Upgrade (if allowed)
 - Upgrade Windows XP to Vista
 - Upgrade Windows 2000/98/Me to Windows XP
 - Dual boot
 - Install Windows Vista/XP in a second partition

Choose the Type of Installation: Upgrade, Clean Install, or Dual Boot (cont'd.)

- Clean install: erasing existing installations
 - Advantage
 - Get a fresh start
 - Registry and applications: clean as possible
 - Disadvantage
 - Must reinstall application software
 - Must restore data from backups
 - If drive is not formatted first:
 - Data is still on the drive
 - Previous settings and applications will be lost
 - Run antivirus program prior to new install

Choose the Type of Installation: Upgrade, Clean Install, or Dual Boot (cont'd.)

- Upgrade installations
 - Advantage
 - All applications, data, and most OS settings are carried forward into new Windows environment
 - Faster installation
 - Disadvantage
 - Problems with applications, OS might be carried into new Windows Vista/XP load
 - Requires installation from current OS desktop
 - Appropriate if system healthy

Choose the Type of Installation: Upgrade, Clean Install, or Dual Boot (cont'd.)

- Creating a dual boot
 - Advantage
 - Used only to verify applications and hardware works under Windows Vista before deleting the old OS
 - Disadvantage
 - Requires at least two hard drive partitions or a second hard drive

Understand the Choices You'll Make During the Installation

- Drives, partitions, and file systems
 - Windows can have up to four partitions
 - Master boot record (MBR)
 - First 512-byte sector
 - Holds partition table
 - Windows allows up to three primary partitions (volumes) and one extended partition
 - Extended partition may contain one or more logical drives
 - Active partition is always a primary partition
 - Each partition formatted with a file system

Understand the Choices You'll Make During the Installation (cont'd.)

- Drives, partitions, and file systems (cont'd.)
 - System partition
 - Active hard drive partition (normally C)
 - Contains OS boot record
 - Boot partition
 - Stores Windows operating system

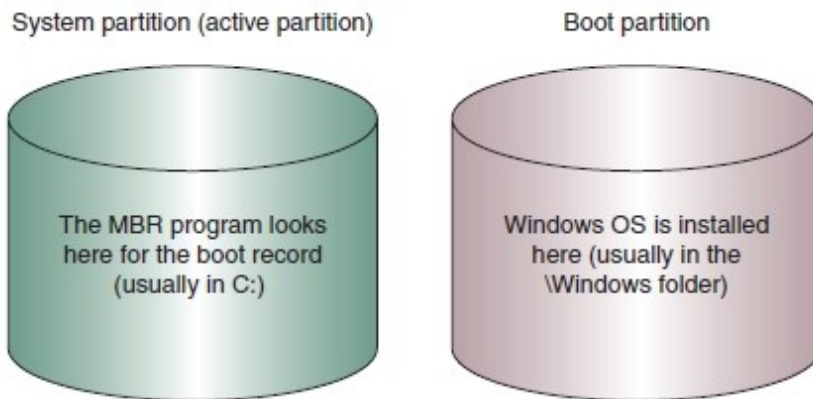


Figure 12-11 Two types of Windows hard drive partitions
Courtesy: Course Technology/Cengage Learning

Understand the Choices You'll Make During the Installation (cont'd.)

- Drives, partitions, and file systems (cont'd.)
 - System partition and boot partition are often the same
 - Drive C
 - Windows Vista/XP installed in C:\Windows
 - Windows 2000 installed in C:\Winnt
 - Different system partition and boot partition
 - Windows Vista installed as a dual boot with XP

Understand the Choices You'll Make During the Installation (cont'd.)

- Drives, partitions, and file systems (cont'd.)
 - Windows installation decisions
 - Drive and partition to hold OS
 - Partition size
 - Most installations use single hard drive
 - Allocate all space to drive C
 - Reasons to use multiple volumes
 - Dual-boot system
 - Organize data on one drive and OS on the other

Understand the Choices You'll Make During the Installation (cont'd.)

- Drives, partitions, and file systems (cont'd.)
 - Vista volume size: 20 GB with 15 GB free
 - NTFS format automatically
 - XP needs 5 GB and uses FAT32 or NTFS
 - Choose FAT32 if volume size less than 2 GB
 - Advantages of NTFS over FAT32
 - Smaller cluster sizes than FAT32
 - Retains two copies of its critical file system data
 - Supports encryption and compression
 - Offers better security

Understand the Choices You'll Make During the Installation (cont'd.)

