today's hard drives, you'll be inserting blank floppies for the next three presidential administrations.

Instead, if your PC does, in fact, have a backup disk connected (a magnetic tape drive, for example, or a Zip drive), choose its name from this drop-down list.

The other option, available on all computers, is to back up the selected data to a file on your hard drive. You can use this option to create CD-sized backup files for burn-

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Advanced Backup Types

As noted above, the Advanced wizard offers you a choice among several kinds of backups.

To understand the differences, it's important to understand that each time it backs up a file, backup programs manipulate an invisible switch on that file called the *archive bit*. It's a little note to itself, a flag that tells Windows whether or not that file needs backing up.

In a **Normal** backup, for example, the program copies all of the selected files to the backup drive, regardless of their archive bits. During the backup process, Windows changes each archive bit to Off, in effect marking it as having been backed up.

(If you later make changes to the file, Windows turn its archive bit back on. As a result, files whose archive bits are turned on are the ones that have been changed since the last Normal backup.)

If you choose **Copy**, Backup copies the files, but doesn't turn off their archive bits. In other words, you're simply using Backup as a glorified copying program.

An **Incremental** backup copies *only* files whose archive bits are set to On—that is, files that are new or have changed since the last Normal backup. After the backup, all archive bits get turned off again, denoting everything as having been backed up.

Incremental backups work much faster (and use less space) than full backups, since Windows copies only a few files each time. But they're less convenient if the worst should happen. When restoring your files to the PC from your backup disks, you must restore each backup file in chronological order, beginning with the Normal backup disks and proceeding through all of the incrementals performed since that last Normal backup.

A **Differential** backup also copies only the files that have their archive bits turned on. So far, it's the same as an incremental backup. However, this type of job leaves the archive bits as they are instead of turning them off. Therefore, the *second* differential backup *also* backs up all the files that have been changed since the full backup, and so does the third. In other words, if you perform a full backup on Monday, the differential backups on Tuesday, Wednesday, and Thursday each back up *all* the files that have changed since Monday.

Of course, this system requires more backup disk space (or tapes), because you're actually making duplicate and triplicate copies of certain files. But the payoff comes when your hard drive dies. Instead of having to restore each day's backup job (as you would with an incremental backup), you need to restore only the last Normal backup and *one* differential backup set (the most recent one)—a relatively fast and simple procedure.

A typical backup cycle is to perform a Normal backup once a week or month, with incremental or differential backups in between.

This technical tradeoff between convenience at backup time and convenience in case of disaster should sound familiar to anyone who's ever had to choose between two insurance policies, one of which costs less but has a high deductible.

Finally, the **Daily** backup copies files you created or changed today. It doesn't change the archive bits.

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ing onto CDs later, to back up your data to another hard drive in the same computer, or to back up to another computer on the network. (To use the latter option, click Browse.) In any case, click Cancel if you're asked to insert a floppy disk.

The Save As dialog box that appears asks you to name the backup file you're creating (its filename extension is *.bkf*). Click Save when you've selected a location and typed a name.

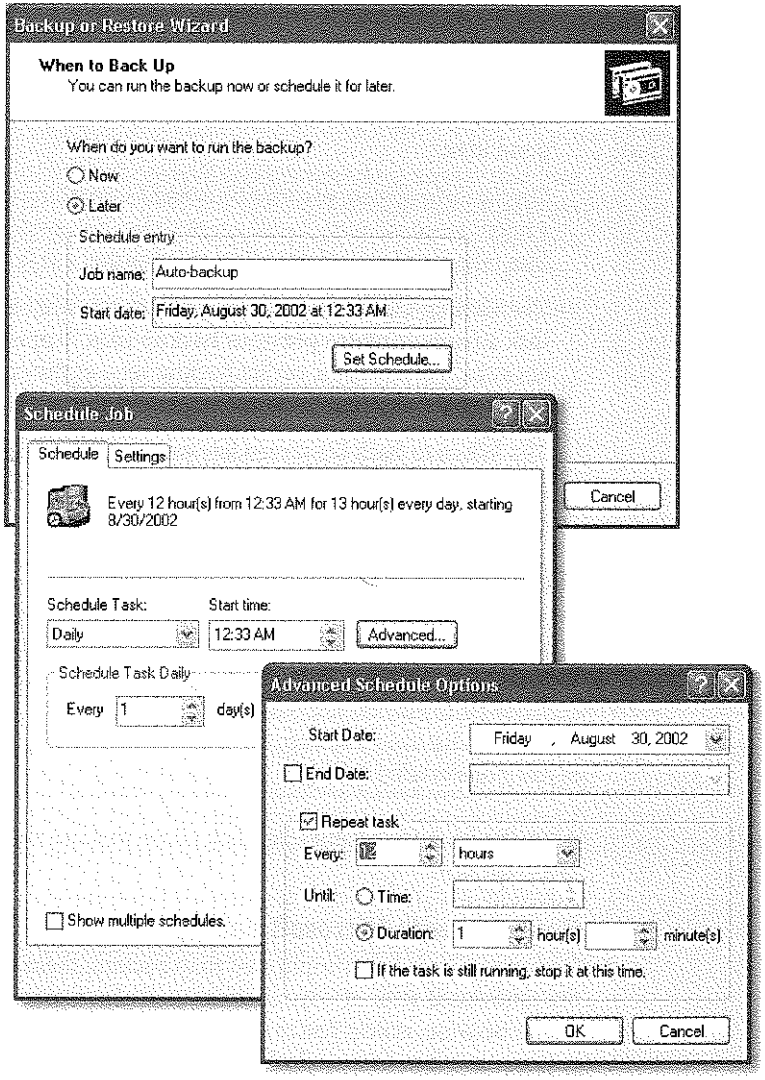


Figure 16-14: *Of all the Advanced options, this series of screens (click Set Schedule, then Advanced) may be the most useful, because it lets you establish a backup that runs automatically, without your involvement. (Behind the scenes, it creates a task in your Start→Control Panel→Scheduled Tasks window, where you can manipulate it or adjust its schedule.)*

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Advanced backup options

The final wizard screen now appears (Figure 16-14). If you click Finish, the backup process begins—a process that may take several seconds or several hours, depending on how much you're copying. Your work here is done.

On the other hand, if you click the Advanced button on the final wizard screen, you're treated to yet another wizard. Most people, most of the time, will never need these special-case options, but here's what the screens of the Advanced wizard offer:

- Choose the *type* of backup you want: Normal, Copy, Incremental, Differential, or Daily (see the box on page 500).
- The next part of the screen offers to *verify* each file that's backed up. In just a few seconds, you get a confirmation that the copy perfectly matches the original—a good idea.

  On the same screen, you may be offered something called Hardware Compression, a reference to circuitry inside a tape drive that condenses the amount of space your files take up. If your drive offers this feature, use it.
- The Backup Options screen lets you specify what should happen if your backup disk already contains previous backup files. "Append this backup to the existing backups" preserves the earlier backup set—at the expense of disk space, of course. "Replace the existing backups" wipes out the original backup.
- The When to Back Up screen lets you indicate when you want this backup to take place—now or at a specified time and date (click the Set Schedule button shown in Figure 16-14).

Click Finish

When Backup is finished backing up your files, a window shows how many files and bytes were backed up. (If you see a message indicating an error, click Report to see a written record of what happened during the backup.)

Tip: Most backup errors arise when Backup tries to back up a file that's open. To avoid this problem, exit all your programs before backing up.

After the backup is complete, click Close to close the Report window. Your data is safe—for now.

Restoring with Microsoft Backup

Restoring files is less complicated than backing them up—a good thing, considering the emotional state of anyone who's just experienced a total hard drive meltdown. That's because, unless you're a spectacularly unlucky individual, you don't perform restores as often as you do backups—and you don't schedule them. The Backup program's Restore Wizard does all the work for you.

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Tip: Perform regular test restores, to make sure your data is retrievable from the backup disks. (Consider restoring your files to a test folder—not the folder where the files came from—so you don't wind up with duplicates.) There's no other way to be absolutely sure that your backups are working properly.

To restore files using the Restore Wizard, here's the plan (which assumes that, if your whole hard drive was trashed, you have already replaced it and reinstalled Windows XP):

1. **Click Start→All Programs→Accessories→System Tools→Backup.**

   The Backup or Restore Wizard Welcome screen appears.

2. **Click Next. On the second screen, click "Restore files and settings," and then click Next.**

   The What To Restore page contains the now-familiar expanding display that lists your PC's backup devices. The display lists a File icon, too, so that you can restore from a backup file (see "Select the backup medium" on page 501). Backup displays the date and time each backup file was made, making it easy to select the right file. If you use a tape drive or other device for your backups, the display lists the tapes or disks you have created.

   Click to select the items you want to restore, exactly as you did when selecting files to back up.

Tip: Clicking the + button expands a folder so that you can select an individual file inside it. This is also a great trick if you're restoring, from your backup file, a document that you've accidentally deleted from the hard drive.

3. **Select the tape or disk that contains your backup. Select the data to restore.**

   When you select the backup disk or tape, the right pane in the What to Restore screen contains an expandable list of its contents. Double-click the folders seen here for a list of individual files. Turn on the checkboxes of the files and folders you want to restore, as shown in Figure 16-15.

Note: Whenever Backup backs up your files, it remembers which files it put on which backup disks by creating a table of contents on the disk or tape that was in the drive when the job ended.

That's why, as you browse the files listed on a backup disk, you may be asked to insert that final disk or tape. Only then can Backup show you what's on it.

4. **On the Completing the Backup or Restore Wizard screen, click the Advanced button, if you like.**

   Ordinarily, Backup restores every backed-up file onto your hard drive in exactly the same folder from which it came. If the original file is still *in* that original folder, however, it doesn't bother copying the equivalent file from the backup disk. If that arrangement sounds good to you, skip to the next step.

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But suppose you'd like Backup to put the files in a *different* folder, or you want them to *replace* the duplicate files it encounters. In that case, the Advanced button is just the ticket. It lets you specify where you want the restored files to go: into the folders they came from or some other disk or folder.

If you choose "Alternate location," you can type in the path to (or Browse to) a different folder (like *C:\Rescued*). If there's no such folder, Backup will create it for you.

If you turn on "Single folder," Backup dumps all of the selected files directly into one specified folder, loose (not in a hierarchy of folders). Choose this option if you're simply trying to reclaim a few important files, rather than trying to reinstate your entire drive.

