If you don't, in fact, have the latest copy of all the files you've selected, Windows performs the necessary copying (assuming you've turned on "Synchronize all offline files before logging off" as described earlier).

When your computer disconnects from the network, two new icons and a "network is unplugged" reminder appear in your notification area (see Figure 20-15).

Phase 4: Working Offline

Once you're untethered from the network, you can find the synchronized files in any of several ways:

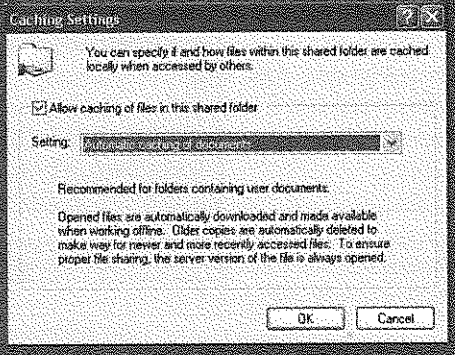
- Open the Offline Files icon on your desktop (if you chose to put one there). The Offline Files window appears (Figure 20-16).
- In any desktop window, choose Tools→Folder Options. Click the Offline Files tab; click View Files.

POWER USERS' CLINIC

Making Files and Folders Available for Other People

On a corporate network, the network administrator generally decides which files and folders are available for offline use. But if *you* are the network administrator—for example, if you work on a workgroup network—*you* will have to specify which folders are available for offline use.

To do so, navigate to the file or folder you want to share, right-click its icon, and choose Properties from the shortcut menu. Click the Sharing tab, turn on Sharing, and then click Caching. The Caching Settings dialog box appears, as shown here. Turn on "Allow caching of files in this shared folder," and then select the desired caching setting from the Setting drop-down list. You have three choices:



Manual caching of documents makes your files available for offline use, but they won't be automatically synchronized when other computers connect or disconnect. Your co-workers are responsible for triggering the synchronization themselves.

Automatic caching of documents means that whenever one of your co-workers opens one of one of the files that you've made available for offline use, it will automatically be copied to their machines, ready for offline editing.

Automatic caching of programs and documents. Select this option only for shared folders that contain files and applications that people aren't allowed to change (software programs, for example).

The first time you mark a network folder or file for offline use, the Offline Files Wizard guides you through the process. When you click Finish, a Synchronizing dialog box displays a progress bar until synchronization is complete. The item(s) you've selected are now available for your offline use.

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- Browse your network just as you normally would, using My Network Places as described earlier this chapter. You will, however, notice something strange: the shared drives and folders on the network appear to be completely empty *except* for the files and folders that you marked for offline use.

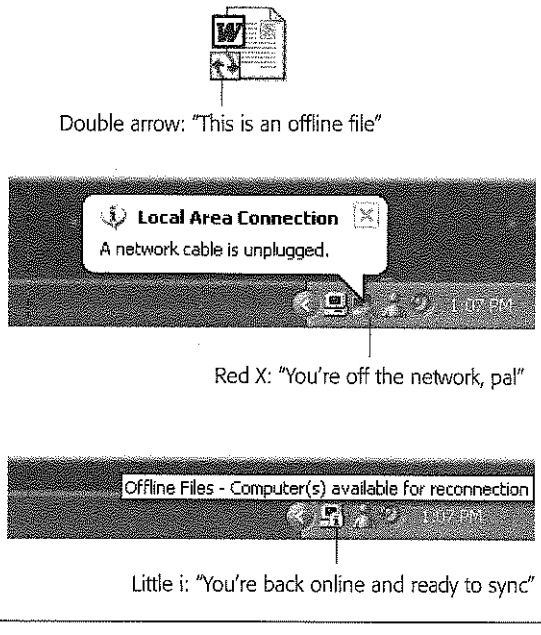

Figure 20-15:
Top: Each offline file and folder icon is marked with this double arrow badge for easy recognition. Middle: When your computer disconnects from the network (or when it disconnects from you), the Offline Files and Local Area Connection icons (the first two pictured here) appear, along with a balloon, to make sure you know about it.

Bottom: When your computer reconnects, the Local Area Connect icon disappears, and the little "i" logo appears on the Offline Files icon. You can manually synchronize your offline files by double-clicking the Offline Files icon, selecting the files you want (in the resulting window), and then clicking OK.

It's easy enough to tell when you're working on a document that's been swiped from the network: a tiny, telltale double arrow appears on its icon (Figure 20-15, top), at least when your viewing the window in an icon view. (Alternatively, highlight its icon, open the File menu, and look for a checkmark next to the Make Available Offline option.)

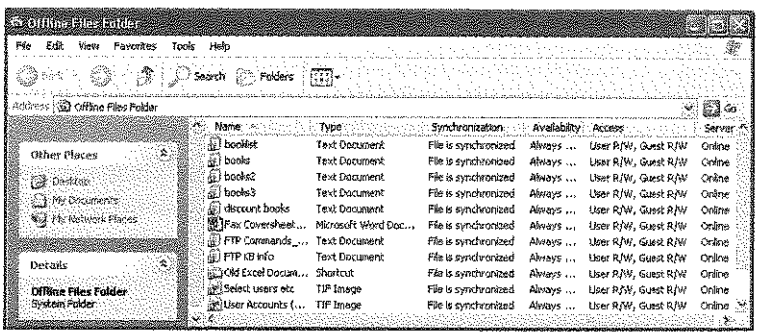

Figure 20-16:
When you're using the Details view, special information columns show you some useful details about each file: the type of file, whether or not it's been synchronized, where it is, and whether or not the server (or whatever computer stores the "real" copies of the files) is online.

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Now you're free to work with these offline files and folders exactly as you would if you were still connected to the network. You can revise, edit, and duplicate files, and even create new documents inside offline folders. The permissions remain the same as when you connect to the network.

Phase 5: Reconnecting to the Network

Now suppose you return from your jaunt away from the office. You plop your laptop down on your desk and reconnect the network cable.

Once Windows discovers that it's home again, it whirls into action, automatically comparing your set of offline files and folders with the master set on the network, attempting to handle discrepancies between the two as best it can. For example:

- If your copy and a network copy of a file don't match, Windows wipes out the older version with the newer version, so that both locations have exactly the same edition.
- If you deleted your copy of a file, or somebody on the network deleted the original, Windows deletes the corresponding file so that it no longer exists on either machine. (That's assuming that nobody edited the file in the meantime.)
- If somebody added a file to the network copy of a folder, you get a copy of it in your laptop's copy of the folder.
- If you've edited an offline file that somebody on the network has deleted in the meantime, Windows offers you the choice to save your version on the network or delete it from your computer.
- If you delete a file from your hard drive that somebody else on the network has edited in the meantime, Windows deletes the offline file from your hard drive but doesn't delete the network copy from the network.
- If both your copy and the network copy of a file were edited while you were away, Windows asks you which one should "win" (and also gives you the option of keeping both of the copies under different names).

Synchronization Options

You could spend a lifetime fiddling with the settings for Offline Files. If you want proof, open any desktop window, open any folder window, choose Tools→ Synchronize, and then, in the Items to Synchronize dialog box, click the Setup button. The Synchronize Settings dialog box opens, shown in Figure 20-17.

The Logon/Logoff tab lets you specify which network connection you want to use, which files and folders you want to synchronize automatically, and when you want synchronization to take place (at log on, log off, or both). Here, too, is your chance to make Windows ask permission before performing any of its synchronizations: just turn on "Ask me before synchronizing the items." (That's a handy option when you're working toward a tight deadline and you don't want this process to slow down your computer.)

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The other two tabs in this dialog box (On Idle and Scheduled) offer specialized synchronization features, discussed later in this section.

When synchronization happens

In general, automatic synchronization is the most convenient. But you can gain more control over exactly when the two-way updating takes place, using any of these scenarios:

- **Manual synchronization.** Windows doesn't always synchronize your files automatically. For example, it can't synchronize a file that's open on your laptop at the moment you log on or log off, and it doesn't try to do automatic synchronization when you're connected to the network via a slow connection (like a dial-up modem).

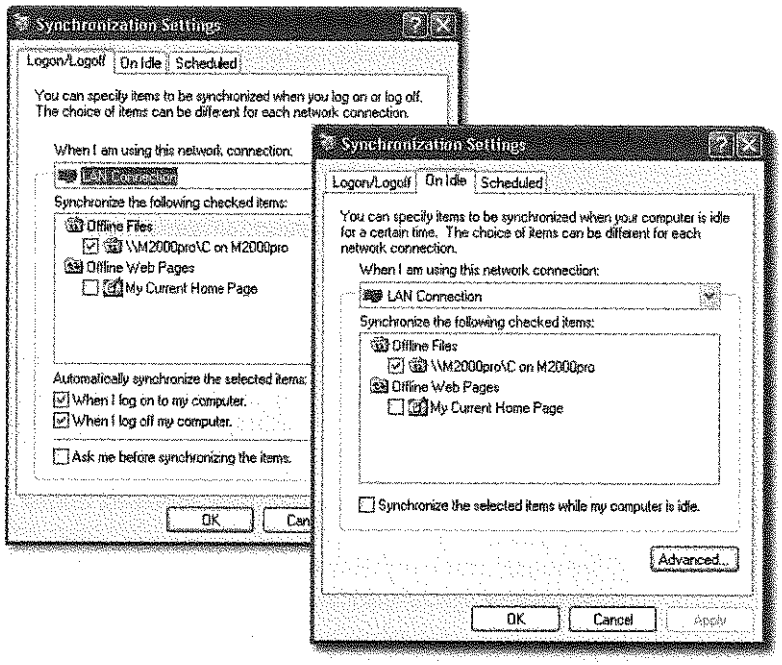

Figure 20-17: *Left: The Logon/Logoff tab lets you specify which files and folders you want to synchronize automatically, and when you want them synchronized (when logging in, logging out, or both).*

Right: The On Idle tab allows you to specify which files and folders you want synchronized when your computer is momentarily unused. (Note that this dialog box also includes controls for managing offline Web pages, *an Internet Explorer feature that lets you grab pages off the Web for reading later.)*

In these cases, you have to trigger the synchronization yourself, like this: Open any folder window. Choose Tools→Synchronize. In the Items to Synchronize dialog box, select the folders you want to synchronize, and then click the Synchronize button. Windows does the rest.

- **On Idle synchronization.** Some people have no problem with the delay caused by automatic synchronization when they disconnect from, or reconnect to, the network. They just sit back with a cup of coffee, waiting while Windows updates the files. There is, however, an alternative: telling Windows to do this copying

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quietly in the background throughout the workday, finding little pauses in your work when the computer isn't being used.

To turn on this option, open the On Idle tab of the Synchronization Settings dialog box (Figure 20-17, right). Now select the files and folders you want synchronized; turn on the "Synchronize the selected items while my computer is idle" option.

If you click Advanced, the Idle Settings dialog box appears, where you can set up regular intervals for the updating (every 60 minutes, for example). The idea here is that if your laptop's quietly keeping things in sync all day long, you'll be able to disconnect quickly, content that you probably have the latest versions of your files. If your computer is a laptop, this dialog box also offers the "Prevent synchronization when my computer is running on battery power" option.

- **Scheduled synchronization.** The Scheduled tab of the Synchronization Settings dialog box (Figure 20-8) lets you establish synchronization at specified times and frequencies. (If you're planning to leave the office for a trip at 4 p.m., for example, you could conceivably set up a sync for 3:45 so that you can grab the laptop and go.)

  To set up such a schedule, click the Add button. In the Scheduled Synchronization Wizard, you'll be asked to specify the network connection, what files you want synchronized, whether or not you want Windows to automatically connect your computer if it isn't already on the network at the designated moment (by dialing in, for example), and how often you want the automatic synchronizing to occur.

A Full and Quick synchronization

The Offline Files synchronization process in general doesn't always leave identical copies on your laptop and on the network; sometimes, Windows copies files only in one direction. To use the technical terminology, Windows sometimes performs a *Quick* synchronization, and sometimes a *Full* one.

In a Full synchronization, Windows copies all offline files both to and from your computer, thus ensuring that the latest and greatest versions of the files are in both locations—the best possible arrangement. But you get Full synchronization only when you trigger synchronization in these ways:

- On a schedule
- Manually, by choosing Tools→Synchronize
- When you've turned on "Synchronize all offline files before logging off" (see page 602)

Quick synchronization, on the other hand, is a much faster, one-way process. It merely checks to ensure that there is *some* copy of every designated offline network file on your hard drive.

If, for example, somebody else on the network has deposited a new file into a folder that you've marked for offline use, Quick synchronization will make sure you have a copy of it. Note, however, that Quick synchronization doesn't compare the network

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and laptop copies, to make sure that you have the *latest* copy—it just makes sure that you have *a* copy.

Quick synchronization is what you get when:

- You log onto the network with automatic synchronization turned on.
- You've turned on "On Idle" synchronization, as described earlier.
- You've turned off "Synchronize all offline files before logging off" (page 602).

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CHAPTER
21

Three Ways to Dial In from the Road

Windows XP Professional provides a long list of avenues for dialing into one PC from another. If you're a road warrior armed with a laptop, you may be delighted by these features. If you're a corporate employee who used to think that you could escape the office by going home, you may not.

In any case, each of these *remote access* features requires a good deal of setup and some scavenging through the technical underbrush, and each offers slightly different benefits and drawbacks. But when you're in Tulsa and a spreadsheet you need is on your PC in Tallahassee, you may be grateful to have at least one of these systems in place.

Remote Access Basics

The two most common scenarios for using these remote access features are (a) dialing your home PC using a laptop and (b) dialing into your office network from your PC at home. To help you keep the roles of these various computers straight, the computer industry has done you the favor of introducing specialized terminology—and learning these terms now will help keep your brain from tying itself in knots:

- The *host computer* is the home-base computer—the one that's sitting there, waiting for you to connect to it. It could be your office computer (you'll dial into it from home), or your home computer (you'll dial into it from your laptop on the road).
- The *remote computer* is the one that will do the dialing: your laptop on the road, for example, or your home machine when you tap into the office network.

The remaining pages of this chapter cover all three systems, but here's a quick summary:

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- **Dialing direct.** The remote computer can dial the host PC directly, modem to modem, becoming part of the network at the host location. At that point, you can access shared folders exactly as described in the previous chapter.

  The downside: The host PC must have its own phone line that only it answers. Otherwise, its modem will answer every incoming phone call, occasionally blasting the ears of hapless human callers.

- **Virtual private networking.** Using this system, you don't have to make a direct phone call from the remote PC to the host. Instead, you use the Internet as an intermediary. This way, you avoid long distance charges, and the host PC doesn't have to have its own phone line. Once again, the remote computer behaves exactly as though it has joined the network of the system you're dialing into.

- **Remote Desktop.** This feature, new in Windows XP, doesn't just make the remote PC join the network of the host; it actually turns the remote computer *into* the host PC, filling your screen with its screen image. When you touch the trackpad on your laptop, you're actually moving the cursor on the home-base PC's screen, and so forth.

UP TO SPEED

Remote Networking vs. Remote Control

As noted above, when you connect to a PC using direct-dial or virtual private networking (VPN), you're simply joining the host's network from far away. If you've dialed into your home PC using your laptop, and you try to open a Word document that's actually sitting on the home PC, your *laptop's* copy of Word opens and loads the file. Your laptop is doing the actual word processing; the host just sends and receives files as needed.

Windows XP's new Remote Desktop feature is a completely different animal. In this case, you're using your laptop to *control* the host computer. If you double-click that Word file on the home-base PC, you open the copy of Word *on the host computer*. All of the word processing takes place on the distant machine, the one you've connected to; all that passes over the connection between the two computers is a series of keystrokes, mouse movements, and screen displays. The host is doing all the work. Your laptop is just peeking at the results.

Once you understand the differences between these technologies, you can make a more informed decision about which to use when. For example, suppose your PC at the office stores a gigantic 100-megabyte video file, and you want to edit it from your PC at home. Using a remote networking connection means that you'll have to wait for the file to be transmitted to your home machine before you can begin working. If you've connected to the office machine using a standard dial-up modem, you'll be waiting, literally, for several *days*. If you use a Remote Desktop connection, on the other hand, the video file remains right where it is: on the host computer, which does all the processing. You see on your screen exactly what you would see if you were sitting at the office.

On the other hand, if the computer doing the dialing is a brand-new Pentium 7, zillion-megahertz screamer, and the host system is a five-year old rustbucket on its last legs, you might actually prefer a remote network connection, so that the faster machine can do most of the heavy work.