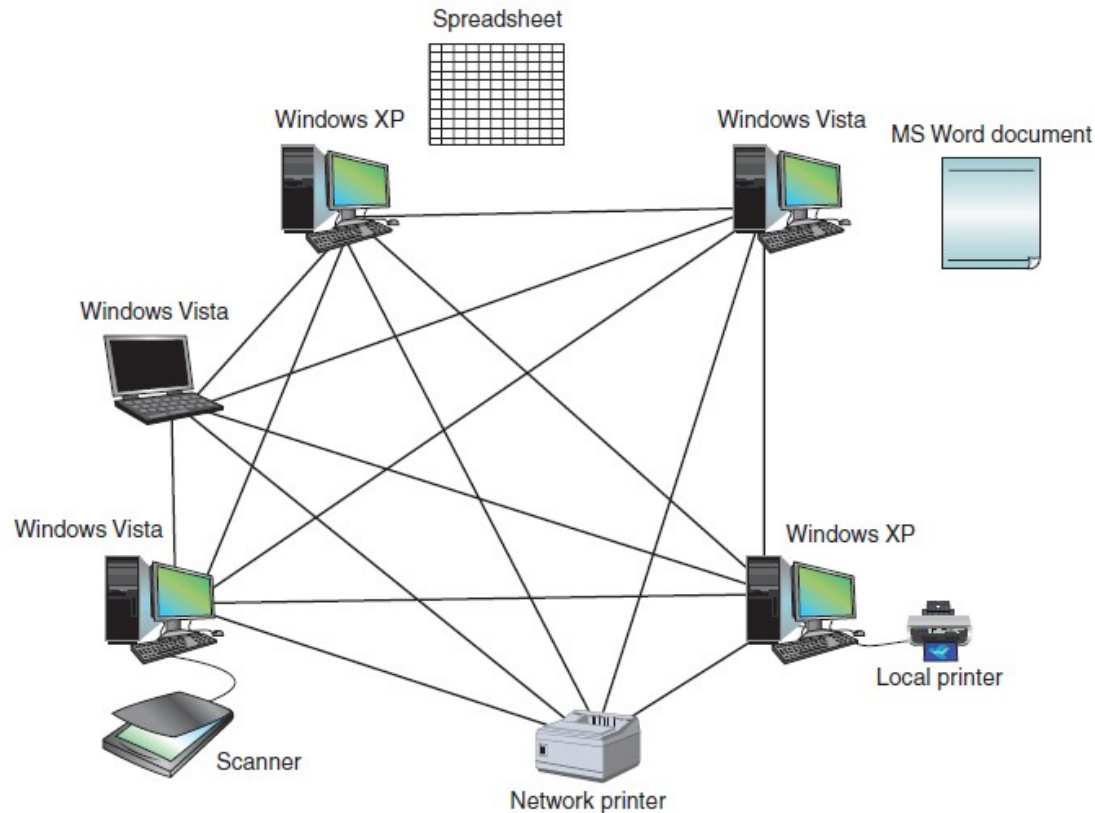


Figure 12-13 A Windows workgroup is a type of peer-to-peer network where no single computer controls the network and each computer controls its own resources. Courtesy: Course Technology/Cengage Learning

Understand the Choices You'll Make During the Installation (cont'd.)

