CHAPTER 1

# An Overview of Windows Vista

IN THIS CHAPTER



It's hard to believe, but when Windows Vista shipped in 2007, it will be a full quarter of a century after Microsoft released its first version of MS-DOS, and an astonishing 23 years since the company announced the original version of Windows (which eventually shipped—to almost no acclaim—in 1985). Windows 2.0, released in 1987, was marginally more promising, but it resolutely failed to light any fires on the PC landscape. It wasn't until Windows 3.0 was released in 1990 that Windows finally came into its own and its utter dominance of the desktop began. With the release of Windows 95 on August 24, 1995, Windows became the rock star of the computing world, beloved by many, hated by some, but known to all.

It's also hard to believe that people were actually lining up outside computer stores on the night of August 23, 1995, to be among the first to purchase Windows 95 at midnight. Why on earth would anyone *do* that? Were they insane? Perhaps some were, but most were just caught up in the hype and hope generated by both Microsoft's marketing muscle and the simple fact that Windows 95 *was* light-years ahead of any previous version of the operating system.

By comparison, the Windows world since that hot summer night in 1995 has been decidedly—some would say *depressingly*—quiet. There have been plenty of new versions—Windows 98 and Windows Me on the consumer side, Windows NT 4 and Windows 2000 on the corporate side, and then Windows XP in all its flavors—but there has been a distinct lack of *buzz* associated with each release. True, nothing will ever live up to the hype (and hokum) that surrounded Windows 95, but the versions since have had a

ho-hum quality to them. Sure, Windows 98 (particularly the Second Edition release) was solid (and is still used by many people to this day), Windows 2000 was a favorite business operating system (OS) for many years, and XP has been the best Windows yet, but nobody lined up at midnight to buy any of these products.

Will any of this change with the release of Windows Vista? True, nobody's all that excited about the name, but the name is meaningless in the long run. (In 2001, most folks thought XP—based, head-scratchingly, on the word *eXPerience*—was the dumbest name since Microsoft BOB, but everyone got used to it within a month or two and the "controversy," such as it was, faded quickly.) What might get people talking about Vista isn't the name, but the simple fact that we're *finally* seeing some interesting OS technology from Microsoft. Vista is beautiful to look at, promises to make our day-to-day computing lives a bit easier, and contains some compelling architectural improvements. I doubt few people outside of Microsoft will trumpet Vista as the greatest OS ever, but many months of delving into Vista's innards has convinced me that it has at least a few things to get excited about.

This chapter gets your Windows Vista introduction off the ground by giving you an overview of the operating system. I'll start with a brief history of Longhorn/Vista, and then give you a quick tour of what's new and interesting.

## The Development of Windows Vista

In 2000, Bill Gates, chairman and chief software architect of Microsoft, announced that the successor to the forthcoming Whistler operating system—later renamed as Windows XP—would be a new OS codenamed Blackcomb. A year later, however, just a few months before the release of XP, Microsoft announced a change of plans: Blackcomb would come much later than expected, and between XP and Blackcomb, probably around 2003, we'd see a minor update codenamed Longhorn.

**NOTE**

Microsoft has long applied codenames to prerelease versions of its products. For Windows, the practice began with Windows 3.1, which used the codename Janus. The first of these temporary monikers that was in any way "famous" (that is, known reasonably widely outside of Microsoft) was Chicago, the codename for Windows 95. Since then, we've seen, among many others, Memphis for Windows 98, Cairo for Windows NT 4.0, Millennium for Windows Me, and Whistler for Windows XP.

Why the codename *Longhorn*? Legend has it that Bill Gates has fond feelings for British Columbia's Whistler-Blackcomb ski resort (the name of which has given us two previous codenames for Windows, so it's clear that *someone* at Microsoft loves the place). At the base of Whistler Mountain, in the Carleton Lodge, there is an après-ski bar called the Longhorn Saloon. The burgers, I hear, are quite good.

There is an impressively exhaustive list of Microsoft codenames on the Bink.nu site: http://bink.nu/Codenames.bink.

However, Microsoft's approach to Longhorn soon began to change. By the time the Windows Hardware Engineering Conference (WinHEC) rolled around in mid-2003, Microsoft was describing Longhorn as a "huge, big, bet-the-company move." Windows XP was being kept current with new updates, including Windows XP Service Pack 2, and new versions of Windows XP Tablet PC Edition and Windows XP Media Center Edition. Meanwhile, Longhorn gradually began to accumulate new features originally intended for Blackcomb. By the summer of 2004, Microsoft realized that Longhorn had become the next major Windows OS, so the company revamped the entire Longhorn development process and more or less started the whole thing from scratch. This delayed the release of Longhorn, of course, and the dates kept getting pushed out: first to 2005, then to early 2006, and finally to later in 2006 and early 2007.

But it wasn't just a revamped development process that was delaying Longhorn. In conferences, demos, and meetings with hardware vendors, developers, and customers, Microsoft had described the new OS and features in the most glowing terms imaginable. This had become a seriously ambitious project that was going to require an equally serious commitment of resources and, crucially, *time* to make the promises a reality. Unfortunately, time was the one thing that Microsoft didn't have a lot of. Yes, XP was a fine OS and was being kept fresh with updates, but the gap between XP and Vista was unprecedented

By the time 2006 rolled around, Microsoft knew that it had to complete Longhorn as soon as humanly possible. Microsoft briefly considered an interim version of Windows that would ship between Windows XP Service Pack 2 and Longhorn. (This stopgap release was codenamed Oasis, but some wags dubbed it Shorthorn.)

## "Vista" Unveiled

The codename Longhorn was finally retired when Microsoft announced on July 22, 2005, that the new OS would be called Windows Vista. Why *Vista*? Because, according to one Microsoft spokesperson, the new OS is "about providing clarity to your world and giving focus to the things that are important to you," and it "provides your view of the world." That sounds like a lot of marketing hoo-ha to my ears, but it's true that Vista does offer some new features that enable you to view your documents in radically new ways (radical for Windows, that is).

To give just one example, you can run a local search from the Start menu. The resulting window displays a list of all the files—documents, email messages, favorites, music files, images, and more—that contain the search term. You can then save the results as a search folder. The next time you open the search folder, Vista shows not only the files from the original search, but also any new files you've created that include the search term.

**NOTE**

Windows version numbers haven't mattered very much since the days of Windows 3.*x* and NT 4.0. However, all Windows releases do carry a version number. For example, Windows XP is version 5.1. Just for the record, Windows Vista is version 6.0. If you have Vista, you can see this for yourself: press Windows Logo+R (or select Start, All Programs, Accessories, Run); type **`winver`**; and click OK.

## What's *Not* in Windows Vista

However, what of all those fancy new technologies that promised to rock the Windows world? Well, there was simply no way to include all of those features *and* ship Vista by early 2007. Reluctantly, Microsoft had to start dropping features from Vista.

The first major piece to land in the Recycle Bin was Windows Future Storage (WinFS), a SQL Server–based file system designed to run on top of NTFS and to make it easier to navigate and find documents. WinFS is expected to ship separately after Windows Vista, although as you'll see in this book, some features of WinFS *did* make it into Vista (see Chapter 4, "Mastering File Types").

Microsoft also removed the Windows PowerShell (codenamed Monad and also called the Windows Command Shell or Microsoft Command Shell), a .NET-based command-line scripting language. (However, PowerShell is undergoing a separate beta cycle as I write this, and it's expected to be released around the same time as Vista.)

Microsoft also "decoupled" some important technologies from Vista, which meant that these technologies were developed separately and released for Vista and "backported" to run on Windows XP and Windows Server 2003. Two major technologies are being backported:

- A new graphics architecture and application programming interface that was codenamed Avalon and is now called Windows Presentation Foundation (WPF)
- A new programming platform for building, configuring, and deploying network-distributed services, codenamed Indigo and now called Windows Communications Foundation (WCF)

In both cases, it doesn't mean that Windows XP and Windows Server 2003 will suddenly look and feel like Windows Vista after you install WPF and WCF. Instead, it means that the older operating systems will be capable of running any applications that use WPF and WCF code. This gives developers more incentive to build applications around these technologies because it ensures a much larger user base than they would otherwise have if WPF and WCF ran only on Vista installations.

Finally, there are also several Vista tools that will also be XP "down-level" tools (as this book went to press, it wasn't clear when these tools would ship; they may be available as you read this). This means that they will be made available as XP downloads, although without certain features that you get in the Vista versions:

- **Internet Explorer 7**—The XP version doesn't come with Protected Mode or Parental Controls (see "Security Enhancements" and "Internet Explorer 7," later in this chapter).
- **Windows Defender**—On XP, scan times will be slower because XP doesn't track file changes the way Vista does (see "Transactional NTFS," later in this chapter).
- **Media Player 11**—The XP version won't play content from another PC or device; it won't view content from a Vista Media Library; it won't integrate with the Windows shell; and it won't have Vista's advanced DVD playback features.

The upshot of these deletions, backports, and down-level tools is that Vista is not quite as compelling a release as it was once touted to be, but there are still plenty of new improvements to make it worth your time.

# Windows Vista System Requirements

Personal computing is governed by two inexorable, and not unrelated, "laws":

**Moore's Law**—Processing power doubles every 18 months (from Gordon Moore, cofounder of Intel).

**Parkinson's Law of Data**—Data expands to fill the space available for storage (from the original Parkinson's Law: Work expands to fill the time available).