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To make this work, you have to dial *into* a computer running Windows XP Pro. But the machine doing the dialing can be running any relatively recent version of Windows, including Windows XP Home Edition.

Tip: The world is filled with more powerful, more flexible products that let you accomplish the same things as these Windows XP features, from software programs like LapLink, Carbon Copy, and PC Anywhere to Web sites like *www.gotomypc.com*.

On the other hand, Remote Desktop is free.

Note, by the way, that these are all methods of connecting to an *unattended* machine. If somebody is sitting at the PC back home, you might find it far more convenient to dial in using Windows Messenger, described in Chapter 11. It's easier to set up and doesn't require XP Professional on one end, yet offers the same kind of "screen sharing" as Remote Desktop.

Dialing Direct

To set up the host to make it ready for access from afar, you first must prepare it to answer calls. Then you need to set up the remote computer to dial in.

Setting Up the Host PC

If your host PC has its own private phone line—the lucky thing—here's how to prepare it for remote access:

1. **Choose Start→Control Panel. In the Control Panel window, double-click Network Connections.**

   You see the icons for the various network connections you've created.

2. **In the task pane at the left side of the window, click "Create a new connection."**

   As you might have predicted, something called the New Connection Wizard appears (Figure 21-1, top).

3. **Click Next. On the next screen, click "Set up an advanced connection," and then click Next.**

   Now the Advanced Connections Options screen appears.

4. **Ensure that the "Accept incoming connections" option is selected (Figure 21-1, middle). Then click Next.**

   Now you're shown a list of the communication equipment your PC has—including its modem.

5. **Turn on the checkbox for your modem.**

   At this point, you could also click the Properties button and, in the resulting dialog box, turn on "Disconnect a call if idle for more than __ minutes." Doing so makes

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sure that your home PC won't tie up the line after your laptop in the hotel room is finished going about its business. Click OK.

6. **Click Next. Leave "Do not allow virtual private connections" selected, and then click Next.**

   As shown in Figure 21-1 at bottom, you're now looking at a list of every account holder on your PC (Chapter 17).

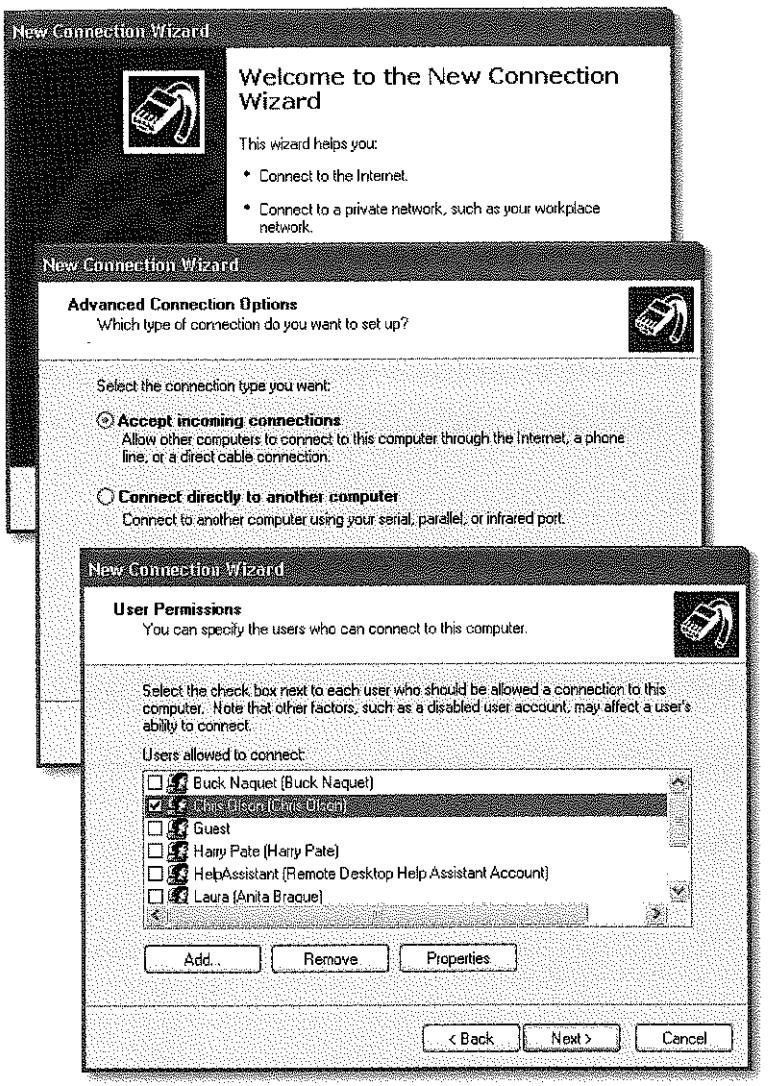

Figure 21-1:
The New Connection Wizard is the key to setting up two of XP's three remote access features: direct dialing and virtual private networking (VPN). To set it up, you answer its questions once on the host computer, and again on the laptop (or whatever machine you'll use to dial in).

Shown here from top: the welcome screen, the all-important "Accept incoming connections" option on the Advanced Connection Options screen (which is what makes your PC answer the phone), and the User Permissions screen (where you indicate which account holders are allowed to dial in).

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7. **Turn on the checkboxes corresponding to the people who should be allowed to dial into this host PC.**

   Don't turn on Guest, which amounts to a welcome mat for hackers.

   If you highlight a name and then click Properties, you can turn on the *callback* feature—a security feature that, after you've dialed in, makes your host PC hang up and call you back at a specific number. You can either (a) specify a callback number at the host machine in advance, so that outsiders won't be able to connect, or (b) let the remote user specify the callback number, which puts most of the telephone charges on the host computer's bill (so that you can bypass obscene hotel long distance surcharges). Click OK to close the dialog box.

8. **Click Next.**

   You're shown a list of networking protocols that Windows XP will make available to you when you call in. In general, you should simply confirm that all the checkboxes are turned on. (Highlighting "Internet Protocol (TCP/IP)" and clicking the Properties button may be useful to the paranoid, however. It lets you limit a remote caller to just this particular PC, instead of having full access to the network.)

9. **Click Next again, and then click Finish.**

A new icon in your Network Connections window, called Incoming Connections, is born. Your home-base PC is ready for connections. When the phone rings, the modem will answer it. (Of course, you shouldn't use this feature with the same phone line as your answering machine or your fax.)

Setting Up the Remote PC

Next, go to the remote computer and get it ready to phone home. Here's what to do:

1. **Choose Start→My Network Places. At the left side of the My Network Places window, click "Create a new connection."**

   The New Connection Wizard appears.

2. **Click Next. Select "Connect to the network at my workplace," and then click Next.**

   Now Windows wants to know if you'll be connecting via modem ("Dial-up connection" or via Internet ("Virtual Private Network connection").

3. **Click "Dial-up connection," and then click Next. Type a name for your connection (like "Phone home"), and then click Next. Type a phone number for the line your home PC is connected to, and then click Next again.**

   You'll have an opportunity to specify area codes and dialing codes later.

4. **On the final screen, turn on "Add a shortcut to this connection to my desktop," and then click Finish.**

You're now ready to establish a connection between the two computers.

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Making the Call

Once you've configured both computers, fire up the remote system and follow these steps to connect:

1. **Double-click the shortcut icon you created in step 4 above.**

   If it isn't on your desktop, you should find it in your Network Connections window (which you can open from the Control Panel). The dialog box shown in Figure 21-2 appears.

Note: If you're using a laptop while traveling, you might have to tell Windows XP where you are before you attempt to connect. If you're in a different area code, open the Phone and Modem Options icon in the Control Panel. Make sure that you've specified your current location, complete with whatever fancy dialing numbers are required by it (see page 318 for instructions on establishing these locations). Click the current location and then click OK. Now Windows knows what area code and prefixes to use.

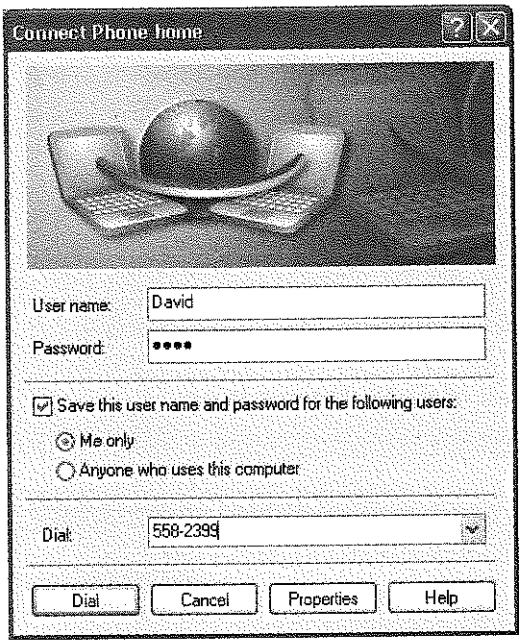

Figure 21-2:
You're ready to phone home. If you click the Properties button, you can invoke one of the dialing rules you prepared while reading page 320, which can save you a bit of fiddling around with area codes and access numbers.

2. **Type in your name and password, and double check the phone number.**

   This is the same name and password you'd use to log in at the Welcome screen if you were sitting in front of the host PC (Chapter 17). If you've set up dialing rules (page 318), you can choose the appropriate set of phone number segments by clicking the Properties button.

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3. Click Dial.

That's all there is to it. Windows dials into your home PC, makes the connection, and—if the phone number, name, and password are all correct—shows you a balloon on your taskbar (Figure 21-3).

You're free to open up any shared folders, even use shared printers, on your network back home. And although it may make your brain hurt to contemplate it, you can even surf the Internet if your home PC has, say, a cable modem.

Note: Don't try to run any *programs* that reside on your host PC, however; you'll be old and gray by the time they even finish opening. If you try, the host computer must transmit all of the files that make up the program to your remote machine as it loads (see the box on page 612).

When you're finished with your email check, address lookup, document transfer, or whatever, right-click the little network icon in your notification area and choose Disconnect from the shortcut menu (Figure 21-3, top).

Tip: If you're having trouble connecting, confirm that the name and password you're using are correct—that's the number-one source of problems. If the remote system still doesn't recognize you, click the Properties button in the dialog box shown in Figure 21-2. On the General tab, make sure that your laptop's dialing the right number; on the Networking tab, confirm that all the checkboxes are turned on.

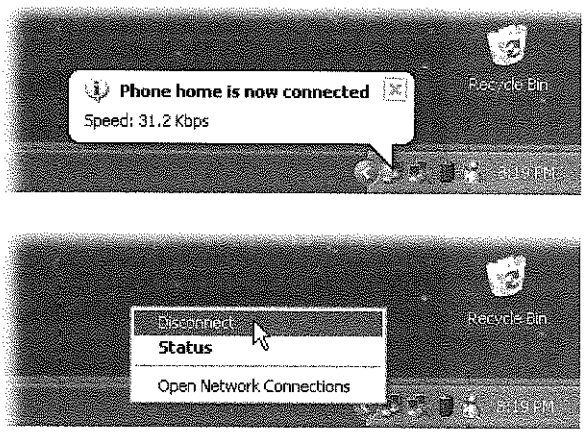

Figure 21-3:
Top: Congratulations—you're in. (When two 56 K modems connect, alas, they're limited to the top uploading *speed of either—and that's about 33 K.)*

Bottom: Disconnect by right-clicking the notification area icon. (The X'ed-out network icon, by the way, represents the office Ethernet cable that's currently disconnected from this laptop, which is in a hotel room somewhere.)

Virtual Private Networking

If you're a frequent traveler who regularly connects to a distant home or office by dialing direct, you must be the toast of your long-distance phone company.

Fortunately, there's a more economical solution. Virtual private networking (VPN) is a fancy way of saying, "Your remote computer can become part of your host network,

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using the Internet as a connection instead of a long distance phone connection." Yes, this does sound exactly like the direct-dialing feature described above—except this time, you don't pay any long-distance bills, your host PC doesn't necessarily have to have its own phone line, and (if the computers on both ends have fast connections) you're not limited to the sluglike speeds of dial-up modems.

With a VPN connection, both the host and the remote computers connect to the Internet by making *local* calls to your Internet service provider (ISP). If you travel

WORKAROUND WORKSHOP

Getting a Fixed IP Address

Several of the remote connection methods described in this chapter require that your home-base PC have a *fixed* IP address. An IP address is a unique number that identifies a particular computer on the Internet. (It's made up of four numbers separated by periods.) A *fixed* IP address is one that's been permanently assigned to your computer.

Furthermore, these remote-connection technologies require that you have a registered IP address (one that, behind the scenes, has been filed with a group called the Internet Assigned Numbers Authority).

A few PCs with high-speed Internet connections (cable modem, DSL) have this kind of permanent, unchanging address. But in most cases, your ISP assigns your computer a new address each time you connect, thus giving you a *dynamic* IP address. That's always what you have, for example, when you connect using a dial-up modem.

Even if your cable modem or DSL connection has a fixed IP address (because you're connected continuously), you don't necessarily have a *registered* IP address. (Want to find out? Connect to the Internet, and then choose Start→All Programs→Accessories→Command Prompt. In the Command Prompt window, you'll see all kinds of network configuration information about your computer, including its IP address [or addresses, if you're connected to a network]. Your IP address is not registered if it falls within any of these ranges: 10.0.0.0 through 10.255.255.255, 172.16.0.0 through 172.31.255.255, or 192.168.0.0. through 192.168.255.255. Or just ask your Internet service provider or network administrator.)

If it turns out that you don't have a fixed, registered IP address, you might assume that you can't use the remote-connection technologies described in this chapter. After all, your Internet address *changes* every time you connect, making it impossible to provide a single, permanent address. Fortunately, there are workarounds.

One solution is to contact your ISP and ask if it offers a fixed, registered IP address service. Some ISPs can be persuaded to assign you the same registered address every time you connect (for an additional fee, of course).

Another solution is to sign up for a *dynamic DNS service* that gives your PC a name, not a number. Whenever you're online, these free services automatically update the IP address associated with the name you've chosen (such as *pcnut.dyndns.org*), so that you (and your colleagues) can memorize a single address for your machine.

To sign up for one of these services, just go to its Web site—*www.dyndns.org*, *www.dhs.org*, *www.dtdns.com*, *www.hn.org*, or *www.no-ip.com*, among others.

If you bought a router for your home or small-office network—a small box that shares your cable modem or DSL connection with several computers on the network—there may be a third solution. Some routers let you map the unregistered address of a computer on your local network to a registered address inside the router, making that computer visible to the Internet. To find out if your router can pull off this stunt, you'll have to dig out the manual for the router, or contact its manufacturer.

In any case, once you obtain a fixed, registered IP address for your host system, don't forget to bring it with you. You'll need it when setting up the remote computer.

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with a laptop, that's a good argument for signing up with a national or international ISP that has local access numbers wherever you plan to be. On the other hand, if you don't move your computers around much, you can just use your regular ISP as you always do, whether you connect using a dial-up, a cable modem, DSL, or whatever.

If you're connecting to your corporate network, no problem: your company probably has its own Internet service. If you are the sole proprietor of both machines, however, all of this may mean that you'll actually have to have *two* different ISP accounts, so that both machines can be online at once.

Not only can VPN save the frequent traveler quite a bit of money, but it's also extremely secure. When you connect using VPN, the information traveling between the two connected computers is encoded (encrypted) using a technology called *tunneling*. Your connection is like a reinforced steel pipe wending its way through the Internet to connect the two computers.

To create a VPN connection, your host computer must have two important components:

- It must be on the Internet at the moment you try to connect. Usually, that means it needs a full-time Internet connection, like cable modem or DSL. But in a pinch—if it has only a dial-up modem, for example—you could phone a family member or co-worker just before you need to connect, with the direction to go online with your home PC.
- It needs its own, fixed *IP address*. (See the box on the previous page for a workaround.)

The remote computer, on the other hand, doesn't have any such requirements.

Setting Up the Host Machine

To set up the host PC for the VPN connection, do exactly as you would for direct-dial connections (page 613)—but in step 6, choose "Allow virtual private connections." When the wizard finishes its work, the host machine is ready for action. Instead of setting up the modem to answer incoming calls, Windows XP now listens for incoming VPN connection requests from the Internet.

Making the Connection

Now move to the laptop, or whatever machine you'll be using when you're away from the main office. These steps, too, should seem familiar—they start out just like those that began on page 615, except that in step 3, you should choose "Virtual Private Network connection." Then proceed like this:

1. **On the Public Network screen before you, leave "Automatically dial this initial connection" selected. Use the drop-down list to select the connection you use to access the Internet.**

   Now Windows XP can automatically dial up your ISP when you launch the VPN connection.