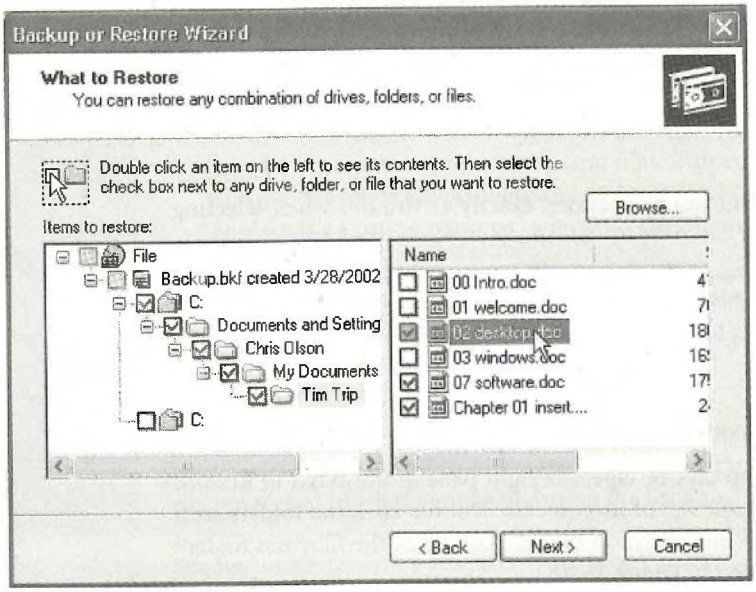


Figure 16-15: *The Restore Wizard's What to Restore page is similar in format to Windows Explorer, except that it displays only the contents of a particular backup tape or disk. You can select from the backup tapes, disks, or files you've created, or click Import File to read the contents of a backup file you created on another Windows XP system.*

5. **Click Next. Indicate whether or not you want Backup to overwrite duplicate files.**

   Backup's file-restoring feature isn't only useful when you've had to wipe out your hard drive completely. It can also be handy when something less drastic went wrong, like a folder accidentally being thrown out. All the rest of your files and folders are OK.

   But suppose you've indicated that you want your My Documents folder restored from the backup disks. What should Backup do when it encounters files that are *still in* your My Documents folder, and in perfect shape? You can choose one of three options. Leave existing files means that Backup won't restore any file that's

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already on the hard drive. Replace existing files if they are older than the backup files makes Backup replace a file on your hard drive only if it's an *older version* than the backed-up copy. Finally, Replace existing files restores every file, replacing its equivalent on the hard drive, regardless of which is newer.

6. Click Next.

The options on this penultimate screen pertain to specialized security and system files.

You're free to click past them, but if curiosity gets the better of you, here's what these three very technical options do.

"Restore security settings" restores certain settings for each file and folder, including permissions and file ownership (see Chapter 17)—an option available only for files you backed up from a Windows XP, NTFS-formatted machine (and files that you're restoring to one).

The second option is "Restore junction points, but not the folders and file data they reference." Here, Microsoft is talking about *mounted drives*. Turn this option on if you're restoring a mounted drive; turn it off if you want to restore only the folder *containing* the mounted drive.

The third option, "Preserve existing volume mount points" requires that you understand *volume mount points*, described on page 490. Turn this option on if you want to restore data to a *replacement* drive, on which you've restored volume mount points yourself. Turn it off if you're restoring data to a reformatted partition or drive, and want to restore the old volume mount points from the backup.

UP TO SPEED

Floppy Disk Crash Course

Floppy disks are quickly becoming extinct, largely because sending files by email or over network wiring are much faster and more convenient ways of shuttling information between computers. But in a pinch, it's still useful to know the basics of using floppy disks: how to insert, erase, eject, and copy them.

Insert a floppy disk into your floppy drive label side up, metal side first. (If your floppy drive is mounted vertically, the label side faces away from the eject button.) To see what's on the disk, double-click your My Computer icon, and then double-click the "3 1/2 Floppy (A:)" icon. (If you double-click this icon when there's no disk is in the drive, you'll get nothing but an error message.)

To erase (format) a floppy, right-click the "3½ Floppy (A:)" icon and choose Format from the shortcut menu. To make a copy of the disk, right-click the icon and choose Copy from the shortcut menu. A little window appears like the one shown here, which you can use to specify where you want the copy made.

To remove the floppy from your machine, push the plastic eject button next to the drive slot, or right-click the floppy's icon and choose Eject from the shortcut menu.

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7. Click Next. If the restore summary page looks good, click Finish.

   Backup swings into action, asking you to insert backup disks or tapes as necessary, and restoring your backed-up files safely onto your hard drive.

The Briefcase

In its way, the Briefcase is a form of backup program, but for a very specific purpose: It's designed to help you keep your files straight when you transport them from desktop to laptop, or from home to work. If you learn to use the Briefcase, you'll be less likely to lose track of which copies of your documents are the most current.

To use the Briefcase, start by adding a briefcase icon on your desktop. To do so, right-click any spot on the desktop; from the shortcut menu, choose New→Briefcase. A new icon appears, called New Briefcase. (If you're feeling inspired, rename it as you would any folder.)

Now round up the icons of the documents you'll work on when away from your main PC. Drag them onto the My Briefcase icon. Windows XP copies the files into this special temporary holding tank.

Now connect your laptop to the desktop PC, if you haven't already. (See Chapter 18 for tips on connecting machines.) Or, if you plan to take your files with you on a disk (such as a floppy or Zip disk), insert the disk. Drag the My Briefcase icon onto the laptop or the disk.

You're ready to leave your office. When you get to wherever you're going, open and edit the documents in the copied Briefcase "folder" icon. Just don't move them.

When you return to your main PC, reconnect the laptop or reinsert the travel disk. Now all of your careful step-following is about to pay off. Open the disk or laptop window and double-click its My Briefcase icon. In the Briefcase window, click the "Update all items" link in the task pane. Windows copies the edited files back to their original folders on your desktop-PC hard drive, automatically replacing the older, original copies. (If you highlighted only some of the icons in the Briefcase window, you can instead click "Update the selected items." Windows copies only the highlighted icons back to the main PC.)

Safe Mode and the Startup Menu

PC troubleshooting is among the most difficult propositions on earth, in part because your machine has so many cooks. Microsoft made the operating system, another company made the computer, and dozens of others contributed the programs you use every day. The number of conflicts that can arise and the number of problems you may encounter are nearly infinite. That's why, if you were smart, you bought your PC from a company that offers a toll-free, 24-hour help line for life. You may need it.

If the problems you're having are caused by drivers that load just as the computer is starting up, turning them all off can be helpful, at least so that you can get into your

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machine to begin your troubleshooting pursuit. That's precisely the purpose of the Startup menu—a menu most people never even know exists until they're initiated into its secret world by a technically savvy guru.

Making the Startup menu appear is a matter of delicate timing. It goes like this:

1. **Restart the computer. Immediately after the *BIOS startup messages* disappear, press the F8 key (on the top row of most keyboards).**

   The BIOS startup messages—the usual crude-looking text on a black screen, filled with copyright notices and technical specs—are the first things you see after turning on the computer.

   If you press the F8 key after the Windows logo makes its appearance, you're too late. If you've done it right, on the other hand, you see a message that says, "Please select the operating system to start." Most people have only one option here—"Microsoft Windows XP Professional."

2. **At the "Please select the operating system" screen, press F8 again.**

   If all goes well, you'll see the Windows Advanced Options Menu (see Figure 16-16). Displayed against a black DOS screen, in rough lettering, is a list of options that includes Normal, Logged, Safe Mode, and so on.

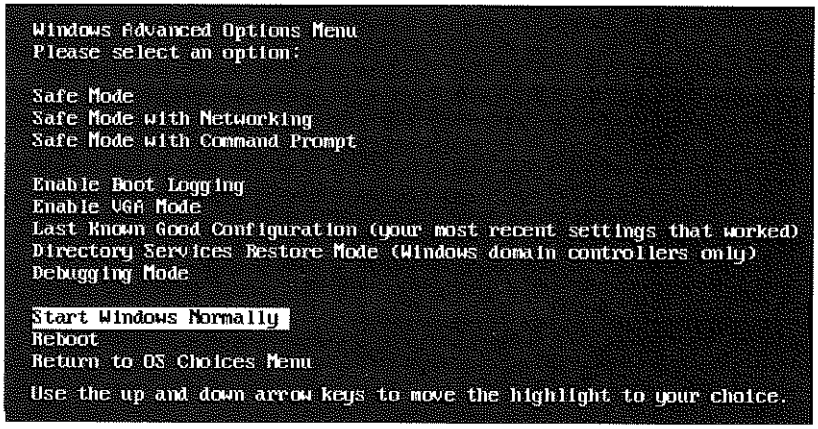


Figure 16-16: *The Startup menu (not to be confused with the Start menu) appears only when you press F8 a couple times as the computer is starting up. In times of deep trouble, it can be a lifesaver.*

3. **Select the startup option you want.**

   To make a selection, press the up or down arrow keys to "walk through" the list. Press Enter when you've highlighted the option you want.

Here's what the Startup menu commands do:

- **Safe Mode.** Safe Mode starts up Windows in a special, stripped-down, generic, somewhat frightening-looking startup mode—with the software for dozens of hardware and software features *turned off*. Only the very basic components work:

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your mouse, keyboard, screen, and disk drives. Everything else is shut down and cut off. In short, Safe Mode is the tactic to take if your PC *won't* start up normally, thanks to some recalcitrant driver.

Once you've selected the Safe Mode option on the Startup menu, Windows asks which operating system you want to run—for most people, Windows XP Professional is the only choice, so just press Enter. Now you see a list, filling your screen, of every driver that Windows is loading. Eventually, you'll be asked to log in; a dialog box then appears, reminding you that you are in Safe Mode.

This dialog box offers two useful buttons. Yes proceeds with the startup process, taking you to the Windows desktop. Clicking No takes you directly to the System Restore screen shown in Figure 16-2, so that you can choose a date when your computer was running properly—and rewind to that happier time.

You'll probably discover that your screen looks like it was designed by drunken cave men, with jagged and awful graphics and text. That's because in Safe Mode, Windows doesn't load the driver for your video card. (It avoids that driver, on the assumption that it may be causing the very problem you're trying to troubleshoot.) Instead, Windows XP loads a crude, generic driver that works with *any* video card.

Tip: Note, by the way, how *fast* Windows is in this mode—a testimony to the dragging effect of all those modern graphic niceties.

