CHAPTER 1

Windows Vista Technology Primer

Introduction to Windows Vista

Microsoft Windows Vista is the most significant rollout of the
Windows operating system since Windows 95. Windows Vista is
different from previous versions of Windows from login to logout.
The new operating system with its subsystem and driver model
enhancements is a major improvement over its predecessor,
Windows XP, in terms of Vista's stability and usability for future
Windows versions. The revolutionary architecture of Windows
Vista changes the way users work with and manage data on their
computers. Key architecture changes include changes to user
account controls and privileges, preinstallation and preboot envi-
ronments, and modularization and disk imaging. All these modifi-
cations are meant to improve the user experience in regard to
usability, such as finding documents, email messages, applica-
tions, or configuration settings. Security is also enhanced with
improvements to User Account Control to help prevent installation
of prohibited applications and system protection against spyware
and malware, with improved versions of Windows Defender and
Windows Firewall.

Understanding Windows Vista Versions

Microsoft Windows Vista is the latest release of the Windows
operating system and is designed to dramatically improve the
computing experience of every kind of PC user—from people at
home who use their PCs for simple web browsing, to business
people who must organize and act on large volumes of data, to

engineers and designers who routinely perform complex mathematical analysis. To meet the specific needs of the broad range of users, Microsoft will deliver five editions of Windows Vista. Each edition is geared toward the needs of a specific type of person. The five editions of Windows Vista available are the following:

- **Windows Vista Home Basic**—A budget version of Windows Vista meant for home users with basic computing needs. This version includes a basic set of entertainment features but does not include the capability to join a domain.

- **Windows Vista Home Premium**—An enhanced version of Windows Vista meant for home users with elevated computing needs. This version includes an enhanced set of entertainment features but does not include the capability to join a domain.

- **Windows Vista Business**—A basic version of Windows Vista for business users. This version includes a basic set of management tools and the capability to join a domain.

- **Windows Vista Enterprise**—An enhanced version of Windows Vista for business users. This version includes an advanced set of management features and the capability to join a domain.

- **Windows Vista Ultimate**—An enhanced version of Windows Vista that contains all the advanced infrastructure features of a business-focused operating system, all the management and efficiency features of a mobility-focused operating system, and all the digital entertainment features of a consumer-focused operating system. This version also allows joining a domain.

Note

Windows Vista Starter, a budget version of Windows Vista, is meant for emerging markets and is designed for first-time PC users. Windows Vista Starter is easy to learn and includes help features tailored to beginner users. Windows Vista Starter is not currently scheduled to be available in the United States, Canada, the European Union, Australia, New Zealand, or other high-income markets as defined by the World Bank. Features and functions for Windows Vista Starter Edition are not covered in the scope of this book.

Understanding Windows User Experience (UX)

Windows Vista introduces a breakthrough user experience and is designed to help users feel confident in their ability to view, find, and organize information and to control their computing experience.

The visual style of Windows Vista helps streamline the computing experience by refining common window elements so users can better focus on the content on the screen rather than on how to access it. The desktop experience is more informative, intuitive, and helpful. New tools bring better clarity to the information on the computer, allowing users to see what their files contain without opening them, find applications and files instantly, navigate efficiently among open windows, and use wizards and dialog boxes with added confidence.

Windows Vista provides the following four levels of user experience:

- **Windows Classic**—Provides a Windows 2000 look and feel, yet preserves the functionality of Windows Vista. This level of user experience is available on any version of Windows Vista and requires just the core Windows Vista system requirements.

- **Windows Vista Basic**—Provides the basic user experience for entry-level desktop systems (see Figure 1.1). The interface is upgraded when compared to earlier version of Windows. The Start menu allows instant search capability and easy access to programs; live icons reveal their contents, preview panes, reading panes, new wizards, diagrams, and dialog boxes. This level of user experience is available on any version of Windows Vista and requires just the core Windows Vista system requirements.

- **Windows Standard**—Provides improved performance and reliability to the basic user experience. This experience level is perfect for mid-level computers equipped with graphics hardware that supports the Windows Driver Display Model (WDDM). The Standard experience uses the WDDM graphics technology to enable smoother window handling, enhanced stability, and a reduction in display glitches while refreshing. This level of experience can be used with any version of Windows Vista, except for the Starter version, and requires the same level of hardware as Windows Aero.