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2. **Click Next. On the VPN Server Selection screen, type the host name or registered IP address of the VPN host—that is, the computer you'll be dialing into.**

   If you've signed up for one of the dynamic DNS services described in the box on page 618, you know what the host computer's name is. Otherwise, specify its registered IP address.

3. **Click Next, turn on "Add a shortcut to this connection to my desktop," and then click Finish.**

   The result is a new icon on your desktop (and in the Network Connections window). When you double-click it, you see a dial-up box like the one shown in Figure 21-2. As with direct-dial connections, you can use dialing rules (page 318) to simplify your life as you move from area code to area code in the course of your life.

At this point, you've once again joined your home network. Exactly as with the direct-dial connections described earlier, you should feel free to transfer files, make printouts, and so on. Avoid actually running programs on the distant PC, at least if one computer or the other is connected to the Internet using a dial-up modem; the situation improves if both are using high-speed connections.

When you want to hang up, right-click the connection icon in your notification area and choose Disconnect.

Note: All of this sounds simple enough—and it is, if you have only one PC at home, or several that rely on Internet Connection Sharing (Chapter 18).

Unfortunately, setting up virtual private networking (and, for that matter, Remote Desktop, described next) on larger networks, or on networks that don't use Internet Connection Sharing, can be extremely complex. If you've installed a router to share an Internet connection with your network, for example, some hairy technical bushwhacking is involved in setting it up to accommodate remote-access requests from the road. A consultant, or call to the router company, may be in your future.

Remote Desktop

If you opt to set up your host computer to use Remote Desktop instead of a standard direct-dial or VPN connection, dialing into it from your remote offers some spectacular advantages. When you use Remote Desktop, you're not just tapping into your home computer's network—you're actually bringing its screen onto your screen. You can run its programs, print on its printers, "type" on its keyboard, move its cursor, manage its files, and so on, all by remote control.

Remote Desktop isn't useful only when you're trying to dial into the office or reach your home computer from the road; it even works over an office network. You can actually take control of another computer in the office—to troubleshoot a novice's PC without having to run up or down a flight of stairs, perhaps, or just to run a program that isn't on your own machine.

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If you do decide to use Remote Desktop over the Internet, the requirements are the same as they are for a VPN connection. That is, the host computer must be connected to the Internet when you try to access it, and it must have a fixed, registered IP address.

Tip: Windows XP Pro contains the software that lets you create both ends of the Remote Desktop connection: the host (server) piece and remote (client) piece.

As noted earlier, the remote PC can be running any version of Windows all the way back to 95. To install the Remote Desktop Connection client on one of these other operating systems, insert the Windows XP Professional CD-ROM into the drive. When the Welcome to Microsoft Windows XP window appears, click Perform Additional Tasks→Setup Remote Desktop Connection. The InstallShield Wizard for Remote Desktop Connection appears, and leads you through the process of installing the software.

Setting Up the Host Machine

To make your Windows XP Pro machine ready for invasion—that is, to turn it into a host—proceed like this:

1. **Choose Start→Control Panel. Double-click the System icon.**

   The System control panel program opens.

2. **Click the Remote tab.**

   The dialog box shown in Figure 21-4 appears.

3. **Turn on "Allow users to connect remotely to this computer."**

   You've just turned on the master switch that lets outsiders dial into your machine and take it over.

4. **Click the Select Remote Users button.**

   The Remote Desktop Users dialog box appears. You certainly don't want casual teenage hackers to visit your precious PC from across the Internet, playing games and reading your personal info. Fortunately, the Remote Desktop feature requires you to specify precisely who is allowed to connect. Anybody not on your list will be shut out.

5. **Click Add. In the resulting dialog box, type the names of the people who are allowed to access your PC using Remote Desktop.**

   This dialog box might seem familiar—it's exactly the same idea as the Select Users, Computers, or Groups dialog box shown on page 645.

   Choose your lucky comrades carefully; remember that they'll be able to do anything to your system, by remote control, that you could do while sitting in front of it. (To further ensure security, Windows XP Pro insists that the accounts you're selecting here have passwords. Password-free accounts can't connect.)

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Note: The Administrator account (page 517) always has Remote Desktop access.

6. **Click OK three times to close the dialog boxes you opened.**

The host computer is now ready for invasion. It's listening to the network for incoming connections from Remote Desktop clients.

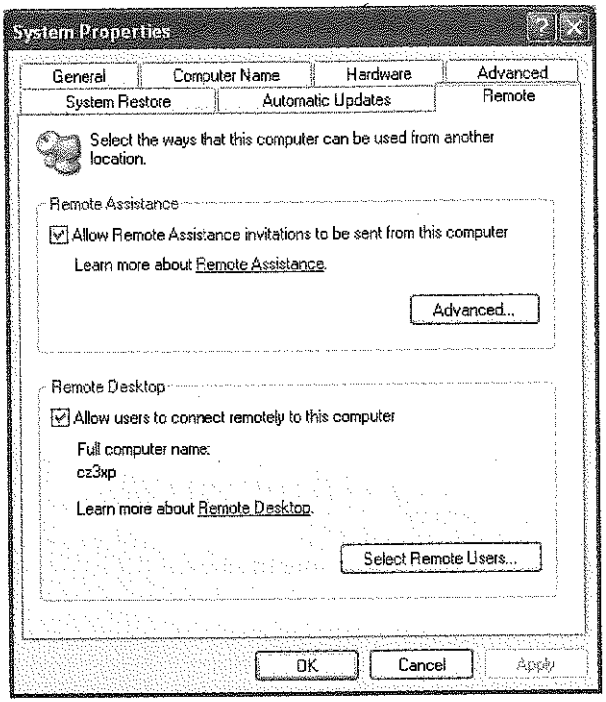

Figure 21-4: *Turning on the "Allow users to connect remotely to this computer" checkbox makes Windows XP listen to the network for Remote Desktop connections. Now you can specify who, exactly, is allowed to dial in.*

Making the Connection

When you're ready to try Remote Desktop, fire up your laptop, home machine, or whatever computer will be doing the remote connecting. Then:

1. **Connect to the Internet just as you always do.**

   If the host computer is elsewhere on your local network—in the same building, that is—you can skip this step.

2. **Choose Start→All Programs→Accessories→Communications→Remote Desktop Connection.**

   The Remote Desktop Connection dialog box appears.

3. **Click the Options button to expand the dialog box (if necessary). Fill it out as shown in Figure 21-5.**

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The idea is to specify the IP address (or DNS name) of the computer you're trying to reach.

4. **Click the Connect button.**

Now a freaky thing happens: after a moment of pitch-blackness, the host computer's screen fills your own (Figure 21-6). Don't be confused by the fact that all of the open windows on the computer you're using have now *disappeared.* You can now operate the distant PC as though you were there in the flesh, using your own keyboard (or trackpad) and mouse. You can answer your email, make long-distance printouts, and so on. All the action—running programs, changing settings, and so on—is actually taking place on the faraway host computer.

Tip: You can even shut down or restart the faraway machine by remote control. Choose Start→Windows Security (a command that appears only when you're connected). In the resulting dialog box, use the Shut Down menu to choose the command you want–Restart, Turn Off, Disconnect, or whatever.

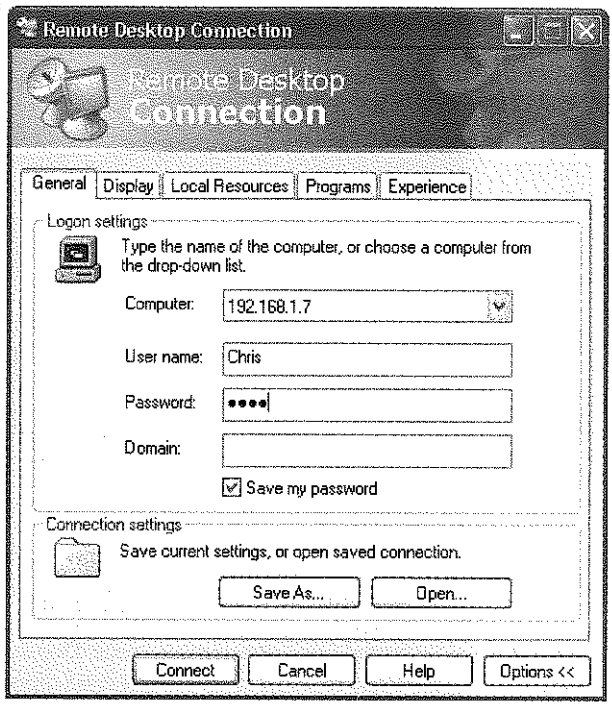

Figure 21-5:
Type in the IP address or registered DNS name of your host computer. Then fill in your name and password (and domain, if necessary), exactly the way you would if you were logging onto it in person.

Keep in mind a few other points:

- You don't need to feel completely blocked out of your own machine. The little title bar at the top of the screen offers you the chance to put the remote computer's

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screen into a floating window of its own, permitting you to see both your own screen and the home-base computer's screen simultaneously (Figure 21-7).

- You can copy and paste highlighted text or graphics between the two machines (using regular Copy and Paste), and even transfer entire documents back and forth (using Copy and Paste on the desktop icons). Of course, if you've made both desktops visible simultaneously (Figure 21-7), you can also copy icons just by dragging them.

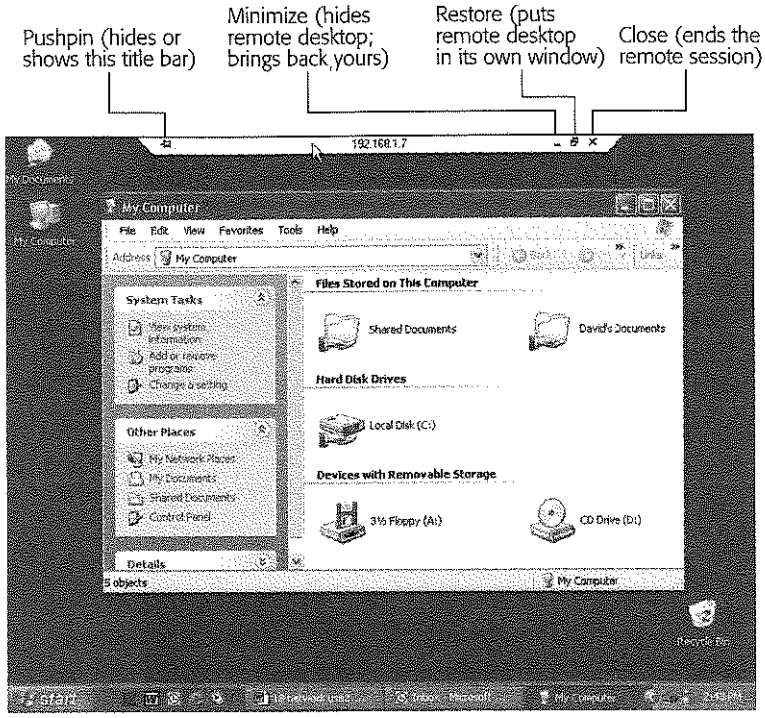

Figure 21-6:
The strange little title bar at the top of your screen lets you minimize the distant computer's screen or turn it into a floating window. To hide this title bar, click the pushpin icon so that it turns completely horizontal. After a minute, it slides into the top of the screen, out of your way until you move the cursor to the top edge of the screen.

- Even Windows XP Pro can't keep its mind focused on two people at once. If somebody is trying to use the host machine in person, you'll see a message to the effect that you're about to bump that person off the PC. In fact, unless Fast User Switching is turned on (page 536) *and* the person back home clicks Yes in the "Do you want to allow this connection?" dialog box that appears, your colleague at home will lose all unsaved work.

- Similarly, if somebody tries to log on at the host computer while you're connected from the remote, *you* get unceremoniously dumped off. (You just get a message that tells you, not exactly accurately, that your session has been terminated "by means of an administration tool.") Fortunately, you don't lose work this way—your account remains logged on behind the scenes, just as in Fast User Switching. When

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you connect again later (after the interloper has signed off), you'll find all your programs and documents open exactly as you left them.

- Back at the host computer, nobody can see what you're doing. The standard Welcome screen appears on the remote PC, masking your activities.

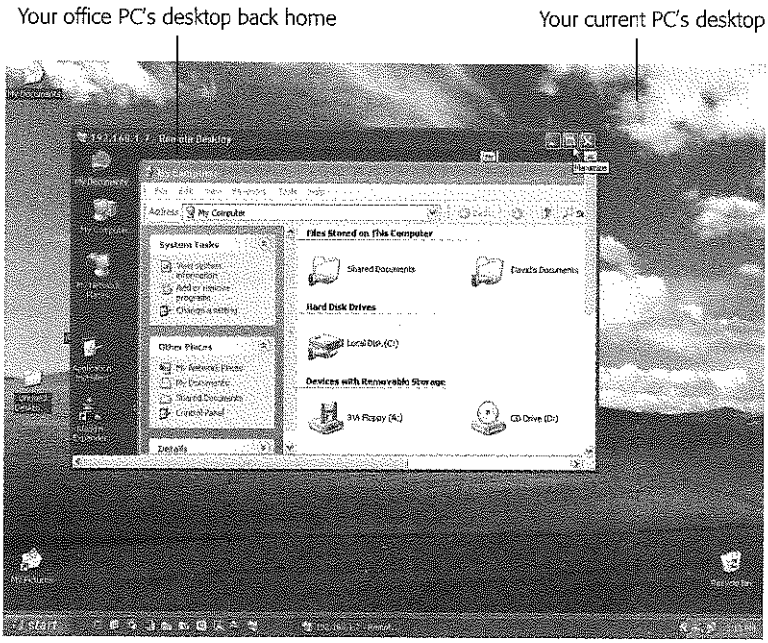

Figure 21-7: *By putting the other computer's screen into a window of its own, you save yourself a little bit of confusion—and open up some unique possibilities. For example, you can now transfer documents back and forth just by dragging them between the two windows. You can even minimize the remote computer's screen entirely, reducing it to a tab on your taskbar until you need it again.*

Keyboard Shortcuts for the Hopelessly Confused

When the Remote Desktop Connection window is maximized (that is, it fills your entire screen), all of the standard Windows keyboard shortcuts operate on the *host* computer, not the one you're actually using. When you press Ctrl+Esc, for example, you see the host computer's Start menu. When you press Ctrl+Alt+Delete, you see the host computer's Task Manager dialog box.

But when you turn the Remote Desktop Connection into a floating window that doesn't fill your entire screen, it's a different story. Now your current computer (the remote machine) "hears" your keystrokes. Now, pressing Ctrl+Esc opens the *remote* computer's Start menu, and Ctrl+Alt+Delete displays the *remote* computer's Task Manager. In this situation, how are you supposed to operate the host computer by remote control?

Microsoft has thought of everything. It's even given you alternatives for the key combinations you're accustomed to using. For example, suppose you've connected to

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your office PC using your laptop. When the Remote Desktop window isn't full-screen, pressing Alt+Tab switches to the next open program on the laptop—but pressing Alt+Page Up switches to the next program on the host computer. Here's a summary of the special keys that operate the distant host computer—a table that can be useful if you are either an extreme power user or somebody who likes to win bar bets:

Standard Windows Key Combination	Remote Desktop Key Combination	Function
Alt+Tab	Alt+Page Up	Switches to the next open program
Alt+Shift+Tab	Alt+Page Down	Switches to the previous open program
Alt+Esc	Alt+Insert	Cycles through programs in the order in which you open them
Ctrl+Esc	Alt+Home	Opens the Start menu
Ctrl+Alt+Delete	Ctrl+Alt+End	Displays the Task Manager or the Windows Security dialog box. (Actually, you should use the alternative key combination whether the Remote Desktop window is maximized or not, because Ctrl+Alt+Delete is always interpreted by the remote computer–the one you're currently using.)

Disconnecting

To get out of Remote Desktop mode, click the close box in the strange little title bar at the top of your screen, as shown in Figure 21-6 (or choose Start→Turn Off Computer).

Note, however, that this method leaves all your programs running and your documents open on the distant machine, exactly as though you had used Fast User Switching. If you log on again, either from the road or in person, you'll find all of those programs and documents still on the screen, just as you left them.

If you'd rather log off in a more permanent way, closing all your distant documents and programs, choose Start→Log Off (the home-base computer's Start menu, not yours).

