Chapter 1: Introducing Windows XP

In This Chapter

- **Where Windows XP fits into The Grand Scheme of Things**
- **What Windows can (and can't) do for you**
- **Dissecting your computer**
- **Installing and activating Windows XP**
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So you're sitting in front of your computer, and this thing called Windows XP is staring at you. The screen you see — the one with the peoples' names on it — is called a Welcome screen, but it doesn't say "Welcome" or "Howdy" or even "Sit down and get to work, bucko." It says only that you have to click your user name in order to start, but you don't have any idea what a user name is, why you have to have one, what Windows has to do with anything, and why in the %$#@! you can't bypass all this garbage, log on, and get your e-mail.

Good for you. That's the right attitude.

Someday, I swear, you'll be able to pull a PC out of the box, plug it into the wall, turn it on, and get your e-mail — bang, bang, bang, just like that, in ten seconds flat. If you want the computer to do something, you'll say, "Computer, get me my e-mail," just like Scotty in the *Star Trek* movies.

No matter what anyone may tell you, computers are still in their infancy. Maybe my son will see the day when they're truly easy to use, when the marketing hype about "intuitive" and "seamless" and "user friendly" actually comes true. I doubt that I will.

In the meantime, those of us who are stuck in the early 21st century have to make do with PCs that grow obsolete before you can unpack them, software that's so ornery you find yourself arguing with it, and Internet connections that surely involve turtles carrying bits on their backs.

Windows XP is one of the most sophisticated computer programs ever made. It cost more money to develop and took more people to build than any previous computer program, ever. So why is it so blasted hard to use? Why doesn't it do what you want it to do the first time? For that matter, why do you need it at all?

That's what this chapter is all about.

What Windows Does (And Doesn't Do)

Someday, you'll get really, really mad at Windows. I guarantee it. When you feel like putting your fist through the computer screen, tossing your Windows XP CD in a bonfire, or hiring an expensive Windows expert to drive out the devils within (insist on a Microsoft Certified System Exorcist, of course), read through this section. It may help you understand why and how Windows has limitations. It also may help you communicate with the geeky rescue team that tries to bail you out, whether you rely on the store that sold you the PC, the smelly guy in the apartment downstairs, or your eight-year-old daughter's nerdy classmate.

Hardware and software

At the most fundamental level, all computer stuff comes in one of two flavors: either it's hardware, or it's software. *Hardware* is anything you can touch — a computer screen, a mouse, a CD. *Software* is everything else: e-mail messages, that letter to your Aunt Martha, pictures of your last vacation, programs like Microsoft Office. If you have a roll of film developed and put on a CD, the shiny, round CD is hardware — you can touch it — but the pictures themselves are software. Get the difference?

Windows XP is software. You can't touch it. Your PC, on the other hand, is hardware. Kick the computer screen and your toe hurts. Drop the big box on the floor and it smashes into a gazillion pieces. That's hardware.

Chances are very good that one of the major PC manufacturers — Dell, HP/Compaq, IBM, Gateway/eMachines, Toshiba, Sony, and the like — made your hardware. Microsoft, and Microsoft alone, makes Windows XP. The PC manufacturers don't make Windows. Microsoft doesn't make PCs, although it does make other kinds of hardware — video game boxes, keyboards, mice, and a few other odds and ends.

When you first set up your PC, Windows had you click "I accept" to a licensing agreement that's long enough to wrap around the Empire State Building. If you're curious about what you accepted, a printed copy of the End User License Agreement is in the box that your PC came in or in the CD packaging (if you bought Windows XP separately from your computer). If you can't find your copy, choose Start➪Help and Support. Type **eula** in the Search text box and press Enter.

When you bought your computer, you paid for a license to use one copy of Windows on the PC that you bought. The PC manufacturer paid Microsoft a royalty so that it could sell you Windows along with your PC. You may think

that you got Windows from, say, Dell — indeed, you may have to contact Dell for technical support on Windows questions — but, in fact, Windows came from Microsoft.

Now you know who to blame, for sure.

Why do PCs have to run Windows?

The short answer: You *don't* have to run Windows on your PC.

The PC you have is a dumb box. (You needed me to tell you that, eh?) In order to get the dumb box to do anything worthwhile, you need a computer program that takes control of the PC and makes it do things such as show Web pages on the screen, respond to mouse clicks, or print résumés. An *operating system* controls the dumb box and makes it do worthwhile things, in ways that mere humans can understand.

Without an operating system, the computer can sit in a corner and count to itself, or put profound messages on the screen, such as `Non-system disk or disk error. Insert system disk and press any key when ready`. If you want your computer to do more than that, though, you need an operating system.

Windows is not the only operating system in town. The single largest competitor to Windows is an operating system called Linux. Some people (I'm told) actually prefer Linux to Windows, and the debates between pro-Windows and pro-Linux camps can become rather heated. Suffice it to say that, oh, 99 percent of all individual PC users stick with Windows. You probably will, too.

A terminology survival kit

Some terms pop up so frequently that you'll find it worthwhile to memorize them, or at least understand where they come from. That way, you won't be caught flatfooted when your first-grader comes home and asks if he can download a program from the Internet.

If you really want to drive your techie friends nuts, the next time you have a problem with your computer, tell them that the hassles occur when you're "running Microsoft." They won't have any idea if you mean Windows, Office, Word, Outlook, or any of a gazillion other programs.

A *program* is *software* (see preceding section) that works on a computer. Windows, the *operating system* (see preceding section), is a program. So are computer games, Microsoft Office, Microsoft Word (which is the word

processor part of Office), Internet Explorer (the Web browser in Windows), the Windows Media Player, those nasty viruses you've heard about, that screen saver with the oh-too-perfect fish bubbling and bumbling about, and so on.

A special kind of program called a *driver* makes specific pieces of hardware work with the operating system. For example, your computer's printer has a driver; your monitor has a driver; your mouse has a driver; Tiger Woods has a driver. Several, actually, and he makes a living with them. Would that we were all so talented.

Sticking a program on your computer, and setting it up so that it works, is called *installing*.

When you crank up a program — that is, get it going on your computer — you can say you *started* it, *launched* it, *ran* it, or *executed* it. They all mean the same thing.

If the program quits the way it's supposed to, you can say it *stopped, finished, ended, exited,* or *terminated*. Again, all of these terms mean the same thing. If the program stops with some sort of weird error message, you can say it *crashed, died, cratered, croaked, went belly up, GPFed* (techspeak for "generated a General Protection Fault" — don't ask), or employ any of a dozen colorful but unprintable epithets. If the program just sits there and you can't get it to do anything, you can say the program *froze, hung, stopped responding,* or *went into a loop*.

A *bug* is something that doesn't work right. (A bug is not a virus! Viruses work right far too often.) Admiral Grace Hopper often repeated the story of a moth being found in a relay of an ancient Mark II computer. The moth was taped into the technician's log book on September 9, 1947, with the annotation "1545 Relay #70 Panel F (moth) in relay. First actual case of bug being found."

The people who invented all of this terminology think of the Internet as being some great blob in the sky — it's "up," as in "up in the sky." So if you send something from your computer to the Internet, you're *uploading*. If you take something off the Internet and put it on your computer, you're *downloading*.

And then you have *wizards*. Windows comes with lots of 'em. They guide you through complex procedures, moving one step at a time. Typically, wizards have three buttons on the bottom of each screen: Back, Next (or Finish), and Cancel (see Figure 1-1). Wizards remember what you've chosen as you go from step to step, making it easy to experiment a bit, change your mind, back up, and try a different setting, without getting all the check boxes confused.

That should cover about 90 percent of the buzzwords you hear in common parlance.