- **Windows Aero**—Provides the highest level of visual design and enhanced dynamic effects to the Standard user experience (see Figure 1.2). These new enhancements allow the user to experience user interface essentials such as transparent glass, live taskbar icons and thumbnails, the Windows Flip 3D, and Flip views. The Windows Aero user experience includes additional benefits, such as improved productivity

(real-time thumbnail previews, new 3D task switching, interface scaling), enhanced visual quality (fast and effective window redrawing), and visual aesthetics (translucent window frames and taskbar, enhanced transitional effects). Windows Aero is available only in Home Premium, Business, Enterprise, and Ultimate versions of Windows Vista.
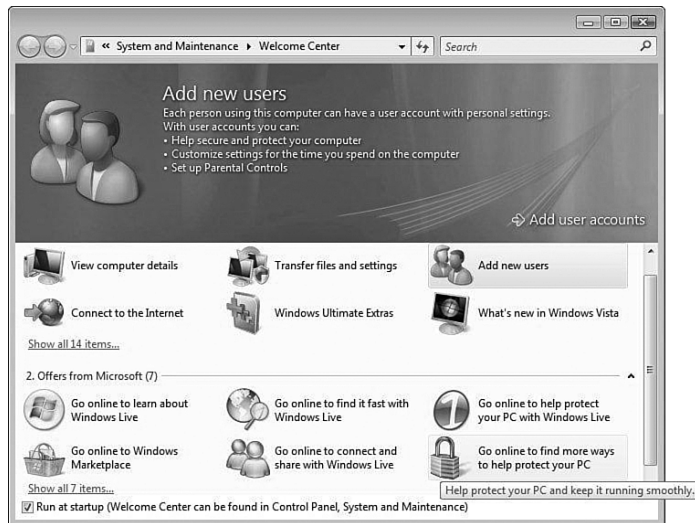

FIGURE 1.1
Viewing the Windows Vista Basic graphical user interface.

FIGURE 1.2
Viewing the Windows Vista Aero graphical user interface.

As noted previously, each level of user experience builds on the features of the previous version and is dependent on the Windows Vista version and the computer's hardware.

Understanding Windows Vista Hardware Requirements

As with previous versions of Windows, Windows Vista has more stringent hardware requirements to maximize the user experience and provide added functionality. However, unlike previous versions of Windows, hardware requirements vary for the different releases of Windows Vista. In some cases, actual hardware requirements will vary, depending on system configuration and on the programs and the features that are installed. Before purchasing and installing Windows Vista, be sure to determine whether the company computers meet the requirements for processing power in megahertz (MHz) or gigahertz (GHz), graphical display memory in megabytes (MB), and physical memory in megabytes (MB). The next sections discuss minimum and recommended hardware specifications.

Minimum Hardware Specifications

The following list describes the recommended minimum hardware requirements for basic functionality of the different editions of Windows Vista. Actual hardware requirements will vary, depending on system configuration and on the programs and the features that you install. If you install Windows Vista over a network, additional hard disk space may be required. Computer systems that meet the minimum hardware specifications can run all versions of Windows Vista's core features, such as innovations in organizing and finding information, security, and reliability.

The minimum hardware specifications for Microsoft Vista Home Basic are as follows:

- 800 megahertz (MHz) 32-bit (x86) processor or 800MHz 64-bit (x64) processor
- 512 megabytes (MB) of system memory
- DirectX 9-class graphics card
- 32MB of graphics memory
- 20 gigabyte (GB) hard disk that has 15GB of free hard disk space
- Internal or external DVD drive

- Internet access capability
- Audio output capability

The minimum hardware specifications for Microsoft Vista Home Premium, Microsoft Vista Business, Microsoft Vista Enterprise, and Microsoft Vista Ultimate are

- 1 gigahertz (GHz) 32-bit (x86) processor or 1GHz 64-bit (x64) processor
- 1GB of system memory
- Windows Aero-capable graphics card
- 128MB of graphics memory that supports DirectX 9 or later
- 40GB hard disk with 15GB of free hard disk space (temporary file storage during the install or upgrade)
- Internal or external DVD drive
- Internet access capability
- Audio output capability

Note

A Windows Aero-capable graphics card must meet specific hardware specifications. Be sure that the video card meets the following requirements:

- Windows Display Driver Model (WDDM) driver support
- DirectX 9-class graphics processor unit (GPU) that supports the following:
  - Pixel Shader 2.0 and 32 bits per pixel
  - Passes the Windows Aero acceptance test in the Windows Driver Kit

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Administrators who are unsure if their computers are Vista compatible can run the Windows Vista Upgrade Advisor on individual machines to learn which version of Windows Vista can successfully be installed on the computer. This software tool will scan a computer and create a report of all known system, device, and program compatibility issues and recommend ways to resolve the issues. In addition, Upgrade Advisor will report if the hardware is not sufficient to run any version of Windows Vista. The Upgrade Advisor can be downloaded at www.microsoft.com/windowsvista/getready/upgradeadvisor/default.mspx.