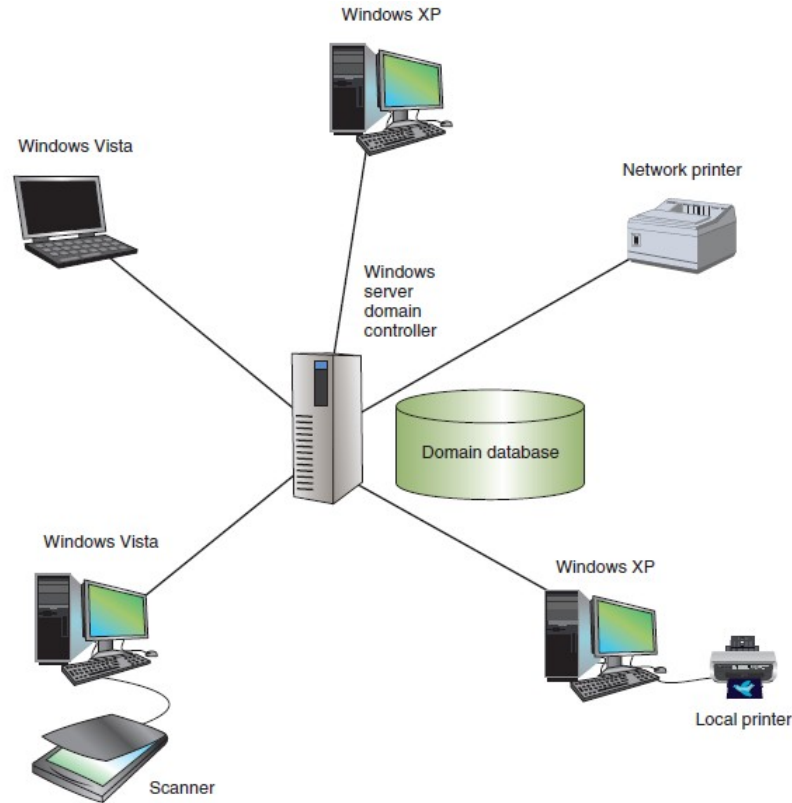


Figure 12-14 A Windows domain is a type of client/server network where security on each PC or other device is controlled by a centralized database on a domain controller
Courtesy: Course Technology/Cengage Learning

Understand the Choices You'll Make During the Installation (cont'd.)

- Network configuration (cont'd.)
 - Network operating system:
 - Windows Server 2008
 - Active Directory database controls the network
 - Database of resources: user accounts and permissions
 - Managed by system administrator
 - Joining a domain:
 - Know domain name, computer name, username, and password
 - Users have domain-level accounts (global account)

Understand the Choices You'll Make During the Installation (cont'd.)

- Network configuration (cont'd.)
 - Administrator account on every Windows computer
 - Local account recognized by local computer
 - Has rights and permissions
 - Vista Installation
 - Can enter password to local user account assigned administrator privileges
 - Default administrator account is disabled by default
 - Windows XP/2000 installation
 - Can enter password to default administrator account
 - Account enabled by default

Understand the Choices You'll Make During the Installation (cont'd.)

- Network configuration (cont'd.)
 - Logging on as administrator after OS installed
 - Create local user accounts
 - User can log onto system with local account even if computer belongs to a domain
 - Domain managed resources are not available until user logs on with domain-level account and password
 - User State Migration Tool (USMT)
 - Transfers settings and data from old PC to new PC
 - Scanstate command
 - Loadstate command

Understand the Choices You'll Make During the Installation (cont'd.)

- Network configuration (cont'd.)
 - Copying user data and settings with no domain
 - Windows XP: Files and Settings Transfer Wizard
 - Windows Vista: Windows Easy Transfer
 - Things to know before installation
 - Computer and workgroup names for a peer-to-peer network
 - Username, user password, and domain name for a domain network
 - For TCP/IP networks: how IP address assigned
 - For static IP addressing: workstation IP address

Final Checklist before Beginning the Installation

Questions to Answer	Further Information
Does the PC meet the minimum or recommended hardware requirement?	CPU: RAM: Hard drive partition size: Free space on the partition:
Do you have in hand the Windows device drivers for your hardware devices and application setup CDs?	List hardware and software that need to be upgraded:
Do you have the product key available?	Product key:
How will users be recognized on the network?	Workgroup name: Domain name: Computer name:
How will the PC be recognized on the network?	Static or dynamic IP addressing: IP address (for static addressing):
Will you do an upgrade or clean install?	Current operating system: Does the old OS qualify for an upgrade?
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:

Table 12-6 Checklist to complete before installing Windows

How to Install Windows Vista

- Topics covered
 - Learn how to install Vista as an:
 - Upgrade
 - Clean install
 - Dual boot

Performing a Vista In-Place Upgrade

- Steps to upgrade from Windows XP to Vista
 - 1. Close applications
 - 2. Launch Windows Vista
 - Click Install now
 - 3. Allow setup program to download updates
 - 4. Enter Vista product key
 - 5. Accept license agreement
 - 6. Select Upgrade for type of installation
 - 7. PC reboots several times
 - Enter country, time, currency, keyboard layout

Performing a Vista In-Place Upgrade (cont'd.)