The purpose of Safe Mode is to help you troubleshoot. If you discover that the problem you've been having is now gone, you've at least established that the culprit is one of the drivers that Windows has now turned off. Safe Mode also gives you full access to the technical tools of Windows XP, including System Restore (page 475), the Device Manager (page 449), the Registry Editor (page 662), Microsoft Backup (page 497), and the Help center. You might use the Device Manager, for example, to roll back a driver that you just updated (page 453), or System Restore to undo some other installation that seems to have thrown your PC into chaos.

If this procedure doesn't solve the problem, contact a support technician.

- **Safe Mode with Networking.** This option is exactly the same as Safe Mode, except that it also lets you load the driver software needed to tap into the network, if you're on one—an arrangement that offers a few additional troubleshooting possibilities, like being able to access files and drivers on another PC. (If you have a laptop that uses a PC-Card networking card, however, this option still may not help you, since the PC-Card driver itself is still turned off.)
- **Safe Mode with Command Prompt.** Here's another variation of safe mode, this one intended for ultra-power users who are more comfortable typing out text commands at the command prompt (page 33) than using icons, menus, and the mouse.

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- **Enable Boot Logging.** This startup method is the same as Normal, except that Windows records every technical event that takes place during the startup in a log file named *ntbtlog.txt* (it's on the startup drive, in the Windows folder).

  Most of the time, you'll use the Boot Logging option only at the request of a support technician you've phoned for help. After confirming the operating system startup, the technician may ask you to open ntbtlog.txt in your Notepad program and search for particular words or phrases—usually the word "fail."

- **Enable VGA Mode.** In this mode, your PC uses a standard VGA video driver that works with all graphics cards, instead of the hideously ugly generic one usually seen in Safe Mode. Use this option when you're troubleshooting video-display problems—problems that you are confident have less to do with drivers than with your settings in the Display control panel (which you're now ready to fiddle with).

- **Last Known Good Configuration.** Here's yet another method of resetting the clock to a time when your PC was working correctly, in effect undoing whatever configuration change you made that triggered your PC's current problems. It reinstates whichever set of drivers, and whichever Registry configuration, was in force the last time the PC was working right. (This option isn't as effective as the newer System Restore option, however, which also restores operating-system files in the process.)

POWER USERS' CLINIC

The Recovery Console

Between System Restore and Safe Mode, everyday Windows users are well equipped to recover from most typical Windows snafus. But there are times—extremely rare ones, thank goodness—when the files of Windows itself are so corrupted that you can't even access these tools.

In those situations, technically proficient PC fans can take advantage of something called the Recovery Console. As in DOS or UNIX, this window displays nothing but text—no icons, menus, or other graphic niceties—but if you know the correct commands to type, Recovery Console can help get you out of some very tight scrapes. It lets you manipulate files and folders, turn off specific drivers or background services, perform certain hard drive repairs, and even erase (reformat) drives.

To prevent unscrupulous techies from exploiting this emergency tool, Recovery Console offers access only to the system files and folders of Windows itself—application and document folders are off-limits—and doesn't let you copy files onto floppies, Zip disks, or other removable disks. Otherwise, however, Recovery Console looks and works much like the standard DOS command prompt. (Type *help*—and then press Enter—to see a list of all the commands you can use.)

To access Recovery Console, restart the PC from your Windows XP Professional CD-ROM. (On some computers, of course, you can't start up from a CD until you first adjust settings in the BIOS. Ask your PC's manufacturer for help.)

When you see the Welcome to Setup screen, press the R key, and then type and the number corresponding to the copy of Windows you want repaired. When you're asked for the password, just press Enter.

When you're finished making your repairs, type *exit* to get out of Recovery Console and restart the PC.

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- **Directory Services Restore Mode.** This extremely technical option is useful only in corporations with specialized *domain controller* computers running Windows .NET Server or Windows 2000 Server.
- **Debugging Mode.** Here's another extremely obscure option, this one intended for very technical people who've connected one PC to another via a serial cable. They can then use the second computer to analyze the first, using specialized debugger software.
- **Start Windows Normally.** This option starts the operating system in its usual fashion, exactly as though you never summoned the Startup menu to begin with. The Normal option lets you tell the PC, "Sorry to have interrupted you...go ahead."
- **Reboot.** Choose this command to restart the computer.
- **Return to OS Choices Menu.** Use this choice to back up to the "Please select the operating system to start" screen that first appeared when you pressed F8 during startup.

FREQUENTLY ASKED QUESTION

"Invalid system disk" Message

OK, I'll bite. I started up my PC, but it won't finish starting up. Instead, I get a message that says, "Invalid system disk (or Non-system disk); Replace and strike any key when ready." What gives?

You probably left a floppy disk in your floppy drive. Remove the floppy disk and then press any key to proceed with the startup. (It's evidently too much trouble for Microsoft to just *tell* you that.)

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5

Part Five: Life on the Network

Chapter 17: Accounts, Permissions, and Logging On

Chapter 18: Setting Up a Workgroup Network

Chapter 19: Introducing Domains

Chapter 20: Sharing Network Files

Chapter 21: Three Ways to Dial In from the Road

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CHAPTER
17

Accounts, Permissions, and Logging On

For years, teachers, parents, tech directors, and computer lab instructors struggled to answer a difficult question: How do you rig one PC so that several different people can use it throughout the day, without interfering with each others' files and settings? And how do you protect a PC from getting fouled up by mischievous (or bumbling) students and employees?

Introducing User Accounts

Like the Windows 2000 under its skin, Windows XP is designed from the ground up to be a multiple-user operating system. On a Windows XP machine, anyone who uses the computer must *log on*—click (or type) your name and type in a password—when the computer turns on. And upon doing so, you discover the Windows universe just as you left it, including these elements:

- **Desktop.** Each person sees his own shortcut icons, folder icons, and other stuff left out on the desktop.
- **Start menu.** If you reorganize the Start menu, as described in Chapter 1, you won't confuse anybody else who uses the machine. No one else can even *see* the changes you make.
- **My Documents folder.** Each person sees only her own stuff in the My Documents folder.
- **Email.** Windows XP maintains a separate stash of email messages for each account holder—along with separate Web bookmarks, a Windows Messenger contact list, and other online details.

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- **Favorites folder.** Any Web sites, folders, or other icons you've designated as Favorites appear in *your* Favorites menu, and nobody else's.
- **Internet cache.** You can read about *cached* Web pages in Chapter 11. This folder stores a copy of the Web pages you've visited recently for faster retrieval.
- **History and cookies.** Windows maintains a list of recently visited Web sites independently for each person; likewise a personal collection of *cookies* (Web site preference files).
- **Control Panel settings.** Windows memorizes the preferences each person establishes using the Control Panel (see Chapter 8), including keyboard, sound, screen saver, and mouse settings.
- **Privileges.** Your user account also determines what you're allowed to do on the network and even on your own computer: which files and folders you can open, which settings you can change in the Control Panel, and even which files and folders you can open.

Tip: Behind the scenes, Windows XP stores *all* of these files and settings in a single folder that techies call your *user profile*. It's in your My Computer→Local Disk (C:)→Documents and Settings→[Your Name] folder.

This feature makes sharing the PC much more convenient, because you don't have to look at everybody else's files (and endure their desktop design schemes). It also adds a layer of security, making it less likely for a marauding six-year-old to throw away your files.

Tip: Even if you don't share your PC with anyone and don't create any other accounts, you might still appreciate this feature because it effectively password-protects the entire computer. Your PC is protected from unauthorized fiddling when you're away from your desk (or when your laptop is stolen)—especially if you tell Windows to require your logon password any time after the screen saver has kicked in (page 269).

Since the day you first installed Windows XP or fired up a new Windows XP machine, you may have made a number of changes to your desktop—fiddled with your Start menu, changed the desktop wallpaper, added some favorites to your Web browser, downloaded files onto your desktop, and so on—without realizing that you were actually making these changes only to *your account.*

Accordingly, if you create an account for a second person, when she turns on the computer and signs in, she'll find the desktop exactly the way it was as factory installed by Microsoft: basic Start menu, Teletubbies-hillside desktop picture, default Web browser home page, and so on. She can make the same kinds of changes to the PC that you've made, but nothing she does will affect your environment the next time *you* log on. You'll still find the desktop the way you left it: *your* desktop picture fills the screen, the Web browser lists *your* bookmarks, and so on.

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In other words, the multiple-accounts feature has two components: first, a convenience element that hides everyone else's junk; and second, a security element that protects both the PC's system software and other people's work.

If you're content simply to *use* Windows XP Pro, that's really all you need to know about accounts. If, on the other hand, you have shouldered some of the responsibility for *administering* XP Pro machines—if it's your job to add and remove accounts, for example—read on.

Windows XP: The OS With Two Faces

As you may remember from the beginning of Chapter 1, Windows XP Pro is designed to handle either of two different kinds of networks: workgroups (small, informal home or small-business networks) and domains (corporate, professionally and centrally administered).

This distinction becomes particularly important when it comes to user accounts.

- **A workgroup network.** In this smaller kind of network, each computer maintains its own security settings, such as user accounts, passwords, and permissions. You can't open files on another computer on the network unless its owner has created an account for you on *that* computer. Before you can access the files on the Front Desk PC and the Upstairs PC, for example, you must create an account for yourself on each of those machines. Clearly, setting up an account on every PC for every employee would get out of hand in a huge company.

  If you're part of a workgroup network (or no network), you'll find that Windows XP Pro gives you simplified, but less secure, access to user accounts and *permissions*, both of which are described in this chapter.

- **A domain network.** In a corporation, your files may not be sitting right there on your hard drive. They may, in fact, sit on a network server—a separate computer dedicated to dishing out files to employees from across the network. As you can probably imagine, protecting all this information is Job Number One for somebody or other.

  That's why, if your PC is part of a domain, you'll find Windows XP Pro more reminiscent of Windows 2000, with more business-oriented features and full access to the account maintenance and permissions management options.

This chapter tackles these two broad feature categories—the workgroup scenario and the domain scenario—one at a time.

Note: After the Windows XP Pro installation is completed, you can modify the Windows configuration to use either the simple mode or the detailed one, no matter how your computer is equipped.

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Local Accounts on a Workstation

This section is dedicated to computers in a workgroup network—or no network at all. If your computer is a member of a domain, skip to "Local Accounts on a Domain Computer," later in this chapter.

To see what accounts are already on your PC, choose Start→Control Panel, and then open the User Accounts icon. You'll see a list of existing accounts (Figure 17-1).