Recommended Hardware Specifications

As with prior versions of Windows, Microsoft provides a different set of hardware specifications that are needed to experience all the features and functions available in Windows Vista. The following list describes the recommended hardware requirements from Microsoft for enhanced functionality of the different editions of Windows Vista. Actual hardware requirements will vary, depending on system configuration and on the programs and the features that you install. If you install Windows Vista over a network, additional hard disk space may be required.

Computer systems that meet the recommended hardware will be capable of running all versions of Windows Vista core features, such as innovations in organizing and finding information, security, and reliability. These systems will also provide an even better Windows Vista experience with the Windows Aero graphical user interface, such as translucent, glasslike interface elements, live taskbar thumbnails, and Windows Flip 3D.

The recommended hardware specifications for Microsoft Vista Home Premium, Microsoft Vista Business, Microsoft Vista Enterprise, and Microsoft Vista Ultimate are

- 1 gigahertz (GHz) 32-bit (x86) processor or 1GHz 64-bit (x64) processor
- 1GB of system memory
- Windows Aero-capable graphics card
- 128MB of graphics memory that supports DirectX 9 or later
- 40GB hard disk with 15GB of free hard disk space (temporary file storage during the install or upgrade)
- Internal or external DVD drive
- Internet access capability
- Audio output capability

Note

A Windows Aero-capable graphics card must meet specific hardware specifications. Be sure that the video card meets the following requirements:

- Windows Display Driver Model (WDDM) driver support
- DirectX 9-class graphics processor unit (GPU) that supports the following:
  - Pixel Shader 2.0 and 32 bits per pixel
  - Passes the Windows Aero acceptance test in the Windows Driver Kit

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> **Tip**
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> The Windows Vista experience is really based on the amount of hardware available to the Vista OS. If you want the best user experience in Windows Vista, make sure your hardware is the best it can be. To do so, consider the following alternative hardware specifications:
>
> - 2.5GHz Intel-compatible "P4 generation" processor or better (which includes the newer, lower-clocked Core Solos and Duos)
> - 2GB of system memory (RAM)
> - A Windows Aero-capable graphics card with 256MB of graphics memory that supports DirectX 9 or later
> - 200GB hard disk with a drive speed of 7200RPM or greater

Understanding Productivity Features

The Windows Vista user experience depends on the performance level of the system hardware. Aside from the hardware requirements, there are common features within Windows Vista that are available in all versions of Windows, whereas other features are targeted only to business users or to consumer users. This section looks at the OS function and features common to all users of Windows Vista. The following sections will explore features and functions targeted at business users and consumer users.

Users expect a lot from their computers. Their computers are used for accessing, searching, and sharing information from a variety of sources. Where sharing and communication of information between systems was once localized, delivery of information is now worldwide, instantly, at a user's fingertips. The prevalence of communication has made information sharing risky as well. By design, Windows Vista is ready to deliver a new user experience that is informative, intuitive, helpful, and secure. Following is a brief look at some of the features that combine to create a breakthrough computer experience for Windows Vista users:

- **User Experience**—Windows Vista provides a streamlined user interface with refined common window features that allow the user to focus on using the information on the screen rather than trying to retrieve it.

- **Security**—New security features, such as User Account Control, Windows Defender for spyware and malware protection, Automatic Updates, and the new Windows Security Center for the latest security patches, set a new standard for PC security.

- **Search and Organization**—New controls such as the Enhanced Column Headers and the Instant Search box make it easy to search, organize, and manage large amounts of onscreen data.

- **Internet Explorer 7**—The new IE7 Protected Mode feature, along with tabbed browsing, live previews, and shrink-to-fit printing, makes finding and delivering information easy, safe, and secure.

- **Sidebar and Gadgets**—The Windows Sidebar boosts personal productivity by providing instant access to gadgets and easy-to-use, customizable miniapplications offering easily accessible tools and information.