These two observations help explain why, when the computers we use are becoming increasingly powerful, our day-to-day tasks never really seem all that much faster. The leaps in processing power and memory are being matched by the increasing complexity and resource requirements of the latest programs. Therefore, the computer you're using today might be twice as muscular as the one you were using a year and a half ago, but the applications you're using are twice the size and require twice as many resources.

Windows fits neatly into this scenario. With each new release of Microsoft's flagship operating system, the hardware requirements become more stringent, and our computers' processing power is taxed a little more. Windows Vista is no exception. Even though Microsoft spent an enormous amount of time and effort trying to shoehorn Vista into a minimal system configuration, you need a reasonably powerful computer if you don't want to spend most of your day cursing the dreaded hourglass icon. The good news is that Windows Vista's hardware requirements are nowhere near as onerous as many people believed they would be. In fact, most midrange or better systems purchased in the past year or two should run Vista without a problem.

The next few sections present a rundown of the system requirements you need to meet in order to install and work with Windows Vista. Note that I give both the minimum requirements as stipulated by Microsoft, and a set of "reasonable" requirements that I believe you need to make working with Vista more or less pleasurable.

## Processor Requirements

Vista desktop minimum: 800MHz modern processor

For adequate Vista performance, you need at least a midrange processor, which means an Intel Pentium 4 or Celeron, or an AMD Athlon XP, Athlon 64, or Sempron running at 2.0–3.0GHz. Faster is better, of course, but only if money is no object. Moving up to 3.2GHz or 3.6GHz might set you back a few hundred dollars, but the performance improvement won't be all that noticeable. You'd be better off investing those funds either in extra memory (discussed later) or in a dual-core processor.

**NOTE**

What does *dual-core* mean? It describes a CPU that combines two separate processors, each with its own cache memory, on a single chip. (The cache memory is an on-board storage area that the processor uses to store commonly used bits of data. The bigger the cache, the greater the performance.) This enables the operating system to perform two tasks at once without a performance hit. For example, you could work in your word processor or spreadsheet program in the foreground using one processor, while the other processor takes care of a background spyware or virus check. Current examples of dual-core processors are the Intel Core 2 and Pentium D series and Pentium Extreme Edition, and the AMD Athlon 64 X2.

The 64-bit processors are becoming more affordable, and they run the 64-bit version of Vista like a dream (one of my Vista test machines was 64-bit, and it was a pleasure to use). Look for a 64-bit Pentium 4 or any of the several x64 chips available from AMD. Note, however, that although these 64-bit machines can run 32-bit applications without a performance hit, those programs will *not* run any faster with the wider bus. To see a speed boost with your applications, you have to wait for 64-bit versions of the applications you intend to run on it.

## Memory Requirements

Vista minimum: 512MB

You can run Vista on a system with 512MB of RAM, but the performance will be quite slow. Admittedly, I've been running beta versions of Vista, which are always slower than release versions because they contain debugging code and are works-in-progress as far as optimization goes. However, I believe that, for most people, 1GB is a more realistic minimum for day-to-day work, and that's how much RAM Microsoft recommends for "Windows Vista Premium Ready" systems. If you regularly have many programs running at the same time, or if you use programs that manipulate digital photos or play music, consider moving up to 1.5GB. If you do extensive work with large files such as databases, or if you use programs that manipulate digital videos, 2GB should be your RAM goal.

Note, however, that if you select a 64-bit processor, you should seriously consider upgrading your system RAM. The conventional wisdom is that because 64-bit machines deal with data in chunks that are twice the size of those in 32-bit machines, you need twice the memory to take full advantage of the 64-bit advantage. Therefore, if you'd normally have 1GB of RAM in a 32-bit machine, opt for 2GB in your 64-bit computer.

Finally, consider the speed of the memory. Older DDR (double data rate) memory chips typically operate at between 100MHz (PC-1600) and 200MHz (PC-3200), whereas newer DDR2 chips run between 200MHz (PC2-3200) and 533MHz (PC2-8500). The up-and-coming DDR3 chips will operate at between 400 and 800MHz, which is a substantial speed boost and should improve Vista performance noticeably.

**NOTE**

Memory module numbers such as PC-3200 and PC2-8500 tell you the theoretical bandwidth of the memory. For example, PC-3200 implies a theoretical bandwidth of 3200MBps. To calculate theoretical bandwidth, you first multiply the base chip speed by 2 to get the effective clock speed. (Modern memory is **double-pumped**, which means data transfers at the beginning and the end of each clock cycle.) You then multiply the effective clock speed by 8 (because the memory path is 64 bytes wide and there are 8 bits in each byte). A 100MHz chip has an effective clock speed of 200MHz and, therefore, a theoretical bandwidth of 1600MBps, so it is called PC-1600 memory.

## Storage Requirements

Vista hard disk free space minimum: 15 GB

The disk space requirements depend on which version of Vista you're installing, but count on the new OS requiring at least 15GB free space to install. The OS will use perhaps another few gigabytes for the storage of things such as the paging file, System Restore checkpoints, Internet Explorer temporary file, and the Recycle Bin, so Vista will require at least 20GB of storage. These days, of course, it's not the operating system that usurps the most space on our hard drives; it's the massive multimedia files that now seem to be routine for most of us. Multimegabyte digital photos and spreadsheets, and even *multigigabyte* database files and digital video files are not unusual. Fortunately, hard disk storage is dirt cheap these days, with most disks costing less—often *much* less—than a dollar a gigabyte.

Note, too, that the type of hard drive can affect performance. For desktop systems, an older IDE drive that spins at 5,400RPM will be a significant performance bottleneck. Moving up to a 7,200RPM drive will help immeasurably, and a 10,000RPM drive is even better if you don't mind the extra expense. You should also consider moving from the older, parallel IDE technology to the new Serial Advanced Technology Attachment (SATA) drives, which are at least theoretically faster (with data-transfer rates starting at 150MBps). Look for a SATA drive with an 8MB cache and Native Command Queuing (NCQ).

**NOTE**

Native Command Queuing (NCQ) is a relatively new hard-disk technology aimed at solving a long-standing hard-disk performance problem. Requests for hard-drive data are stored in the memory controller and are handled in sequence by the disk's onboard controller. Unfortunately, whenever the controller processes requests for data that is stored in areas that are far away from each other, it causes a significant performance hit. For example, suppose that request 1 is for data stored near the start of the disk, request 2 is for data near the end of the disk, and request 3 is again for data near the start of the disk. In a typical hard disk, the read/write heads must travel from the start of the disk to the end, and then back again, processing each request in

the order it was received. With NCQ, the controller reorders the requests so that the 1 and 3, which are close to each other, are carried out first, and only then is the distant request 2 carried out.

Unfortunately for laptop users, most portable hard drives fall into the 5,400 RPM range, and some are even slower than that. You can pay more to get a 7,200 RPM drive, but in most instances, the performance improvement you'll see from such an upgrade isn't necessarily worth the additional cost.

Finally, you should also bear in mind that one of Windows Vista's new features is the ability to burn data to recordable DVDs. To take advantage of this, your system requires a DVD burner, preferably one that supports both the DVD-RW and DVD+RW disc formats (that is, a DVD±RW drive) .

**NOTE**

To learn more about Vista's new DVD features, see the section "DVD Burning and Ripping," in Chapter 7, "Working with Digital Media."

## Graphics Requirements

Vista graphics memory minimum: 32MB

You'll be learning a lot more about Vista's graphical underpinnings in Chapter 13, "Customizing the Windows Vista Interface." For now, however, it's important to note that Microsoft is taking a sensibly cautious route to graphics requirements. Vista's interface is graphics intensive, but it will be smart enough to adopt a less intensive interface based on what your PC can handle. Whether Vista holds back on the visual bells and whistles depends on whether you have a separate AGP or PCI Express graphics adapter (as opposed to an integrated motherboard graphics chip), the capability of the card's graphics processing unit (GPU), and how much graphics memory the card has on board:

- If Vista detects a low-end card, it defaults to the Windows Classic theme, which offers a Windows 2000–like interface.
- If Vista detects a card with medium-range capabilities, it uses the new Aero theme, but without the Glass effects (such as transparency).
- If Vista detects a high-end card, it defaults to the full Aero Glass interface.

To get the beautiful Aero Glass look as well as the new 3D and animated effects, your system should have a graphics processor that supports DirectX 9, Pixel Shader 2.0 (in hardware, not as a software emulation), and 32 bits per pixel, and comes with a device driver that supports the new Windows Vista Display Driver Model (WDDM). (If you purchase a new video card, look for the Windows Vista Capable or Windows Vista Premium Ready logo on the box. If you just need to upgrade the driver for an existing graphics card, look for "WDDM" in the drive name or description.)

The amount of onboard memory you need depends on the resolution you plan to use (assuming that you're using a single monitor; for dual monitors, double the memory):

- If you'll be using a basic 800×600 or 1024×768 resolution, 32MB is enough.
- If you want to run up to 1280×1024, you need at least 64MB.
- If you want to run up to 1920×1200, you need at least 128MB.

**TIP**

Graphics memory is like system memory: You can never have too much, and it's always a good investment to buy a card that has much as you can get. One of Microsoft's Vista FAQs said it best: "The most [graphics] memory your bank account can afford is the ticket."

Before the final release of Vista, it wasn't clear whether *any* integrated graphics chips would support the full Aero Glass interface, although I've seen reports that some integrated graphics hardware—such as the Intel 945 and the ATI Radeon XPress X200—can handle Aero Glass.

## Hardware Requirements for Various Vista Features

Windows Vista is a big, sprawling program that can do many things, so it's not surprising that there is a long list of miscellaneous equipment you might need, depending on what you plan to do with your system. Table 1.1 provides a rundown.