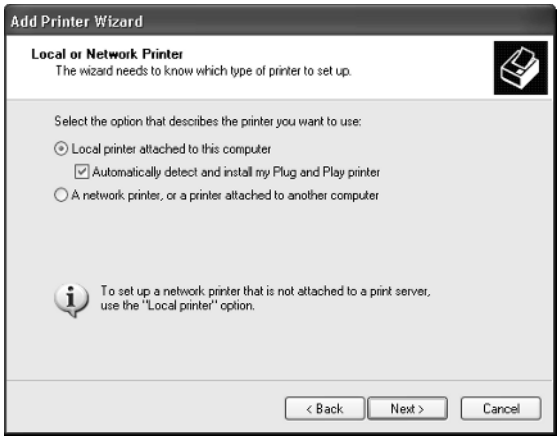

Figure 1-1: The Add Printer Wizard helps you connect printers to your computer.

Where Windows Has Been

Unlike Windows Me (which is a barely warmed-over remake of Windows 98) and Windows 2000 (which should've been called Windows NT 5.0), Windows XP is quite different from any operating system that has come before. To understand why Windows XP works so differently, you need to understand the genetic cesspool from which it emerged.

Let's start at the beginning: Microsoft licensed the first PC operating system, called DOS, to IBM in late 1981. MS-DOS sold like hotcakes for a number of reasons, not the least of which is that it was the only game in town. None of this sissy graphical stuff; DOS demanded that you type, and type, and type again, in order to get anything done.

The rise of Windows

The 'Softies only started developing Windows in earnest when the company discovered that it needed a different operating system to run Excel, its spreadsheet program. Windows 1.0 shipped in November 1985. It was slow, bloated, and unstable — some things never change, eh? — but if you wanted to run Excel, you had to have Windows.

Excel 2.0 and Windows 2.0 shipped in late 1987. This breathtaking, revolutionary new version of Windows let you overlap windows — place one window on top of another — and it took advantage of the PC/XT's advanced computer chip, the 80286. Version 2.1 (also called Windows 286) shipped in June 1988, and some people discovered that it spent more time working than crashing. My experience was, uh, somewhat different. Windows 286 came on a single diskette.

Windows 3.0 arrived in May 1990, and the computer industry changed forever. Microsoft finally had a hit on its hands to rival the old MS-DOS. When Windows 3.1 came along in April 1992, it rapidly became the most widely used operating system in history. In October 1992, Windows for Workgroups 3.1 (which I loved to call "Windows for Warehouses") started rolling out, with support for networking, shared files and printers, internal e-mail, and other features you take for granted today. Some of the features worked. Sporadically. A much better version, Windows for Workgroups 3.11, became available in November 1993. It caught on in the corporate world. Sporadically.

eNTer NT

At its heart, Windows 3.*x* was built on top of MS-DOS, and that caused all sorts of headaches: DOS simply wasn't stable or versatile enough to make Windows a rock-solid operating system. Bill Gates figured, all the way back in 1988, that DOS would never be able to support an advanced version of Windows, so he hired a guy named Dave Cutler to build a new version of Windows from scratch. At the time, Dave led the team that built the VMS operating system for Digital Equipment Corp's DEC computers.

When Dave's all-new version of Windows shipped five years later in August 1993, Windows NT 3.1 ("New Technology"; yes, the first version number was 3.1) greeted the market with a thud. It was awfully persnickety about the kinds of hardware it would support, and it didn't play games worth squat.

NT and the "old" Windows

For the next eight years, two entirely different lineages of Windows co-existed.

The old DOS/Windows 3.1 branch became Windows 95 (shipped in August 1995, "probably the last version of Windows based on DOS"), Windows 98 (June 1998, "absolutely the last version of Windows based on DOS, for sure"), and then Windows Me (Millennium Edition, September 2000, "no, honest, this is really, really the last version of Windows based on DOS").

On the New Technology side of the fence, Windows NT 3.1 begat Windows NT 3.5 (September 1994), which begat Windows NT 4.0 (August 1996). Many companies still use Windows NT 4 for their servers — the machines that anchor corporate networks. In February 2000, Microsoft released Windows 2000, which confused the living daylights out of everybody: In spite of its name, Windows 2000 is the next version of Windows NT and has nothing at all in common with Windows 98 or Me.

Microsoft made oodles of money milking the DOS-based Windows cash cow and waited patiently while sales on the NT side gradually picked up. Windows NT 5.0, er, 2000 still didn't play games worth squat, and some

hardware gave it heartburn, but Windows 2000 rapidly became the operating system of choice for most businesses and at least a few home users. Still is, for many of them.

Merging the branches

Windows XP — in my opinion, the first must-have version of Windows since Windows 95 — officially shipped in October 2001. Twenty years after Microsoft tiptoed into the big time with MS-DOS, the Windows XP juggernaut blew away everything in sight.

Some people think that Windows XP (the XP stands for eXPerience, according to the marketing folks) represents a melding or blending of the two Windows lineages: a little Me here, a little 2000 there, with a side of 98.

Ain't so. Windows XP is 100 percent, bona fide NT. Period. Not one single part of Windows Me — or any of the other DOS-based Windows versions, for that matter, not to mention DOS itself — is in Windows XP. Not one.

That's good news and bad news. First, the good news: If you can get Windows XP to work at all on your old computer, or if you buy a new PC that's designed to use Windows XP, your new system will almost certainly be considerably more stable than it would be with Windows Me or any of its progenitors. The bad news: If you know how to get around a problem in Windows Me (or 98 or 95), you may not be able to use the same tricks in Windows XP. The surface may look the same. The plumbing is radically different.

Windows XP evolves

The original Windows XP, for all its faults, came shining through as a workhorse of the first degree. If you could get it installed, it almost always worked right. Microsoft waited nearly a year — until September 2002 — to release its first Service Pack, a massive collection of 300 bug fixes and security patches to the original version of Windows XP.

Actually, Microsoft released two "Service Pack 1" versions, and therein lies a legal story of clashing titans, Microsoft and Sun. The original version of Windows XP didn't include Sun's programming language, Java (otherwise known as JVM, or the Java Virtual Machine), which is used on many Web sites. Sun was miffed: In order to run Java programs on Web pages, original Windows XP users had to download and install a copy of Java, separately, and Sun felt (rightly) that Microsoft was using its monopoly on the desktop to hinder the spread of Java. After a series of legal wranglings that made the Keystone Cops look staid, Microsoft decided to put Java in Service Pack 1, and the version of SP1 that went out in September 2002 included Java. Sun was miffed again — something about oral orifices on gift horses, I think. Back to court. In February 2003, Microsoft released Service Pack 1a, which only

differed from Service Pack 1 in that it *didn't* include Java. If you wanted Java, you had to download it from www.java.com. 'Course that happened eons (well, okay, 14 months) before Microsoft agreed to pay Sun $2 billion to settle all its open disputes and improve "interoperability" between Sun and Microsoft products — including Java and Windows. Go figger.

Microsoft continued to improve on Windows XP, with new versions of Windows Media Player, Windows Movie Maker, Windows for telephones, Windows for toasters, Windows for telephones attached to toasters with integrated roasters and coasters and more. But, hands down, the most impressive new product to come out of Redmond in the post-Windows XP era has to be Windows XP Media Center Edition, a program that runs on top of Windows XP and gives you tremendous control over your television, cable, satellite, stereo system — everything for the couch potato except the couch.

Simultaneously, black-hat cretins all over the world discovered that PCs attached directly to the Internet running Windows XP had "Kick Me" signs posted all over them. Microsoft responded with security patches and patches to patches and patches to patches to patches. Bill stopped all the work at Microsoft to run a month-long "security lockdown." The net result: more patches and patches to patches and . . . well, you get the idea.

Thus, nearly two years after Service Pack 1, Windows XP users got treated to Service Pack 2, a huge roll-up of new features and patches, and patches disguised as features. Some things never change.

The Future of Windows

When Windows XP got beaten to a pulp by a few dozen relentless virus and worm writers, and courts around the world found Microsoft guilty of all manner of egregious behavior, the company's tune changed quickly. We stopped hearing so much about Microsoft's breast-beating plans to dominate every nook and cranny of computerdom. In some cases — Microsoft's decision to stop keeping financial information in .NET Passports, for example — Microsoft stopped sounding so much like a convicted monopolist bull in a china shop and more like a socially responsible, trustworthy team player.