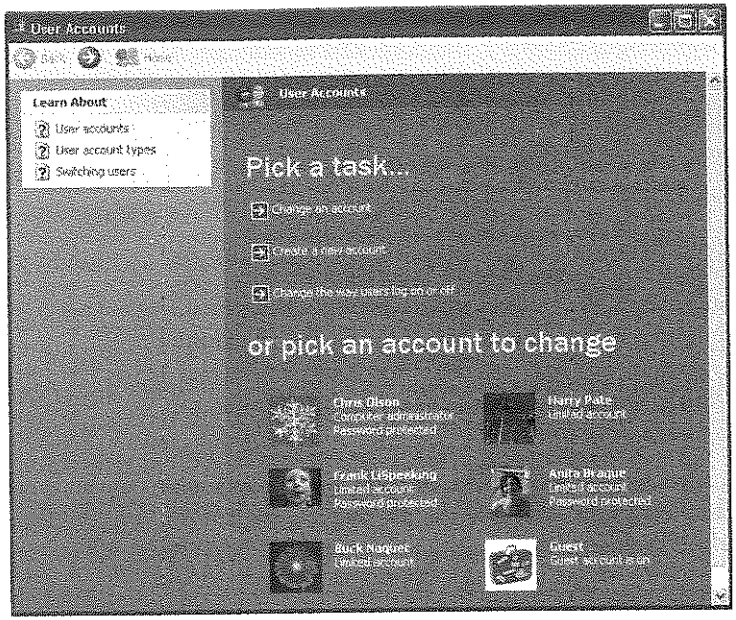


Figure 17-1: *This screen lists everyone for whom you've created an account. From here, you can create new accounts or change people's passwords.*

(Hint: To change account settings, just click the person's name on the bottom half of the screen. Clicking the "Change an account" link at top requires an extra, redundant click.)

If you see more than one account here—not just yours—then one of these situations probably applies:

- You created them when you installed Windows XP Pro, as described in Appendix A.

Tip: All of the accounts you create when you first install Windows XP become *Administrator* accounts, as described in the following section.

- You bought a new computer with Windows XP preinstalled, and created several accounts when asked to do so the first time you turned on the machine.
- You upgraded the machine from an earlier version of Windows. Windows XP gracefully imports all of your existing accounts.

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Note: Upgrader beware: If you've upgraded from Windows 98 or Me, Windows XP treats all of these imported accounts as Administrator accounts, described below. It also wipes out their passwords, which leaves open a security hole the size of Canada. Promptly after upgrading, therefore, you should take a moment to assign passwords and downgrade account types to Limited, as described below.

If you're new at this, there's probably just one account listed here: yours. This is the account that Windows XP created when you first installed it.

Administrator Accounts

It's important to understand the phrase that appears just under each person's name. On your own personal PC, the words "Computer administrator" probably appear underneath yours.

Because you're the person who installed Windows XP to begin with, the PC assumes that you're one of its *administrators*—the technical wizards who will be in charge of it. You're the teacher, the parent, the resident guru. You're the one who will maintain this PC and who will be permitted to make system-wide changes to it.

You'll find settings all over Windows XP Professional (and all over this book) that *only* people with "Computer administrator" accounts can change. For example, only an administrator is allowed to:

- Create or delete accounts and passwords on the PC.
- Install new programs (and certain hardware components).
- Make changes to certain Control Panel programs that are off-limits to non-administrators.
- See and manipulate *any* file on the machine.

As you go about creating accounts for other people who'll use this PC, you'll be offered the opportunity to make each one an administrator just like you. Needless to say, use discretion. Bestow these powers only upon people as responsible and technically masterful as you.

Limited Accounts

Anyone who isn't an administrator is an ordinary, everyday Limited account holder. "Limited" people have everyday access to certain Control Panel settings—the ones that pertain to their own computing environments. But most other areas of the PC are off-limits, including everybody else's My Documents folders, Windows system files, and so on.

If you're a Limited account holder, in other words, your entire world consists of the Start menu, your My Documents folder, the Shared Documents folder, and any folders you create.

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Tip: If a Limited account holder manages to download a computer virus, its infection will be confined to his account. If an *administrator* catches a virus, on the other hand, every file on the machine is at risk.

That's a good argument for creating as few computer administrator accounts as possible. In fact, some Windows pros don't even use Administrator accounts *themselves*. Even they use Limited accounts, keeping one Administrator account on hand only for new software or hardware installations, account or password changing, and similar special cases.

Adding an Account

Once you've opened the User Accounts program in the Control Panel, it's easy to create a new account: just click the "Create a new account" link shown in Figure 17-1. (You see this link only if you are, in fact, an administrator.)

A wizard guides you through the selection of a name and an account type (see Figure 17-2).

When you're finished with the settings, click the Create Account button (or press Enter). After a moment, you return to the User Accounts screen (Figure 17-1), where the new person's name joins whatever names were already there. You can continue adding new accounts forever or until your hard drive is full, whichever comes first.

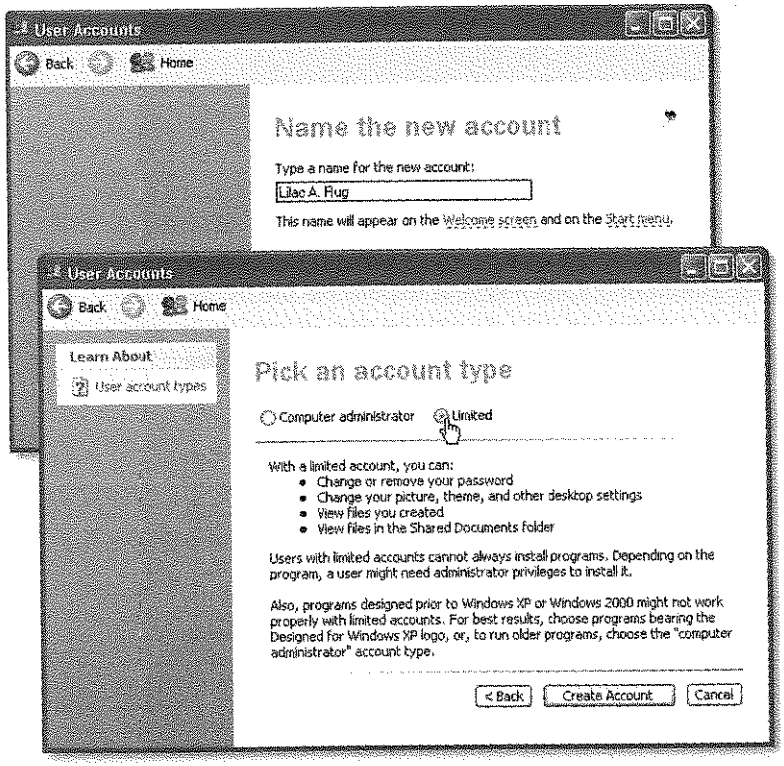


Figure 17-2:
Top left: If it's all in the family, the account's name could be Chris or Robin. If it's a corporation or school, you'll probably want to use both first and last names. Capitalization doesn't matter, but most punctuation is forbidden.

Bottom right: This is the master switch that lets you specify whether or not this unsuspecting computer user will be a computer administrator, as described above.

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Tip: If you never had the opportunity to set up a user account when installing Windows XP—if you bought a PC with Windows XP already on it, for example—you may see an account named Owner already in place. Nobody can use Windows XP at all unless there's at least *one* Administrator account on it, so Microsoft is doing you a favor here.

Just use the User Accounts program in the Control Panel to change the name Owner to one that suits you better. Make that account your own using the steps in the following paragraphs.

Editing an Account

Although the process of creating a new account is swift and simple, it doesn't offer you much in the way of flexibility. You don't even have a chance to specify the new person's password, let alone the tiny picture that appears next to the person's name and at the top of the Start menu (rubber ducky, flower, or whatever).

That's why the next step in creating an account is usually *editing* the one you just set up. To do so, once you've returned to the main User Accounts screen (Figure 17-1), click the name or icon of the freshly created account. You arrive at the screen shown at the top in Figure 17-3, where—if you are an administrator—you can choose from any of these options:

- **Change the name.** You'll be offered the opportunity to type in a new name for this person and then click the Change Name button—just the ticket when one of your co-workers gets married or joins the Witness Protection Program.
- **Create a password.** Click this link if you'd like to require a password for access to this person's account (Figure 17-3, bottom). Capitalization counts.

  The usual computer book takes this opportunity to stress the importance of having a long, complex password, such as a phrase that isn't in the dictionary, something made up of mixed letters and numbers, and *not* "password." This is excellent advice if you create sensitive documents and work in a corporation.

  But if you share the PC only with a spouse or a few trusted colleagues in a small office, for example, you may have nothing to hide. You may see the multiple-users feature more as a convenience (for keeping your settings and files separate) than a way of protecting secrecy and security.

  In these situations, there's no particular need to dream up a convoluted password. In fact, you may want to consider setting up *no* password—leaving both password blanks empty. Later, whenever you're asked for your password, just leave the Password box blank. You'll be able to log on that much faster each day.

  If you do decide to provide a password, you can also provide a *hint* (for yourself or whichever co-worker's account you're operating on). This is a hint than anybody can see (including bad guys trying to log on as you), so choose something meaningful only to you. If your password is the first person who ever kissed you plus your junior-year phone number, for example, your hint might be "first person who ever kissed me plus my junior-year phone number."

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Later, if you ever forget your password, you'll be offered an opportunity to view this hint at sign-in time to jog your memory.

Tip: When you're creating accounts that other people will use for the purpose of accessing their machines from across the network, set up the same passwords they use when logging onto their own computers. You'll save them time and hassle. Once they've logged onto another machine on the network, they'll be able to connect to their own without having to type in another name and password.

By the way, it's fine for you, an administrator, to create the *original* passwords for new accounts. But don't change their passwords later on, after they've been using the computer for a while. If you do, you'll wipe out various internal security features of their accounts, including access to their stored Web site passwords and stored passwords for shared folders and disks on the network (Chapter 20). See the box on page 523 for details.