- **Performance**—New features such as Windows SuperFetch (memory management), Windows ReadyBoost (performance boost via flash drives), and Windows ReadyDrive (utilizing hybrid hard drives integrated with flash drives) helps productivity by improving battery life, system performance, and reliability.

- **Windows Backup**—New features such as Windows Backup and Previous Versions provide protection against data loss from user error, hardware failure, or software-related issues.

- **Networking**—New features such as Network Center and Network Map provide computer-to-network connectivity information in a graphical representation. If a PC on the network loses Internet connectivity, Network Diagnostics can determine the cause of the problem and provide a potential solution.

- **Windows SideShow**—The new Windows Vista SideShow platform enables hardware manufacturers to build auxiliary displays in a wide range of peripheral devices, such as keyboards, LCD display casings, remote controls, and cell phones. This feature saves users time and battery life by providing quick access to key information such as appointments, emails, or notes—without turning on the laptop.

- **Speech Recognition**—A new feature in Windows Vista enables users to interact with the computer using their voices. Using voice commands, users can start and stop applications, control the Vista operating system, or dictate documents and email.

- **Help and Feedback**—Windows Vista itself detects, diagnoses, and helps you respond to common problems. Also, when necessary, Windows Vista provides centralized support tools, such as Remote Assistance, to quickly diagnose and resolve issues.

■ **Windows Update**—An improved version of Windows Update automatically keeps the computer up-to-date and more secure by providing software updates to the Vista operating system.

Exploring Business User Features

Some of the new technologies in Windows Vista are targeted at addressing issues that impact organizations, helping users to be more productive and drive business success. Windows Vista will help users collaborate and communicate more effectively by easily connecting them to corporate resources, to the Internet, and to each other, regardless of their physical locations. In addition, Windows Vista will also help businesses lower costs, improve system security, and comply with regulatory requirements. The new and improved business user features are the following:

■ **Security**—Windows Vista includes key security features such as User Account Control to prevent unauthorized application installations, Windows Service Hardening to prevent file system and Registry changes, Brower Security with Internet Explorer 7 Protected Mode, Windows Firewall to control rogue programs, and Network Access Protection, which prevents systems that do not meet internal system health policies from connecting and infecting other systems with malware.

■ **Mobile PCs**—Mobile computing has never been easier than with Windows Vista. New power-management features provide greater control over power options and system battery life. The Windows Mobility Center, discussed in Chapter 9, "Configuring Mobile Functionality in Windows Vista," contains key mobile computing-related settings in one easy-to-locate place. The new Windows Vista Sync Center provides one place where users can manage data synchronization for multiple PCs, between network servers and PCs, and with externally connected devices.

■ **Sharing and Collaboration**—Windows Vista helps you more easily share files, folders, and computers. A new Sharing Wizard helps users specify other users to share information with. Formerly Windows Collaboration, Windows Meeting Space allows groups to instantly and securely form a shared, common session for up to 10 people. The capability to share files, programs, or something as simple as a desktop, anytime or anywhere, makes group collaboration a snap.

- **Faxing and Scanning**—New enhancements in Windows Fax and Scan provide complete document-handling and communications capabilities. Integrated with improved scanning capability, Windows Fax and Scan supports scanning of documents from both local or network-connected scanners and multifunction print/scan/fax devices.

- **Built-in Diagnostics**—Although Windows Vista is more reliable than Windows XP, system problems may still occur. To reduce the frequency and impact of disruptions, Windows Vista can self-diagnose a number of common problems, including failing hard disks, memory problems, and networking issues. Built-in Diagnostics provides automatic diagnosis and correction for common error conditions and helps to protect data when failures occur. For example, the Built-in Diagnostics feature in Windows Vista will warn users of impending hard drive failures and provide advice for corrective action before data is lost. In the worst case, a new Startup Repair technology provides step-by-step diagnostics to guide users through recovery and minimize data loss if a computer will not start up.

- **Data Protection**—With increasingly mobile workforces, companies' sensitive data is at risk if a laptop is lost or stolen. Windows Vista includes both software and hardware solutions for protecting against data loss and unauthorized access. Encrypting File System provides user-level file and folder encryption to protect data. BitLocker Drive encryption, new to Windows Vista, is a hardware-enabled data protection that encrypts the entire Windows file system and prevents data from being compromised on lost or stolen PCs. Additionally, Windows Vista includes the capability to restrict the use of removable storage devices such as Universal Serial Bus (USB) flash drives with corporate computers.