I remain skeptical.

The next version of Windows, code-named Longhorn, remains a great unknown. This much is certain: It will be very different from the Windows XP you know today. Between a new user interface, bolted-to-the-walls security, greatly improved storage and retrieval capabilities, searching and indexing from the get-go, DVD support par excellence, and a new communications subsystem, Longhorn improvements look great. On paper.

At the same time, Microsoft is moving out of the business of selling software into the business of renting it — and charging for the "glue" that binds companies, individuals, buyers, and sellers together. Whether either of those shifts makes the lives of Windows users easier remains to be seen. But the profitability of it all beckons, loud and clear.

Now's a great time to dig into Windows XP and get to know it. Future versions of Windows may well seem anticlimactic, compared to this one.

Anatomy of a Computer

Here's how it usually goes. You figure you need to buy a new PC. So you spend a couple of weeks brushing up on the details — bits and bytes and kilobytes and megabytes and gigabytes — and comparison shopping. You end up at your local Computers Were Us shop, and this guy behind the counter convinces you that the absolutely best bargain you'll ever see is sitting right here, right now, and you'd better take it quick before somebody else nabs it.

Your eyes glaze over as you look at yet another spec sheet and try to figure out one last time if a RAM is a ROM and how a CD-R differs from a CD-RW and whether you need a DVD-R or DVD+R. In the end, you figure the guy behind the counter must know what he's doing, so you plunk down your plastic and pray you got a good deal.

The next Sunday morning you look in the paper and discover you could've bought twice as much machine for half as much money. The only thing you know for sure is that your PC is hopelessly out of date, and the next time you'll be smarter about the whole process.

If that describes your experiences, relax. It happens to everybody. Take solace in the fact that you bought twice as much machine for the same amount of money as the poor schmuck who went through the same process last month.

In this section, I try to give you just enough information about the inner workings of your PC so that you can figure out what you have to do with Windows. The details will change from week to week. But these are the basics.

Inside the big box

The big box that your computer lives in is sometimes called *a CPU,* meaning Central Processing Unit (see Figure 1-2). Right off the bat, you're bound to get confused, unless somebody clues you in on one important detail: The main computer chip inside that big box is *also* called a CPU. I prefer to call the big box "the PC" because of the naming ambiguity, but you have probably thought of a few better names.

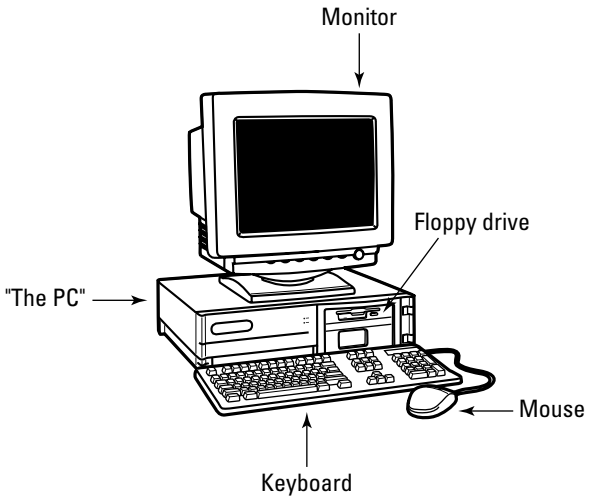

Figure 1-2: The big box.

The big box contains many parts and pieces (and no small amount of dust and dirt), but the crucial, central element inside every PC is the *motherboard* (see Figure 1-3). Attached to the motherboard you'll find

- **The *processor* or CPU:** This gizmo does all the computing. It's probably from Intel or AMD or one of their competitors. People who sell computers rate the processors by speed, measured in MHz (megahertz) or GHz (gigahertz, 1 GHz = 1,024 MHz). Windows XP runs like a slug on anything slower than 300 MHz or so.

  If you're buying a new computer, the speed really doesn't mean much, unless you're designing airplane wings, reshooting *Jurassic Park,* or you play a lot of games on your PC. Ignore the salesperson. If you want to improve Windows XP performance, your money should go to more memory (see next) or a fast Internet connection.

- **Memory chips and places to put them:** Memory is measured in MB (megabytes). Windows XP runs on a machine with 64MB — I've done it — but you usually want 256MB or more. Most computers allow you to add more memory to them, and boosting your computer's memory to 512MB from 256MB makes it much snappier, especially if you run memory hogs such as Office, PageMaker, or Photoshop. If you leave Outlook 2003 open and work with it all day, and run almost any other major program at the same time, 512MB will make a big difference.

- **Lots of other stuff:** You'll never have to play with this other stuff, unless you're very unlucky.

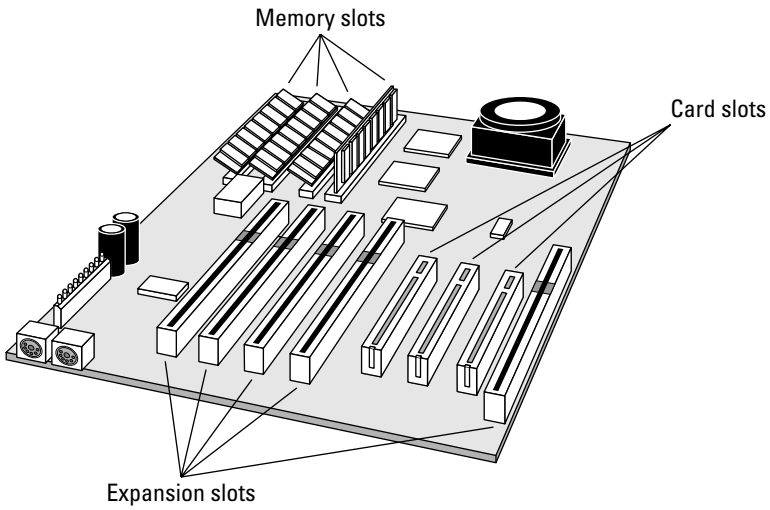

Figure 1-3: The motherboard sits in the middle of it all.

Never let a salesperson talk you into eviscerating your PC and upgrading the CPU: A 2.0 GHz PC doesn't run a whole lot faster than a 1.6 GHz PC. Memory upgrades don't mean much beyond 512MB: You'll see a noticeable improvement in performance up to the 512MB mark, especially if you run multiple memory-hungry applications at the same time (I won't mention Office 2003 by name), but very little improvement beyond that. Instead of nickel-and-diming yourself to death on little upgrades, wait until you can afford a new PC, and give away your old one.

If you decide to get more memory, have the company that sells you the memory install it. The process is simple, quick, and easy — if you know what you're doing. Having the dealer install the memory also puts the monkey on their back if a memory chip doesn't work or a bracket gets snapped.

What you see, what you get

The *computer monitor* or *screen* — you may think of it as a hoity-toity TV — uses technology that's quite different from what you have in your television set. A TV scans lines across the screen from left to right, with hundreds of them stacked on top of each other. Colors on each individual line vary all over the place. The near-infinitely variable color on a TV combined with a comparatively small number of lines makes for pleasant, but fuzzy, pictures.

By contrast (pun absolutely intended, of course), a computer monitor works with dots of light, called *pixels*. Each pixel can have a different color, but the maximum number of different colors that can appear on the screen at one time is limited. As a result, computer monitors are much sharper than TV

tubes, but if the number of on-screen colors is restricted, pictures shown on the monitor won't look as good as they would on a TV set.

Although it's theoretically possible to use a TV set as a makeshift computer monitor, the result leaves much to be desired. So-called *scan converters* allow you to plug a TV set into the back of your computer, but text ends up so murky that it's hardly readable. Very expensive converters sharpen text — but in the end usually cost more than the price of a new monitor.

LCD monitors or *flat screens* hold many advantages over traditional monitors: The lines are always straight; the units don't weigh much, they're small and they don't use much electricity; and they don't flicker like fireflies in heat. On the other hand, the flatties are expensive; individual pixels on an LCD screen can and do go black and stay that way forever; and a high-quality well-adjusted traditional monitor can always deliver a better, richer picture — if you're snooty about that kind of thing.