Fine-tuning Remote Desktop Connections

Windows XP Pro offers all kinds of settings for tailoring the way this bizarre, schizophrenic connection method works. The trick is, however, that you have to change them *before* you connect, using the tabs on the dialog box shown in Figure 21-8.

Here's what you'll find:

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- **General tab.** Here's where you can tell Windows to memorize your password, or to save all of the current settings as a shortcut icon, which makes it faster to reconnect later. (If you connect to a number of different distant computers, saving a setup for each one in this way can be a huge timesaver.)
- **Display tab.** Use these options to specify the *size* (resolution) of the host computer's display—an especially useful option if it's different from your remote computer's screen size.

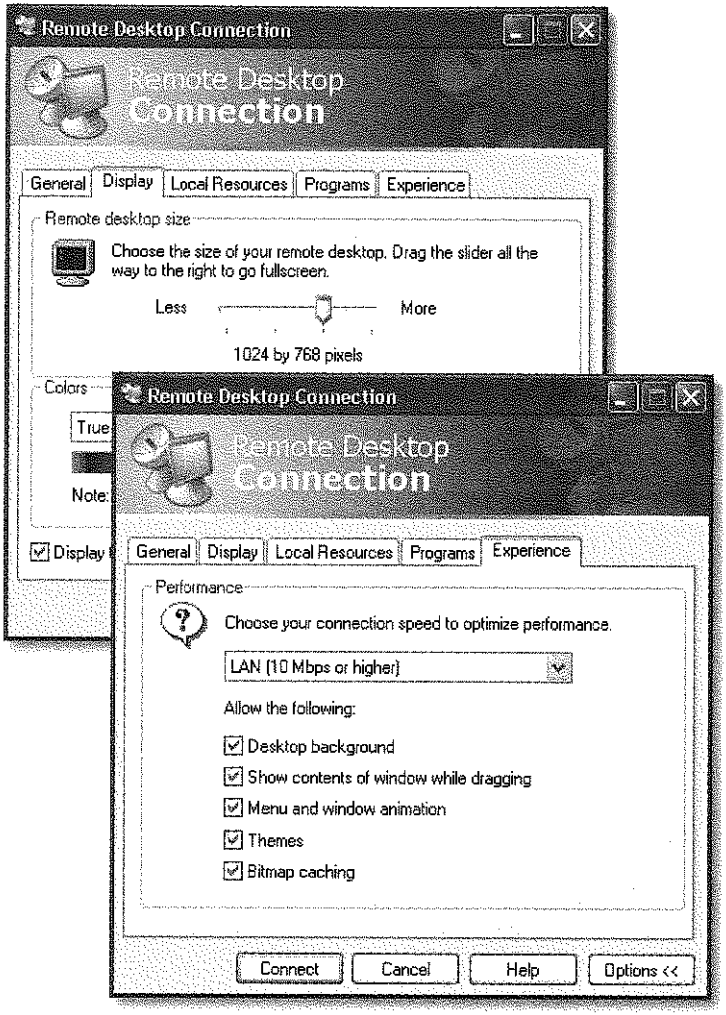

Figure 21-8: *Click the Options button if you don't see these tabs. Once you've made them appear, though, a few useful (and a lot of rarely useful) settings become available. On the Display tab (left), for example, you can effectively reduce the size of the other computer's screen so that it fits within your laptop's. On the Experience tab (right), you can turn off special-effect animations to speed up the connection.*

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- **Local Resources tab.** Using these controls, you can set up local peripherals and add-ons so that they behave as though they were connected to the remote computer. This is also where you tell Windows which PC should "hear" keystrokes like Alt+Tab, and whether or not you want to hear sound effects played by the distant machine.
- **Programs tab.** You can set up a certain program to run automatically as soon as you connect to the host machine.
- **Experience tab.** Tell Windows the speed of your connection, so that it can limit fancy visual effects like menu animation, the desktop wallpaper, and so on, to avoid slowing down the connection.

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6

Part Six: Appendixes

Appendix A: Installing Windows XP Pro

Appendix B: Windows XP, Menu by Menu

Appendix C: Fun With the Registry

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APPENDIX
A

Installing Windows XP Pro

If your computer came with Windows XP Professional already installed on it, you can skip this appendix—for now. But if you're running an earlier version of Windows and want to savor the XP experience, this appendix describes how to install the new operating system on your computer.

Before You Begin

Believe it or not, most of the work involved in installing Windows XP takes place well before the installation CD so much as approaches your computer. You have a lot of research and planning to do, especially if you want to avoid spending a five-day weekend in Upgrade Hell.

To start with, before you even think about installing Windows XP, you must ensure that your PC is beefy enough to handle it. You also have to decide which of two types of installation you want to perform: an *upgrade* or a *clean install.* (More on this in a moment.)

If you opt for the clean install (a process that begins with *erasing your hard drive completely*), you must back up your data. Finally, you have to choose a *file system* for your hard drive and gather all of the software bits and pieces you'll need in order to perform the installation.

Checking Hardware Requirements

Before you even buy a copy of Windows XP, your first order of business should be to check your computer against the list of hardware requirements for Windows XP, as published by Microsoft:

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- A computer with 300 megahertz (MHz) or higher processor clock speed recommended (233 MHz minimum required); Intel Pentium/Celeron family, AMD K6/Athlon/Duron family, or compatible processor recommended
- 128 megabytes (MB) of RAM or higher recommended (64 MB minimum)
- 1.5 gigabytes (GB) of free hard disk space
- Super VGA (800 x 600) or higher resolution video adapter and monitor
- CD-ROM or DVD drive
- Keyboard and Microsoft mouse or compatible pointing device

At this point, of course, anyone who really knows Windows is writhing on the carpet, convulsed in laughter. Run Windows XP on a 233 MHz Pentium with 64 MB of RAM? It would take three weeks just to get past the Windows logo at startup time. You'd get your work done faster by using an abacus.

Microsoft does make a distinction between what is "recommended" and what is "required," but even the "recommended" statistics are wishful thinking. Glaciers exhibit more speed than an underpowered computer running Windows XP.

In short, if you care about your sanity, treat the first two recommendations (processor and memory) as bare minimums—especially the memory. (256 MB makes Windows XP much happier than 128.) And keep in mind that even on a 1 GHz Pentium machine with 512 MB of memory, it still takes a second or two for the Start→All Programs menu to appear on the screen.

If your computer doesn't meet these requirements, then consider a hardware upgrade—especially a memory upgrade—before you even attempt to install Windows XP. With memory prices what they are today (read: dirt cheap), you'll thank yourself later for adding as much RAM as you can afford.

Adding more hard disk space is also a reasonably easy and inexpensive upgrade. The one place where you may be stuck, though, is on the processor issue. The state of the art in processor speeds seems to advance almost weekly, but it's safe to say that a PC running at 300 MHz or less is certifiably geriatric. It may be time to think about passing the old girl on to the kids or donating it to a worthy cause and getting yourself a newer, faster computer. As a bonus, it will come with Windows XP preinstalled.

Hardware Compatibility

Once you've had a conversation with yourself about your equipment, it's time to investigate the suitability of your existing add-on gear for use with Windows XP.

Microsoft maintains a list of the hardware components that have been tested with Windows XP (and other Microsoft operating systems): the hardware compatibility list (HCL), which is at *www.microsoft.com/hcl*. On this Web page, you can search for a particular component to make sure that it has been tested and works with XP.

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If some of the hardware components in your computer don't appear on the HCL, you don't necessarily need to assume that they won't work with Windows XP—only that they haven't been tested by Microsoft. In general, products released since November 2001 are Windows XP–compatible, but you should still proceed with caution before using them with Windows XP. You should by all means check the Web sites of these components' manufacturers in hopes of finding updated driver software.

Checking Software Compatibility

Most programs and drivers that worked with Windows 2000 work fine in Windows XP, but not all of them—and programs designed for Windows 95, 98, and Me may well cause you problems.

If you have a lot of older programs for which XP–compatible updates aren't available, you'd be wise to run the Windows XP Professional Upgrade Advisor program. To do so, insert the Windows XP CD-ROM, and on its welcome screen (Figure A-2), click "Check system compatibility," and then click "Check my system automatically."

Tip: The same compatibility checker runs automatically during the installation process itself.

The Upgrade Advisor first offers to download updated setup files from Microsoft's Web site. If you can get online, it's an excellent idea to take it up on this offer. You'll get all the patches, updates, and bug fixes Microsoft has released since the debut of Windows XP.

Tip: You can download the Windows XP Professional Upgrade Advisor from Microsoft's Web site at *http://www.microsoft.com/windowsxp/pro/howtobuy/upgrading/advisor.asp* so that you can check your computer's hardware and software compatibility before you purchase Windows XP Professional.

Next, the advisor shows you a report that identifies potential problems. Almost everybody finds some incompatibilities reported here, because Microsoft is particularly conservative with its judgment about which programs will work with Windows XP. But if the report lists a serious incompatibility, it's not worth proceeding with the XP installation until you've updated or deleted the offending program.

Note: Utilities like hard-drive formatting software, virus checkers, firewall programs, and so on are especially troublesome. Don't use them in Windows XP unless they're specifically advertised for Windows XP compatibility.

Upgrade vs. Clean Install

If your PC currently runs an older version of Windows, the next big question is whether or not you should upgrade it to Windows XP.

About the Upgrade Installation

You can upgrade to Windows XP Professional from Windows 98, Windows 98 SE, Windows Millennium Edition (Me), Windows NT Workstation 4.0, Windows 2000

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Professional, or Windows XP Home Edition. If your PC currently runs Windows 3.1, Windows 95, or Windows NT Workstation 3.51, you can't upgrade to Windows XP Professional at all—you have to perform a *clean install*, as described in the following pages.

Upgrading the operating system retains all of your existing configuration settings and data files. Your desktop colors, font choices, and wallpaper all remain the same, as do some more important elements, including your Favorites list and the files in your My Documents folder.

Upgrading might seem like a convenient option because you don't have to go back and redo all your preferred settings. Unfortunately, upgrading can bring along some unwelcome baggage, too. Outdated drivers, fragmented disk drives, and a clutter of unneeded registry settings are just some of the things that Windows preserves when you upgrade. If all this artery-clogging gunk has already begun to slow down your computer, upgrading to Windows XP will only make things worse.

Furthermore, following an upgrade installation of Windows XP, you may find that some of your software doesn't run as well as it used to, and various other system glitches may pop up from time to time. That's not to say that your software won't run well on Windows XP—only that it would prefer to be installed fresh on the new operating system. In short, upgrading can save you some time and aggravation now, but you might end up paying for it later.

Buying Windows XP

If you do decide to upgrade your existing version of Windows, you can save some money. As with other versions of Windows, XP is available in both an Upgrade version and a Full version.

The Upgrade Edition can only install Windows XP Professional on a computer that already has Windows 98, Windows 98 SE, Windows Me, Windows NT Workstation 4.0, Windows 2000 Professional, or Windows XP Home Edition on it. (If your machine's eligibility is in doubt, check this Web page: *www.microsoft.com/windowsxp/pro/upgrading/matrix.mspx.)*

If your computer is currently running any other version of Windows, and you want Windows XP Professional, you have to buy the Full version and perform a clean install.

About the Clean Install

The alternative to an upgrade is the *clean install* of Windows XP. During a clean install, you repartition and reformat your hard disk, wiping out everything on it. The overwhelming advantage of a clean install is that you wind up with a fresh system, 100 percent free of all of those creepy little glitches and inconsistencies that have been building up over the years. Ask any Windows veteran: the best way to boost the speed of a system that has grown sluggish is to perform a clean install of the operating system and start afresh.

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Backing up

The drawback of a clean install, however, is the work it will take you to back up all of your files and settings before you begin. If your computer has a tape backup drive, that's not much of a problem. Just perform a full backup, test it to make sure that everything you need has been copied to tape and is restorable, and you're ready to install Windows XP.

If you have a CD-R or CD-RW drive, backing up is almost equally easy. If you have a second computer, you can also consider backing up your stuff on to it, via a network (Chapter 18). And, of course, you can always buy a Zip drive or external hard drive. In any of these cases, you'll probably want to use the new Files and Settings Transfer Wizard for this purpose, which is included with Windows XP Professional. It's described later in this appendix.

Even having a full backup plan, however, doesn't mean that a clean install will be a walk in the park. After the installation, you'll still have to reinstall all of your programs, reconfigure all your personalized settings, re-create your dial-up networking connections, and so on.

Tip: It's a good idea to spend a few days writing down the information you need as you're working on your computer. For example, copy down the phone number, user name, and password that you use to connect to your Internet service provider (ISP), and the user names and passwords you need for various Web sites you frequent.

Performing a clean install also means buying the Full Edition of Windows XP. It's more expensive than the Upgrade Edition, but at least you can install it on a blank hard disk without having to install an old Windows version first.

Overall, performing a clean install is preferable to an upgrade. But if you don't have the time or the heart to back up your hard drive, wipe it clean and re-establish all of your settings, the upgrade option is always there for you.

Dual Booting

Here's yet another decision you have to make before you install Windows XP: whether or not you'll want to be able to *dual boot.*

In this advanced scenario, you install Windows XP onto the same PC that contains an older version of Windows, maintaining both of them side by side. Then, each time you turn on the PC, it *asks you* which operating system you want to run for this computing session (see Figure A-1).

Dual booting comes in handy when you have some program or hardware gadget that works with one operating system but not the other. For example, if you have a scanner with software that runs on Windows 98 but not Windows XP, you can start up the PC in Windows 98 only when you want to use the scanner.

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If you intend to dual boot, here's some important advice: *Don't install both operating systems onto the same hard drive partition.* Your programs will become horribly confused.

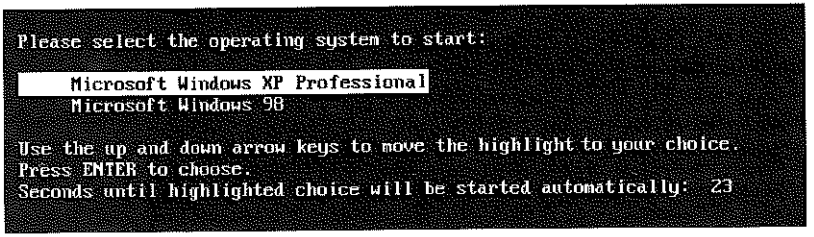

Figure A-1: *When you dual boot, this menu appears each time you turn on your PC, offering you a choice of OS. (If you don't choose in 30 seconds, the PC chooses for you.)*

Instead, keep your two Windows versions separate using one of these avenues:

- Buy a second hard drive. Use it for one of the two operating systems.
- Back up your hard drive, erase it completely, and then *partition* it, which means dividing it so that each chunk shows up in the My Computer window with its own icon, name, and drive letter. Then install each operating system on a separate disk partition.

  One way to partition your drive is free, but not especially user-friendly: use the built-in DOS program called FDISK (see the box on the facing page).
- If you're less technically inclined, you might prefer to buy a program like PartitionMagic (*www.partitionmagic.com*). Not only does it let you create a new partition on your hard drive without erasing it first, but it's more flexible and easier to use than FDISK.

There's just one wrinkle with dual-booting. If you install Windows XP onto a separate partition (or a different drive), as you must, you won't find any of your existing programs listed in the Start menu, and your desktop won't be configured the way it is in your original operating system. You'll generally wind up having to reinstall every program into your new Windows XP world, and re-establish all of your settings, exactly as though the Windows XP "side" were a brand-new PC.

Choosing a File System

There's one final decision you have to make: which *file system* you want to use for formatting your hard drive.

A file system is a scheme of formatting your hard drive, a system of dividing up its surface into little parking spaces for data. It's a very technical issue, and, mercifully, one that's largely invisible to you except for the day you install the operating system.

Windows XP offers a choice of two file systems, geekily named *FAT* 32 and
. FAT 32 (file allocation table) is the descendant of the original DOS formatting

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scheme. NTFS (NT file system) is far more advanced and modern; it was introduced with Windows NT in 1993.

NTFS offers a long list of attractive features:

POWER USERS' CLINIC

Using FDISK to Partition a Drive

If you're an old-time Windows user, the idea of using an old DOS program like FDISK might be no big deal. But scan the following instructions and confirm that they're worth slogging through just to save yourself the price of a simpler formatting program like PartitionMagic. Remember that FDISK *erases your entire hard drive;* don't use it until you're confident you have a good backup.

Here, then, is how you'd create a two-partition setup so that you can have Windows 95, 98, Me, NT 4.0, or 2000 installed simultaneously with Windows XP on different partitions. (Note: After you make each selection in the following instructions, press the Enter key to proceed.)