TABLE 1.1 Equipment Required for Various Windows Vista Tasks

| Task | Required Equipment |
|---|---|
| Using the Internet | For a dial-up connection: A modem, preferably one that supports 56Kbps connections. |
| | For a broadband connection: A cable or DSL modem and a router for security. |
| Networking | For a wired connection: A network adapter, preferably one that supports Fast Ethernet (100Mbps) connections, a network switch or hub, and network cables. |
| | For a wireless connection: A wireless adapter that supports IEEE 802.11a, b, or g, and a wireless access point. |
| Handwriting | A Tablet PC with a digital pen, or a graphics tablet. |
| Photo editing | A USB slot for connecting the digital camera. If you want to transfer the images from a memory card, you need the appropriate memory card reader. |
| Document scanning | A document scanner or an all-in-one printer that includes scanning capabilities. |
| Faxing | A modem that includes fax capabilities. |

TABLE 1.1 Continued

| Task | Required Equipment |
|---|---|
| Ripping and burning CDs | For ripping: A CD or DVD drive.<br>For burning: A recordable CD drive. |
| Burning DVDs | A recordable DVD drive. |
| Video editing | An internal or external video-capture device, or an IEEE 1394 (FireWire) port. |
| Videoconferencing | A webcam or a digital camera that has a webcam mode. |
| Listening to digital audio files | A sound card or integrated audio, as well as speakers or headphones. For the best sound, use a subwoofer with the speakers. |
| Listening to radio | A radio tuner card. |
| Watching TV | A TV tuner card (preferably one that supports video capture). A remote control is useful if you are watching the screen from a distance. |

# Windows Vista Editions

For many years, the Windows world was divided into two camps: the so-called "consumer" editions—Windows 95, 98, and Me—aimed at individuals and home office users, and the "business" editions—Windows NT and 2000—aimed at the corporate market. With the release of Windows XP, Microsoft merged these two streams into a single code base. However, that didn't mean the end to having multiple editions of the operating system. In fact, XP ended up with six major editions: Starter (for users with low-cost PCs in emerging markets outside North America), Home (individuals), Professional (corporate users and the SOHO crowd), Professional x64 (the 64-bit version for power users), Media Center (multimedia users), and Tablet PC (with digital pen support for Tablet PC users). Many people found the existence of so many versions of XP confusing, and it certainly was a head-scratching situation for anyone not versed in the relatively subtle differences among the editions.

Given this widespread confusion, you would think that Microsoft would simplify things with Windows Vista. After all, a case could be made that the reason so many people did not upgrade to XP was that they simply were not sure which edition they should purchase. Therefore, no one would blame you for thinking that the road to Vista is going to be straighter than the twisting XP path.

In the end, Vista has shipped with the same number of versions as XP—six in all—although Vista's versions are configured completely differently than XP's. First, the home market has two editions:

Vista Home Basic

- **Windows Vista Home Basic**—This edition is available in North America and other developed nations, and it represents the simplest Vista option. The Home Basic Edition is aimed at individuals using their computer at home who want security without complexity. Home Basic

includes Windows Defender, Windows Mail with its antispam features, Internet Explorer 7 with its antiphishing features and protected mode, the improved Windows Firewall, the revamped Security Center, and Vista's enhanced parental controls. It also features Windows Media Player 11, Windows Movie Maker, Windows Photo Gallery, Windows Calendar, Windows Sidebar, Windows Search, the Games Explorer, partial support for the Mobility Center for notebook users, and basic networking (wired and wireless). However, Home Basic does not support the new Aero shell.


- **Windows Vista Home Premium**—This edition includes everything in Home Basic, plus the Aero shell, Media Center, support for Tablet PCs, Windows Collaboration, Windows DVD Maker, scheduled backups, and advanced networking capabilities (such as ad hoc peer-to-peer networks and multiple-machine parental controls). This edition is aimed at networked household, multimedia enthusiasts, and notebook users.

The business market also has two editions:


- **Windows Vista Business**—This edition is analogous to Windows XP Professional and includes the same corporate features as XP Pro: support for domains, multiple network protocols, offline files, Remote Desktop, file and folder encryption, roaming user profiles, and group. Vista Business also comes with the Aero shell, Internet Information Server, Windows Fax and Scan, support for Tablet PCs, and the full Mobility Center. This edition does *not* come with Media Center, Movie Maker, and DVD Maker. In short, it's a no-nonsense OS for the business professional.


- **Windows Vista Enterprise**—This edition is optimized for corporate desktops. It includes everything that's in the Vista Business edition, plus features such as Windows BitLocker (drive encryption for sensitive data), Virtual PC Express, Multilanguage User Interface (MUI), and Subsystem for UNIX-Based Applications (SUA). It also allows IT personnel to deploy the OS in different languages using a single disk image. Note, however, that Enterprise Edition will be made available only to Enterprise Agreement (EA) and Software Assurance (SA) volume-licensing customers. (Or, of course, you can just buy the Ultimate Edition, which I discuss next.)

Bestriding the canyon that exists between the home and business editions is an every-thing-but-the kitchen sink version:


- **Windows Vista Ultimate**—This edition comes with all the features of the Home Premium and Enterprise editions. It also offers enhanced game performance, access to online subscription services, custom themes, and enhanced support.

Here's the sixth Vista version:

- **Windows Vista Starter**—This is a stripped-down edition of Vista that is available only in emerging markets. It's designed for low-cost PCs and is optimized to run on machines with relatively slow CPUs and small memory footprints. This means that the Starter Edition won't support features such as the Aero shell, networking, image editing, and DVD burning. As with XP Starter Edition, Vista Starter Edition is limited to an 800×600 display and won't allow users to open more than three programs or three windows at once.

In addition to these editions, there are original equipment manufacturer (OEM) equivalents for all versions, as well as 64-bit versions for everything except the Starter Edition. Finally, Microsoft also released special versions of Vista—a Home Edition and a Professional Edition—that are customized for Europe to satisfy antitrust legal obligations in that region, which means these editions come without Microsoft's media features, including Media Player and Media Center.

## Windows Anytime Upgrade

Microsoft is building Windows Vista as a *modularized* OS. This means that *every* edition of Vista rests on a subset—sometimes called MinWin—that contains the core functionality of the OS. Microsoft says that base contains about 95% of the Vista functionality. To create any of the Vista editions that you learned about earlier in this chapter, Microsoft simply adds the appropriate module (or *SKU*) on top of the base. This also works for language packs. The base OS has no language-specific code (it's *language-agnostic*, in the vernacular). Not even English is in the base OS. Therefore, you can apply only the languages you need on top of the base.

**NOTE**

**SKU**—short for *stock keeping unit* and pronounced *skew*—is a retailing term that refers to a unique code assigned to a product, which makes it easy for retailers to receive, identify, and inventory their stock. It also has the broader meaning of "a separate product," which is the meaning that Microsoft is using with the Vista components.

One of the big advantages of shipping multiple Vista SKUs in a single disc image is that all the modules I listed in the previous section are present on the disc. Therefore, it should be easy to "upgrade" to a higher version of Vista by simply adding the appropriate modules. That's exactly what Microsoft is doing with its new Windows Anytime Upgrade

feature in the Home Basic, Home Premium, and Business editions. For example, if you are currently running the Home Basic edition of Windows Vista, you can use Windows Anytime Upgrade to jump up to Home Premium or even Ultimate. Similarly, Vista Business users can move to Vista Ultimate.

Figure 1.1 shows the Windows Anytime Upgrade window for Home Basic users (select Start, Control Panel, System and Maintenance, Windows Anytime Upgrade).


FIGURE 1.1 Windows Vista Home Basic users can upgrade to Home Premium or Ultimate.

Clicking one of the upgrade links takes you to another window that explains the upgrade process (see Figure 1.2):

1. Purchase a license from a Microsoft partner.
2. Download and install the license.
3. Insert your original Vista disc and follow the instructions to add the modules for the new version to your system.


FIGURE 1.2 Clicking an upgrade link takes you to this page, where you can begin the upgrade process.

## New Interface Features

You'll be learning about what's new with Vista's interface in detail in Chapter 7. For now, here's a summary of what to expect:

- **The Start "Orb"**—The Start button—a fixture in the computing firmament since Windows 95—has been replaced by an "orb" with the Windows logo, as shown in Figure 1.3.

FIGURE 1.3 Windows Vista replaces the Start button with an orb.

- **The Start Menu**—The Windows Vista Start menu has a new look, as you can see in Figure 1.4. There are still Internet and Email icons pinned to the top of the left side of the menu (although the Email icon now points to Windows Mail, the Vista replacement for Outlook Express), and the collection of links to Windows features on the right has been reconfigured. In addition, the icon at the top of the menu changes depending on which link is highlighted. The new Start menu has an integrated Search box as well, which I discuss a bit later in this section.

**NOTE**

Note also that the names of many Windows features have changed. In particular, Windows Vista no longer tacks on the word *My* to your personal folders (for example, My Documents is now just Documents).


FIGURE 1.4 The Windows Vista reconfigured Start menu.

- **The Desktop**—The desktop itself hasn't changed much, although the new high-resolution icons are much prettier than in previous versions. The big change related to the desktop is the new customization interface—called Desktop Background—which is much nicer than the old dialog box of controls and also offers a much wider variety of wallpapers, some of which are quite stunning. Figure 1.5 shows the Control Panel's Desktop Background window.
- **Aero Glass**—This is the new look of Vista's window, controls, and other elements. The "Glass" part means that for systems with relatively high-end graphics capabilities, the Vista window title bars and border will have a transparency effect.
- **Window Thumbnails**—These are scaled-down versions of windows and documents. For supported file types, these thumbnails are "live," which means they reflect the current content of the window or document. For example, in folder windows, the icon for an Excel workbook shows the first worksheet, and an icon for a Word document shows the first page. Similarly, a Windows Media Player thumbnail shows live content, such as a running video.