- Steps to upgrade from Windows XP to Vista (cont'd.)
 - 8. Enter user name, password, computer name, date, time, update preference
 - User name is assigned administrative permissions
 - 9. Setup checks computer performance
 - Logon screen appears

Performing a Clean Install or Dual Boot

- Steps
 - 1. Boot directly from Windows Vista CD or DVD
 - Click Install now
 - 2. Enter product key and accept license agreement
 - 3. Choose Custom (advanced) for type of installation
 - 4. List of partitions displayed
 - Make selection and click Next
 - 5. Drive options (advanced)
 - Click New, enter size of Vista partition, click Apply
 - Installation continues the same way as an upgrade

Performing a Clean Install or Dual Boot (cont'd.)

- Boot with a dual boot
 - Boot loader menu automatically appears
 - Provides a selection for an operating system

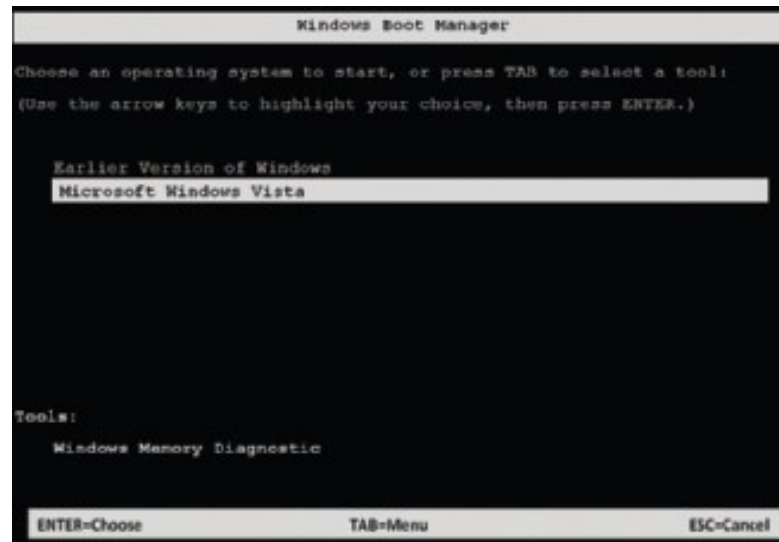


Figure 12-26 Vista boot loader menu. Courtesy: Course Technology/Cengage Learning

Performing a Clean Install Using the Vista Upgrade DVD

- Upgrade from Windows XP to Vista
 - Start Vista installation from within Windows XP
 - Problem if PC will not boot to Windows XP
- Options to resolve problem
 - Reinstall Windows XP and install Windows Vista as an upgrade
 - Use Vista upgrade DVD to perform a clean install
 - Upgrade product key entered during clean install
 - Vista verifies product key
 - Upgrade product key for a clean install results in an error and stops installation

Performing a Clean Install Using the Vista Upgrade DVD (cont'd.)

- Steps to get around error
 - 1. Boot from Vista upgrade DVD, start the installation
 - Do not enter product key
 - Uncheck Automatically activate Windows when I'm online
 - 2. Message appears asking for the key
 - Click No to continue and select Vista edition purchased
 - 3. Complete the installation
 - Product key is needed to activate Vista
 - 4. Start installation routine again from Vista desktop
 - Choose upgrade and enter product key

What to Do After the Vista Installation

- Verify network access
- Activate Windows
- Install Windows updates and service packs
- Configure automatic updates
- Configure Vista components
- Install hardware
- Install applications

How to Install Windows XP

- Important tips about installing XP
 - Installing Windows 2000 and Windows XP 32-bit versions
 - Two programs: Winnt.exe and Winnt32.exe
 - Both located in \i386 CD folder
 - Installing 64-bit Windows XP
 - CD installation folder named \AMD64
 - Clean installation required
 - Folder structure exceeding 256 characters error
 - Move folders and files to another media or computer
 - Restore later

Windows XP Clean Install When an OS Is Not Already Installed

- General directions
 - 1. Boot from Windows XP CD
 - Press Enter to select the first option
 - 2. Setup lists all partitions found on hard drive
 - Select partition to install Windows XP or create one
 - 3. Format new partition if necessary and restart
 - 4. Select geographical location
 - 5. Enter name, organization name, and product key
 - 6. Enter computer name and local Administrator account password

Windows XP Clean Install When an OS Is Not Already Installed (cont'd.)