Start up the PC from the Windows 95/98/Me/NT/2000 CD-ROM. On the first two screens, choose "Boot from CD-ROM" and then "Start computer with CD-ROM support." After a moment, you wind up at the A:/> prompt; type *fdisk*.

When asked if you "wish to enable large disk support," accept the Y (yes) option by pressing Enter. The FDISK Options screen appears.

If your drive has already been in use: Choose 3 ("Delete partition or Logical DOS Drive"), then 1 ("Delete Primary DOS Partition"), and then 1 (which corresponds to your C: drive's main partition). Type Y to confirm that you want to wipe it out, then Esc to continue. Continue with the steps in the next paragraph, because your drive is now completely empty.

If your drive is completely empty: On the FDISK Options screen, type 1 ("Create DOS partition or Logical DOS Drive"). On the next screen, choose 1 again ("Create Primary DOS Partition"). After FDISK checks your drive, it asks if you "wish to use the maximum available size." Type N (no, you don't—you want to partition it, dividing its space in half).

After a moment, you're asked for the size you want for the first partition, which will contain the older Windows version. In general, you'll need at least 1500 MB, leave room for your programs, too. So type, for example, *2500*, press Enter, and then press Esc to return to FDISK Options. This time, press 2 ("Set active partition") and then, on the next screen, press 1 (for the main partition) to establish your first partition as the active one. Press Esc to return to the FDISK Options screen.

Back at FDISK Options, create the second partition by choosing 1 ("Create DOS partition..") and then, on the next screen, 2 ("Create extended DOS partition"). If two partitions are all you need, then you don't have to specify the size of this second one—FDISK automatically proposes using all the space that's left. Just press Enter, then Esc.

FDISK now wants you to format the second partition, which will house Windows XP. Here again, you'll generally want to use the full amount of space available—so just press Enter, then Esc. You're at the FDISK Options screen one last time. Press Esc twice more to say goodbye. Finally, press Ctrl+Alt+Delete to restart the PC.

At last you're ready to install Windows 95, 98, Me, NT, or 2000. Start up from its installation CD, choosing "Start Windows Setup from CD-ROM," "Format Drive C:," and "Format this drive (Recommended)" when you get the chance. After a quick disk check by ScanDisk (press X for Exit when it's done), the usual Windows Setup program appears. When you're offered a choice of partitions, allow it to install Windows onto the C:\WINDOWS folder as usual.

When that's all over, just install Windows XP as though you're performing a clean install. Follow the instructions that begin on page 623, paying special attention to the notes pertaining to dual-booting.

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- It can handle bigger hard drives than FAT—in fact, it can handle drives with capacities up to two terabytes (that's 2,048 gigabytes). No, drives that big aren't available today, but it's only a matter of time. The FAT scheme can handle any of today's hard drives, but Microsoft recommends that you use NTFS for all drives larger than 32 gigabytes.
- It offers automatic file compression, conserving disk space.
- It makes your hard drive much more immune to corruption (of the sort that used to require the old ScanDisk program to scurry around, cleaning up glitches).
- It lets you take advantage of a long list of advanced hard drive and file features, including *mounted drives* (Chapter 15) and *private folders* that nobody else on the network can see (Chapter 17).

There's only one significant drawback of formatting your drive with NTFS: older versions of Windows don't recognize it. If you format your drive with NTFS when you install Windows XP, and then at some future time start up the computer using a DOS floppy disk, you won't be able to "see" the NTFS drive.

Although Windows NT and 2000 do recognize NTFS disks, Windows 95, 98, and Me don't. That's a problem if you plan to dual boot between Windows XP and one of these older versions. The bottom line: If you intend to dual boot between Windows XP and Windows 95, 98, or Me, your startup drive *must* use the FAT file system.

If the lack of complete operating system support isn't a problem, then you should opt for NTFS when installing Windows XP. Otherwise, use FAT.

Tip: If you are unsure about which file system to use, start out choosing FAT. You can never convert an NTFS drive to the older FAT system, but you can convert a FAT drive to NTFS at any time.

Here's how. Choose Start→All Programs→Accessories→Command Prompt. Type *convert C:/FS:NTFS* and then press Enter. (Of course, replace *C:* with whatever drive letter you're trying to reformat.) If the drive you're converting is the one with Windows XP on it, the conversion will occur the next time you restart the computer.

Installing Windows XP

Once you've decided to take the plunge and install Windows XP, you can begin your final preparations.

Preparing for the Installation

If you've made all the plans and done all the thinking described so far in this chapter, you have only a short checklist left to follow:

- Update your virus program and scan for viruses. Then, if you're updating an existing copy of Windows, *turn off* your virus checker, along with other auto-loading programs like non-Microsoft firewall software and Web ad blockers.

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- Decompress the data on any Windows drives that are compressed with DriveSpace.
- Confirm that your computer's BIOS—its basic startup circuitry—is compatible with Windows XP. To find out, contact the manufacturer of the computer or the BIOS. *Don't skip this step.* You may well need to upgrade your BIOS if the computer was made before mid-2001.
- Gather updated, Windows XP–compatible drivers for all of your computer's components. Graphics and audio adapters are particularly likely to need updates, so be sure to check the manufacturers' Web sites—and driver-information sites like *www.windrivers.com* and *www.driverguide.com*—and download any new drivers you find there.
- Disconnect any gear that's older than Windows XP itself to prevent it from making the PC freeze during the installation. You'll have better luck if you reconnect them *after* Windows XP is in place.

If you've gone to all this trouble and preparation, the Windows XP installation process can be surprisingly smooth. You'll spend most of your time waiting around and reading the commercials on the screen as the installer does its thing.

Performing an Update Installation

Here's how you upgrade your existing version of Windows to full Windows XP status. (If you prefer to perform a clean install, skip these instructions.)

1. **Start your computer. Insert the Windows XP Professional CD-ROM into the drive.**

   The Setup program generally opens automatically (Figure A-2). If it doesn't, open My Computer, double-click the CD-ROM icon, and run the Setup.exe program in the CD's root folder.

2. **Click Install Windows XP.**

   The Windows Setup Wizard appears.

3. **From the Installation Type drop-down list, choose Upgrade (Figure A-2, bottom). Click Next.**

   A screen full of legalese appears.

4. **Review the work of Microsoft's lawyers, and then click "I Accept This Agreement." Click Next.**

   Now you're asked to find the 25-character serial number that came with your Windows CD.

5. **Enter the 25-character product key.**

   Note that you don't have to press Tab or click to move from box to box. As you fill up each text box, your insertion point moves automatically to the next one.

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6. Click Next.

Now Microsoft offers you the opportunity to check for updates and patches for the installer program itself. If you're online, and you have the time, letting it perform this check is a very good idea.

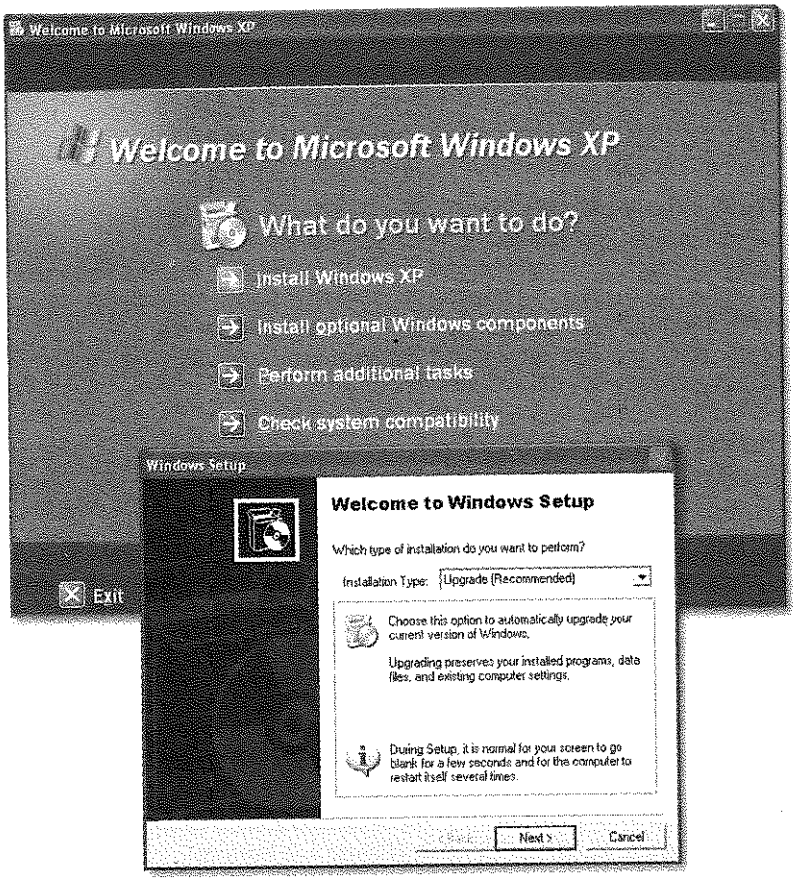

Figure A-2:
Top: The Windows XP Setup program is ready for action. Close the doors, take the phone off the hook, and cancel your appointments. The installer will take at least an hour to go about its business—not including the time it will take you to iron out any post-installation glitches.

Bottom: Use this important drop-down menu to indicate whether you want a clean installation or an upgrade installation.

7. **Click Yes to download updated installation files from the Internet, or No to bypass this option. Click Next.**

Now the installer checks to see if any of your PC's components are incompatible with Windows XP. If so, the Report System Compatibility screen appears, shown in Figure A-3. There's not much you can do about it at this point, of course, other than to make a note of it and vow to investigate XP-compatible updates later. Click Next.

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Either way, the installation program begins copying files and restarting the computer several times. Finally, the familiar Welcome to Microsoft Windows screen appears, so that you can log back on. This step completes the upgrade process.

Performing a Clean Install (or Dual-Boot Install)

To perform a clean installation of Windows XP Professional, or to install Windows XP onto an empty partition for the purpose of dual booting, the steps are slightly different:

1. **Start up your PC from your Windows XP Professional CD-ROM.**

   Almost every Windows XP–compatible computer can start up from a CD instead of from its hard drive. Sometimes, if you start up the computer with a CD in the drive, instructions for booting from it appear right on the screen (you may be directed to hold down a certain key, or any key at all). If you don't see such an instruction, you might have to check with the computer's maker for instructions on this point.

Tip: If your computer can't start up from a CD-ROM, download the English version of the Windows XP startup disk utility from *www.microsoft.com/downloads/release.asp?ReleaseID=33291.* (The utility is also available in other languages: *http://support.microsoft.com/default.aspx?scid=kb;en-us;Q310994.*)

This download contains a program that builds a set of six boot floppies needed to start Windows XP Professional. You can substitute the first of these floppies for the CD in this instruction.

At the beginning of the setup process, you'll wait for quite a while as an ugly, all-text DOS-like screen loads the necessary files.

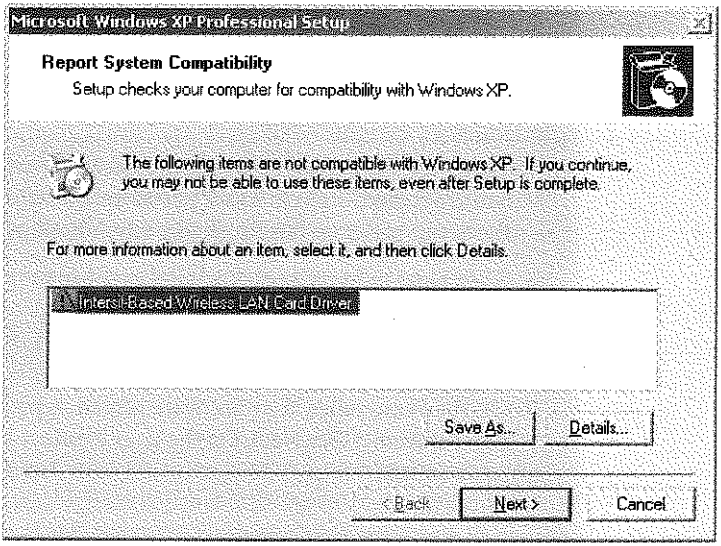

Figure A-3: *This screen lists any programs and drivers that Microsoft considers incompatible with Windows XP Pro. You can save any information that shows up in this list to a file by clicking the Save As button.*

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2. **When the DOS Welcome to Setup screen appears, press Enter to continue.**

   After a moment, the usual legal notice appears.

3. **Review the licensing agreement, if you like, and then press the F8 key to continue.**

   Setup searches for previous Windows XP installations. If it finds one, Setup asks whether you want to repair it or to install a fresh (or clean) copy without repairing it. Since you do want to install a clean copy of XP, press the Esc key.

   Now Windows shows you a list of the *partitions* on your hard drive (page 488). Unless you've set up your hard drive for *dual booting* as described in the box on page 635, you probably have only one.

4. **By pressing the up and down arrow keys, highlight the name of the partition on which you want to install Windows XP, and then press Enter.**

   If you selected a partition that already contains another operating system, you have to confirm your decision by pressing the C key.

5. **Specify whether you want to format the partition you selected, and whether you want to use NTFS or FAT, with or without the Quick option, and press Enter.**

   See page 636 for a discussion of these formatting options.

   If you elect to format the partition, and there are files on it, the installation program forces you to confirm—by pressing the letter F key—that you really want to wipe out all of the partition's data.

Dual-booters note: If you choose NTFS, remember that you won't be able to "see" that partition when you're running your Windows 95/98/Me. Stick with FAT if you want to be able to share documents between your two worlds.

After the formatting process is complete, the Setup program begins copying files to the partition you selected, and eventually restarts the computer.

When the PC begins detecting the hardware components of your computer, the Setup program steps in to ask you some questions. At this point, you'll notice that the Setup program has finally started to look more like Windows than DOS.

6. **Click Next to bypass the Regional and Language Options screen.**

   Bypass it, that is, unless you don't speak English or don't live in the United States.

7. **On the Personalize Your Software screen, type your name and the name of your organization. Click Next. On the Your Product Key screen, enter the 25-character product key.**

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"Product key" refers to the serial number that came with your Windows XP Professional CD-ROM. As noted earlier, you don't have to click or press Tab to move from box to box—the insertion point jumps automatically as you type.

8. **Click Next. On the Computer Name and Administrator Password screen, specify a name for your computer and a password for the Administrator account.**

   The computer name should be short and punctuation-free. (You can always change it later; see page 295.) If you're installing Windows XP on your home computer, you probably don't need an especially secure password. If you're in a business environment, consider using a password that's not easy to guess.

9. **Click Next.**

   If your computer has a modem, the Modem Dialing Information screen appears at this point. (If not, skip to step 11.)

10. **Select your country, phone system type (tone or pulse dialing), your area code, and the number you dial to get an outside line (if any). Click Next.**

    The Date and Time Settings screen appears now.

11. **Set the date, time, and time zone, and then click Next.**

    Next stop: The Network Settings screen.

Note: If you don't have a network card installed, you won't see the Network Settings screen or the Workgroup or Computer Domain screen. Skip to step 14.

---

12. **Click Typical Settings, and then click Next to continue.**

    Now, on the Workgroup or Computer Domain screen, you face an important question: whether your PC will be part of a *workgroup network* or a *domain network*. (You can find many glorious paragraphs of prose describing these concepts beginning on page 19.)

    If your PC will be part of a domain, select "Yes, make this computer a member of the following domain," and then enter the name of the domain. (Of course, if you really are joining a domain, then a network administrator, or just a really smart computer whiz, is probably on hand to help you with this step.)

    If your PC won't be part of a network, or will be part of a home or small-office network instead, select "No, this computer is not on a network, or is on a network without a domain." Then type in a name for your workgroup network (or accept Microsoft's suggestion: "WORKGROUP").

13. **Click Next.**

    If you've indicated that you want your PC to be part of a domain network, but the administrator hasn't yet added your computer to the domain, you now see the Join Computer to <name of the domain> Domain dialog box.

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Unless you know the Administrator-account password, an error message asks you if you want to proceed for now and join a domain later. Click Yes; your network administrator will have to sort this problem out later.

14. Click Next.

When it's all over, the Setup Wizard appears, as described next.

Setup Wizard

Most of the installation procedures described here wind up at the Setup Wizard, which debuts with a Welcome to Microsoft Windows screen. When you click Next, this wizard guides you through the process of:

- Identifying how you plan to connect to the Internet (dial-up modem, cable modem/DSL, or network).
- Entering the settings for your network connection (your IP and DNS numbers).
- *Activating* your copy of Windows (Figure A-4).