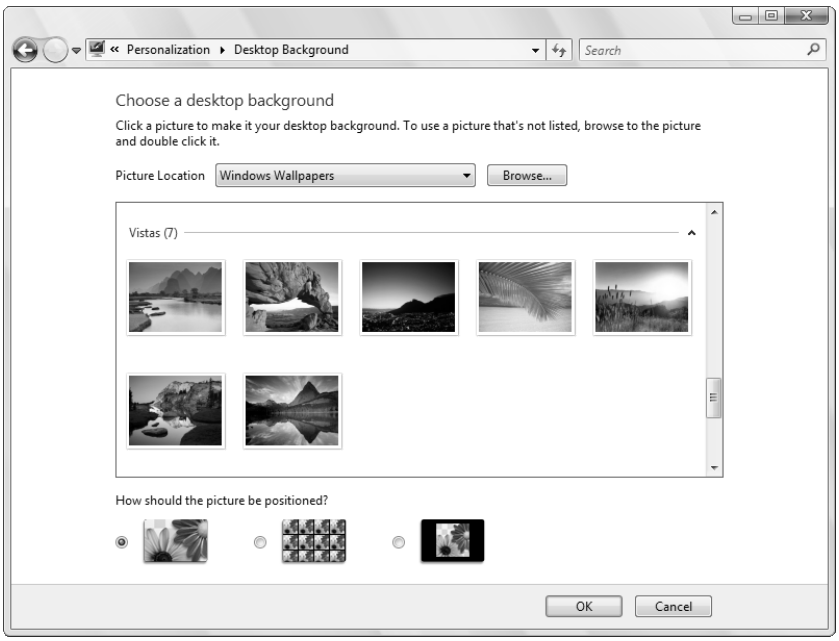


FIGURE 1.5 The Control Panel's Desktop Background window makes it easy to customize the desktop wallpaper, color, and more.

- **Flip and Flip 3D**—When you hold down Alt and press Tab, Vista displays not an icon for each open window, but a thumbnail for each window. Each time you press the Tab key, Vista "flips" to the next window (hence the name of this new feature: Flip). You can also press Windows Logo+Tab to organize the open windows in a 3D stack. Pressing the arrow keys or scrolling the wheel mouse flips you from one window to another (this feature is called Flip 3D). In Chapter 7, see the section titled "Better Cool Switches: Flip and Flip 3D" for screenshots that show you these features in action.
- **Taskbar Thumbnails**—The live thumbnails idea also extends to the taskbar. If you mouse over a taskbar button, Vista displays a live thumbnail for the window associated with the button, as shown in Figure 1.6.


FIGURE 1.6 When you hover the mouse pointer over a taskbar button, Vista displays a live thumbnail image of the associate window.

- **Folder Windows**—Windows Vista has given folder windows a considerable makeover, as shown in Figure 1.7. The "address" of the folder is hidden in favor of a hierarchical "breadcrumb" folder path, the Task pane is now a strip below the address bar, and the Classic (as they're now called) menus are hidden (you can display them by pressing Alt). Each window can be divided into as many as five sections: Besides the folder content, you can display the Navigation pane on the left, the Reading pane on the right, the Search pane above, and the Preview pane below.

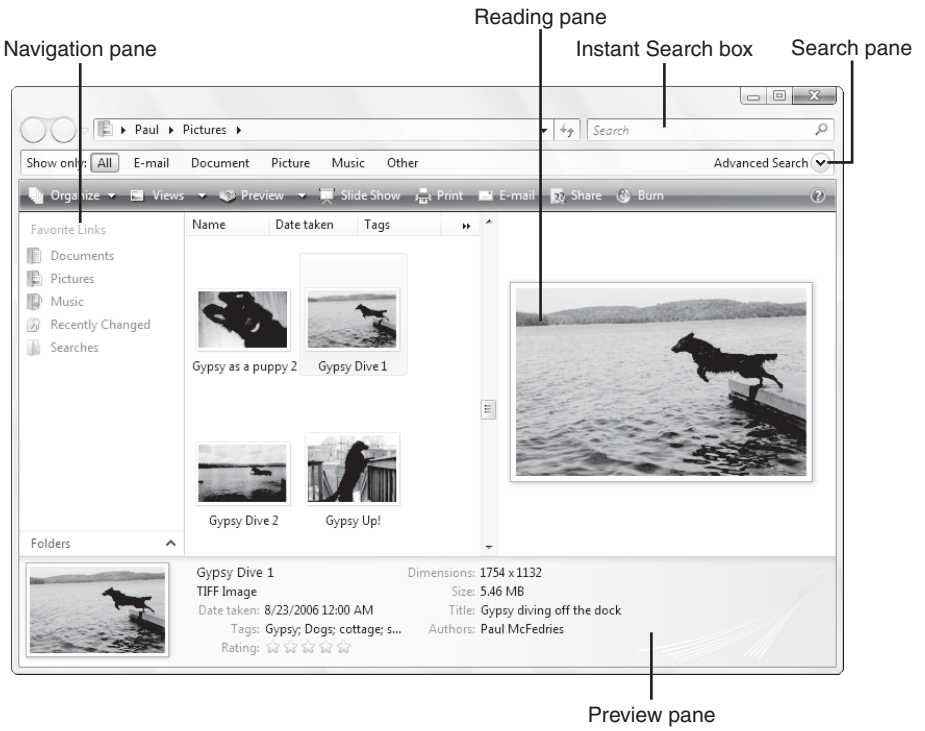


FIGURE 1.7 Folder windows in Windows Vista have been given a serious makeover.

- **Instant Search**—Vista's new Windows Search Engine (WSE) promises to be a more powerful alternative to the search capabilities of previous Windows versions. This is partially because WSE supports searching via tags, comments, and other document metadata (see "Support for Document Metadata," later in this chapter). Nevertheless, perhaps the biggest and potentially most useful search innovation in Vista is the Instant Search box that appears at the bottom of the Start menu (refer to Figure 1.4) and within every folder window (refer to Figure 1.7). The Instant Search box enables you to perform as-you-type searches, which means that when you type

even a single character in the Instant Search box, Vista automatically begins searching all your programs, documents, Internet Explorer favorites, email messages, and contacts (in the case of the Start menu's Instant Search box) or all the files in the current folder (in the case of a folder window's Instant Search box). There are also on-the-fly Instant Search boxes within Windows Media Player, Windows Mail, Windows Photo Gallery, and many other locations.

**NOTE**

Folder windows come with a new Search pane that you can use to perform much more sophisticated searches, including operators such as `starts with` and `doesn't contain`, and also Boolean (`AND/OR`) searches.

- **Windows Sidebar**—The Windows Sidebar is a pane that appears on the right side of the Vista desktop. You can populate the Sidebar with a new technology called *gadgets*, which are mini-applications that can display the local weather, stock quotes, the current time, RSS newsfeeds, and much more.

# What's New Under the Hood

The Windows Vista interface has been garnering most of the attention in the beta program, but Vista also offers plenty of new and improved features under the hood, as the next few sections show.

## Support for Document Metadata

**Metadata** is data that describes data. For example, if you have some digital photos on your computer, you could use metadata to describe each image: the person who took the picture, the camera used, tags that describe the image itself, and so on. Windows Vista comes with built-in support for document metadata, enabling you to add and edit properties such as the `Title`, `Comments`, `Tags`, `Author`, and `Rating` (1 to 5 stars).

Windows not only gives you easier ways to edit metadata (for example, you can click the Edit link in the folder window's Preview pane), but it also makes good use of metadata to make your life easier:

- **Searching**—The Windows Search service indexes metadata so that you can search for documents using any metadata property as a query operand.
- **Grouping**—This refers to organizing a folder's contents according to the values in a particular property. This was also possible in Windows XP, but Windows Vista improves on XP by adding techniques that enable you to quickly select all the files in a group and to collapse a group to show only its header.
- **Stacking**—This is similar to grouping because it organizes the folder's contents based on the values of a property. The difference is that a stack of files appears in the folder as a kind of subfolder.

- **Filtering**—This refers to changing the folder view so that only files that have one or more specified property values are displayed. For example, you could filter the folder's files to show only those in which the `Type` property was, say, `Email` or `Music`.

**NOTE**

For the complete details on metadata, see the "Metadata and the Windows Explorer Property System" section in Chapter 3.

## Performance Improvements

When I tell people that a new version of Windows is available, the first question they inevitably ask is, "Is it faster than [insert their current Windows version here]?" Everybody wants Windows to run faster, but that's primarily because most of us are running systems that have had the same OS installed for several years. One of the bitter truths of computing is that even the most meticulously well maintained system will slow down over time. On such systems, the only surefire way to get a big performance boost is to wipe the hard drive and start with a fresh OS install.