Exploring Consumer User Features

Windows Vista delivers better personal productivity and digital entertainment for consumer PCs through its improved reliability, security, and performance. Windows Vista helps home users accomplish tasks faster, with a rich new interface and new ways to organize and find the information stored on their PCs. Windows Vista includes the tools and entertainment features necessary to incorporate a family PC as an integral part of the home entertainment experience.

- **Family Safety Settings**—Windows Vista makes it simple for parents to control their children's experiences at the computer. With the new Family Safety Settings, parents can limit computer time, access to certain programs and games, and restrict content viewed or downloaded from the Web. Parents can also view reports that detail their children's computer activities.

- **Windows Mail**—Windows Mail is the latest version of its "free" email client. It is the successor to Outlook Express and builds on the foundation of Outlook Express. Windows Mail adds an assortment of new features designed to make the email experience more productive and fun, while helping reduce risks and annoyances such as phishing and junk email.

- **Windows Calendar**—Windows Calendar is a flexible, easy-to-use calendar built directly into the Windows Vista operating system. It allows users flexibility in coordinating and scheduling events with peers, family, or friends. Windows Calendar includes all the features needed to manage personal schedules, such as personal task lists, task notifications, and appointment reminders.

- **Windows Photo Gallery**—Windows Photo Gallery provides home users with the tools needed to organize, find, and view family photos and home videos. Home users can save, edit, print, and share photos with peers, family, and friends. Providing a complete solution for photo and video management, Windows Vista facilitates transferring photo data from camera to PC with a simple import process.

- **Windows Media Player**—The latest version of Windows Media Player is incorporated into Windows Vista. Windows Media Player 11 is an easy way to enjoy, organize, and manage digital information such as videos, music, and pictures on the PC.

- **Windows Movie Maker**—With the latest Windows Vista edition of Windows Movie Maker, home users can easily import, edit, and organize all their digital home videos. With new tools, such as new effects and transitions and improved graphics performance, home users can manage and edit their home videos like professionals.

- **Windows Media Center**—Windows Media Center in Windows Vista makes it easier than ever for home users to find, play, and manage their digital photos and home movies on their PC or TV. Optimized for the latest in widescreen and high definition display technology, Windows

Media Center using Windows Media Extenders (included in Xbox 360) systems can display digital entertainment on up to five additional displays.

- **Gaming**—Consumer gaming has never been so convenient. Windows Vista contains enhancements that make managing, accessing, and playing games easy. The Games folder is located directly on the Start menu, and thumbnail graphics display game information, such as publisher, developer, version owned, the last time the game was played, game release, rating, and genre. Another nice feature is support for the universal controller so that home users can use the same controller for their Xbox 360 and their PC.

- **Windows Easy Transfer**—Using a data transfer wizard, Windows Vista makes transferring personal data easy. Windows Easy Transfer helps home users transfer important data such as files and folders, email messages and settings, contacts, photos, music, and more. Transfer media choices are plentiful and home users can use an Easy Transfer cable, home network, or removable storage devices such as USB drives, CDs, or DVDs.

Running Windows Vista

After Windows Vista is installed on their computers, users can begin to take full advantage of the new technologies and productivity enhancements incorporated into the operating system. Computers running Windows Vista can be part of a workgroup (an associated network of independently managed computers) or of a domain (a group of computers collectively managed by domain controllers and Windows servers). Some aspects of Windows Vista may be different depending on whether a computer is a member of a workgroup or a domain.

Logging On to a Windows Vista System

When the computer is a member of a workgroup, Windows Vista displays a logon screen at startup. If more than one standard user or administrator account has been created, all will be listed on the Log On screen. Logging on is a simple three-step process:

1. Click the account name with which to log on.

2. If the account is password protected, type the account password.

3. Click the arrow button to log on.

When the computer is a member of a domain, Windows Vista displays a blank startup screen after initializing the Vista operating system. Logging on involves a few more steps than a workgroup logon. The logon process is as follows:

1. Press Ctrl+Alt+Del to display the Log On screen. By default, Windows Vista will display the last account to log on to the computer. The user account format will be shown as computer\username or as domain\username.

2. To log on to this account, type the password and then click the arrow.

3. If this is not the account to log on with, click the Switch User button, press Ctrl+Alt+Del, and then click Other User. There are a few more options depending on the type of account being used. If the account is in the default domain, type the username and password. If the account is in a different domain, specify the domain and account name in the format domain*username*; that is, companyabc.com\airjimi. If logging on to the local machine is desired, use .*username*; that is, .\airjimi.