Most people set up Windows XP to run at 1024 x 768 pixels — that is, their monitors show 1024 pixels across the screen, with 768 running up and down — on 17 inch or smaller conventional monitors or 15-inch LCD monitors. Some folks have screens (and eyes!) that are good enough to run 1280 x 1024. Others limp along at 800 x 600. The more pixels you can cram on a screen — that is, the higher the *screen resolution* — the more information you can pack on the screen. That's important if you commonly have more than one word-processing document open at a time, for example. At 800 x 600, two open Word documents placed side by side look big but fuzzy, like viewing them through a dirty magnifying glass. At 1280 x 1024, those same two documents look sharp, but the text may be so small that you have to squint to make it out.

A special-purpose computer stuck on a board called a *graphics adapter* creates everything that's shown on your computer's screen. The graphics adapter has to juggle all the pixels and all the colors — so if you're a gaming fan, the speed of the adapter's chip can make the difference between a zapped alien and a lost energy shield. People who sell graphics adapters for home and office rate them in accordance with both their resolution and their *color depth,* and the two are interrelated: A graphics adapter that can handle 1024 x 768 pixels on the screen with 64,000 colors showing simultaneously may be able to show 1280 x 1024 pixels, but only 256 simultaneous colors.

If you don't like the graphics adapter that shipped with your computer, you can always buy a new one. But beware of one big potential problem. The drivers that ship with new graphics adapters — the programs that allow Windows XP to control the graphics adapter — are notorious for being buggy and unstable. Think twice before buying a new graphics adapter, and always update the driver to the latest version by following the instructions on the manufacturer's Web site: Don't bother installing the software that came on the CD in the box.

Computer monitors are sold by size, measured diagonally, like TV sets. Just like TV sets, the only way to pick a good computer screen over a run-of-the-mill one is to compare them side by side or to follow the recommendation of someone who has.

Managing disks

Your PC's memory chips hold information only temporarily: Turn off the electricity, and the contents of main memory goes bye-bye. If you want to reuse your work, keeping it around after the plug has been pulled, you have to save it, typically on a disk. The following are the most common types of disks:

- **Floppies:** The 1.44MB floppy disk drives that were ubiquitous on PCs for many years are becoming an endangered species — most new PCs (especially laptops) no longer come with floppy disk drives. Still, it's going to make more than a few silver bullets and strands of garlic to get rid of them completely.

  

  You probably know how to put a floppy disk into a drive (right-side up with the slidey-metal-thing pointing into the PC). You may not know how to get a recalcitrant floppy out of the drive. Sometimes the slide starts bowing, and the floppy hangs when you press the eject button. If that happens to you, get a long pair of thin tweezers — stamp collector's tongs work great — turn off your PC, unplug it, grab the diskette between the prongs of the tweezers and gently pry the diskette out. You have to get the tweezers all the way down beyond the tip of the slide, so longer is definitely better.

- **Hard drives:** Get the biggest, cheapest one(s) you can; electronic pictures swallow up an enormous amount of space. While it's generally true that more expensive hard drives seem to be more reliable than cheaper ones, objective numbers are hard to come by, and individual results will vary all over the place. Speed doesn't matter much, and the technology (ATA, EIDE, SCSI) matters even less.

  

  If you buy a new hard drive, have the dealer install it. You have to worry about lots of permutations and combinations, and it simply isn't worth the effort. Life's too short.

- **CD and DVD drives:** Of course, these drives work with CDs and DVDs, which can be filled with data or contain music or movies. Although Windows XP will play an audio CD automatically, you may have to jump through some extra hoops to get it to play DVDs. See the section on "Multimedia galore," later in this chapter, for details.

- **CD-R drives:** These drives let you create (*burn*) your own CDs. After you burn a CD in a CD-R drive, you generally can't reburn it. If you *can* get Windows XP to reburn a CD, you might not be able to play the reburned disc in a CD player — or even in another PC. *Caveat burnor.*

- **CD-RW drives:** These drives not only allow you to burn CDs; they're also reusable. The CD-RW drive, in conjunction with CD-RWs, lets you burn and reburn to your heart's content.

  Most older audio CD players — like the one you probably have in your car or your home stereo — will play only CDs that are burned with a CD-R drive. You can't reburn audio CDs.

- **CD-R/CD-RW drives:** Many drives nowadays can create both CD-Rs and CD-RWs, just to confuse everybody. You need CD-Rs if you're going to burn audio CDs. You probably want CD-RWs for everything else, even though the blank discs themselves cost more than blank CD-Rs.

- **DVD-RW/DVD+RW drives:** If you think the CD terminology is confusing, wait till you look at DVDs. The DVD world is divided into two camps: DVD-R ("DVD slash R"), which uses one method for encoding and reading data; and DVD+R ("DVD plus R"), which uses a completely different (and incompatible) method.

  If you're going to buy a DVD recorder, get one that'll burn both DVD-RW and DVD+RWs. That gives you the option of creating "-R" discs if you need to play them in a "-R only" player. In general, when burning DVDs for use on other PCs, buy the cheapest discs you can find that don't turn themselves into pixie dust. When burning DVDs for use in a commercial DVD player, use brand name discs and DVD+R.

- **USB Flash Drive:** Treat them like lollipops. Half the size of a pack of gum, and able to hold an entire PowerPoint presentation or two or six, flash memory should be your first choice for external storage space or for copying files between computers. Pop one of these guys in a USB slot (see the next section) and suddenly Windows XP knows it has another drive — except this one's fast, portable, and incredibly easy to use. Make sure you get USB 2.0 support, and only pay for password protection if you need it. The rest of the "features" are just, uh, Windows dressing.

This list is by no means definitive: There are Jaz disks, Zip drives, and recordable media that sing till the cows come home.

Making PC connections

Your PC connects to the outside world using a bewildering variety of cables and connectors. The most common are as follows:

- **USB (Universal Serial Bus) cables:** These cables have a flat connector that plugs into your PC. The other end is usually shaped like a D, but different pieces of hardware have different *terminators*. ("I'll be back . . .") USB is the connector of choice for just about any kind of hardware — printers, scanners, MP3 players, Palm/pocket computers, portable hard drives, even mice. If you run out of USB connections on the back of your PC, get a USB hub with a separate power supply and plug away.

- **RJ-45 connectors:** These are the most common kind of network connectors. They look like overweight telephone plugs (see Figure 1-4). One end plugs into your PC, typically into a *NIC* (Network Interface Card, pronounced "nick"), a network connector on the motherboard, or a network connector on a card that slides into a port (a so-called "PC Card" or "PCMCIA Card"). The other end plugs into your network's hub (see Figure 1-5), switch, or possibly into a cable modem, DSL box, router, or other Internet connection-sharing device.

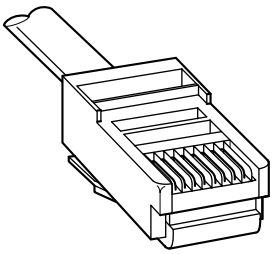

Figure 1-4: The RJ-45 network connector.

Figure 1-5: A network hub.

- **PS/2 or mini-DIN connectors:** These are round connectors with six pins and a plastic hump that prevents you from getting the connector twisted around in the wrong direction (see Figure 1-6). Ancient technology that works great. Commonly found on keyboards and mice.

If you have a mouse and a keyboard, both with PS/2 connectors, but your PC sports only one PS/2 slot, not to worry! Most cable manufacturers have Y connectors that allow you to attach two PS/2 devices to a single port. Surprisingly, both the mouse and the keyboard can co-exist with nary a hiccup. Try `www.cablestogo.com`.

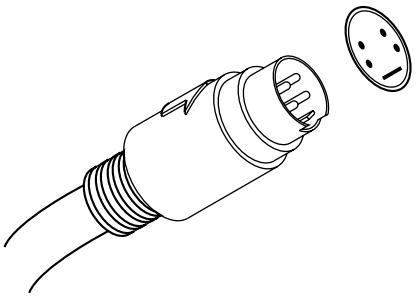

Figure 1-6: A PS/2 or mini-DIN connector.