The Windows Vista Setup program essentially does just that (preserving and restoring your files and settings along the way, of course). Therefore, the short answer to the previous question is, "Yes, Vista will be faster than your existing system." However, that performance gain comes not just from a fresh install, but also because Microsoft has tweaked the Windows code for more speed:

- **Faster startup**—Microsoft has optimized the Vista startup code and implemented asynchronous startup script and application launching. This means that Vista doesn't delay startup by waiting for initialization scripts to complete their chores. It simply completes its own startup tasks while the scripts run in their own good time in the background.
- **Sleep mode**—Actually, you can reduce Vista startup to just a few seconds by taking advantage of the new Sleep mode, which combines the best features of the XP Hibernate and Standby modes. Like Hibernate, Sleep mode preserves all your open documents, windows, and programs, and it completely shuts down your computer. However, like Standby, you enter Sleep mode within just a few seconds, and you resume from Sleep mode within just a few seconds.
- **SuperFetch**—This technology tracks the programs and data you use over time to create a kind of profile of your disk usage. Using the profile, SuperFetch can then make an educated guess about the data that you'll require; like XP's Prefetcher, it can then load that data into memory ahead of time for enhanced performance. SuperFetch can also work with Vista's new ReadyBoost technology, which uses a USB 2.0 flash RAM drive as storage for the SuperFetch cache, which should provide improved performance even further by freeing up the RAM that SuperFetch would otherwise use.

- **Restart Manager**—This feature enables patches and updates to install much more intelligently. Now you often have to reboot when you install a patch because Windows can't shut down all the processes associated with the application you're patching. Restart Manager keeps track of all running processes and, in most cases, can shut down all of an application's processes so that the patch can be installed without requiring a reboot.

## Stability Improvements

The second thing that people always ask about a new version of Windows is, "Will it crash less often? Microsoft has had nearly a quarter of a century to get Windows right, so why can't it produce a glitch-free operating system?" I have to break the news to my frustrated interlocutors that what they seek is almost certainly impossible. Windows is just too big and complex, and the number of software permutations and hardware combinations is just too huge to ensure complete system stability in all setups.

That doesn't mean that Microsoft isn't at least *trying* to make Windows more stable. Here's what it did in Vista:

- **I/O cancellation**—Windows often fails because some program has crashed and brought the OS down with it. The usual cause of this is that a program has made an input/output (I/O) request to a service, resource, or another program, but that process is unavailable; this results in a stuck program that requires a reboot to recover. To prevent this, Vista implements an improved version of a technology called **I/O cancellation**, which can detect when a program is stuck waiting for an I/O request and then cancel that request to help the program recover from the problem.
- **Reliability monitor**—This new feature keeps track of the overall stability of your system, as well as **reliability events**, which are either changes to your system that could affect stability or occurrences that might indicate instability. Reliability events include Windows updates, software installs and uninstalls, device driver installs, updates, rollbacks and uninstalls, device driver problems, and Windows failures. Reliability monitors graphs these changes and a measure of system stability over time so that you can graphically see whether any changes affected system stability.
- **Service recovery**—Many Windows services are mission-critical, and if they fail, it almost always means that the only way to recover your system is to shut down and restart your computer. With Windows Vista, however, every service has a **recovery policy** that enables Vista not only to restart the service, but also to reset any other service or process that depends on the failed service.
- **Startup Repair Tool**—Troubleshooting startup problems is not for the faint-of-heart, but you might never have to perform this onerous core again, thanks to Vista's new Startup Repair Tool (SRT), which is designed to fix many common startup problems automatically. When a startup failure occurs, Vista starts the SRT immediately. The program then analyzes the startup logs and performs a series of diagnostic tests to determine the cause of the startup failure.

- **New diagnostic tools**—Windows Vista is loaded with new and improved diagnostic tools. These include Disk Diagnostics (which monitors the Self-Monitoring, Analysis, and Reporting Technology, or SMART, data generated by most modern hard disks); Windows Memory Diagnostics (which works with Microsoft Online Crash Analysis to determine whether program crashes are caused by defective physical memory); Memory Leak Diagnosis (which looks for and fixes programs using increasing amounts of memory); Windows Resource Exhaustion Detection and Resolution (RADAR, which monitors virtual memory and issues a warning when resources run low, and also identifies which programs or processes are using the most virtual memory and includes a list of these resource hogs as part of the warning); Network Diagnostics (which analyzes all aspects of the network connection and then either fixes the problem or gives the user simple instructions for resolving the situation); and the Windows Diagnostic Console (which enables you to monitor performance metrics).

## Security Enhancements

With reports of new Windows XP vulnerabilities coming in with stomach-lurching regularity, we all hope that Vista has a much better security track record. It's still too early to tell—and nefarious hackers are exceptionally clever—but it certainly looks as though Microsoft is heading in the right direction with Vista:

- **User Account Control**—This new—and *very* controversial—feature ensures that every Vista user runs with only limited privileges, even those accounts that are part of the Administrators group (except the Administrator account itself). In other words, each user runs as a "least privileged user," which means users have only the minimum privileges they require for day-to-day work. This also means that any malicious users or programs that gain access to the system also run with only limited privileges, thus limiting the amount of damage they can do. The downside (and the source of the controversy) is that you are constantly pestered with security dialog boxes that ask for your approval or credentials to perform even trivial tasks, such as deleting certain files.
- **Windows Firewall**—This feature is now **bidirectional**, which means that it blocks not only unauthorized incoming traffic, but also unauthorized outgoing traffic. For example, if your computer has a Trojan horse installed, it might attempt to send data out to the Web, but the firewall's outgoing protection will prevent this.
- **Windows Defender**—This is the Windows Vista antispyware program. (**Spyware** is a program that surreptitiously monitors a user's computer activities or harvests sensitive data on the user's computer, and then sends that information to an individual or a company via the user's Internet connection.) Windows Defender prevents spyware from being installed on your system and monitors your system in real-time to look for signs of spyware activity.
- **Internet Explorer Protected mode**—This new operating mode for Internet Explorer builds on the User Account Control feature. Protected mode means that Internet

Explorer runs with a privilege level that's enough to surf the Web, but that's about it. Internet Explorer can't install software, modify the user's files or settings, add shortcuts to the Startup folder, or even change its own settings for the default home page and search engine. This is designed to thwart spyware and other malicious programs that attempt to gain access to your system through the web browser.

- **Phishing Filter**—**Phishing** refers to creating a replica of an existing web page to fool a user into submitting personal, financial, or password data. Internet Explorer's new Phishing Filter can alert you when you surf to a page that is a known phishing site, or it can warn you if the current page appears to be a phishing scam.
- **Junk Mail Filter**—Windows Mail (the Vista replacement for Outlook Express) comes with an antispam filter based on the one that's part of Microsoft Outlook. The Junk Mail Filter uses a sophisticated algorithm to scan incoming messages for signs of spam. If it finds any, it quarantines the spam in a separate Junk Mail folder.
- **Windows Service Hardening**—This new technology is designed to limit the damage that a compromised service can wreak on a system by (among other things) running all services in a lower privilege level, stripping services of permissions that they don't require, and applying restrictions to services that control exactly what they can do on a system.
- **Secure Startup**—This technology encrypts the entire system drive to prevent a malicious user from accessing your sensitive data. Secure Startup works by storing the keys that encrypt and decrypt the sectors on a system drive in a Trusted Platform Module (TPM) 1.2 chip, which is a hardware component available on many newer machines.
- **Network Access Protection (NAP)**—This service checks the health status of a computer, including its installed security patches, downloaded virus signatures, and security settings. If any health item is not completely up-to-date or within the network guidelines, the NAP enforcement service (running on a server that supports this feature) either doesn't let the computer log on to the network or shuttles the computer off to a restricted area of the network.
- **Parental Controls**—This feature enables you to place restrictions on the user accounts that you've assigned to your children. Using the new User Controls window in the Control Panel, you can allow or block specific websites, set up general site restrictions (such as Kids Websites Only), block content categories (such as Pornography, Mature Content, and Bomb Making), block file downloads, set time limits for computer use, allow or disallow games, restrict games based on ratings and contents, and allow or block specific programs.

## Windows Presentation Foundation

The Windows Presentation Foundation (WPF) is Vista's new graphical subsystem, and it's responsible for all the interface changes in the Vista package. WPF implements a new graphics model that can take full advantage of today's powerful graphics processing units.

With WPF, all output goes through the powerful Direct3D layer (so that the CPU doesn't have to deal with any graphics); this output also is all vector based, so WPF produces extremely high-resolution images that are completely scalable.

### Desktop Window Manager

The Desktop Window Manager (DWM) is a new technology that assumes control over the screen display. With Vista, applications draw their graphics to an offscreen buffer, and then the DWM composites the buffer contents on the screen.

### Improved Graphics

The combination of the WPF and DWM means that Vista graphics are the best Windows graphics ever. Program and document windows no longer "tear" when you move them quickly across the screen, animations applied to actions such as minimizing a window are richer and more effective, icons scale up and down with no loss of quality, and transparency effects are applied to window title bars and borders.

### Transactional NTFS

The Windows Vista file system implements a new technology called Transactional NTFS, or TxF, for short. TxF applies transactional database ideas to the file system. This means that if some mishap occurs to your data—it could be a system crash, a program crash, an overwrite to an important file, or even just imprudent edits to a file—Vista allows you to roll back the file to a previous version. It's a lot like the System Restore feature, except that it works not for the entire system, but for individual files, folders, and volumes.

### XML Paper Specification

Windows Vista supports a new Microsoft document format called the XML Paper Specification, or XPS. This is an XML schema designed to create documents that are high-fidelity reproductions of existing documents. In other words, documents published as XPS and opened in an XPS viewer program should look the same as they do in the original application. Microsoft has incorporated an XPS viewer into Windows Vista, so any Vista user will automatically be able to view XPS documents. (The viewer runs within Internet Explorer.)