- General directions (cont'd.)
 - 7. Select the date, time, and time zone
 - PC might reboot
 - 8. If connected to a network, choose how to configure network settings
 - 9. Enter workgroup or domain name

Windows XP Clean Install When an OS Is Already Installed

- General directions
 - 1. Close applications, boot management software, and antivirus software
 - 2. Insert Windows XP CD
 - Autorun launches
 - 3. Select option to Install Windows XP
 - Under Installation Type select New Installation
 - Read and accept licensing agreement
 - Installation process works the same as preceding procedure (Step 2)

Upgrade To Windows XP

- General directions
 - 1. Clean up the hard drive
 - 2. Flash BIOS if necessary
 - 3. Back up important files
 - 4. Scan hard drive for viruses
 - 5. Decompress the drive if necessary
 - 6. Uninstall incompatible hardware or software
 - 7. Insert Windows XP Upgrade CD
 - Auto run launches and select install Windows XP
 - 8. Run Setup command if necessary

Upgrade To Windows XP (cont'd.)

- General directions (cont'd.)
 - 9. Under Installation Type, select Upgrade
 - Two option available: express or custom
 - 10. Select desired upgrade and accept licensing agreement
 - 11. Select partition to install Windows XP
 - 12. Stop installation if compatibility problems arise
 - 13. Upgrade from Windows 98/Me: setup converts information and presents opportunity to join domain
 - 13. Upgrade from Windows NT/2000: almost all registry entries converted

Dual Boot Using Windows XP

- PC with another operating system already installed:
 - Start installation as if a clean install
 - Choose to install Windows XP on a different partition than the other operating system
 - Windows XP recognizes another OS installed
 - Sets up startup menu to offer it as an option for booting

What to Do After the XP Installation

- 1. Verify network and Internet are accessible
 - Click Start and My Network Places
- 2. Activate XP
 - Microsoft provides a 30-day trial period
 - Use Activate Windows dialog box
- 3. Install Windows updates and service packs
- 4. Configure automatic updates
 - Click Start, right-click My Computer, click Properties
 - In System Properties window, click Automatic Updates tab

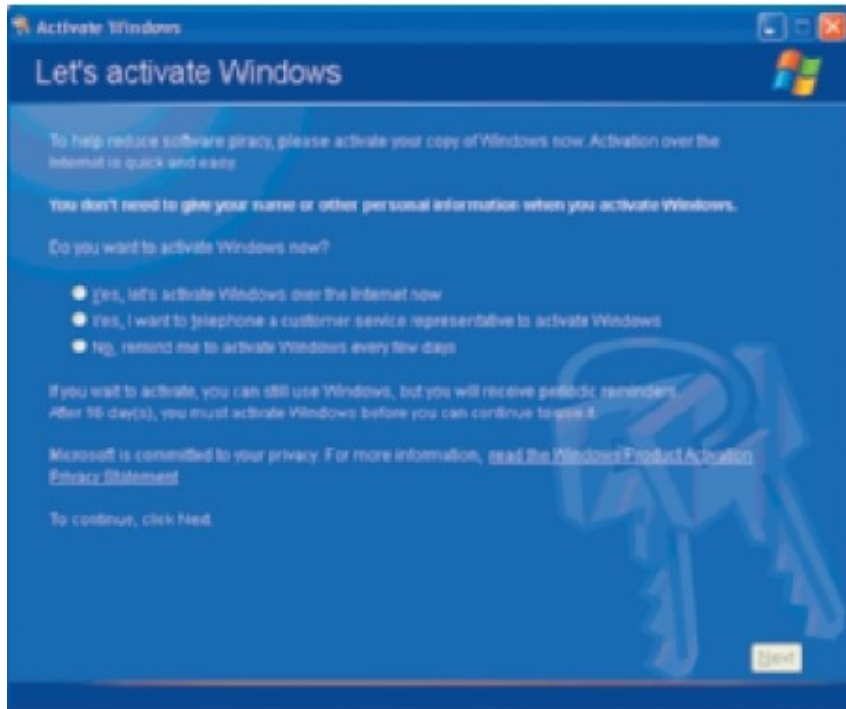


Figure 12-45 Product activation is a strategy used by Microsoft to prevent software piracy
Courtesy: Course Technology/Cengage Learning