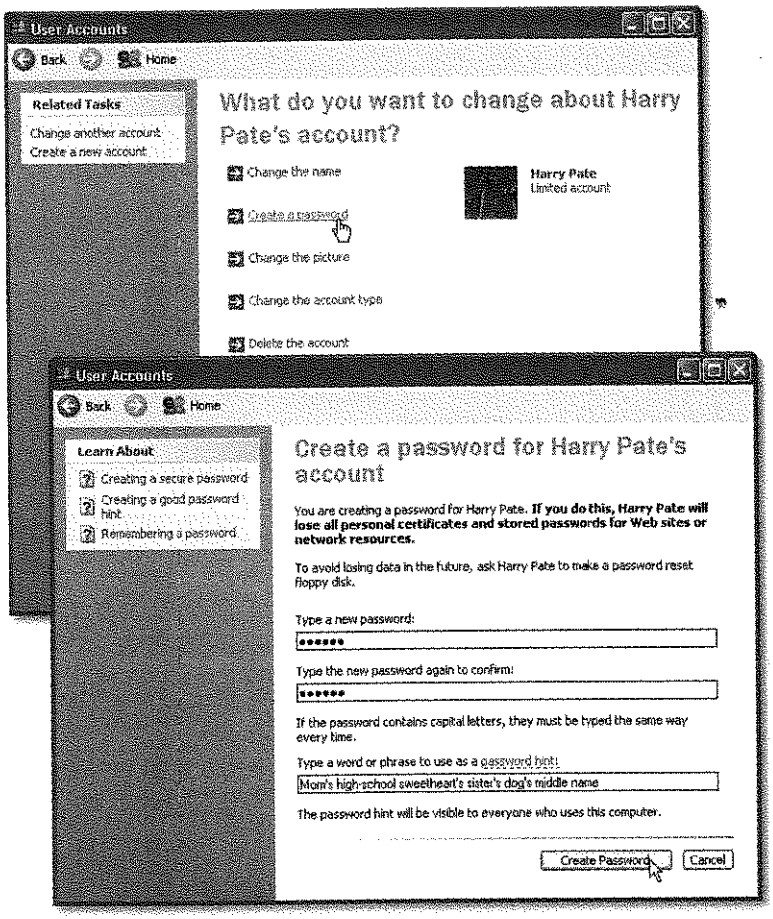


Figure 17-3:
Top: Here's the master menu of account changing options that you, an administrator, can see. (If you're a Limited account holder, you see far fewer options.)

Bottom: You're supposed to type your password twice, to make sure you didn't introduce a typo the first time. (The PC shows only dots as you type, to guard against the possibility that some villain is snooping over your shoulder.)

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- **Make your files private.** The first time you make up a password *for your own account,* another screen asks: "Do you want to make your files and folders private?" If you're using the accounts feature more for convenience than for security—if you and your boss are married and have no secrets from each other, for example—click No.

Note: The private-folder feature is available only on hard drives you've formatted using the *NTFS* scheme, as described on page 636.

But if you click the button labeled "Yes, Make Private," Windows takes a minute to mark everything in your *user profile folder* off-limits to other account holders. (Your user profile folder is the one bearing your name in the Documents and Settings folder on your hard drive.) Henceforth, if anyone else tries to open any of your files or folders (when they're logged in under their own names), they'll get nothing but a curt "Access is denied" message.

(Technically, making a folder private even shields it from the eyes of the machine's Administrator account holders—but it's a pretty flimsy shield. A determined administrator can burrow past this wisp of protection to examine your files, if she's determined to do so, or even change your password late one night to gain full access to your stuff.)

Note that even if you *do* make your files and folders private, you'll still be able to share selected files and folders with other people. You just put them into the Shared Documents folder described on page 107.

Tip: You can make *any* of your own folders private—or un-private, for that matter. Just right-click the folder; from the shortcut menu, choose Properties; click the Sharing tab; and turn "Make this folder private" on or off.

To make your entire world un-private, for example, you'd perform this surgery on your *user profile folder* in the Documents and Settings folder (page 541).

- **Change the picture.** The usual sign-in screen (Figure 17-14) displays each account holder's name, accompanied by a little picture. When you first create the account, however, it assigns a picture to you at random—and not all of them are necessarily appropriate for your personality. Not every extreme-sport headbanger, for example, is crazy about being represented by a dainty flower or butterfly.

  If you like the selections that Microsoft has provided (drag the vertical scroll bar to see them all), just click one to select it as the replacement graphic. If you'd rather use some other graphics file on the hard drive instead—a digital photo of your own face, for example—you can click the "Browse for more pictures" link (Figure 17-4). You'll be shown a list of the graphics files on your hard drive so that you can choose one, which Windows then automatically scales down to postage stamp size (48 pixels square).

- **Change the account type.** Click this link to change a Limited account into an Administrator account, or vice versa. You might want to use this option, for

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example, after upgrading a Windows 98 or Windows Me computer to Windows XP—a process that otherwise leaves all existing user accounts as Administrator accounts.

- **Delete the account.** See page 524.

You're free to make any of these changes to any account at any time; you don't have to do it just after first creating the account.

Tip: If the User Accounts program looks nothing like the illustrations in this chapter so far, it's probably because you have only a Limited account. In that case, opening User Accounts in the Control Panel offers only certain links: "Create a password" (or "Change my password"), "Change my picture," and "Set up my account to use a .NET Passport." Only a computer administrator can make the other kinds of changes described here.

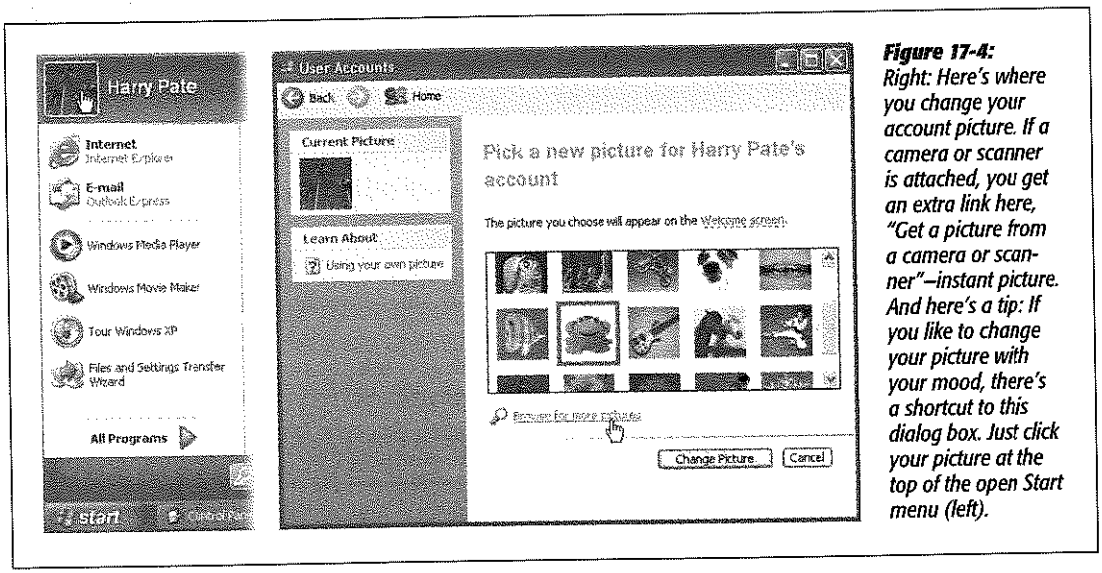


Figure 17-4: *Right: Here's where you change your account picture. If a camera or scanner is attached, you get an extra link here, "Get a picture from a camera or scanner"—instant picture. And here's a tip: If you like to change your picture with your mood, there's a shortcut to this dialog box. Just click your picture at the top of the open Start menu (left).*

The Forgotten Password Disk

As described later in this chapter, Windows XP contains a handy hint mechanism for helping you recall your password if you've forgotten it: the little ? icon that appears after you click your name on the Welcome screen. When you click that little icon, you're shown the hint that you provided for yourself—*if* you provided one—when setting up your account.

But what if, having walked into a low-hanging branch, you've completely forgotten both your password and the correct interpretation of your hint? In that disastrous situation, your entire world of work and email would be locked inside the computer forever. (Yes, an administrator could issue you a new password—but as noted in the box on the facing page, you'd lose all your secondary passwords in the process.)

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Fortunately, Windows XP offers a clever solution-in-advance: the Password Reset Disk. It's a floppy disk that you can use like a physical key to unlock your account, in the event of a forgotten password. The catch: You have to make this disk *now*, while you still remember your password.

To create this disk, choose Start→Control Panel. Open the User Accounts program. If you're an administrator, click your account name; if not, you can skip this step.

Either way, you should now see a link in the task pane called, "Prevent a forgotten password." Click that to open the Forgotten Password Wizard shown in Figure 17-5.

When the day comes that you can't remember your password, your attempts to get past the logon screen will be met by a "Use your Password Reset Disk" link. (If you've turned off the standard Welcome screen shown at top in Figure 17-14, you'll see a Reset button instead.)

When you click that link or button, Windows asks you to insert your Password Reset Disk, and then gives you the opportunity to create a new password (and a new hint to remind you of it). You're in.

UP TO SPEED

Passwords Within Passwords

The primary password that you or your administrator sets up in the User Accounts program has two functions. You already know that it lets you log on each day, so that you can enter your Windows world of desktop clutter, Start menu tailoring, Web bookmarks, and so on.

But what you may not realize is that it's also the master key that unlocks all the *other* passwords associated with your account: the passwords that Internet Explorer memorizes for certain Web sites, the passwords that get you into shared disks and folders on the network, the password that protects your .NET Passport (and its Wallet for electronic payments, if you set one up), and so on. The simple act of logging onto your account also unlocks all of these other secure areas of your PC life.

But remember that anyone with an Administrator account can *change* your password at any time. Does that mean that whoever has an Administrator account—your teacher, boss, or teenager, for example—has full access to your private stuff?

After you leave the household, company, or school, what's to stop an administrator from changing your password, thereby gaining access to your electronic-brokerage account (courtesy of its memorized Internet Explorer password), buying stuff with your Passport Wallet, and so on?

Fortunately, Microsoft is way ahead of you on this one. The instant an administrator changes somebody else's password, Windows XP *wipes out* all secondary passwords associated with the account. That administrator can log onto your account and see your everyday files, but not Web sites with memorized passwords, and so on.

Note that if you change your *own* password—or if you use a Forgotten Password Disk, described next—none of this applies. Your secondary passwords survive intact. It's only when *somebody else* changes your password that this little-known Windows XP security feature kicks in, sanitizing the account for your protection.

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Even though you now have a new password, your existing Password Reset Disk will still be good. Keep it in a drawer somewhere, for use the next time you experience a temporarily blank brain.



Figure 17-5: *The screens of this wizard guide you through the process of inserting a blank floppy disk and preparing it to be your master skeleton key. If you forget your password—or if some administrator has* changed *your password—you can use this disk to reinstate it without the risk of losing all of your secondary passwords (memorized Web passwords, encrypted files, and so on).*

Deleting User Accounts

It happens: Somebody graduates, somebody gets fired, somebody dumps you. Sooner or later, you may need to delete a user account from your PC.