Microsoft is also licensing XPS royalty-free so that developers can incorporate XPS viewing and publishing features into their products without cost. This means it should be easy to publish XPS documents from a variety of applications.

## New and Improved Programs and Tools

All new versions of Windows come with a few brand-new programs and tools, as well as a bunch of existing features that have been overhauled, tweaked, or merely prettified. Windows Vista is no exception, and I've talked about a few of these already (including Windows Sidebar, Windows Defender, and the Reliability Monitor). The next few sections

take you through the main highlights of the rest of Vista's new and improved programs and tools.

## Welcome Center

When you start Windows Vista, you automatically see the new Welcome Center window, shown in Figure 1.8. This window tells you your Vista version and activation status, and provides you with some basic details about your PC (processor, RAM, computer name, and so on). There are also several links for tasks such as setting up devices, working with user accounts, transferring files from your old computer, and viewing more details about your computer.

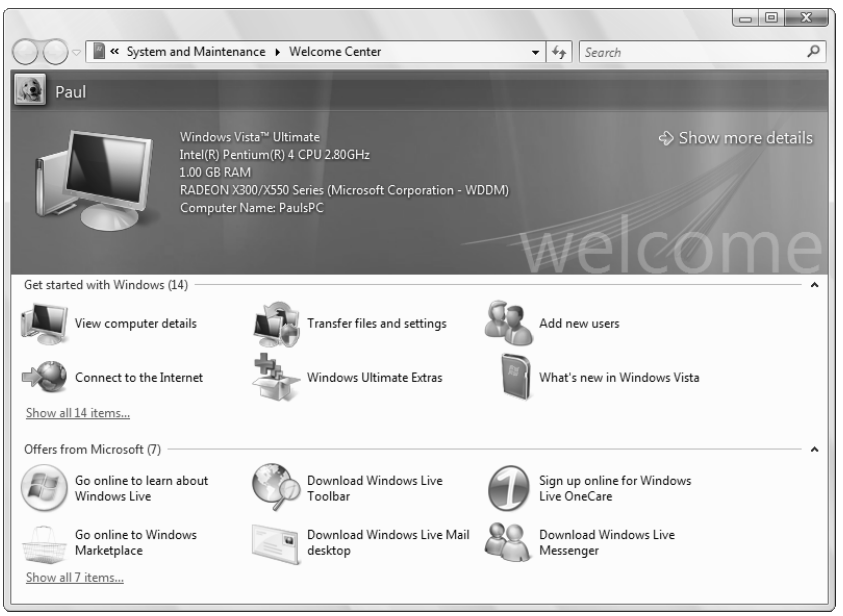


FIGURE 1.8 The new Welcome Center window appears automatically each time you start Vista.

## Control Panel

The Control Panel received a major overhaul in Windows XP, which consisted of a new Category view that divided the icons into 10 categories, such as Appearance and Themes, Printers and Other Hardware, and Network and Internet Connections. This was a boon to novice users because it meant they no longer had to be intimidated by the 30-plus Control Panel icons that came with a default XP install. Power users, of course, *hated* the Category View because it required far too many extra clicks to get at the icon we wanted. Fortunately, Microsoft made it easy to switch between Category view and Classic view, the new name for the old all-icon arrangement of the Control Panel window.

Microsoft has tried again to reconfigure Control Panel in Windows Vista. Perhaps that's because the sheer number of Control Panel icons has exploded in Vista, with a default install foisting more than 50 icons onto your system. That's a lot of icons, even for power users to deal with, so clearly some kind of reorganization is required. Fortunately, Microsoft did *not* simply come up a new set of Control Panel categories that everyone but beginners would ignore. Yes, there are categories, but with a number of twists:

- There are more categories than in XP. There are 11 sections in all (including the Mobile PC category that appears in notebook installations), so the categorization is a bit finer grained. This is particularly true because several XP "categories"—User Accounts, Add or Remove Programs, and Security Center—were actually icons that launched features.
- The categories are supplemented with links to specific features, as shown in Figure 1.9. For example, besides clicking the Hardware and Sound category to see all Control Panel's hardware- and audio-related icons, you can also click Printers or Mouse to go directly to those features.

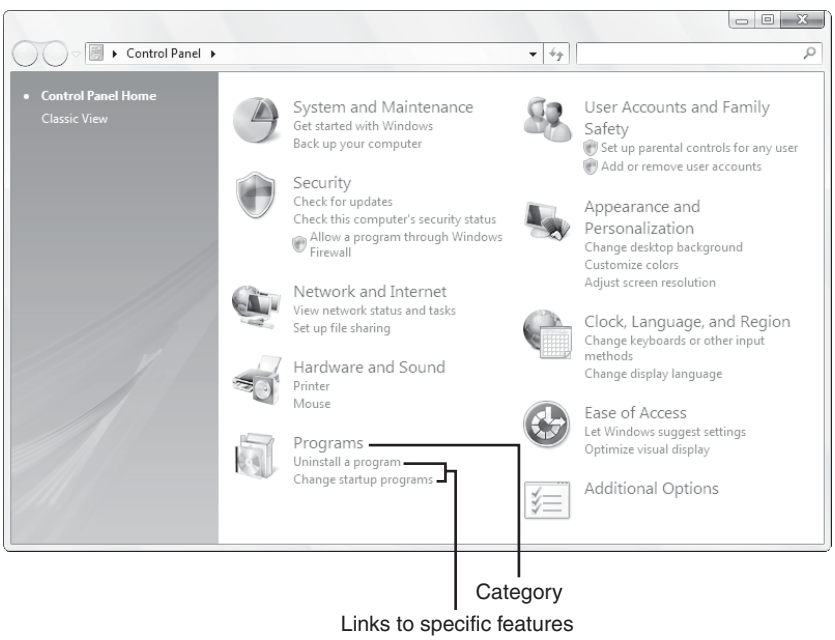


FIGURE 1.9 The Vista Control Panel supplements icon categories with links to specific features.

- Some icons are cross-referenced in multiple categories to make them easier to find. For example, you can find the Power Options icon in both the Hardware and Sound category and the Mobile PC category, and you can find the Windows Firewall icon in both the Security category and the Network and Internet category.

- When you open a category, Control Panel displays a list of all the categories on the left pane, as shown in Figure 1.10. That way, if you pick the wrong category or want to work with a different category, you don't need to navigate back to the Control Panel Home window.

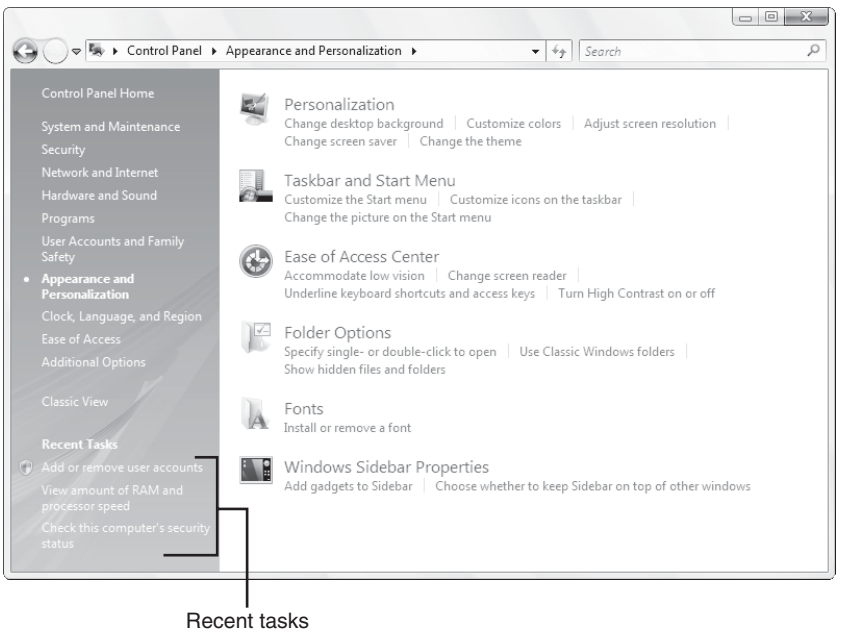


FIGURE 1.10 When you navigate into a category, Control Panel displays a list of all the categories in the left pane for easy access.

- Control Panel remembers your most recent tasks in each Windows session, as shown in Figure 1.10. This makes it easy to rerun a task that you use frequently.

The Vista Control Panel is clearly superior to its XP predecessor. It's easy to navigate for novices, but it also minimizes mouse clicks for experienced users. However, my guess is that most power users will still use the Classic view and, even faster, will set up the Control Panel as a submenu of the Start menu.

## Internet Explorer 7

We haven't seen a new web browser from Microsoft for several years, so you'd expect that Internet Explorer 7 would be chock full of new features. Alas, it's not. The most important new features are the security enhancements that I mentioned earlier (the Phishing Filter and Protected mode). Other than those and a slightly revamped interface, the list of significant new features is disappointingly meager:

- **Tabbed browsing**—Like Firefox, Opera, Safari and quite a few other browsers, Internet Explorer finally has tabbed browsing, in which each open page appears in its own tab within a single Internet Explorer window. Internet Explorer ups the tab ante a bit with a new feature called Quick Tabs that displays a live thumbnail of each tabbed page, as shown in Figure 1.11.