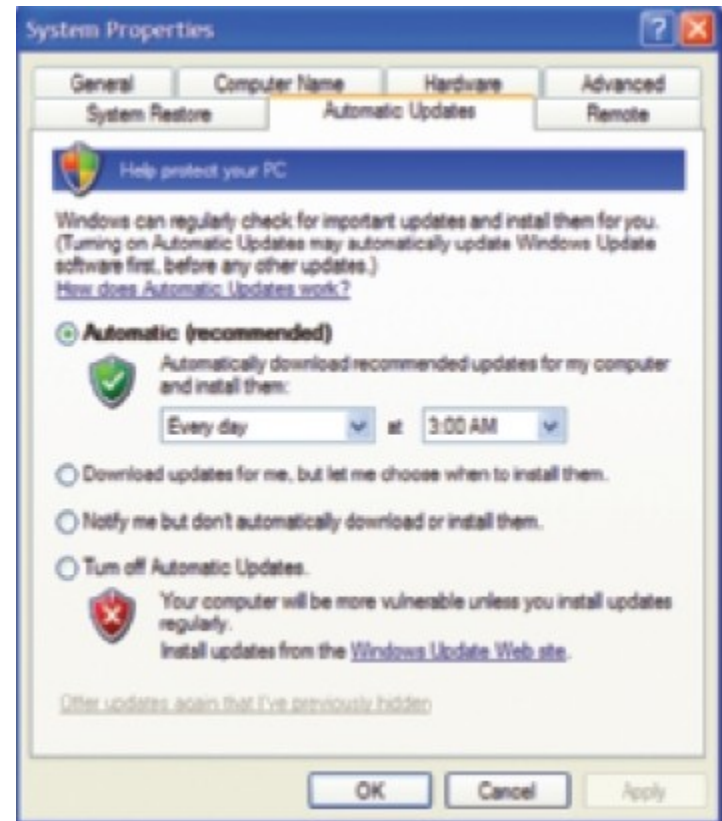


Figure 12-46 Set Automatic Updates for automatic and daily updating
Courtesy: Course Technology/Cengage Learning

What to Do After the XP Installation (cont'd.)

- 5. Install and configure XP components
 - Open Add or Remove Programs applet in Control Panel, click Add/Remove Windows Components
 - Check a component to install, click Next
 - Follow directions on-screen
- 6. Install hardware and applications