To delete a user account, you, an administrator, must open the User Accounts program, click the appropriate account name, and then click "Delete the account."

Windows XP now asks you if you want to preserve the contents of this person's My Documents folder. If you click the Keep Files button, you'll find a new folder, named for the dearly departed, on your desktop. (As noted in the dialog box, only the documents, contents of the desktop, and the My Documents folder are preserved—but *not* programs, email, or even Web favorites.) If that person ever returns to your life, you can create a new account for him and copy these files into the appropriate folder locations.

If you click the Delete Files button, on the other hand, the documents are gone forever.

A few more important points about deleting accounts:

- You can't delete the account you're logged into.

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- You can't delete the last Administrator account. One account must always remain.
- You can create a new account with the same name and password as one that you deleted earlier, but in Windows XP's head, it's still not the same account. As described in the box on page 523, it won't have any of the original *secondary* passwords (for Web sites, encrypted files, and so on).
- Don't manipulate accounts manually (by fooling around in the Documents and Settings folder, for example). Create, delete, and rename them only using the User Accounts program in the Control Panel. Otherwise, you'll wind up with duplicate or triplicate folders in Documents and Settings, with the PC name tacked onto the end of the original account name (Bob, Bob.MILLENNIA, and so on)—a sure recipe for confusion.

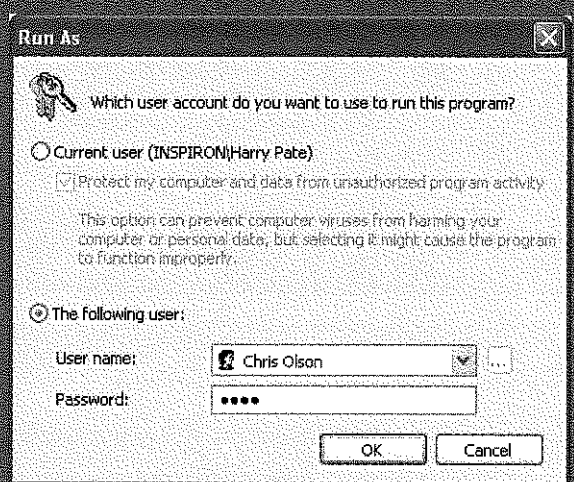
FREQUENTLY ASKED QUESTION

Limited Unlimited

OK, OK, I get it: for maximum security, it's best to create Limited accounts for the people who use my PC. But I've got this program, Beekeeper Pro, that doesn't work right under a Limited account. Now what?

Unfortunately, you have only two alternatives, and neither is particularly convenient.

First, whenever a Limited account holder encounters a place where administrator powers are required, he doesn't actually have to log out so that you, the administrator, can log on and make changes. Instead, he can just call you over to the PC. He can then right-click the icon of the problem program and, from the shortcut menu, choose "Run as."



The dialog box shown here appears. You, the administrator, should click "The following user," and then fill in your own name and password—if, indeed, you feel comfortable permitting your peon limited user to proceed. As far as Windows (and the specific program in question) is concerned, that limited user is now officially an administrator.

That, of course, is a one-shot, temporary solution—a routine that will grow old fast if the limited user has to use that recalcitrant program every single day. In that case, you may have no alternative but to upgrade your colleague to an Administrator account, despite the security downsides.

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Tip: If you're an administrator, don't miss the Users tab of the Task Manager dialog box (press Ctrl+Alt+Delete to open it). It offers a handy, centralized list of everybody who's logged into your machine—even those who have dialed in from the road, as described in Chapter 21—and buttons that let you log them off, disconnect them, or even make a little message pop up on their screens. All of this can be handy whenever you need some information, a troubleshooting session, or a power trip.

The Administrator Account

It may come as a surprise to a workgroup user that Windows XP provides one more, very special account: an emergency, backup account with full administrator powers. Even if you delete all of your other accounts, this one will still remain, if only to give you some way to get into your machine. It's an account called Administrator, and it's ordinarily hidden.

In fact, you'll generally see it only in times of troubleshooting, when you start up your PC in Safe Mode (page 506). It's the ideal account to use in those situations. Not only does it come with no password assigned, but it's also not limited in any way. It gives you free powers over every file, which is just what you may need to troubleshoot your computer.

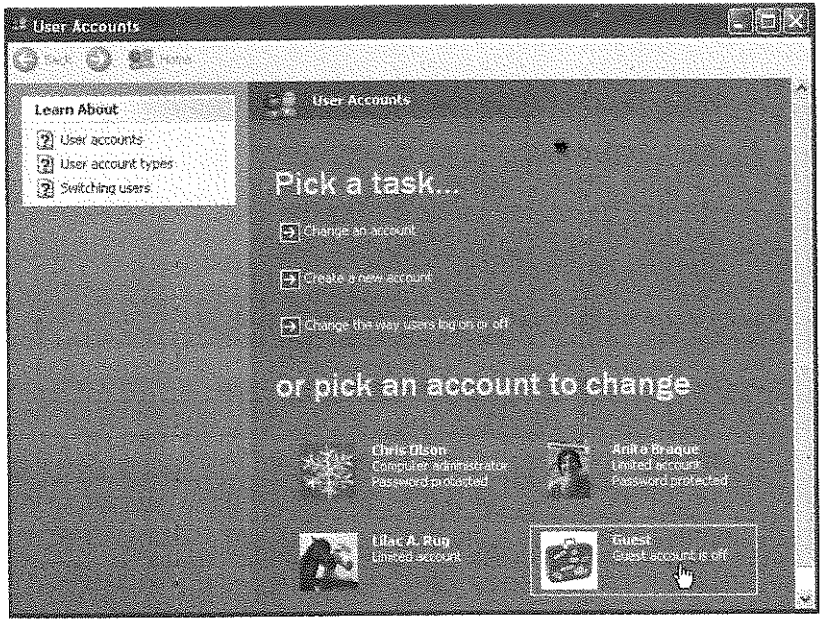


Figure 17-6: *There's not really much to learn about the Guest account; it's exactly the same thing as a Limited account, except that it requires no password at all.*

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The Guest Account

Actually, Administrator and Limited aren't the only kinds of accounts you can set up on your PC.

The third kind, called the Guest account, is ideal for situations where somebody is just visiting you for the day. Rather than create an entire account for this person, complete with password, hint, little picture, and so on, you can just switch on the Guest account.

To do so, open the User Accounts program in the Control Panel. If you're an administrator, you'll see an icon for the Guest account at the bottom of the screen (Figure 17-6). Click it; on the next screen, click the button labeled Turn On the Guest Account. That's all there is to it.

When the visitor to your office is finally out of your hair, healthy paranoia suggests that you turn off the Guest account once again. (To do so, follow precisely the same steps, except click Turn Off the Guest Account in the final step.)

Local Accounts on a Domain Computer

When your computer is a member of a corporate domain, the controls you use to create and manage user accounts are quite a bit different.

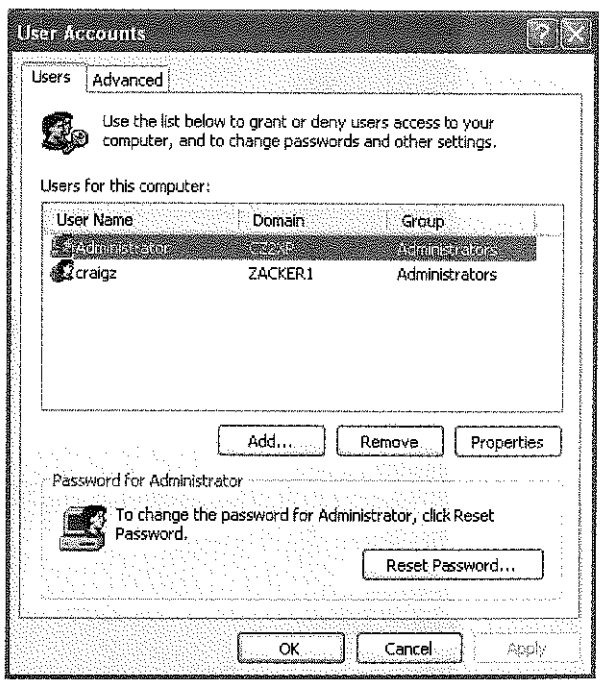


Figure 17-7:
A Windows XP Professional computer that's a member of a domain has a more detailed User Account dialog box. Instead of creating new accounts on your local machine, these controls let you give other people on your domain the ability to log onto your computer locally *(that is, in person, rather than from across the network).*

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Local Accounts on a Domain Computer

In this case, when you choose Start→Control Panel→User Accounts, you see the dialog box shown in Figure 17-7. The layout is different, but the idea is the same: You can see all of the accounts on the computer, including the Administrator account described above. (In a domain situation, it isn't hidden, as it is on a workgroup computer.)

This dialog box lets you create *local* accounts—accounts stored only on your computer, and not on the corporate domain machine—for existing citizens of the domain. (Why would you need a local account, if all of your files and settings are actually stored elsewhere on the network? Because certain tasks, like installing drivers for new hardware, require you to log on using a *local* Administrator account.)

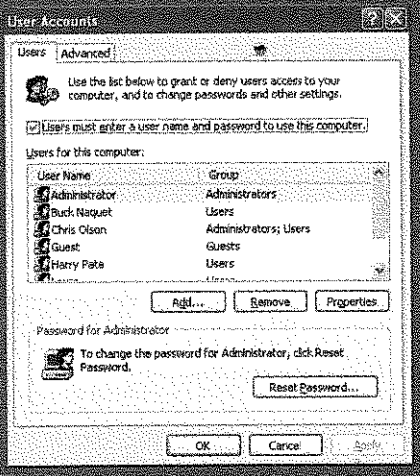
Note: This business of creating a local account that corresponds to an *existing domain account* isn't quite the same thing as creating a completely new account for a completely new person. For that purpose, see the following pages.

NOSTALGIA CORNER

The Windows 2000 User Accounts Control Panel

You're supposed to do most of your account-editing work in the User Accounts program of the Control Panel, which is basically a wizard that offers one option per screen. That requirement may not thrill veteran Windows 2000 fans, however, who are used to the much more direct—and more powerful—User Accounts screen.

Actually, it's still in Windows XP. To make it appear, choose Start→Run, type out *control Userpasswords2*, and then press Enter. You see the program shown here.