- **Parallel and serial ports:** These are the long (parallel, 25-pin, with 13 pins on top and 12 on the bottom) and short (serial, 9-pin, five on top and four on the bottom) connections on the back of your computer. The serial port is notoriously slow, and both kinds sometimes fall apart — which is particularly disconcerting when you unscrew a connector and a nut falls off inside your computer. If you have a choice, choose USB.

Futzing with sound

If you plug your computer's speakers directly into the back of the PC, the whole process won't strain any little gray cells (see Figure 1-7).

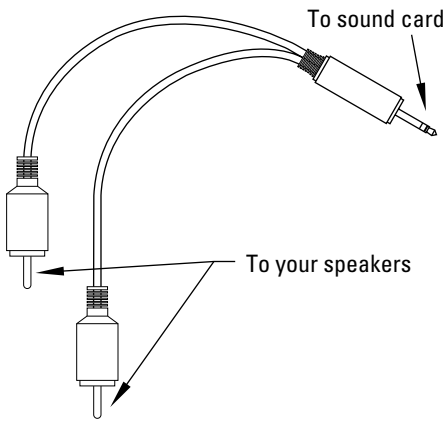

Figure 1-7: A simple connection for speakers.

Most Windows XP users care about sound, and many find that tiny, tinny speakers meticulously paired with an underaspirated amp sound about as bad as Leonard Nimoy singing *The Star Spangled Banner*. (No offense, Leonard, okay?)

Chances are pretty good that you are running Windows XP on a PC with at least a little oomph in the audio department. If so, you have to be concerned about four different sound jacks because each one does something different. Your machine may not have all four. (Are you feeling inadequate yet?) Here's how they are usually marked, although sometimes you have to root around in the documentation to find details:

- **Line in:** A stereo input jack. Feeds a stereo signal into the PC. Not used very often, but it can be handy if you need to record a radio program or digitize something on audio tape.

- **Mike in:** Almost exclusively used for voice-recognition systems, where you speak into the microphone and the computer attempts to convert your speech into text. There are lots of gotchas, particularly when selecting microphones. See `www.woodyswatch.com/office/archtemplate.asp?v6-n30` for details.
- **Line out:** A stereo output jack that bypasses the computer's internal amplifier. This is the source for the highest-quality sound your computer can produce.
- **Headphone or speaker out:** Goes through the internal amplifier. Use this jack for headphones or speakers, but avoid it in all other situations.

PC manufacturers love to extol the virtues of their advanced sound systems, but the simple fact is that you can hook up a rather plain-vanilla PC to a home stereo and get great sound. Just connect the "line out" jack on the back of your PC to the "Aux in" jack on your home stereo. *Voilà!*

Do You Need Windows XP?

If you haven't yet decided whether Windows XP or Windows XP Media Center Edition is worth the plunge, this section should help you make up your mind.

You can safely skip this section, unless you have to justify the upgrade to the boss — or your spouse. Trust me. You want Windows XP — and you may want the Media Center, too. Read on to find out why.

It just works

In the vast majority of cases, Windows XP works far more reliably than any other version of Windows. One of the main reasons why: Windows XP successfully protects itself from programs that try to overwrite its crucial files. The end — or at least the severe curtailing — of "DLL hell," where incompatible versions of programs overwrite each other, goes a long way toward increasing Windows XP's reliability.

Although rooting around inside Windows XP is certainly an order of magnitude more complex than in Windows 98 or Me, you're much less likely to dig into the bowels of Windows XP, unless you're running some really weird, relatively old hardware or trying to coax a hopelessly ancient game into action.

Multimedia galore

If you want to use your computer for music, pictures, video, and the like, Windows XP has plenty of good news for you: Microsoft finally gets it. Well, more than it used to, anyway.

Workgroups and domains

When you attach computers to each other (that is, you network them), you can choose from two inherently different ways to go. In a *client/server network,* which Microsoft calls a *domain,* one computer (the server) controls access to all the others (the clients). On the other hand, in a *peer-to-peer network,* which Microsoft calls a *workgroup,* all of the computers are equal, with no single computer standing out above all the rest.

Client/server networks abound in large companies, where central control is crucial. Network Administrators set up security rules, grant access where needed, allow new users to get onto client PCs, and generally ride herd on the entire network. Usually the server(s) hold important corporate files and backup copies of key files on the client computers. Usually the major networked printers hang off of the server(s). Usually all Internet access goes through the server(s). Usually.

Peer-to-peer networking, on the other hand, doesn't get hung up in the kind of security and central administration that client/server networks take for granted. For example, a typical user on a peer-to-peer network can share a disk drive so that anybody on the network can see it. On a client/server network, you'd have to call in the Network Administrator.

At the risk of over-simplifying, peer-to-peer networking works best in homes and small offices where security isn't a major concern. Client/server networking works best in larger companies with significant security needs — and a budget to match. Network Administrators don't come cheap.

One of the most controversial parts of Windows XP is its limited support (some would say "lack of support") for the MP3 audio format. A lot of misinformation is floating around about Windows XP and MP3, so let me set the record straight:

- If you have MP3 files, Windows XP will play them, no hassle, no sweat. You can e-mail MP3 files, burn CDs and DVDs full of them, copy and trade them to your heart's content, and Windows XP helps you every inch of the way.
- On the other hand, if you are trying to convert audio CD tracks to MP3 format (a process called *ripping*), Windows XP won't help much — for many reasons, but two stand out:
  - Microsoft would have to pay a royalty for the technology that allows audio CD tracks to be converted to MP3. Microsoft doesn't want to pay a royalty for every copy of Windows XP that's sold, so it doesn't ship fully functional MP3 ripping technology in the box with Windows XP. You have to pay extra for it, find the ripper somewhere else and install it on your machine, or get the ripper some other way — perhaps along with your MP3 player.

- Microsoft has no incentive for building MP3 ripping technology into Windows XP. Some wags (this one included) feel that Microsoft could've done something more to support MP3 ripping if it wanted to badly enough. But it doesn't want to. Microsoft wants the world to change to its own WMA audio file format for a bunch of reasons, not the least of which is the fact that WMA discourages piracy.

✦ No matter where you stand on the ethical questions surrounding piracy, Microsoft can clearly make a lot of money helping companies sell (non-pirated) music files. It doesn't make squat from pirated copies.

Windows XP does not include DVD support, straight out of the box. Again, licensing considerations take the brunt of the blame. Unless DVD playback software came with your DVD player or PC, you have to find, pay for, and install DVD playback software before Windows XP will play DVDs.

Windows XP also includes digital camera support that's automatic, full-featured, and probably better than the software that shipped with your camera. Add the slide show feature built into Windows Explorer, and digital imaging takes a giant leap forward.

Easy multiuser support

Windows XP/Home makes setting up multiple users on the same machine very easy:

✦ Each user can have his or her own password or decide not to use a password at all.

✦ With Windows XP/Home, you don't have to memorize user names or passwords: one click and you're in.

✦ You can switch among users quickly and easily. So if your daughter wants to check her Hotmail quickly while you go get a sandwich, all it takes is a click.

✦ Your programs keep running when you switch users, unless you specifically close them down.

Windows XP/Pro, straight out of the box, retains the old you-gotta-know-yer-user-id-and-password-to-get-in bias, and it won't allow you to switch quickly between users, but in a corporate environment with centralized access controls, that makes sense. (You can change Windows XP/Pro to make it act like Windows XP/Ho me, though — and you can add some password restrictions to Windows XP/Home accounts.)

Making networks easy

Windows XP finally delivers on Microsoft's promise to make simple networking simple. That's no small accomplishment, as anyone who's struggled with assembling and maintaining a network can readily attest. In most cases, putting together a small network of Windows XP, 2000, Me, and 98 PCs is as easy as connecting the wires and running a wizard. Really.