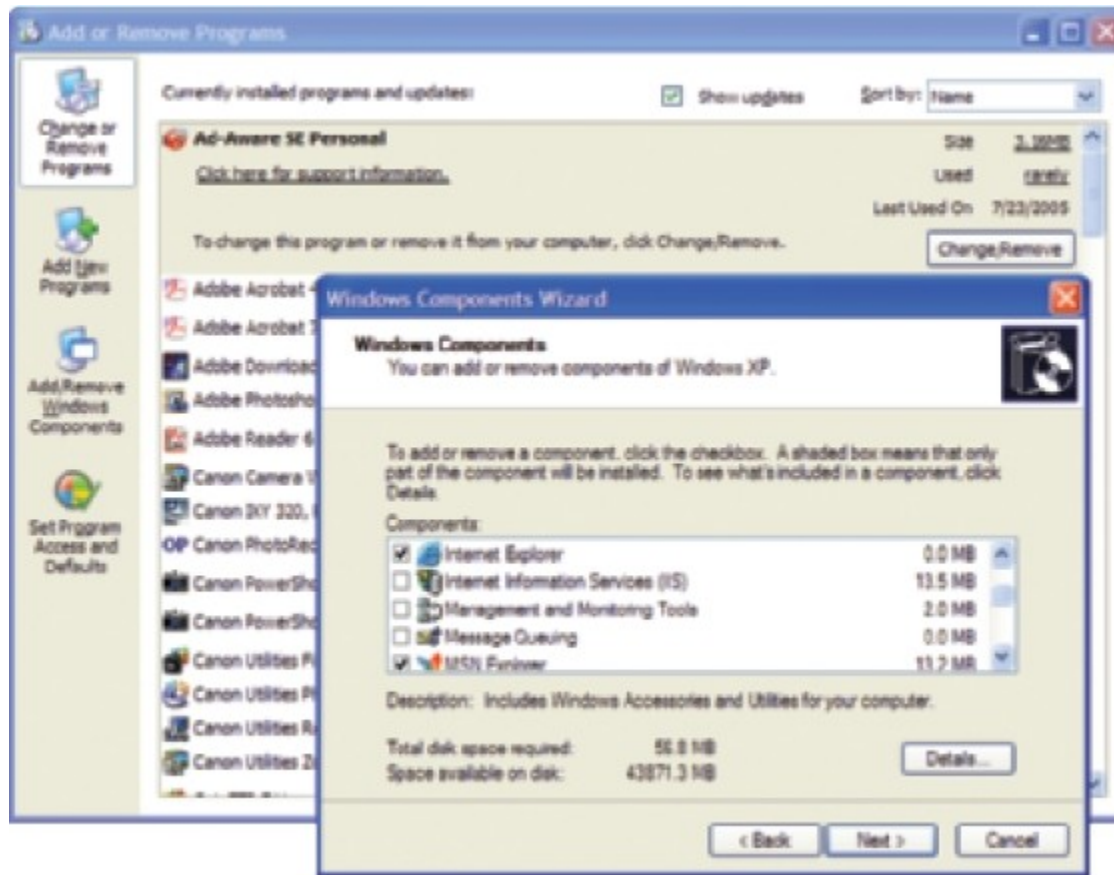


Figure 12-47 Add or remove Windows components using the Add or Remove Programs applet

Courtesy: Course Technology/Cengage Learning

How to Install Windows 2000

- Microsoft no longer supports Windows 2000
- Reasons to reinstall 2000
 - Hard drive replaced
 - Windows 2000 installation corrupted
- Both situations require a clean install

Clean Installation of Windows 2000

- Windows 2000 packaging
 - Documentation and CD
 - United States distribution packages include a floppy disk (provides 128-bit data encryption)
- Installation steps if PC capable of booting from a CD
 - 1. Insert CD and turn on PC
 - Welcome to Setup screen appears
 - 2. Press Enter to begin installation
 - 3. Press F8 to accept the end-user license agreement
 - 4. Skip to Step 6 in the following list of steps

Clean Installation of Windows 2000 (cont'd.)

- If PC does not boot from a CD, create Windows 2000 setup disks to boot
 - 1. Using a working PC, format four floppy disks
 - 2. Place Windows 2000 CD in CD drive, place formatted floppy disk in floppy disk drive
 - 3. Insert new disks as requested and label them
 - 4. Boot PC from first setup disk
 - Insert each of the four disks in turn
 - Insert the Windows 2000 CD

Clean Installation of Windows 2000 (cont'd.)

- If PC does not boot from a CD, create Windows 2000 setup disks to boot (cont'd.)
 - 5. Accept license agreement
 - Welcome screen appears
 - Select Install a new copy of Windows 2000 and click Next
 - Accept license agreement
 - Setup process now identical to that of booting directly from the CD

Clean Installation of Windows 2000 (cont'd.)

- If PC does not boot from a CD, create Windows 2000 setup disks to boot (cont'd.)
 - 6. Windows 2000 searches hard drive for partitions
 - 7. Enter settings and personal information
 - Enter product key, date, time, and administrator password
 - 8. Configure computer to access the network
 - 9. Remove Windows 2000 CD, click Finish, computer then restarts
 - Windows 2000 completes process of connecting

Clean Install of Windows 2000 When an OS Is Already Installed

- 1. Insert Windows 2000 CD
 - Answer No to upgrade question
 - Install Windows 2000 window appears
- 2. Click Install Windows 2000
 - Select Install a new copy of Windows 2000 (Clean Install)
 - Accept license agreement, enter product key, and select special options
 - System reboots
- 3. Installation continues as before

Summary

- Planning requires many decisions
 - Purchase options, versions, 32-bit or 64-bit, hardware requirements, installation method, and network issues
- Vista installation choices
 - Upgrade, clean install, or dual boot
- Windows XP installation
 - Similar to Vista in some areas
 - Upgrade, clean install, or dual boot
- Windows 2000
 - Primarily reinstallations of operating system