Most of the functions here are the same as what you'd find in the new XP User Accounts program—it's just that you don't have to slog through several wizard screens to get things done. Here you can add, remove, or edit accounts all in a single screen.

This older Control Panel program also offers a few features that you don't get at all in the new one. For example, you can turn off the checkbox called, "Users must enter a user name and password to use this computer." When you do so, you get a dialog box called Automatically Log On, where you can specify a user name and password of one special person. This lucky individual won't have to specify any name and password at logon time, and can instead turn on the PC and cruise directly to the desktop. (This feature works only at *startup time*. If you choose Start→Log Off, the standard Logon dialog box appears, so that other people have the opportunity to sign in.)

This automatic logon business is ordinarily a luxury enjoyed by solo operators whose PCs have only one account and no password. By using the secret User Accounts method, however, you can set up automatic logon even on a PC with several accounts, provided you appreciate the security hole that it leaves open.

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Creating a Local Account for a Domain Member

When you click the Add button (Figure 17-7), an Add New User Wizard appears. It lets you specify the person's name and the name of the domain that already stores his account. (You can also click the Browse button to search your domain for a specific person.)

When you click Next, the wizard prompts you to specify what level of access you want to grant this person. You have three choices:

- **Standard user.** This person will be allowed to change certain system settings and install programs that don't affect the Windows XP system files.
- **Restricted user.** A restricted user can log in and save documents, but isn't allowed to install software or modify system settings.
- **Other.** If you choose this option, you'll be allowed to specify what local *group* this person belongs to, as described later in this chapter.

Once the account you selected appears in the user accounts list, that person is now ready to log into your PC using the local account.

Local Users and Groups

The simple control panels you've read about so far in this chapter are designed for simplicity and convenience, but not for power. Windows XP Pro offers a second way to create, edit, and delete accounts: an alternative window that, depending on your taste for technical sophistication, is either intimidating and technical—or liberating and flexible.

It's called the Local Users and Groups console.

Opening the Console

You can open up the Local Users and Groups window in any of several ways:

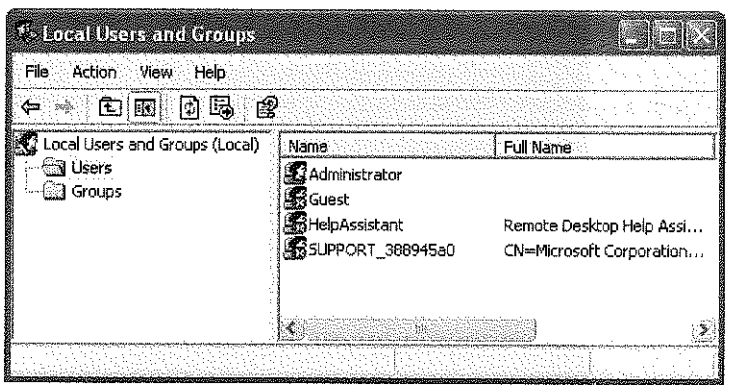


Figure 17-8: *Local Users and Groups is a* Microsoft Management Console (MMC) snap-in. *MMC is a shell program that lets you run most of Windows XP's system administration applications. An MMC snap-in typically has two panes. You select an item in the left (scope) pane to see information about it displayed in the right (detail) pane.*

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- Choose Start→Control Panel→Administrative Tools→Computer Management. Click the Local Users and Groups icon in the left pane of the window.
- Choose Start→Run, type *Lusrmgr.msc*, and click OK.
- *Domain PCs only:* Choose Start→Control Panel. Open User Accounts, click the Advanced tab , and then, under Advanced User Management, click the Advanced button.

In any case, the Local Users and Groups console appears, as shown in Figure 17-8.

In this console, you have complete control over the local accounts (and groups, as described in a moment) on your computer. This is the real, raw, unshielded command center, intended for power users who aren't easily frightened.

The truth is, you probably won't use these controls much on a domain computer. After all, most people's accounts live on the domain computer, not the local machine. You might occasionally have to log in using the local Administrator account to perform system maintenance and upgrade tasks, but you'll rarely have to create *new* accounts.

Workgroup computers are another story. Remember that you'll have to create a new account for each person who might want to use this computer—or even to access its files from across the network. If you use the Local Users and Groups console to create and edit these accounts, you have much more control over the new account holder's freedom than you do with the User Accounts control panel.

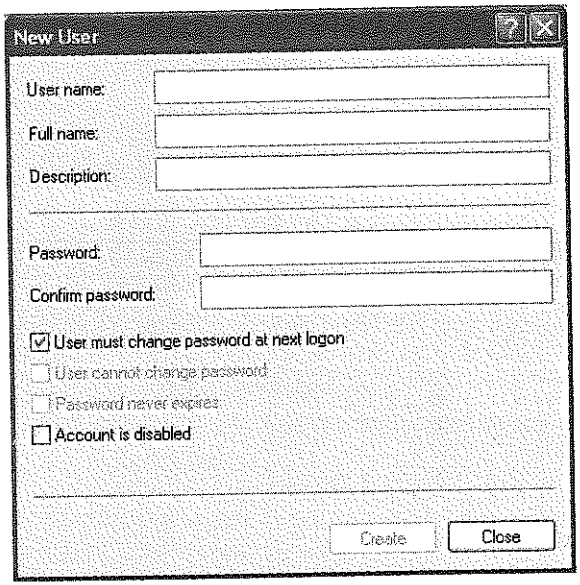


Figure 17-9:
When you first create a new user, the "User must change password at next logon" checkbox is turned on. It's telling you that no matter what password you make up when creating the account, your colleague will be asked to make up a new one the first time he logs in. This way, you can assign a simple password (or no password at all) to all new accounts, but your underlings will still feel free to devise passwords of their own choosing, and the accounts won't go unprotected

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Creating a New User Account

To create a new account in the Local Users and Groups console, start by clicking the Users folder in the left side of the console (technically called the *scope pane*). On the right side of the console (the *detail pane*), you see a list of the accounts already on the machine. It probably includes not only the accounts you created during the Windows XP installation (and thereafter), but also the Administrator and Guest accounts described earlier in this chapter.

To create a new account, choose Action→New User from the Action menu. In the New User dialog box (Figure 17-9), type a name for the account (the name this person will type or choose when logging in), the person's full name, and if you like, a description. (Microsoft no doubt has in mind "Shipping manager" rather than "Short and balding," but the description can be anything you like.)

In the Password and Confirm Password text boxes, specify the password that your new colleague will need to access the account. Its complexity and length are up to you and your innate sense of security paranoia.

Tip: If you can't create a new account, it's probably because you don't have the proper privileges yourself. You must have an Administrator account (page 517) or belong to the Power Users or Administrators *group* (page 533).

If you turn off the "User must change password at next logon" checkbox, you can turn on options like these:

- **User cannot change password.** This person won't be allowed to change the password that you've just made up. (Some system administrators like to maintain sole control over the account passwords on their computers.)
- **Password never expires.** Using software rules called *local security policies*, an administrator can make account passwords expire after a specific time, periodically forcing employees to make up new ones. It's a security measure designed to foil intruders who somehow get a hold of the existing passwords. But if you turn on this option, the person whose account you're now creating will be able to use the same password indefinitely, no matter what the local security policy says.
- **Account is disabled.** When you turn on this box, this account holder won't be able to log on. You might use this option when, for example, somebody goes on sabbatical—it's not as drastic step as deleting the account, because you can always reactivate the account by turning the checkbox off. You can also use this option to set up certain accounts in advance, which you then activate when the time comes by turning this checkbox off again.

Note: When an account is disabled, a red circled X appears on its icon in the Local Users and Groups console. (You may have noticed that the Guest account appears this way when you first install Windows XP.)

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When you click the Create button, you add the new account to the console, and you make the dialog box blank again, ready for you to create another new account, if necessary. When you're finished creating accounts, click Close to return to the main console window.

Groups

As you may have guessed from its name, you can also use the Local Users and Groups window to create *groups*—named collections of account holders.

Suppose you work for a small company that uses a workgroup network. You want to be able to share various files on your computer with certain other people on the network. You'd like to be able to permit them to access some folders, but not others. Smooth network operator that you are, you solve this problem by assigning *permissions* to the appropriate files and folders (page 545).

In Windows XP Pro, you can specify different access permissions to *each file for each person*. If you had to set up these access privileges manually for every file on your hard drive, for every account holder on the network, you'd go out of your mind—and never get any real work done.

That's where groups come in. You can create one group—called Trusted Comrades, for example—and fill it with the names of every account holder who should be allowed to access your files. Thereafter, it's a piece of cake to give everybody in that group access to a certain folder, in one swift step. You end up having to create only one permission assignment for each file, instead of one for each *person* for each file.



Figure 17-10:
The New Group dialog box lets you specify the members of the group you are creating. A group can have any number of users as members, and a user can be a member of any number of groups.

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Furthermore, if a new employee joins the company, you can simply add her to the group. Instantly, she has exactly the right access to the right files and folders, without your having to do any additional work.

Creating a group

To create a new group, click the Groups folder in the left side of the Local Users and Groups console (page 529). Choose Action→New Group. The New Group dialog box appears, as shown in Figure 17-10. Into the appropriate boxes, type a name for the group, and a description if you like. Then click Add.

A Select Users or Groups dialog box appears (the same box shown in Figure 17-20). Here, you can specify who should be members of your new group. (You can always add more members to the group, or remove them later.)

Finally, click OK to close the dialog box, and then click Create to add the group to the list in the console. The box appears empty again, ready for you to create another group.

Built-in groups

You may have noticed that even the first time you opened the Users and Groups window, a few group names appeared there already. That's because Windows XP comes with a canned list of ready-made groups that Microsoft hopes will save you some time.

For example, when you use the User Accounts control panel program to set up a new account, Windows automatically places that person into the Limited or Computer Administrator group, depending on whether or not you made him an administrator (page 417). In fact, that's how Windows knows what powers and freedom this person is supposed to have.

Here are some of the built-in groups on a Windows XP Professional computer:

- **Administrators.** Members of the Administrators group have complete control over every aspect of the computer. They can modify any setting, create or delete accounts and groups, install or remove any software, and modify or delete any file.

  But as Spiderman's uncle might say, with great power comes great responsibility. Administrator powers make it possible to screw up your operating system in thousands of major and minor ways, either on purpose or by accident. That's why it's a good idea to keep the number of Administrator accounts to a minimum—and even to avoid using one for everyday purposes yourself, as described in the Tip on page 518.