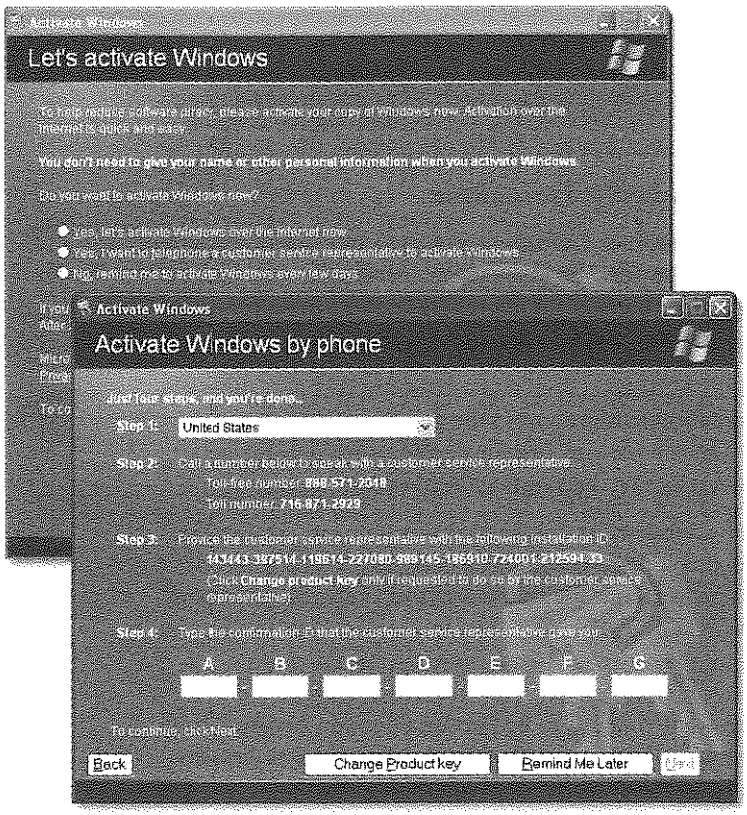

Figure A-4:
Top: Let's activate Windows! During activation, your PC sends Microsoft a list of 10 internal components of your PC. This, ladies and gentleman, is copy protection. If you ever try to install Windows XP onto a second machine, it will notice that the components aren't identical, and you'll be locked out after 30 days (see page 16).

Bottom: If you don't have an Internet connection, you can do this process by telephone, although it's less convenient and takes a lot longer.

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- Registering it (an optional process—if you'd rather not get junk mail, click "No, not at this time").
- Configuring your Internet connection, if you don't already have one.
- Setting up names for the first five user accounts (Chapter 17), if they aren't already set up.

Tip: The Setup Wizard asks only for names, not passwords. When the installation is complete, you might consider making a beeline for the User Accounts program in the Control Panel, in order to set up passwords for your newly hatched accounts (and to set up more than five accounts, if necessary).

This is an important step, too, if you've just upgraded from a previous version of Windows, one that had user accounts already set up. Windows XP imports the old accounts—but strips away their passwords. You might want to take a moment to reinstate them.

Network Identification Wizard

If you weren't able to add your computer to a corporate domain network earlier in the installation process, the Network Identification Wizard appears at this point to give you another shot at it. It's not an especially self-explanatory process; in fact, most

WORKAROUND WORKSHOP

Using an Image Disk

It's becoming increasingly common for computer manufacturers to sell you a new PC without including an operating system CD-ROM. (Every 11 cents counts, right?) The machine has Windows installed on it—but if there's no Windows installation CD, what are you supposed to do in case of emergency?

Instead of a physical Windows CD, the manufacturer provides something called an *image disk*—a CD-ROM containing a complete copy of the operating system *and* other software that was installed on the computer at the factory. If the contents of the computer's hard disk are ever lost or damaged, you can, in theory, restore the computer to its factory configuration by running a program on the image disk.

Of course, this image is a bit-by-bit facsimile of the computer's hard disk drive, and therefore, restoring it to your computer *completely erases* whatever files are already on the drive. You can't restore your computer from an image disk without losing all of the data you saved since you got the computer from the manufacturer. (Talk about a good argument for keeping regular backups!)

But completely reinstalling Windows isn't the only time that you need a Windows CD. As you can read in various chapters of this book, you'll also be prompted to insert the original Windows CD whenever you want to install a new Windows component that wasn't part of the original installation.

In these situations, if your PC came with only an image disk, you're still covered. This image CD generally contains a copy of the operating system installation files, so that whenever you install a new Windows feature, your PC can grab it from the disk. (Furthermore, some manufacturers install a copy of these installation files right on the hard drive, so that you won't even have to hunt for your CD.)

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of the questions this wizard poses are best answered by your network administrator. After all, adding PCs to network domains wasn't in *your* job description.

(Besides, you can always join the domain later, following the instructions in Chapter 19.)

Files and Settings Transfer Wizard

The Files and Settings Transfer Wizard is a new tool included with Windows XP Professional. It's designed to round up the files and preference settings from one computer—and copy them into the proper places on a new one. For millions of upgrading Windows fans, this little piece of software is worth its weight in gold.

You can use the Files and Settings Transfer Wizard in several ways:

- If you have two computers and you want to transfer files and settings from the old one to the new one, you can run the wizard on the old computer, package its files and settings, and then transfer them to the new computer. You can make the transfer over a network connection, a direct cable connection, or via floppy disks, Zip disks, CD-Rs, or some other kind of disk. The Windows XP CD-ROM includes a version of the wizard that you can run directly from the CD on another Windows computer, even one that's not running Windows XP. You can also create a wizard disk on your Windows XP computer for use on another system.
- If you have only one computer, you can run the wizard from the Windows XP CD-ROM before you install Windows XP, saving the files and settings to a disk or a second hard drive. Then, after performing a clean install of Windows XP, you can run the wizard again, neatly importing and reinstating your saved files and settings.

Tip: If you'd like more power, versatility, or automation in transferring settings between machines or between installations, you can use a commercial program like LapLink PC Sync *(www.laplink.com)* or PC Upgrade Commander *(www.v-com.com)* instead of Microsoft's own wizard.

Phase 1: Backing up the Files

To save the files and settings on your old computer (or your old operating system), proceed like this:

1. **Insert the Windows XP Professional CD-ROM into the drive.**

   The Setup program opens automatically.

2. **Select Perform Additional Tasks; on the next screen, select Transfer Files and Settings.**

   The Files and Settings Transfer Wizard opens up (Figure A-5).

3. **Click Next.**

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If you're running the wizard on a Windows XP computer, the "On which computer is this?" screen appears. Tell it that this computer is the old one.

(The old computer can be running Windows 95 or later. The new computer must be a Windows XP machine.)

4. **Click Next. On the Select A Transfer Method screen, specify where you want to store the files and settings you intend to transfer (Figure A-5, middle).**

   This location can be a link to another computer using a direct cable or network connection, or to a folder on a hard drive, or to a floppy or other removable disk.

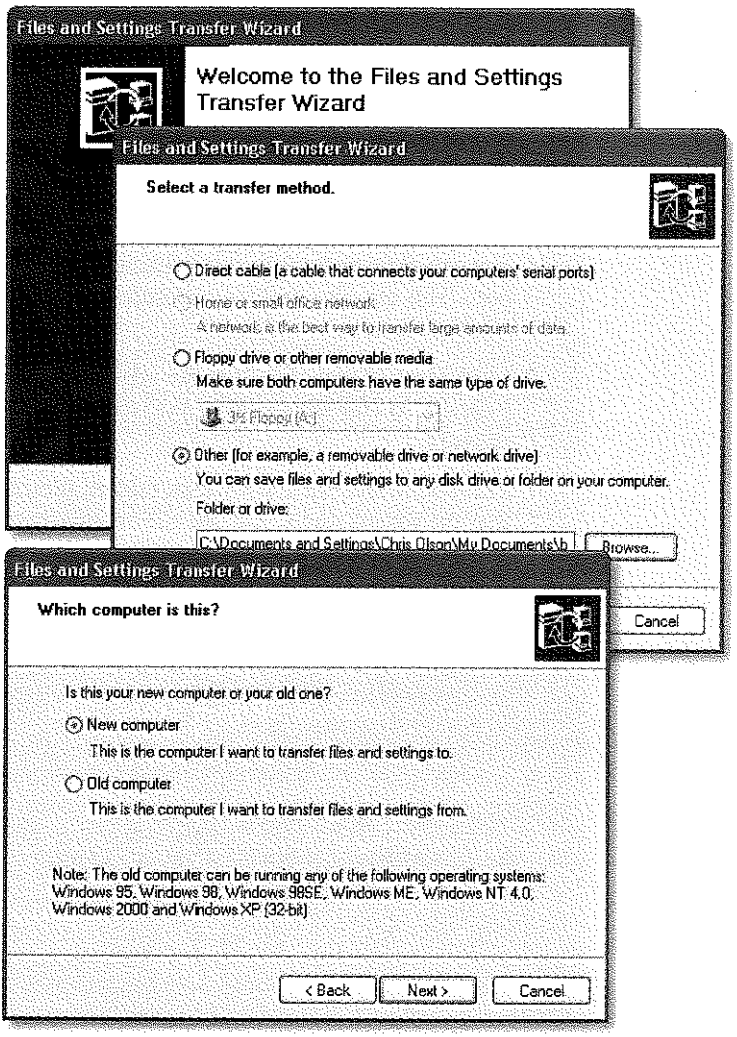

Figure A-5:
Top: The Files and Settings Transfer Wizard, new to Windows XP, can be a sanity-saving convenience. Middle: It lets you save all of the files and settings into a folder, which can be on your hard drive, for example, across a network cable, or onto a disk.

Bottom: After you've installed Windows XP or bought a new Windows XP computer, you can reinstate all of your old files and settings using the same wizard. Just locate the folder that it saved originally.

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When storing the information on a floppy, you'll need one or two floppies if you want to transfer only your settings, and five to ten floppies to store both settings and files. Don't forget to number the floppies as they are created. When you transfer the information, the wizard will prompt you to insert the floppies in the order that they were copied.

Tip: If you click Other, you can save the files and settings onto the built-in hard drive, where they become a single, special backup file. You can then copy this file to any medium you wish, like a backup tape or CD-R.

---

5. **Click Next.**

   If you selected Direct Cable, the "Set up your serial connection" screen appears. Click the Autodetect button on both wizards after you've connected your two computers with the cable.

   Before you click the Autodetect button, make sure that you've advanced the other computer to this screen.

6. **Click Next. On the "What do you want to transfer?" screen, specify which information you want to transfer to the other computer.**

   You can elect to transfer just your personalized settings, just your data files, or both. You can also build a customized list of the *specific* files and settings you want to transfer.

7. **Click Next. If you click "Let me select a custom list of files and settings when I click Next (for advanced users)," the Select Custom Files and Settings screen appears.**

   This screen lets you add settings, folders, files, and file types to your list of items that the wizard stores. You can also remove items from the list.

8. **Click Next.**

   On the Install Programs on Your New Computer screen, the wizard lists the programs associated with the settings you're saving.

   You should have installed these programs on the new computer before proceeding with the transfer.

9. **Click Next.**

   The Collection in Progress screen appears. The wizard proceeds to search your drives for the necessary information, compress it, and send it to the location you specified.

10. **Click Finish to close the wizard.**

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Phase 2: Restoring the Files

To transfer the settings and files you've saved to your new Windows XP computer, use the following procedure.

1. **Choose Start→All Programs→Accessories→System Tools→Files and Settings Transfer Wizard.**

   The Files and Settings Transfer Wizard appears.

2. **Click Next. On the "Which computer is this?" screen, select "New computer" (Figure A-5, bottom) and then click Next.**

   The "Do you have a Windows XP CD?" screen appears.

3. **Click "I don't need the wizard disk."**

   If you don't have the Windows XP CD-ROM handy, you can use this screen to create a wizard disk that runs on other Windows operating systems.

4. **Click Next. On the next screen, specify the location of the files and settings you saved on the other computer.**

   The location you specify could be a path to a hard drive folder, a floppy or CD-ROM drive, or a direct cable/network connection to another computer running the wizard.

5. **Click Next.**

   If you selected Direct Cable, the "Set up your serial connection" screen appears. Click the Autodetect button on both wizards after you've connected your two computers with the cable.

   Before you click the Autodetect button, make sure that you've advanced the wizard on the other computer to this screen.

6. **Click Next.**

POWER USERS' CLINIC

User State Migration Tool

The Files and Settings Transfer Wizard is meant for use on a small scale, like home networks. If you're an administrator who needs to transfer files and settings on a larger scale, as in a corporate environment, you should consider using the User State Migration Tool (USMT), a command-line utility. It requires Windows XP Pro on the destination machine, a client machine that's connected to a Windows Server domain controller, and an administrator who knows what's what.

The USMT tools are in the Valueadd→MSFT→USMT folder on the Windows XP installation CD. For details, visit this Web page: *www.microsoft.com/windowsxp/pro/techinfo/deployment/userstate/UserStateMigrationinWindowsXP.doc*.

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The wizard proceeds to copy the files and apply the saved settings on the new computer.

7. **Click Finish to close the wizard.**

If Windows couldn't restore some of your settings, you'll see them listed on the final screen; you'll have to re-create these settings manually. Depending on the settings you saved, you may have to log off and log on again before the transferred settings take effect.

Backing Out of Windows XP

Hard though it may be to imagine, even after going to all of the trouble to switch to Windows XP, you may pine for the old days. Some people find Windows XP too

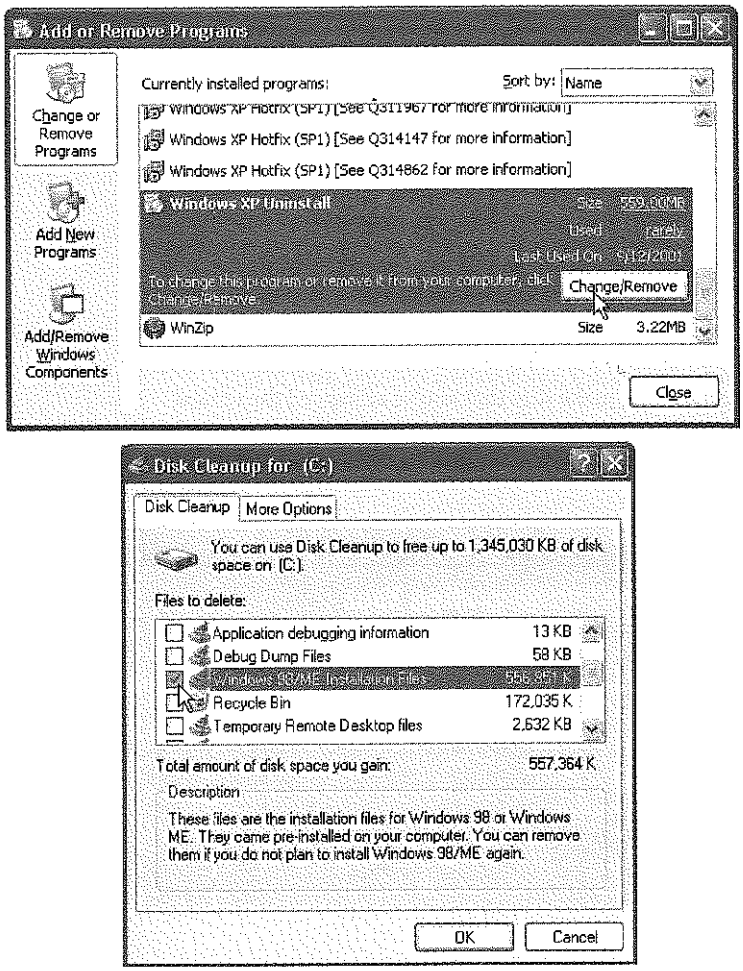

Figure A-6: *Whenever you perform an upgrade installation from Windows 98, Windows 98 SE, or Windows Me, you actually retain both the old and the new versions of Windows. If, as the months go by, you decide that you'd like to reclaim the disk space being used by the dormant operating system, you can delete it. You can delete the older version (top), committing to Windows XP forever, or you can delete Windows XP (bottom), restoring your older version.*

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intrusive and too much of a nag. Other people find too many incompatibilities with their old gear. Fortunately, Microsoft has made it very easy for you to back out, reinstating your older operating system.

Note: This option is available only if you upgraded your PC from Windows 98, Windows 98 SE, or Windows Me. If you erased the hard drive and performed a clean install, or if you upgraded from Windows NT 4.0 or Windows 2000, this option isn't available. Furthermore, you lose this option if you repartitioned your drive, or converted it to NTFS, since you upgraded.