The good news extends well beyond the mechanics of pulling together a network. Windows XP makes sharing an Internet connection among many machines easy, whether they're running Windows XP, 2000, Me, or even lowly Windows 98. Sharing a printer with any other computer on a network takes a few clicks. Sharing a disk drive takes even less effort.

Do you need Windows XP/Pro?

Windows XP/Pro costs a whole heckuvalot more than Windows XP/Home, but for many folks, both at home and at the office, Windows XP/Home beats the pants off Windows XP/Pro. The arguments, both, uh, Pro and Con, may get esoteric and techie very quickly. What's a Dummy to do?

Fortunately, the situation isn't nearly as difficult as you may think. In most situations, if you get to pick the version of Windows XP that's right for you, you want Windows XP/Home. If somebody else makes the decision — presumably a corporate IT department or some such — they probably choose Windows XP/Pro, simply because it fits into the existing PC network better.

You should buy Windows XP/Pro if

- ✦ You want to set up a secure, client/server network (see sidebar "Workgroups and domains"). If you think Windows XP/Pro itself is expensive, wait until you see the bill for this one.
- ✦ Your company wants you to use Windows XP/Pro. They probably have good reasons to spend the extra bucks, mostly centered around security, central administration, and automated backup.
- ✦ While you're on the road, you need to dial into your computer at work and use it directly from your laptop. That demands a feature called Remote Desktop, which runs only with Windows XP/Pro.
- ✦ The machine you're currently using runs Windows 2000 Pro (or Windows NT 4), and you want to upgrade it directly to Windows XP, carrying across all of your settings.

You can upgrade directly from Windows 98 or Windows Me to either Windows XP/Home or Windows XP/Pro, and bring all of your settings with you. See the next section, "Upgrading to Windows XP — A Brain Transplant."

Windows XP/Pro comes in handy in a corporate environment in a few minor ways. For example, it handles Roaming Profiles, which let you log onto any computer on the network and retrieve your settings, and it has built-in security hooks that let you get at folders even when the server is not working (so-called Offline Folders) — but none of the other Windows XP/Pro features are show stoppers.

What about Windows XP Media Center?

If you're an inveterate toy freak, you don't need me to answer that question.

But if you're kind of sitting on a fence, and you don't want to throw away a few thousand bucks on some piece of technology that's sure to be obsolete in a couple of years, consider this:

- Windows XP Media Center Edition (affectionately known as MCE) is a program that runs on top of Windows XP. That means MCE inherits all of the truly rich capabilities of Windows XP itself, including the Windows Media Player, which is a crucial component of MCE.

  In the same breath, it also means that MCE inherits all of the problems in Windows XP itself, and adds another layer of bugs and potential security problems. A quick glance through Microsoft's Knowledge Base will rapidly confirm that even MCE gets the buggy blues.

- Some people love the MCE approach — a keyboard and TV-style remote, typically sitting on a couch or coffee table, that let you get at the more common multimedia capabilities functions quickly and easily. It's a great way to drive a big screen TV. Some people would rather just sit at their PC to watch a movie, or prop a portable up on the coffee table and get rid of the software middleman.
- On the other hand, Microsoft's marketing clout means that all sorts of new features — particularly the kind that require cooperation with satellite and cable TV companies — are sure to appear on MCE systems at the earliest possible instant. With MCE, you're driving the best, and the rest of the industry knows it.

No matter how you look at it, Windows XP Media Center Edition is still in its infancy. Unlike many other Microsoft products, though, this youngster appears to be here to stay.

Upgrading to Windows XP — A Brain Transplant

If your current machine runs Windows 98 or Me, you can upgrade to Windows XP by simply starting Windows, inserting the Windows XP CD into the CD drive, and following the instructions.

If you decide that Windows XP isn't your cup of tea, you can remove it and restore your old Windows 98 or Me system, intact. Here's how:

1. **Choose Start⇨Control Panel.**
2. **Click Add and Remove Programs.**
3. **Click Windows XP, and then click Add/Remove.**
4. **Pick the option to Uninstall Windows XP, and click Continue.**

If your current machine runs Windows NT 4 or Windows 2000, you can upgrade to Windows XP/Pro directly with the CD. However, you will not be able to automatically uninstall Windows XP and revert to NT 4 or 2000.

If your current machine runs Windows 95 or NT 3.*x*, you won't be able to upgrade. Your only option is to erase Windows from your hard drive (never a simple proposition) and perform a clean install from scratch (see the section, "Considering a clean install," for sobering enlightenment). Chances are good that your Windows 95 or NT 3.*x* system isn't powerful enough to run Windows XP very well anyway. It's far better to wait until you can afford a new PC that comes with Windows XP preinstalled.

Windows Upgrade Advisor/Hardware Compatibility List

Before you upgrade an existing PC to Windows XP, you should check the machine to make sure there are no known problems. Microsoft distributes a program called the Windows XP Upgrade Advisor that reaches into the innermost parts of your PC and reports on potential problems with the upgrade. You can download the Windows XP/Home Upgrade Advisor from `www.microsoft.com/windowsxp/home/howtobuy/upgrading/advisor.asp`. The Windows XP/Pro advisor is at `www.microsoft.com/windowsxp/pro/howtobuy/upgrading/advisor.asp`. You may also find a copy of both advisors on a free CD at your friendly local computer shop.

Microsoft used to publish a master list of all hardware that's passed muster for Windows XP — a so-called Windows Hardware Compatibility List — but that useful tool has been supplanted by a piece of marketing fluff called the Windows Catalog (`www.microsoft.com/windowsxp/pro/upgrading/compat.mspx`). The Windows Catalog consists of paid advertising, which is worse than useless. (The same could be said, in spades, about Windows Marketplace.) Read the fine print at the bottom of the page: "The Windows Catalog is provided for informational purposes only and Microsoft makes no representations and warranties, either expressed, implied, or statutory, regarding the products, manufacturers, compatibility of the products available within, or the Windows Catalog." What a crock.

There's a tremendous, unbiased list of Windows XP compatibility problem reports covering every imaginable piece of hardware and software available at `www.ntcompatible.com/compatibility.html`. In spite of its name, the NT Compatible Web site deals with Windows NT, 2000, and XP.

Considering a clean install

Windows XP is an enormously complex program. In the best of all possible worlds, if you upgrade from your current version of Windows — be it 98, Me, NT 4, or 2000 — to Windows XP, the upgrade routines successfully grab all of your old settings, get rid of the extraneous garbage that's floating around on your old machine, and install a stable, pristine copy of Windows XP, ready for you to take around the block.

Unfortunately, the world is not always a pretty place, and your hard drive probably looks like a bit-strewn sewer. Historically, Windows has been considerably less stable for upgraders than for those who perform a *clean install* — wiping out the contents of the hard drive and starting all over again. All the flotsam and jetsam left from an old version of Windows invariably mucks up the works with the new version.

A clean install is not for the faint of heart. No matter how hard you try, you will lose data, somewhere, somehow — it always happens, even to those of us masochists who have been running clean installs for a decade. If you value everything on your computer, go for the simple upgrade. If you want your PC to run smoothly, think about a clean install.

The following is my general procedure for a clean install, on computers that can start from the CD drive, in very broad terms:

1. **Download and install Revelation from SnadBoy software at `www.snadboy.com` (see Figure 1-8).**

   Use Revelation for a few days (or weeks!) to retrieve any passwords that you may have stashed away.

2. **Make sure that you have current CDs for all the software that you normally use.**

   If the programs require passwords/installation keys, you need the passwords, too.

3. **Back up everything. Twice.**

   If you have a Windows XP computer handy, and you can attach it to the PC that you're upgrading through a network or a direct-connect cable, you may want to try a Vulcan Mind Meld, er, the Windows XP Migration Wizard. Use it to transfer all your files and settings over to the other PC, temporarily. Follow the instructions in the next section, "Using the

Migration Wizard," to pick up the settings before you perform the upgrade and stick them on the temporary machine. Then follow the instructions again to move them from the temporary PC back to your (freshly upgraded) original PC.