By design, Windows Vista stores user profile date in `%SystemDrive%\Users\%UserName%` (`C:\Users\Airjimi`). Within each user profile folder, there are individual folders called personal folders for each person who logs on to the system. Each personal folder contains several additional folders. The folders are as follows:

- **Contacts**—This folder is the default location for storing the user's contacts and contact groups.

- **Desktop**—This folder is the default location for storing the user's desktop.

- **Documents**—This folder is the default location for storing the user's document files.

- **Downloads**—This folder is the default location for storing information downloaded from the Internet.

- **Favorites**—This folder is the default location for storing the user's web browser favorites.

- **Links**—This folder is the default location for storing the user's web browser links.

- **Music**—This folder is the default location for storing the user's music files.

- **Pictures**—This folder is the default location for storing the user's picture files.

- **Searches**—This folder is the default location for storing the user's saved searches.

- **Videos**—This folder is the default location for storing the user's video files.

Using the Welcome Center

The Welcome Center provides new users of Windows Vista easy access to configuration tasks such as viewing computer details, transferring files and settings, managing user accounts, setting up devices, and personalizing Windows. As shown in Figure 1.3, the Welcome Center also contains a variety of offers and other downloads available from Microsoft. Some of the offers are free and some need to be paid for.

FIGURE 1.3
Exploring the Windows Vista Welcome Center window.

The Welcome Center layout isn't designed just for novice users but also for users new to Windows Vista. It provides a one-stop area for users without

any in-depth knowledge and encompasses most of the configuration choices that users of Vista might require when working with Windows Vista, whether they are new users or experts.

By default, when users log on, Windows Vista displays the Welcome Center. If displaying the Welcome Center is not desired, the feature can be disabled by deselecting the Run at Startup option in the bottom-left side of the screen. The Welcome Center can be reopened as necessary by using the following steps:

1. Click the Start button and then select Control Panel.

2. In Control Panel, click the System and Maintenance link.

3. Click the Welcome Center link.

If you are using the Classic view of the Control Panel, the Welcome Center can be reopened by using the following steps:

1. Click the Start button and then select Control Panel.

2. In Control Panel, if necessary, scroll down and locate the Welcome Center icon.

3. Double-click the Welcome Center icon.

Exploring Vista Product Keys and Activation

Although volume licensed versions of Windows Vista might not require activation or product keys, retail versions of Windows Vista will require both activation and product keys. Users can check the activation status with Windows Vista Welcome Center by checking the Activation Status contained in the View Computer Details screen. If the operating system has not been activated, the operating system can be activated by clicking Show More Details and then scrolling down in the View Basic Information About Your Computer screen and selecting the option Activate Windows Now under Windows Activation.

Microsoft changed its policy in regard to product-key entry and modification. Windows Vista product keys, contrary to previous versions of Windows, provide additional flexibility in accommodating different licensing plans and can be changed as needed. Changing the product key is fairly easy with the following steps:

1. Open the System window in the Welcome Center by clicking Show More Details.

2. In the System window, click Change Product Key, located under Windows Activation.

3. Enter the new product key in the Windows Activation screen and then click Next.

Exploring Basics of User Account Control

Microsoft introduced User Account Control (UAC) in Windows Vista as an answer to user-community complaints about computer security. UAC helps prevent unauthorized changes to the computer by programs such as viruses, spyware, and malware. This feature enhances computer security by ensuring complete separation of standard user and administrator user accounts. By definition, a standard user is an account that allows most software and system changes that do not affect other users or threaten computer security. In contrast, administrator accounts have complete access to the computer and its underlying operating system to make any changes as required.

Note

In this version of Windows, the user groups have been simplified and the Power Users present in the Windows XP group no longer exist. If a user upgrades from Windows XP to Windows Vista and has folders or files that were set up with specific rights for Power Users in Windows XP, the folders and files can still be used as in Windows XP.

If a user is logged in as standard user or administrator, a security prompt will be displayed by default (dependent on Group Policy settings and account type) if an application is run that requires administrator privileges. When a user is logged on using a standard user account, the user is asked to provide a password for an administrator account. If the user is logged in to a workgroup, local computer administrator accounts are listed by name. The user must select an account and type the associated password and then click Submit.