Ditching Windows XP

To get rid of Windows XP and reinstate the good old days, open the Add or Remove Programs program in your Control Panel. As shown in Figure A-6 at top, Windows XP is listed among the other programs currently installed in your machine.

Click Windows XP Uninstall, then the Change/Remove button, then Uninstall Windows XP. When you're asked if you really want to uninstall Windows XP and restore your old operating system, click Yes. When the process is complete, your computer will shut itself down, restart, and then start up with your old copy of Windows 98, Windows 98 SE, or Windows Me.

Ditching the Older Windows

Conversely, if you just love Windows XP and never want to go back, you may prefer to reclaim the hundreds of megabytes of disk space that your old copy of Windows 98, 98 SE, or Me is taking up.

Here, too, there's not much to it. Choose Start→All Programs→Accessories→System Tools→Disk Cleanup. As shown in Figure A-6 at bottom, the Disk Cleanup program lists a lot of stuff that you can permanently delete—and in the list, you'll see the name of your original Windows version ("Windows 98/Me Installation Files," for example).

Just turn on the checkbox and then click OK. The 600 megabytes you save could be your own.

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APPENDIX
B

Windows XP, Menu by Menu

A menu bar tops every Windows desktop window and almost every application window. Along this menu bar, of course, are the names of the menus that, when clicked, produce lists of the commands available to you.

Most menu bars have a menu named File on the extreme left side, and Help is always the last menu on the right. What comes between depends on the program you're using. This appendix covers the menu commands in the Windows XP desktop windows.

Tip: You can choose almost any Windows XP menu command entirely from the keyboard; the necessary keystrokes are described in this appendix. (If you open a submenu that doesn't bear the telltale keystroke-hint underlines, press the arrow keys to highlight the command you want, and then Enter to trigger it.)

If you open a menu and then change your mind, press the Esc key to close the menu.

File Menu

Most of these commands operate on a *selection*—that is, you're supposed to highlight an icon, or several icons, before using the menu. It's worth noting, too, that the File menu *changes* depending on what you've highlighted. For example, you see one set of commands when you've highlighted an icon, and a longer set when nothing is selected.

Note: Certain software installations may add other commands to your File menu.

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Open, Open With..., Preview

Opens a highlighted document, program, folder, or disk into a window, exactly as though you had double-clicked its icon. (If Windows doesn't know what program it's supposed to use for opening a highlighted document, the command says Open With..., so that you can choose the program you want. And if you've highlighted a graphics file, the command says Preview instead of Open.) *Keyboard equivalent:* Enter.

Print

Available for documents only. Sends the highlighted document to your printer after first opening the necessary application (such as your word processor) and offering you the Print dialog box, where you can specify, for example, how many copies you want. *Keyboard equivalent:* Alt+F, P.

Explore

Opens Windows Explorer, which shows you what's in the highlighted disk or folder in the Explorer two-pane format (see page 112). This command is available only if the selected icon is a drive or folder. *Keyboard equivalent:* Alt+F, X.

Search

Opens a Search window that's ready to look in the selected drive or folder (the Search command isn't available if you select a file). See page 37 for more on the Search command. *Keyboard equivalent:* F3.

Sharing and Security

Available only for folders and disks. Opens the Sharing tab of the icon's Properties dialog box. As described in Chapter 20, this dialog box is exclusively for people with networks; it lets you make a folder or disk available to other people on the network. *Keyboard equivalent:* Alt+F, H.

Run As...

Available for programs only, this handy command lets you run a program as though you have an Administrator account (or somebody else's account), provided you know the account's password. It's described on page 544. *Keyboard equivalent:* Highlight the program name, then press Alt+F, A.

Pin to Start menu

Here's another option for programs (and shortcuts of programs) only. It forces the highlighted icon to be listed in the top left section of your Start menu for easy access. *Keyboard equivalent:* Alt+F, I.

Send To

Offers submenu commands that move or copy the highlighted icon(s) to the desktop, to a floppy disk, to the My Documents folder, and so on. (For files and folders only.) *Keyboard equivalent:* Alt+F, N.

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New

This command's submenu lets you create a new folder, shortcut, text file, or other new item, depending on the programs you've installed. For example, if you have Microsoft Office installed, you'll find a New→Microsoft Word Document command here. *Keyboard equivalent:* Alt+F, W.

Create Shortcut

Creates a shortcut to the selected icon. (See page 129 for more on shortcuts.) If you've highlighted a folder or document icon, the shortcut appears in the same window as the original icon; at this point, you haven't accomplished much. To make it useful, drag the shortcut to, for example, the desktop or the Quick Launch toolbar.

If the selected icon is a drive, Windows XP displays a message that says: "Windows cannot create a shortcut here. Do you want the shortcut to be placed on the desktop instead?" Click Yes. *Keyboard equivalent:* Alt+F, S.

Delete

Moves the highlighted folder or file to the Recycle bin, after first requesting confirmation. *Keyboard equivalent:* Delete or Ctrl+F, D.

Rename

Opens an editing box for the name of the highlighted icon. *Keyboard equivalent:* F2.

Properties

Opens the Properties dialog box for the highlighted icon. Folder and file properties display creation-date and modification-date information. Disks display information about free and used space, along with a Tools tab that lets you open the disk-maintenance tools described in Chapter 16. If you've set up a network (Chapter 18), disk and folder Properties dialog boxes also offer a Sharing tab. *Keyboard equivalent:* Alt+Enter.

Close

Closes the window, just as if you'd clicked the X in the upper-right corner of the window (or double-clicked the icon in the upper-left corner). *Keyboard equivalent:* Alt+F4.

Edit Menu

When you work in, say, your word processor, you use the Edit menu quite a bit—its Cut, Copy, and Paste commands are very useful for moving bits of text. At the desktop, these commands operate on icons, providing an easy way for you to move files and folders from one window or disk to another.

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Undo

Reverses the last action you performed. The name of the command changes to reflect what you've just done: Undo Delete, Undo Rename, and so on. (Alas, there's no Undo Print feature.) *Keyboard equivalent:* Ctrl+Z.

Cut, Copy, Paste, Paste Shortcut

Let you move or copy files or folders from one window to another, as described on page 124. (The Paste Shortcut command offers yet another method of creating a shortcut icon.) *Keyboard equivalents:* Ctrl+C (for Copy), Ctrl+X (for Cut), Ctrl+V (for Paste), Alt+E, S (for Paste Shortcut).

Copy To Folder, Move To Folder

If the Cut/Paste and Copy/Paste routines for moving or copying a file or folder to a different window aren't your cup of tea, you can use these commands instead. When you choose either command, a dialog box opens so you can select a destination folder (see Figure B-1). *Keyboard equivalents:* Alt+E, F (for Copy to Folder), Alt+E, V (for Move to Folder).

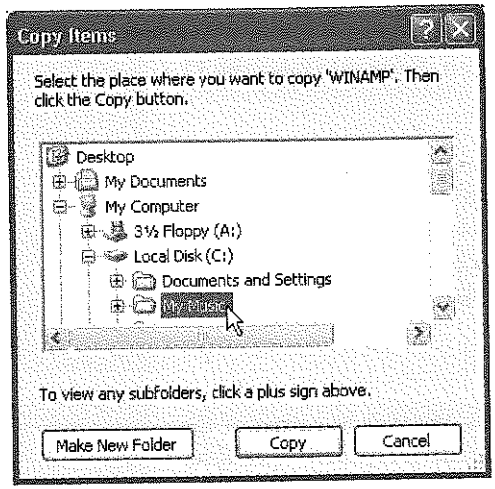

Figure B-1:
Click the + button to "expand" your drive's contents, so that you can choose a destination folder for the icon you're moving or copying. You can create a new folder inside the selected folder by clicking the Make New Folder button.

Select All

Highlights all of the icons in the open window—or, if no window is open, on the desktop. Windows applies any subsequent command (Copy, Delete, Print, Rename, or whatever) to all of them at once.

If you're editing an icon's name, and your cursor is blinking in the renaming rectangle, this command highlights the entire filename instead. *Keyboard equivalent:* Ctrl+A.

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Invert Selection

If there are 50 icons in a folder, and you want to highlight 49 of them, don't bother trying to click and Shift-click all 49. Instead, use this trick: Click the one icon (or Shift-click the handful of icons) you *don't* want. Then choose Edit→Invert Selection. Windows highlights the icons that weren't selected, and vice versa. *Keyboard equivalent:* Alt+E, I.

View Menu

The commands in the View menu apply only to the *active* desktop window: the one that's open and in front of all the others.

Toolbars

Offers a submenu of toolbars you can add to the top of the window. For details on these toolbars and their functions, see page 87. *Keyboard equivalent:* Alt+V, T.

Status Bar

Makes the status bar appear or disappear at the bottom of the window. The status bar displays information about the contents of the current window, or the selection you've made inside it. (It may say, for example, "3 object(s) selected" or "Type: Microsoft Word Document.") *Keyboard equivalent:* Alt+V, B.

Explorer Bar

Splits the window, creating a new left-side pane. In this special panel, you can summon your choice of extra information; make your choice using the View→ Explorer Bar submenu. The choices are described on page 73. *Keyboard equivalent:* Alt+V, E.

Thumbnails, Filmstrip, Tiles, Icons, List, Details

Let you view the files in a window as icons (which you move by dragging freely), as a list (a neat list view that's automatically sorted), as a filmstrip (a slide show of graphics files), and so on. Page 82 begins a complete description of these views and their relative advantages.

Arrange Icons By

Tidies a window filled with randomly spaced icons, placing them into an orderly grid according to the criteria you select from the submenu here. These commands appear only in windows you've displayed in icon (not list) views. Page 83 has complete details. *Keyboard equivalent:* Alt+V, I.

Choose Details

If you've put a window into Details view, you can use this command to specify which columns of information you want the window to show (date, size, type, author, and so on). *Keyboard equivalent:* Alt+V, C.

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Customize This Folder

This command launches a wizard that walks you through the process of changing the folder's template (its background, the identifying text and graphics that appear on the left side of the window, and so on). See page 79 for details. *Keyboard equivalent:* Alt+V, F.

Go To

This command's submenu lets you move forward or backward through desktop windows you've recently opened, much like the Back and Forward buttons in your Web browser. (View→Go To→Home Page launches your Web browser, connects to the Internet, and takes you to the page you've designated as your home page.)

Keyboard equivalents: Backspace or Alt+left arrow (for Go To→Back), Alt+right arrow (for Go To→Forward), Alt+V, O, U (for Up One Level), Alt+Home (for Home Page), Windows logo key+D (for Desktop).

Refresh

Updates the contents of the window. Use this command if you've just cut, pasted, or deleted icons and the window doesn't yet reflect the changes. *Keyboard equivalent:* F5.

Favorites Menu

The Favorites menu shows the list of Web pages you've "bookmarked" when using Internet Explorer *and* desktop windows you've designated as Favorites to which you'd like quick access.

Add to Favorites

Adds the currently open Web page or desktop window to the Favorites list. *Keyboard equivalent:* Alt+A, A.

Organize Favorites

Opens the window shown in Figure B-2. Here, you can edit your Favorites list items in several ways:

- **Rearrange them** by dragging your Favorites items up or down in the right-side list.

Tip: Windows can sort your Favorites alphabetically, but not in the Organize Favorites dialog box. Instead, right-click any item *in the Favorites menu itself* and choose Sort by Name from the shortcut menu.

- **Delete or rename one** by clicking its name and then clicking Delete or Rename, respectively.
- **Organize them into folders.** For example, you may want a folder for all the favorite folders on your PC, another folder for all the Internet sites related to cooking, and another folder for all the Internet sites you visit to get help on computing.

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Click the Create Folder button to add a new, empty folder to the right-side list; type a name for it and then press Enter. Then file a Favorites listing away by dragging it onto the folder icon (see Figure B-2). *Keyboard equivalent:* Alt+A, O.

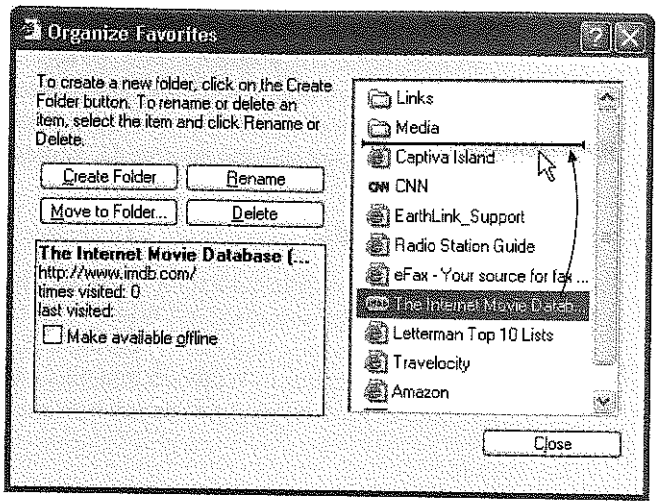

Figure B-2:
Click a folder to see what's in it. Drag a Favorites item up or down the list to reposition it; drag it onto a folder icon to file it away into a subcategory. Click its name once to read, in the lower-left panel, about its origin and when you last looked at it.

Favorites List

Choose a name from this list to open the desktop window, or visit the Web site, in question. If you choose a folder name, a submenu appears that lists all of the windows or Web pages you filed in that "folder," as described in the previous paragraphs.

Tools Menu

This menu offers a handful of leftover commands that didn't quite belong in any of the other menus.

Map Network Drive

This command, exclusively for people on a network, lets you assign a drive letter to a folder to which you've connected over the network. For details, see page 160. *Keyboard equivalent:* Alt+T, N.

Disconnect Network Drive

This command, also just for networked people, summons a dialog box that lets you *delete* a drive mapping you've established. *Keyboard equivalent:* Alt+T, D.

Synchronize

Synchronize, in Microsoft-ese, means, "copy files so both computers contain the identical contents." Using the Briefcase, for example, you can ensure that your laptop and desktop computers contain the same updated files (see page 524 for details).

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Synchronizing also means updating the Web pages you've told Internet Explorer that you want to read when you're not online, a trick described on page 354. *Keyboard equivalent:* Alt+T, S.

Folder Options

The dialog box summoned by this command lets you change several global desktop-window options. For example, you can specify that you want a new window to appear every time you double-click a folder (instead of the single-window approach); that you want one click, not two, to open a folder; and so on. You can read about these settings in detail starting on page 83. *Keyboard equivalent:* Alt+T, O.

Help Menu

This menu has three commands: Help and Support Center, which opens the Windows XP help system discussed in Chapter 4; "Is this copy of Windows legal?" which takes you to a Web page that shows you the various clues that you have a genuine, non-counterfeit version of Windows; and About Windows, which tells you precisely which Windows XP version you have and how much memory your PC has.

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APPENDIX
C

Fun with the Registry

Occasionally, in books, articles, and conversations, you'll hear hushed references to something called the Windows Registry—usually accompanied by either knowing or bewildered glances.

The Registry is your PC's master database of preference settings. For example, most of the programs in the Control Panel are nothing more than graphic front ends that, behind the scenes, modify settings in the Registry.

The Registry also keeps track of almost every program you install, every Plug and Play device you add, every multiple-user profile you create (Chapter 17), your networking configuration, and much more. If you've noticed that shortcut menus and Properties dialog boxes look different depending on what you're clicking, you have the Registry to thank. It knows what you're clicking and what options should appear as a result. In all, there are thousands and thousands of individual preference settings in your Registry.

As you can well imagine, therefore, the Registry is an extremely important cog in the Windows XP machine. That's why Windows marks your Registry files as invisible and non-deletable, and why it makes a Registry backup every single time you shut down the PC. If the Registry gets damaged or randomly edited, a grisly plague of problems may descend upon your machine. Granted, Windows XP's System Restore feature (described in this chapter) can extract you from such a mess, but now you know why the Registry is rarely even mentioned to novices.

In fact, Microsoft would just as soon you not even know about the Registry. There's not a word about it in the basic user guides, and the only information you'll find about it in the Help and Support center is a line that says, "It is strongly recommended

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that you do not edit Registry settings yourself. Incorrectly editing the Registry may severely damage your system."

Still, the Registry is worth learning about. You shouldn't edit it arbitrarily, but if you follow a step-by-step "recipe" from a book, magazine, Web site, or technical-help agent, you shouldn't fear opening the Registry to make a few changes.

And why would you want to? Because there are lots of Windows settings that you can't change in any other way, as you'll see in the following pages.