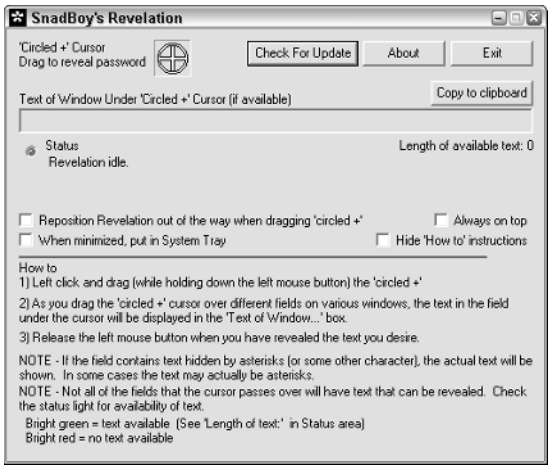

Figure 1-8: SnadBoy's Revelation lets you see passwords that appear as ****** on the screen.

4. **Insert the Windows XP installation disc in the CD drive, and then choose Start⇨Shut Down to go through a full shut down.**

   Windows XP may offer to install itself while you're trying to shut down. If it does, click Cancel. Power off the PC and wait at least a full minute.

5. **Turn the power on.**

   If the PC is capable of starting ("booting") from the CD, you see a line on the screen that says something like `Press any key to boot from CD`. Press the Enter key.

6. **Go through the steps indicated by the installer to delete the primary partition.**

   That wipes out all the data on the hard drive.

7. **Pick your jaw up from the floor, kick yourself twice for being so obstinate, pat yourself on the back for starting out fresh, and follow through with the rest of the installation.**

   Windows XP does a good job of taking you through the steps. Just follow along. The only really tricky part of the installation: Windows XP has to restart your PC early in the installation process. When that happens, you'll probably get that `Press any key to boot from the CD` message again. This time — the second time you see the message — ignore it. Let Windows XP start itself from the hard drive.

Clean installs rate right up there with root canals and prostate exams. Nobody in their right mind will try one, unless they really want to make sure that Windows will run smoothly. That said, I try to perform a clean install on all of my systems at least once a year. It can make a big difference.

Using the Migration Wizard

Windows XP's Files and Settings Transfer Wizard (better known as the Migration Wizard) makes transferring certain kinds of settings and data files between two computers comparatively easy. It sounds great and works well, as long as you don't expect too much. You need to be aware of several limitations:

- The PC you're transferring files and settings "to" must be running Windows XP. If at all possible, it should be connected to the PC that you're transferring settings "from." The "from" PC can be running Windows 95, 98, Me, NT 4, 2000, or XP.

  The Files and Settings Transfer Wizard can send a humongous amount of data from one PC to another. You can schlep diskettes from one machine to another, if you have a few spare hours (or days). Far better, though, is if you can get both PCs talking to each other on a network. Failing that, you can buy a special cable called a "Serial PC to PC Transfer Cable" that plugs into the serial slots on both PCs (the slots you may be using for printers). The wizard will work with any of 'em.

- The wizard can't install your old programs on your new PC. You have to do that yourself, manually, one at a time, generally from the original CDs that the programs came on.

  If you use the Files and Settings Transfer Wizard but you don't install all of your old programs on your new PC, weird things may happen on the new PC. You may double-click on a file in Windows Explorer, for example, and have Windows XP say that it can't find the program associated with the file. Outlook may have trouble displaying a file attached to a message. Nothing earth-shattering will happen, mind you, but it can be annoying.

- The wizard picks up only data files and some Windows Registry entries. That means you can't expect it to pull across all of your passwords, and some copy-protection schemes (on games, for example) may go haywire.

On the plus side, though, the Files and Settings Transfer Wizard doesn't pick up much of the garbage that seems to accumulate in every Windows PC, which means you can use it without gumming up your new computer. Too much.

Here are the kinds of things you can expect to go across in a transfer:

- Data files from your Windows desktop, the My Documents folder (including My Pictures and My Music, if you have those in the My Documents folder), and the Shared Desktop and Documents folders.

- Other files scattered around your hard drive(s), as long as Windows recognizes them as common data files.

The Files and Settings Transfer Wizard really chooses which files to transfer based on the filename extension. It looks for filename extensions that are commonly associated with data files, such as `.doc` or `.jpg`. See the section on showing filename extensions in Book I, Chapter 3 for a lengthy tirade on this topic.

- Settings for Windows (desktop, screen savers, taskbar options, and the like), Windows Explorer, Internet Explorer (including your list of Favorites), and Outlook Express.
- All of your Microsoft Office settings.

To use the File and Settings Transfer Wizard, follow these steps:

1. **Make sure Windows XP is up and running on the "to" PC.**

   Get your hardware installed, set up your users, and run Windows XP long enough to be familiar with it.

2. **Log on the "to" PC as the user who's supposed to receive all the files and settings from the "from" PC.**

   If both the "to" and "from" PCs are connected to your network, choose Start➪My Network Places or Start➪My Computer to make sure that the network connection is up and kicking. If they aren't connected to the same network, get a Serial PC to PC Transfer Cable and attach it to the serial ports on both PCs.

3. **Choose Start➪Files and Settings Transfer Wizard, if it's on the Start menu.**

   If it isn't, choose Start➪All Programs➪Accessories➪System Tools➪ Files and Settings Transfer Wizard.

4. **Follow the steps in the wizard (see Figure 1-9).**

   The exact steps vary depending on the method you're using to transfer the data. If you have many large documents or picture files, plan on spending a few hours. If you're transferring by diskette, don't be surprised if it takes a day.

If you perform a scorched-earth clean install of Windows XP (see the preceding section), you can use the Files and Settings Transfer Wizard twice to drag most of your data (but none of your programs!) through the upgrade, even though you delete everything on your hard drive in the process of upgrading. All it takes is an intermediary machine running Windows XP that holds your settings while the old PC is wiped clean. For the first run of the Files and Settings Transfer Wizard, use the intermediary machine as the "to" machine. Then upgrade the old PC. Finally, run the Files and Settings Transfer Wizard again, this time using the intermediary machine as the "from" machine. Works like a champ.

Figure 1-9: The Files and Settings Transfer Wizard can send most (but not all) of your important information from an old PC to a new one.

Product Activation

When you buy a copy of Windows XP in a shrink-wrapped box, you're allowed to install it on one — and only one — PC.

When you buy a new PC with Windows XP preinstalled, Windows stays with the PC. You can't transfer Windows XP from the original, bundled machine to a different machine. Microsoft uses a technique called "BIOS locking" to make sure that the copy of Windows XP that ships with a PC stays tied to that specific PC, forever and ever. See Fred Langa's expose at `www.langa.com/newsletters/2001/2001-09-10.htm` for a detailed explanation of what's involved.

There are some ifs, ands, and buts floating around (for example, what if you upgrade to Windows XP and the next day your PC suddenly dies?), but in general, you can't copy Windows XP and pass around pirate CDs to your buddies or install a single copy on all the machines in your home. If you have three PCs, and you want to run Windows XP on all of them, you have to buy three copies of Windows XP, either in shrink-wrapped boxes or preinstalled on new machines.

Corporate licenses are a little different. I talk about them at the end of this section.

Windows XP enforces this one-Windows-one-PC licensing requirement with a technique called *Windows Product Activation,* or WPA. Here's how WPA works:

1. **The Windows XP installer makes you type the unique 25-character code that's printed on the case of your Windows XP CD.**

Later, the Product Activation program looks at various serial numbers inside your PC — the processor, network card, and disk drives, among others — mixes them together, and produces a second 25-character code that identifies your PC. Those 50 characters, taken together, are called the *Installation ID*.

2. **When you *activate* Windows XP (see Figure 1-10), you give Microsoft that 50-character Installation ID.**

   Microsoft checks to see whether anybody else has submitted the 25-character code from the case of the Windows XP CD.