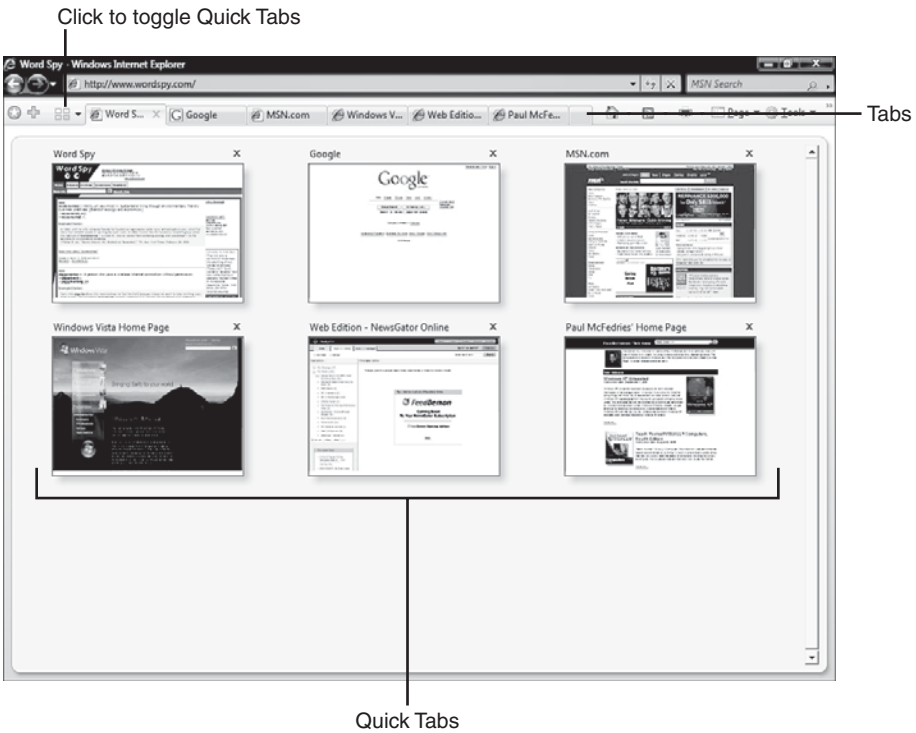


FIGURE 1.11 Internet Explorer 7 finally has tabbed browsing, but it improves on this feature with Quick Tabs, which provides live thumbnails of the tabbed pages.

- **Support for RSS feeds**—RSS (Real Simple Syndication) is becoming the preferred method for sites to enable readers to stay up-to-date with changing content. Internet Explorer 7 recognizes when a site has one or more RSS feeds available and enables you to view the feed. You can also subscribe to a feed to have Internet Explorer alert you when new content is available. Subscribed feeds appear in the new Feeds folder, which is part of the Favorites Center, a pane that also includes the Favorites and History folders.
- **Delete Browsing History**—This new feature gives you an easy way to delete the following data related to your past web browsing: temporary Internet files, cookies, history, saved form data, and remembered passwords. You can delete any one of these options, or you can delete all of them with a single click.

- **Multiple home pages**—Internet Explorer 7 enables you to specify up to eight home pages. When you launch Internet Explorer or click the Home button, Internet Explorer loads each home page in its own tab. This is a great new feature if you always open the same few sites at the start of each browsing session.

**CAUTION**

There's no such thing as a free browsing lunch, of course. The more home pages you have, the longer it takes Internet Explorer to launch.

- **Manage Add-ons**—If you've installed an add-on program that adds new features such as a toolbar to Internet Explorer, you can use the new Manage Add-ons dialog box to see all the add-ons. You can also use it to enable or disable an add-on and delete an installed ActiveX control.

## Windows Mail

Windows Mail is the new name for Outlook Express, which Microsoft needed to change because some people were getting it confused with Microsoft Outlook. Unfortunately, the name is just about all that's new with Windows Mail. Only three new features are of any significance:

- **Junk Mail Filter**—Borrowed from Microsoft Outlook's excellent spam filter, this does a fine job of detecting incoming spam and relegating it to the new Junk Email folder.
- **Search box**—Like the Vista Start menu and folder windows, Windows Mail comes with a Search box in the upper-right corner. You can use the Search box to perform as-you-type searches of the To, Cc, subject, and body text fields of the messages in the current folder.
- **Microsoft Help Groups**—Windows Mail comes with a preconfigured account for Microsoft's msnews.microsoft.com news server, which hosts more than 2,000 `microsoft.public.*` newsgroups. If you have a Microsoft Passport ID (such as a Hotmail address), you can log in and rate newsgroup posts as either Useful or Not Useful.

## Windows Calendar

Windows is slowly evolving into a complete computing system in the sense that it contains everything that a user with simple needs could want. It has long had a word processor, text editor, graphics editor, web browser, email client, media player, and backup program. What's missing? On the security side, it's essential to have a bidirectional firewall and antispyware tool, and Vista has both of those. In addition, all of us need some way to track appointments and to-do lists, so we need a calendar application; Vista now comes with one of those, too, called Windows Calendar, and it's actually not bad for an operating system freebie. It has a nice, clean interface (see Figure 1.12), and it does all the basic jobs that a calendar should:

- Create appointments, both one-time and recurring
- Create all-day events
- Schedule tasks, with the ability to set a priority flag and a completed flag
- Set appointment and task reminders
- View appointments by day, week, or month
- Publish and subscribe to calendars using the iCal standard
- Import Calendar (`.ics`) files
- Create multiple calendars

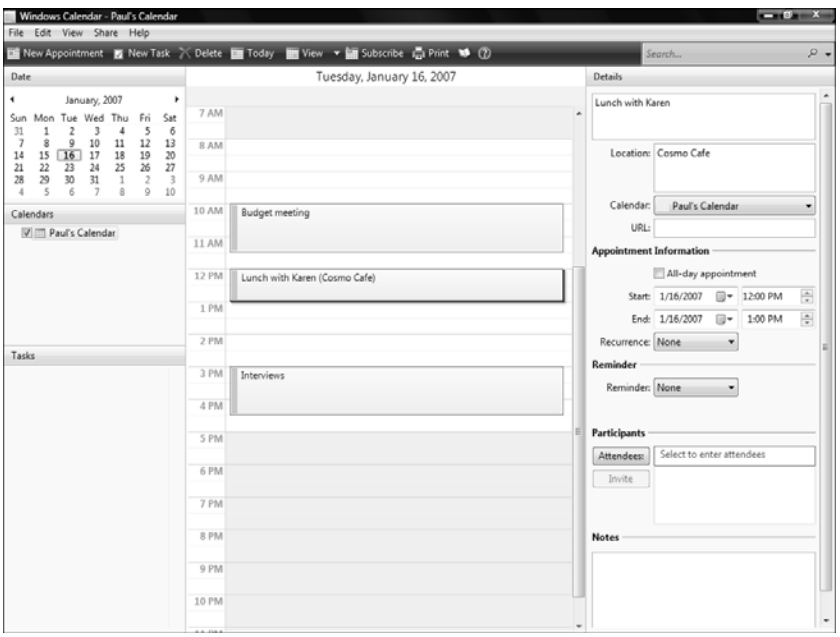


FIGURE 1.12 Windows Calendar is a reasonably competent calendar program.

## Media Player

Vista ships with Windows Media Player 11 (WMP 11), a major update that includes quite a few new features:

- **Cleaner interface**—The overall interface is a bit simpler than in previous versions.
- **Album art**—If you've downloaded or scanned album art, it appears throughout the WMP 11 interface, which is much nicer than previous versions, in which album art appeared only rarely.

- **Grouping and stacking of media**—The grouping and stacking techniques that I mentioned earlier for folder windows also apply to the WMP library. For music, for example, WMP offers several views based on media metadata, including Songs view, which groups songs according the values in the `Album Artist` property and then by the values in the `Album` property, and `Genre`, which stacks the albums using the values in the `Genre` property. You get a different set of views for each category (Music, Pictures, Video, Recorded TV, or Other Media).
- **Advanced Tag Editor**—You can easily apply media metadata by downloading the relevant information from the Internet, but most WMP metadata is editable. An innovation in WMP 11 is the Advanced Tag Editor, which gives you a front-end for much of the metadata available for a particular media file.
- **Instant Search**—The WMP 11 window has an Instant Search box in the upper-right corner that enables you to perform as-you-type searches. After you type your text in the Search box, WMP searches filenames and metadata for matching media files; it shows the results in the WMP window.
- **Synching with media devices**—Synching items from the Library to a media device is a bit easier in WMP 11. When you insert a WMP-compatible media device, WMP recognizes it and automatically displays the device, its total capacity, and its available space in the Sync tab. In addition, WMP 11 supports two-way synching, which means that you can synch files not only from your PC to a media device, but you can also synch files from a media device to your PC.
- **Easier ripping**—Ripping files from an audio CD is more convenient in WMP 11 because the program gives you easier access to rip settings. For example, if you pull down the Rip tab list, you can select Format to display a list of file formats, including various Windows Media Audio formats (regular, variable bit rate, and lossless), MP3, and—new in WMP 11—WAV. You can also pull down the Rip menu and select Bit Rate to choose the rate at which you want to rip the media.
- **Burning options**—Burning music or other media to a disc is more flexible in WMP 11. For one thing, WMP supports burning media to a DVD disc. For another, WMP 11 comes with a new Burn tab in its Options dialog box, which you can use to select the burn speed, apply volume leveling to audio CDs, select the file list format for a data disc, and set the file quality.
- **URGE support**—WMP 11 automatically downloads and installs the URGE store, which is the online music store that Microsoft has created in collaboration with MTV.
- **Library Sharing**—This feature enables you to share your WMP Library with other network users, just like you'd share a folder or a printer.
- **DVD playback**—When you play a DVD in WMP 11, a DVD button is added to the playback controls. Clicking that button displays the DVD menu, which offers a much wider array of DVD-related commands than in previous versions. Welcome additions to the DVD arsenal are the capabilities to select audio and language tracks (if available), display subtitles (if any), and capture frames.