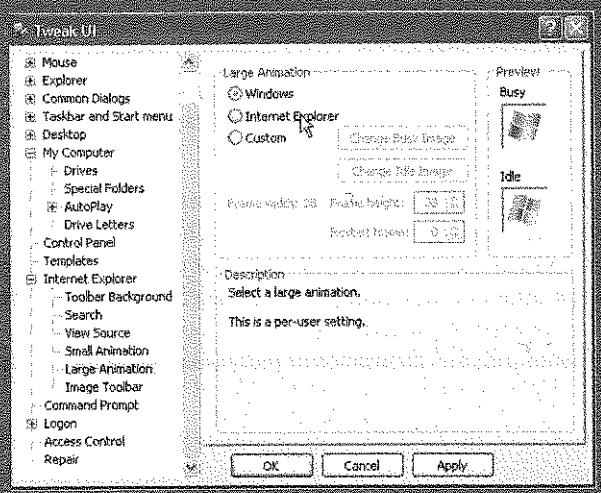
Meet RegEdit

Windows XP comes with a built-in program for editing Registry entries, a little something called (what else?) the Registry Editor. (There are dozens of other Registry-editing, Registry-fixing, and Registry-maintenance programs, too—both commercial and shareware—but this one is already on your PC.)

GEM IN THE ROUGH

TweakU, TweakU Very Much

If you cruise online looking for neat RegEdit hacks, you'll find an awful lot of them that duplicate the functions of the free Microsoft tool TweakUI (which you can download from, for example, the "Missing CD" page at www.missingmanuals.com).



For example, TweakUI lets you add folders of your own choosing to the Places sidebar in the Open and Save dialog boxes; log on to your account automatically at startup; turn off the "Unread Mail" counter on the Welcome screen; hide the icons of control panels you never use; hide drive icons in My Computer, for security purposes; change the locations of important folders like CD Burning, Desktop, Programs, and My Pictures; hide drive letters on disk icons; make My Computer, rather than My Documents, appear at the top of the desktop; prevent certain programs' names from appearing in the Frequently Used Programs section of the Start menu; change or eliminate the little "badge" that appears on a file shortcut's icon; change the colors that identify compressed or encrypted files; and much more.

Using TweakUI is pretty straightforward. Hunt around its options (listed, in Windows Explorer style, in a list at left) until you see something that looks promising—and then just use the buttons and sliders as necessary.

Happy tweaking!

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As an advanced tool that Microsoft doesn't want falling into the wrong hands, the Registry Editor has no Start-menu icon. You must fire it up by typing its name into the Run command. That is, choose Start->Run. Then in the Run dialog box, type regedit and press Enter. After a moment, you see a window like Figure C-1.

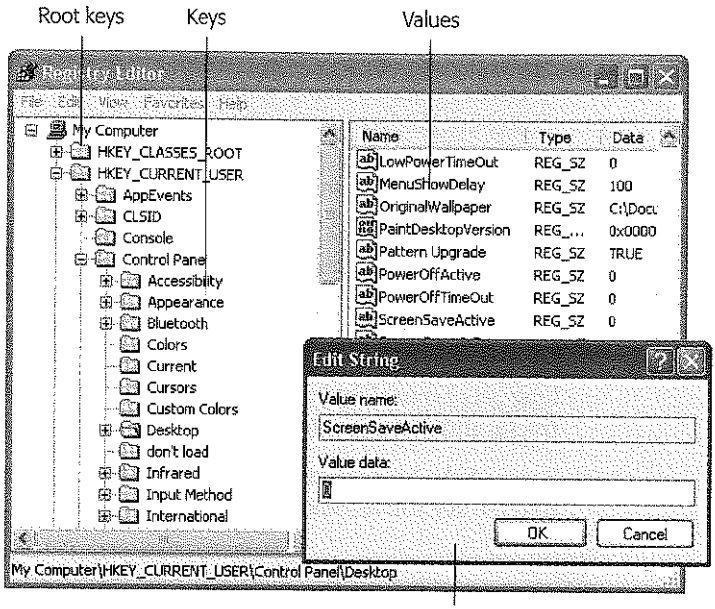

Figure C-1
The Registry's settings are organized hierarchically; in fact, the Registry Editor looks a lot like Windows Explorer. But there's no easy way to figure out which part of the Registry holds a particular setting or performs a particular function. It's like flying a plane that has no windows.

The Big Five Hives

It turns out that Microsoft has arranged all of those software settings into five broad categories. Microsoft calls them hives or root keys, but they look and act exactly like folders in a Windows Explorer window. You expand one of these folders (keys) just as you would in Explorer, too, by clicking the little + button beside its name.

The names of these five hives are, frankly, just as weird as the term hives itself:

- HKEY_CLASSES_ROOT. This root key stores all kinds of information about files: filename extensions, file types, shortcut menus, and so on.

Note: A number of Registry entries appear in more than one place, live mirrors of each other, for convenience and clarity. Edit one, make a change in "both" places.

This root key, for example, is a pointer to the key at HKEY_LOCAL_MACHINE\SOFTWARE\Classes. (More on this slash notation below.)

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- **HKEY_CURRENT_USER.** As you'd guess, here's where you'll find the settings pertaining to your account: how you've got your desktop arranged, your wallpaper setting, and so on, plus information about connections to printers, cameras, and so on. (This key, too, is a live duplicate—of the identical one in HKEY_USERS, described below.)
- **HKEY_LOCAL_MACHINE.** All about your PC and its copy of Windows. Drivers, security settings, hardware info, the works.
- **HKEY_USERS.** Here's where Windows stores the information about all of the account holders (user profiles) on your PC, including the "Current_User's." You'll rarely be asked to edit this root key, since the good stuff—what applies to your own account—is in the CURRENT_USER key.
- **HKEY_CURRENT_CONFIG.** Most of this root key is made up pointers to other places in the Registry. You'll rarely be asked to edit this one.

Keys and Values

If you expand one of these hives by clicking the + button next to its name, you'll see long list of inner "folders" called keys. These are the actual settings that the Registry tracks, and that you can edit.

Some of the keys contain other keys, in fact. Keep clicking the + buttons until you find the key you're looking for.

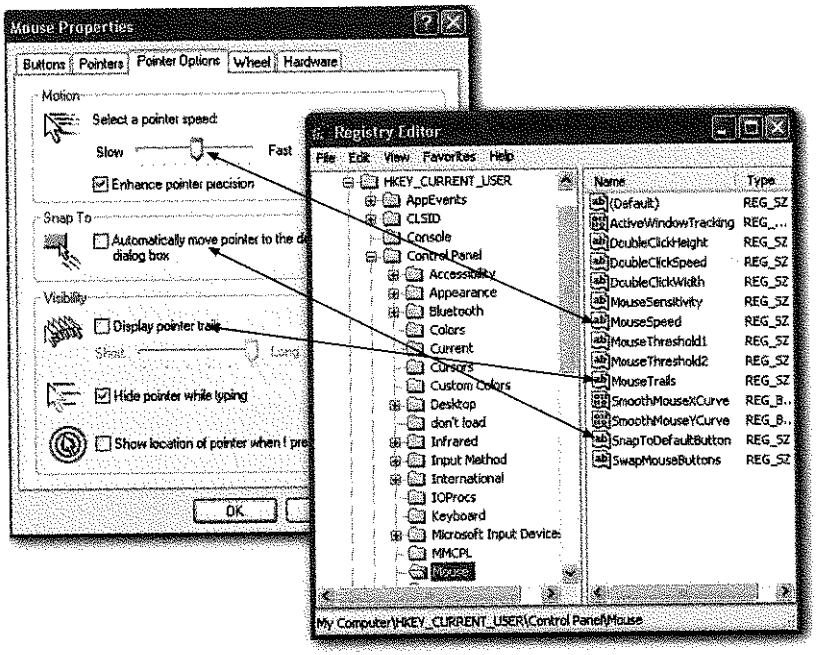

Figure C-2: *A Control Panel program (like Mouse, shown at left) is nothing more than a user-friendlier front end for a bunch of underlying Registry keys (right).*

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In books, magazines, and tutorials on the Web, you'll often encounter references to particular Registry subkeys written out as a Registry path, like this:

```
HKEY_CURRENT_USER→Control Panel→Mouse
```

(You may see backslashes used instead of the arrows, however.) That instruction tells you to expand the HKEY_CURRENT_USER root key, then expand Control Panel within it, and finally click the Mouse "folder." It works just like a folder path, like C:->Documents & Settings→Chris→Desktop.

If you actually try this maneuver, you'll find, in the right half of the window, a bunch of keys named DoubleClickSpeed, MouseSpeed, MouseTrails, and so on. These should sound familiar, as they correspond to the options in the Mouse program of your Control Panel. (Figure C-2 clarifies this relationship.)

Each value usually contains either a number or a block of text. DoubleClickSpeed, for example, comes set at 500. In this case, that means 500 milliseconds between clicks, but each Registry value may refer to a different kind of units.

Tip: Many of the Windows Explorer keyboard shortcuts also work in RegEdit. For example, once you've clicked a key, you can press the right or left arrow to reveal and hide its subkeys. You can also type the first letter of a subkey's name to highlight it in the left pane, or a value's name in the right pane. And you can press the Backspace key to jump to the "parent" key, the one that contains the subkey.

Backing Up Key Values

In general, you won't go into the Registry unless you truly want to make a change. That's why the program is called RegEdit, not RegViewer.

As you know, though, making the wrong change can botch up your copy of Windows—and RegEdit has no Undo command and no "Save change before closing?" message.

That's why it's essential to back up a Registry key—or even its entire root key—before you change it. Later, if the change you made doesn't work the way you'd hoped, you can restore the original.

To back up a key (including and all its values and subkeys), just select it and then choose File→Export. Save the resulting key somewhere safe, like your desktop. Later, you can reinstate the key by double-clicking the .reg file you exported. (Or, if you're paid by the hour, open RegEdit, choose File→Import, and manually open the .reg file.)

Note: Importing a .reg file merges it with the data already in the Registry. Any values you edited will go back to their original versions, provided you haven't renamed them.

This means, for instance, that if you export a key, rename one of the values in that key, and then re-import the .reg file, the value you renamed will still be there, along with the value by its original name. In other words, a .reg file is a very good idea, but it's not a "get out of jail free card"; it won't undo all types of changes.

The only way to get a true Registry backup is to back up the Registry hive files themselves. The Microsoft Backup program described starting on page 497 can do this for you.

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A Few Regedit Examples

Here are some typical regedit tweaks, spelled out for you step by step.

Tip: If you, too, find your pulse racing with the illicit thrill of making tweaks to your system, why stop here? You can find hundreds more RegEdit "recipes" in books, computer magazines, and Web sites (check out, for example, *www.winguides.com* and *www.jsiinc.com/reghack.htm*).

Faster Menus

As you may have noticed, submenus in Windows (like the Control Panel, Connect to, and All Programs submenus in the Start menu) aren't especially sprightly in Windows XP. In fact, these submenus don't sprout until your mouse has rested on them for what feels like an eternity.

What Microsoft had in mind was ensuring that you don't open a submenu accidentally, just by absentmindedly resting your cursor on it. But if you're a cool, suave, sure-of-yourself customer, there's no reason you should spend your life waiting for a time delay intended for more clueless people. This next RegEdit trick speeds up the Start menu a lot. You'll feel like you have a new computer.

- **Navigate to:** HKEY_CURRENT_USER→Control Panel/Desktop.
- **Double-click this value on the right side:** MenuShowDelay.
- **Make this change:** Change the number to 0. This number represents the amount of time, in milliseconds, between the instant you move the cursor to a submenu and when Windows finally opens the menu. (The factory setting is 400.)

Tip: If you set this to an arbitrarily large value like 30000, you'll effectively turn off the automatically-opening menus. Now submenus don't open until you actually click their names, as though you're using one of the early versions of Windows.

- **Wrap up:** Click OK, quit RegEdit, log out, and log back in again.

The Desktop Cleanup Wizard Interval

Here's a nuisance nag that you might like to stifle: the message that not-so-helpfully points out that your desktop contains icons you haven't opened in awhile. Using this regedit tweak, you can change the frequency of its appearance from every 60 days to any number of days you like.

- **Navigate to:** HKEY_CURRENT_USER→Software→Microsoft→Windows→CurrentVersion→Explorer→Desktop→CleanupWiz
- **Double-click this value on the right side:** "Days between clean up"
- **Make this change:** Click Decimal, and then enter the number of days you'd like between cleanup nags.
- **Wrap up:** Click OK, quit RegEdit, and restart the computer.

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Encrypt/Decrypt from the Shortcut Menu

As you know from page 473, one of the perks of using Windows XP (on an NTFS hard drive) is that you can encrypt files and folders, protecting them from people who try to open them from across the network or using a different account.

If you use this feature quite a bit, however, you'll quickly grow tired of opening the Properties box every time you want to encrypt something. Wouldn't it be much more convenient if the Encrypt and Decrypt commands were right there in the shortcut menu that appears when you right-click an icon?

Of course it would. To make it so, do this:

- **Navigate to:** HKEY_LOCAL_MACHINE→SOFTWARE→Microsoft→Windows→ CurrentVersion→ Explorer→Advanced.

  Now, for this trick, you're going to need a key that doesn't actually exist yet. Fortunately, it's very easy to create a new key. In this case, just right-click the Advanced "folder" and, from the shortcut menu, choose New→DWORD Value. You'll see "New Value #1" appear in the right side of the window, ready to be renamed; type EncryptionContextMenu and then press Enter.

Tip: The birth of a new Registry entry is a good opportunity to name it, but you can rename any value or key at any time, just the way you'd rename a file icon. That is, you can open the renaming rectangle by slowly double-clicking the icon, by right-clicking, or by pressing F2.

- **Double-click this value on the right side:** EncryptionContextMenu.
- **Make this change:** In the "Value data" box, type 1.
- **Wrap up:** Click OK and quit RegEdit. When you right-click any file or folder icon, you'll see the new Encrypt command in the shortcut menu. (Or, if it's already encrypted, you'll see a Decrypt command.)

A Really, Really Clean Desktop

Windows XP nags you every now and then to get unused icons off your desktop. But why stop there? If you've got the world's most beautiful desktop wallpaper set up, you might not want any icons marring its majesty.

If you think about it, you can get by just fine without a single icon on the desktop. My Computer and similar icons are waiting in your Start menu. You can put things into the Recycle Bin without dragging them to its icon (just highlight icons and then press the Delete key, for example).

The following RegEdit hack doesn't actually remove anything from your desktop. It just hides them. You can still work with the icons on your desktop using Windows Explorer to view the contents of your Desktop folder, for example.

- **Navigate to:** HKEY_CURRENT_USER→Software→Microsoft→Windows→ CurrentVersion→ Policies→Explorer.

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- **Double-click this value on the right side:** NoDesktop. (If you don't see this value, create it. Right-click the Explorer folder, choose New→Binary Value, and name the new value NoDesktop.)
- **Make this change:** In the "Value data" box, type 01 00 00 00 and click OK.
- **Wrap up:** Click OK, quit RegEdit, and restart the PC. (To reverse the procedure, just delete the NoDesktop value you created.)

Faster Shutdowns

When you shut down your PC, Windows sends out an invisible "Last call! We're closing shop, people!" message to every program and service that's currently running. (A service is a background task that Windows is always performing, like looking for the presence of wireless networks, checking for Windows XP updates, and so on.) It gives each service or program 20 seconds to reply, "Yo, all clear here. Go ahead."

If, after 20 seconds, Windows receives no reply from a service, it assumes that the program or service has crashed. Windows shuts it down with brute force and proceeds with the PC turnoff.

That's an awful lot of time for you to sit there, twiddling your thumbs. Here's how you can shorten that window of waiting opportunity, which will often make your shutdowns faster.

- **Navigate to:** HKEY_CURRENT_USER→Control Panel→Desktop.
- **Double-click this value on the right side:** WaitToKillAppTime.
- **Make this change:** The value comes factory set as 20000. That's 20 seconds, expressed as milliseconds. Change it to, for example, 50000 (five seconds).
- **Wrap up:** Click OK. Now double-click the value called HungAppTimeout, and change it to a smaller number, too. Click OK, quit RegEdit, and restart the computer.

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Colophon

This book was created in Microsoft Word XP, whose revision-tracking feature made life far easier as drafts were circulated from authors to technical and copy editors. SnagIt (*www.techsmith.com*) was used to capture illustrations; Adobe Photoshop CS and Macromedia Freehand MX were called in as required for touching them up.

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