   - If nobody else has activated that 25-character code from the CD case, or if the 25-character code has been activated with that specific Installation ID (which means you activated this particular copy of Windows XP from the same PC twice), Microsoft sends back a 42-character *Confirmation ID*. Both the Installation ID and the Confirmation ID are stored on your PC.
   - If that 25-character code has already been used on a different PC, though, you get a polite message on your machine saying, `According to our records, the number of times that you can activate Windows with this product key has been exceeded. Please enter a different product key, and then click Retry`. You're given further instructions for contacting Microsoft, if you feel the need.

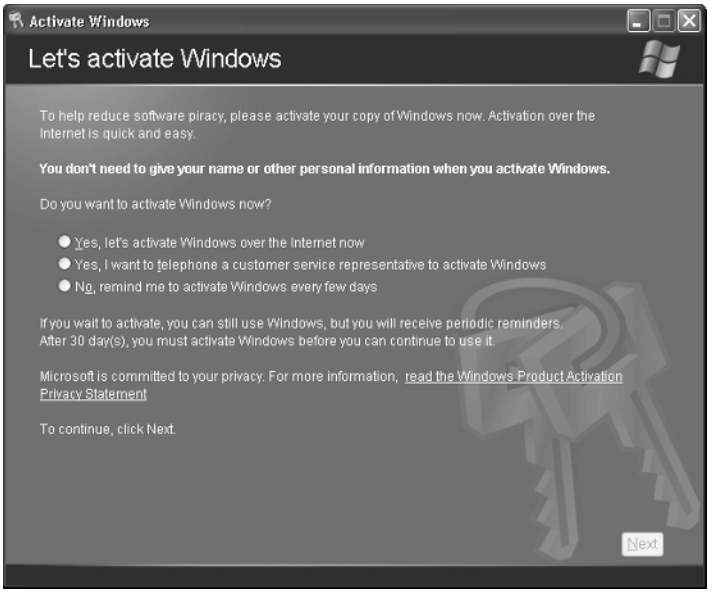

Figure 1-10: The Windows Product Activation Wizard.

3. **Every time Windows XP starts, it recalculates the 25-character code that's based on the various serial numbers inside your PC.**

   If the code matches the one that's stored on your PC, and the Confirmation ID is good, Windows takes off.

4. **On the other hand, if the recalculated 25-character code doesn't match your original code, pandemonium breaks loose.**

   Your hard drives start spinning at twice their normal speed, your keyboard gets short-circuited with your PC's power supply, and the local constabulary receives an urgent fax from Redmond with a preapproved no-knock search warrant. Okay, okay. I'm exaggerating a little bit. Here's what really happens:

   - If Windows decides that you've only made a few changes to your PC — replaced a hard drive, say, or even changed the motherboard — it lets you start Windows anyway.
   - On the other hand, if Windows determines that you've made too many changes, it refuses to start and insists that you contact Microsoft for a new Confirmation ID. That starts the activation cycle all over again. Microsoft has full details at `www.microsoft.com/piracy/basics/activation` and `www.microsoft.com/technet/prodtechnol/winxppro/evaluate/xpactiv.mxpx`.

If you bought your PC with Windows XP preinstalled, it was activated before you ever got it.

If you bought and installed Windows XP yourself, though, the activation time clock takes over. From the day you install Windows XP, you have 30 days to activate it. Windows tries to get you to activate it while you're installing. Failing that, it continues to remind you, relentlessly, as the 30 days tick away. Reinstalling Windows XP won't bypass the activation requirement.

Activating via the Internet makes the whole process of generating, sending, and receiving ID codes invisible: All you know is that the process worked, and you can continue to use the software you bought. If you activate by telephone, though, you have to be sitting at your computer with your Windows XP installation CD handy. You get to read a bunch of numbers to the rep on the other end of the phone line, and she reads a bunch of numbers back to you so that you can type them into the WPA Wizard.

Surprisingly, Windows XP still works a little bit, even after the activation period has expired, and even though it won't start. For example, a modem attached to a PC that hasn't been activated can still dial out, if it's set up for Internet Connection Sharing.

As the Activation Wizard screens emphasize (see Figure 1-11), activation is not the same as registration. When you activate Windows XP, your computer sends Microsoft a 50-character Installation ID — *and nothing else*. When you register Windows XP, you send Microsoft your name, address, telephone number, and any other information that the screens can extract from you.

Activation is a given: You have to activate Windows XP or it dies. Registration, on the other hand, is entirely optional — and basically useless for Dummies everywhere. (What? You think Microsoft wants your mailing address to send you a product recall? A birthday card? Sheeesh.) You have no reason in the world to register Windows XP. Don't do it.

Big companies with big bucks don't have to put up with Windows Product Activation. (One guess why.) Any company that buys Windows XP via a site license — that is, buys many copies at a time — gets a special version that doesn't require activation.

If you hear rumors on the Internet about a key that magically bypasses Windows Product Activation, chances are very good that it's a corporate key that somebody is passing around the Net. Microsoft can, and has, blocked access to Service Packs and updates for people who used the most widely available and well-known pirated keys. (Don't confuse these hamfisted, widely disseminated pirate keys with the results of "keygen" programs, which produce unique, untraceable, fully functional keys. Big difference.) Cracking Windows XP is illegal, immoral, and fattening. Don't do it.

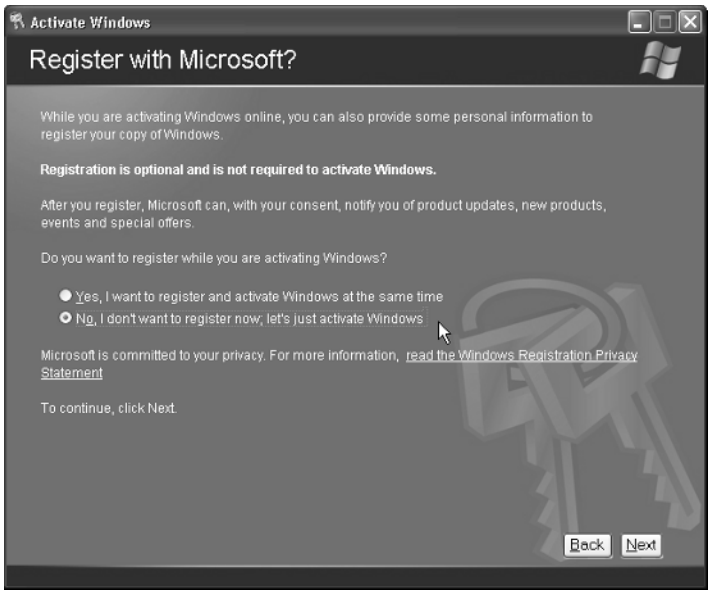

Figure 1-11: You can (and should) activate without registering.

What if the Wheels Fall Off?

So what should you do if Windows XP dies?

- If you got Windows XP bundled with a new PC, scream bloody murder at the vendor who sold you the %$#@! thing. Don't put up with any talk about "it's a software problem; Microsoft is at fault." If you bought Windows XP with a new PC, the company that sold you the machine has full responsibility for making it work right.
- If you upgraded from Windows 98 or Windows 98 SE to Windows XP, you can always uninstall Windows XP and go back to your old operating system, as unpalatable as that may seem. Follow the instructions in the section, "Upgrading to Windows XP — A Brain Transplant."
- If you upgraded from Windows NT 4 or 2000 and you didn't go through a clean install, try that. You don't have much to lose, eh? Follow the instructions in the section, "Considering a clean install."
- If you've done a clean install and Windows XP still falls over and plays dead, man, you have my sympathies. Check with your hardware manufacturer and make sure you have the latest BIOS version installed. (Make sure you get an instruction book; changing the BIOS is remarkably easy, if you follow the instructions.) Hit the newsgroups online, check out the NT Compatible Web site, `www.ntcompatible.com/compatibility.html`, or drop by my WOPR Lounge, `www.wopr.com/lounge`, to see if anybody there can lend a hand. If all else fails, admit defeat, and reinstall your old operating system. Again, life's too short.