## Media Center

You'll find no separate Media Center Edition of Windows Vista as there was with Windows XP. Instead, Vista comes with Media Center as part of its Home Premium and Ultimate editions. Here's a summary of the changes Microsoft has made to the Vista version of Media Center:

- **Interface improvements**—Microsoft has tweaked the Media Center interface to make it easier to use. The top-level tasks (TV, Music, and so on) appear more like a list than menu choices, as they do in XP Media Center. When you select a top-level task, Vista Media Center bolds the task text and displays the available second-level tasks below. When you select a second-level task, Media Center displays a graphic along with the task text to illustrate the task's function. As the displayed tasks move away from the center of the screen (whether up or down, left or right), they become progressively lighter. This focuses the user's attention on the task at hand in the center of the screen.
- **New menu structure**—The Vista Media Center comes with quite a few top-level tasks, including Pictures + Videos (work with your picture and video libraries), Movies (work with DVD movies), TV (work with your TV tuner), Music (work with music and radio), Spotlight (access media online and run other Media Center programs installed on your computer), Tools (access Media Center tools), and Tasks (run other Media Center features).
- **Show notifications for incoming phone calls**—You can set up Media Center to display these notifications for all incoming calls or just for calls with caller ID.
- **Wireless networking**—You can now use the Media Center to join your computer to an existing wireless network.
- **Parental controls**—You can set up parental controls to restrict the content viewed through Media Center.
- **Program optimization**—Vista Media Center comes with an optimization feature that ensures maximum performance from your system. Optimization occurs automatically every morning at 4 a.m., but you can set your own schedule.

## Windows Photo Gallery

Windows Photo Gallery is a new program that can import images and videos from a camera, a scanner, removable media, the network, or the Web. You can then view the images, add metadata such as captions and tags, rate the images, search for images, and even apply common fixes to improve the look of photos. You can also burn selected images to a DVD disc.

## DVD Burning and Authoring

Windows Vista offers DVD-burning capabilities in a number of places, including Windows Photo Gallery, Windows Media Player, Media Center, and Windows Movie Maker. Vista

also comes with Windows DVD Maker, a program that enables you to author actual DVD discs, complete with menus, chapters, and other elements of a typical DVD disc interface.

## Per-Application Volume Control

Windows Vista implements a new technology called *per-application volume control*. This means that Vista gives you a volume-control slider for every running program and process that is currently producing audio output. Figure 1.13 shows the new Volume window that appears when you double-click the Volume icon in the notification area. The slider on the left controls the speaker volume, so you can use it as a systemwide volume control. The rest of the window contains the **application mixer**—sliders and mute buttons for individual programs.

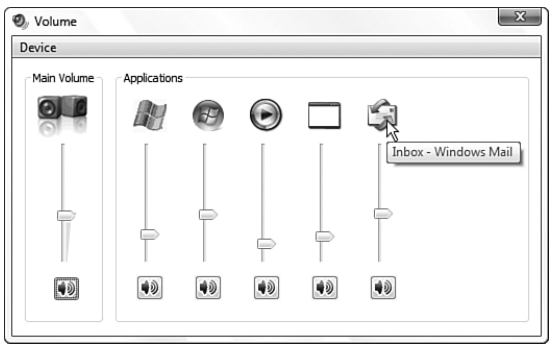


FIGURE 1.13 Windows Vista uses per-application volume control to enable you to set the volume level for each program that outputs audio.

## Sound Recorder

Vista's Sound Recorder program is completely new and improves on its predecessors by offering unlimited recording time and the capability to record to the Windows Media Audio file format (previous versions were limited to one minute of WAV audio).

## Windows Easy Transfer

Windows Transfer is the replacement for the XP Files and Settings Transfer Wizard. It works in much the same way as the XP wizard, but Windows Easy Transfer supports a broader range of transfer media, including Flash drives.

## Windows Backup

The Windows Vista new backup program—now called Windows Backup—is quite an improvement on its predecessors:

- You can back up to a writeable disc, USB Flash drive, or other removable media.
- You can back up to a network share.

- When you set up the program, backing up is completely automated, particularly if you back up to a resource that has plenty of room to hold your files (such as a hard disk or roomy network share).
- You can create a system image backup—which Microsoft calls a *CompletePC backup*—that saves the exact state of your computer and thus enables you to completely restore your system if your computer dies or is stolen.

## The Game Explorer

The Game Explorer is a special shell folder that offers several new features for gamers and game developers:

- A repository for all installed games.
- Game-related tasks such as launching a game, linking to the developer's website, and setting up parental controls.
- Support for games metadata, such as the game's publisher and version number and the last time you played the game. The Game Explorer also supports ratings from various organizations, including the Entertainment Software Rating Board (ESRB).
- Auto-update of games. With the new Game Update feature, Vista automatically lets you know if a patch or a newer version is available for an installed game.

The Game Explorer is initially populated with the eight games that come in the Vista box. These games include updates to venerable Windows favorites (FreeCell, Hearts, Minesweeper, Solitaire, Spider Solitaire, and InkBall) and a few new additions (Chess Titans, Mahjong Titans, and Purble Place).

## Mobility Center

The new Windows Mobility Center offers a convenient overview of the state of various mobility features on your notebook computer. As you can see in Figure 1.14, the Mobility Center enables you to view and control the brightness, volume, battery status, wireless network connection, screen orientation for a Tablet PC, external display, and current synchronization status of your offline files.

## Network Center

Network Center is the new Vista networking hub that shows you the current status of your connection and gives you quick access to all the most common networking tasks: connecting to a network, browsing a network, setting up a network (including new **ad hoc connections**, which are temporary hookups between two or more nearby PCs), and diagnosing network problems.

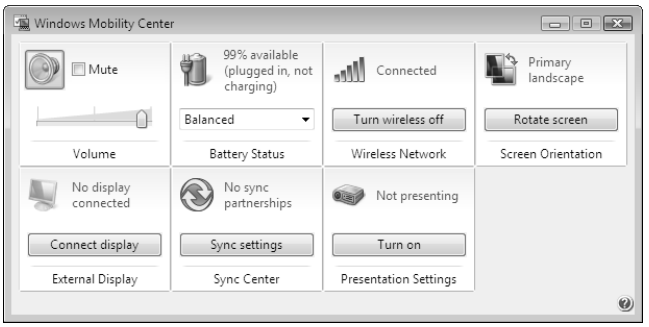


FIGURE 1.14 The new Mobility Center offers a selection of information and controls for notebook-related features.

## Network Map

The Network Center displays a subset of the new Network Map feature, which gives you a visual display of everything your computer is connected to: network connections (wired and wireless), ad hoc connections, Internet connections, and more. Network Map also gives you a visual display of the connection status so that you can easily spot problems. Windows Vista comes with a more detailed version of Network Map, an example of which is shown in Figure 1.15.

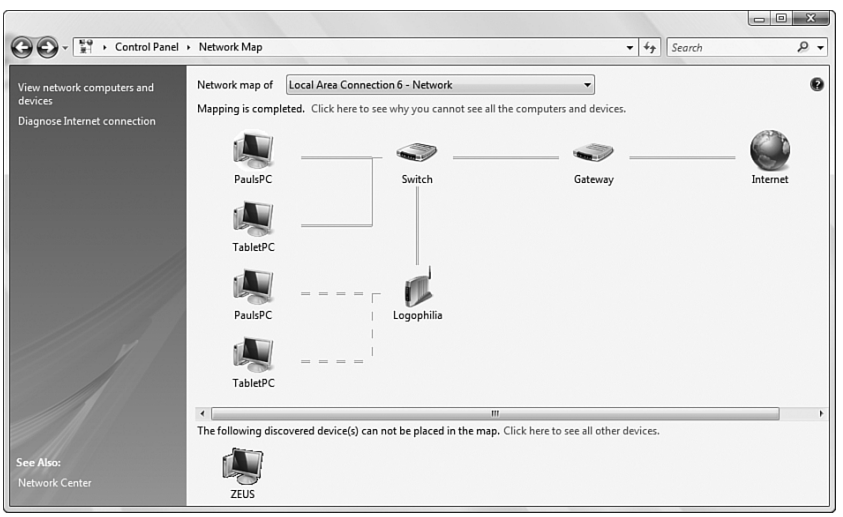


FIGURE 1.15 The full version of the Network Map.

### Windows Collaboration

Vista's replacement for NetMeeting is an entirely new program called Windows Collaboration. As with NetMeeting, you can use Windows Collaboration to show a local program or document to any number of remote users, and you can collaborate on a document with remote users. Windows Collaboration uses several new Vista technologies, including Peer-to-Peer Networking, Distributed File System Replicator, and People Near Me. The latter is an opt-in list of people on the same network that you are. The idea is that you start a collaboration session and then invite one or more people from the People Near Me list to join the session. You can then start a presentation, which involves one of the participants performing some sort of action on his or her computer, and the other participants seeing the results of those actions within their session window. For example, you can demonstrate how a program works, collaborate on a document, or share your desktop, which enables remote users to view everything you do on your computer.

## From Here

This chapter gave you an overview of what's new and noteworthy in Windows Vista, and you saw that there is quite a bit to sink your teeth into. That's just what we'll do in the rest of this book and I take you inside Windows Vista and show you how to take full advantage of its features, both new and old.