In a domain environment, administrator accounts for users who have logged on to the computer are listed. Typically, these accounts are either local administrator accounts or domain administrator accounts. The user must select an account and type the associated password and then click Submit. In addition, the user has the option of choosing an administrator account other than those listed. The user does this by clicking on Use Another Account, then typing in the account name and password and clicking Submit.

If the user is logged in as an administrator account, a confirmation dialog box will appear, as shown in Figure 1.4. The user must click Continue to allow the task to be completed or Cancel to stop the task from being executed.
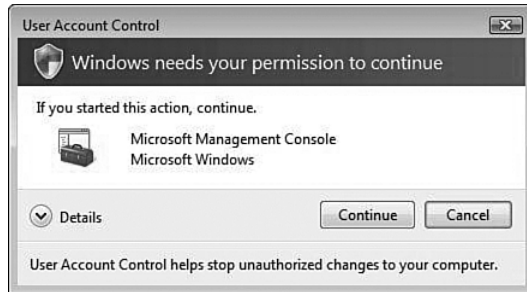

FIGURE 1.4
Using User Account Control to confirm program installation.

Applications can also be run with an elevation of privileges. Elevation of privileges allows a standard application to be run with administrator account rights. After performing the following steps, a user can run applications using elevated privileges:

1. Right-click the application shortcut or menu icon and then select Run as Administrator.

2. When the User Account Control prompt appears, select Continue to allow the task to be completed or Cancel to stop the task from being executed.

Tip

Elevation of privileges also applies when using the command prompt. When trying to run an administrative utility or task requiring administrator privileges via command line, an error will occur if the user does not have the administrator rights and permissions. Be sure to use the Run as Administrator option to avoid seeing an error message.

Powering Down Windows Vista Systems

Typically, when a user turns off a computer running Windows Vista, the system enters sleep state rather than shutting down and turning off

completely; the system saves all work, turns off the display, and puts the system into sleep mode. Sleep mode is a low-power-consumption mode where the system state is saved into memory and the computer disk drives and cooling fans turn off. By clicking the Power button on the Start Menu, most computers can be put into sleep mode. Waking up the computer can be accomplished by pressing any key on the keyboard or by pressing the power button on the computer itself.

Startup, Sleep, and Shutdown Performance

In Windows Vista, users can switch their computers between different powered states of low-power consumption and high-power consumption. Users can easily place their computers in a lower power sleep mode using the Power button on the Windows Start menu. In addition, if properly configured, the computer can be placed in sleep mode by pressing the computer's external power button. Sleep, a new power state in Windows Vista, combines the benefits of the standby (fast startup) and hibernation (data protection) features previously available in Windows XP. In sleep mode, the state of the operating system is saved in the computer's memory and although the hard drive and system fans are shutdown, the system can quickly be powered back up to a working state.

Some computers cannot be put into sleep mode because of the system hardware, system state, or applied power-saving configurations. If the system hardware doesn't support sleep mode, the system is completely powered off. If a computer has just completed installing new software updates requiring a restart or a new program has been installed, the system will also not go into sleep mode. In addition, if power options have been reconfigured and have set the Power button to use the Shut Down action, the computer cannot use sleep mode, and turning off the computer shuts it down completely.

With the new GUI enhancements in Windows Vista, it is easy to determine how the Power button works (see Figure 1.5). Windows Vista displays two different views for the Power button. If the Power button displays an amber icon with a circle with a vertical line through the top, pressing the Power button will turn the system off and put the system in a low-power-consumption state so the working session can be resumed quickly. If the Power button displays a red icon with a circle and a vertical line through the middle of it, pressing the power button will turn the system off completely.

FIGURE 1.5
Viewing the Power button.

Summary

Windows Vista is the next-generation client operating system from Microsoft, with significant advances in usability, security, performance, and productivity. The visually enhanced user experience is different from previous versions of Windows from login to logout. The new operating system with its subsystem and driver model enhancements is a major improvement over its predecessor, Windows XP, in terms of Vista's stability and usability for future Windows versions. Revolutionary architecture improvements such as user account controls and privileges, preinstallation and preboot environments, and modularization and disk imaging change the way users work with and manage data on their computers. These modifications are meant to improve the user experience with regard to usability, such as finding documents, email messages, applications, or configuration settings. Security is also enhanced with improvements to the User Account Control to help prevent installation of rogue applications and provide system protection against malware with improved versions of Windows Defender and Windows Firewall.