- **Power Users.** Members of this group have fewer powers than Administrators, but still more than mere mortals in the Users group. If you're in this group, you can set the computer's clock, change its monitor settings, create new user accounts and shared folders, and install most kinds of software. You can even modify some of the

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critical system folders, including the Windows folder and Windows→ System32 folder—but only for the purpose of installing applications that deposit files into those folders.

Clueless Power Users members can still cause trouble, so you should reserve the status for people who know what they're doing. On the other hand, Power Users aren't allowed to delete, move, or change core operating system files, so the damage they can inflict is relatively limited. This is a good kind of account for you, the wise administrator, to use for everyday work.

- **Users.** Limited account holders (page 525) are members of this group. They can access their own Start menu and desktop settings, their own My Documents folders, the Shared Documents folder, and whatever folders they create themselves—but they can't change any computer-wide settings, Windows system files, or program files.

  If you're a member of this group, you can install new programs—but you'll be the only one who can use them. That's by design; any problems introduced by that program (viruses, for example) are limited to your files and not spread to the whole system.

  If you're the administrator, it's a good idea to put most new account holders into this group.

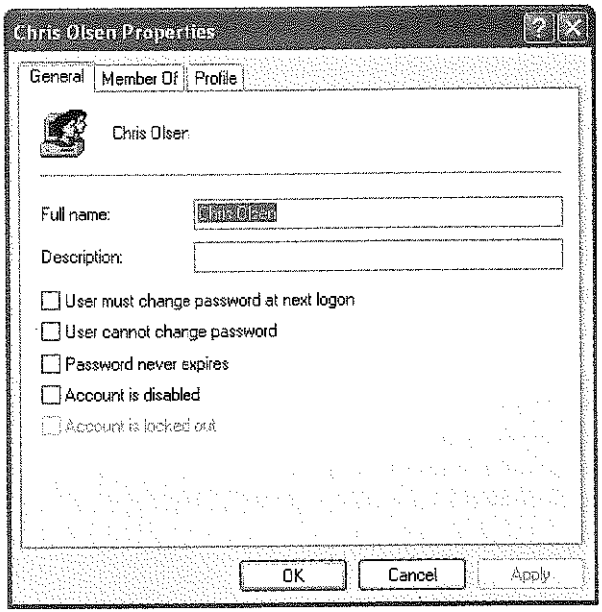


Figure 17-11:
In the Properties dialog box for a user account, you can change the full name or description, modify the password options, and add this person to, or remove this person from, a group. The Properties dialog box for a group is simpler still, containing only a list of the group's members.

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- **Guests.** If you're in this group, you have pretty much the same privileges as members of the Users group. You lose only a few nonessential perks, like the ability to read the computer's *system event log* (a record of behind-the-scenes technical happenings).

In addition to these basic groups, there are also two special-purpose groups:

- **Backup Operators.** People in this group can back up and restore any of the files on the computer, even if those files are technically off-limits to these account holders. Members of this group can also log onto the system and shut it down, although they can't modify any security settings.
- **Replicator.** If you're in this group, you can replicate files across a domain, a technical bit of bookkeeping of absolutely no interest to anyone outside the thrilling world of network administration.

Remember: You can add an individual account to as many groups as you like. That person will have the accumulated rights and privileges of all of those groups.

Modifying Users and Groups

To edit an account or group, just double-click its name in the Local Users and Groups window. A Properties dialog box appears, as shown in Figure 17-11.

You can also change an account password by right-clicking the name and choosing Set Password from the shortcut menu. But see page 520 earlier in this chapter for some cautions about this process.

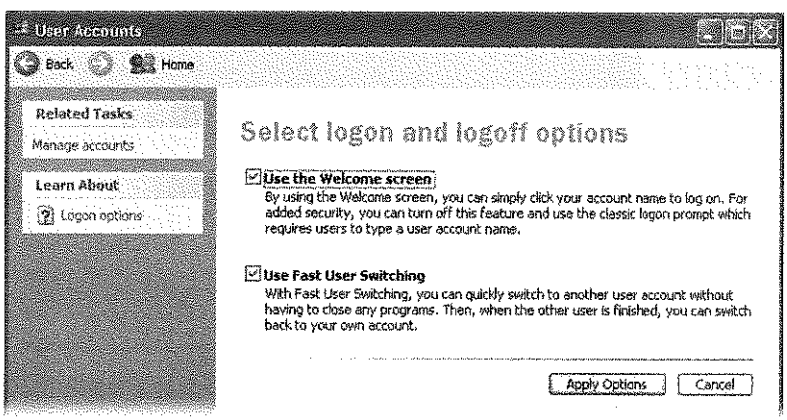


Figure 17-12: *The first option here governs the appearance of the user-friendly Welcome screen shown in Figure 17-14. The second lets one person duck into his own account without forcing you to log off completely, as described on page 518. Note that these options are related–you can't turn off the first without first turning off the second.*

Setting Up the Logon Process

On a Windows XP computer in a workgroup, the dialog box that greets you when you turn on the PC (or when you relinquish your turn at the PC by choosing Start→

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Log Off) looks something like Figure 17-14. But a few extra controls let you, an administrator, set up the logon screen for either more or less security—or, put another way, less or more convenience.

Open the User Accounts program in the Control Panel, and then click "Change the way users log on or off." As shown in Figure 17-12, Windows XP now offers you two extremely important logon options.

Use the Welcome Screen

Under normal circumstances, the logon screen presents a list of account holders when the PC is first turned on, as shown in Figure 17-14.

If you're worried about security, however, you might not even want that list to appear. If you turn off "Use the Welcome screen," each person who signs in must type both his name *and* password into blank boxes—a very inconvenient, but secure, arrangement (Figure 17-13). (You can't turn off "Use the Welcome screen" if Fast User Switching is turned on, as described in the next section.)

Tip: Even when you're looking at the standard, friendly Welcome screen (Figure 17-14), you can switch to the older, Classic logon screen: just press Ctrl+Alt+Delete. (If you're having trouble making it work, try pressing down the Alt key *before* the other ones.)

You may be used to using the Ctrl+Alt+Delete keystroke for summoning the Task Manager, as described on page 154, but at the Welcome to Windows box, it means something else entirely.

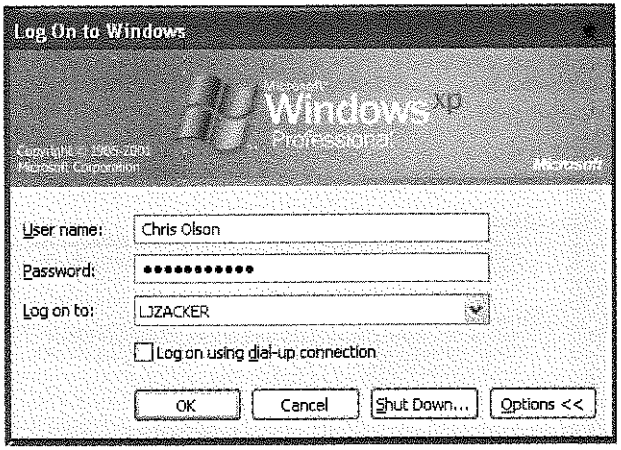


Figure 17-13:
If you turn off the new Welcome screen, you sign into Windows XP just as Windows 2000 fans have for years. You're expected to type in your name and password and then click OK. (By the way, you also see this display if you joined a domain when installing Windows XP Pro.)

Use Fast User Switching

If you've used any version of Windows before, the business about separate user accounts for everybody who uses a certain PC is old hat. One aspect of this feature, however, is dramatically new in Windows XP—and extremely welcome: *Fast User Switching.*

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How Fast User Switching works

Suppose you're signed in, and you've got things just the way you like them: You have eleven programs open in carefully arranged windows, your Web browser is downloading some gigantic file, and you're composing an important speech in Microsoft Word. Now Chris, a co-worker/family member/fellow student, wants to duck in to do a quick email check.

In the old days, you might have rewarded Chris with eye-rolling and heavy sighs, or worse. If you chose to accommodate the request, you would have had to shut down your whole ecosystem, interrupting the download, closing your windows, saving your work and exiting your programs. You would have had to log off completely.

If Fast User Switching is turned on, however, none of that is necessary. All you have to do is press the magic keystroke, Windows logo key+L. (Or, if you've misplaced your keyboard, you can choose Start→Log Off, and then click Switch User in the Log Off dialog box.)

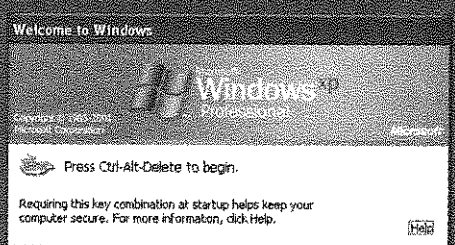
Now the Welcome screen appears, ready for the next person to sign in. Looking at the screen now, you may *think* you've just logged off in the usual way.

But look at it closely (Figure 17-14): You haven't actually logged off at all. Instead, Windows has *memorized* the state of affairs in your account—complete with all open windows, documents, and programs—and shoved it into the background. Chris (or whoever) can now sign in normally, do a little work, or look something up. When Chris logs out again, the Welcome screen comes back once again, at which point *you*

NOSTALGIA CORNER

The Double-Thick Security Trick

If you use Windows XP Pro in a corporation, you may see the startup box shown here when you first turn on the machine. You don't proceed to the Classic logon box (Figure 17-13) until you first press Ctrl+Alt+Delete.



This somewhat inconvenient setup is intended as a security feature. By forcing you to press Ctrl+Alt+Delete to bypass the initial Welcome box, Windows rules out the possibility that some sneaky program (such as a Trojan-horse program), designed to *look* like the Classic logon box, is posing *as* the Classic logon box—in order to "capture" the name and password you type there.

This two-layer logon system is what you get when you add your PC to a network domain during the Windows XP Pro installation. If you want to use it on a workgroup machine, you can, but you have to do a little digging to find it. Choose Start→Run, type *control Userpasswords2*, and then press Enter. You see the program shown on page 510—the old-style User Accounts box. Click the Advanced tab.

At the bottom of the Advanced tab, turn on "Require users to press Ctrl+Alt+Delete," and then click OK. From now on, turning on the PC greets you not with a logon screen, but with the un-fakeable Welcome box shown here. (Of course, this presumes you've also turned off "Use the Welcome screen," as shown in Figure 17-12.)

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can log on again. Without having to wait more than a couple of seconds, you find yourself exactly where you began, with all programs and documents still open and running.

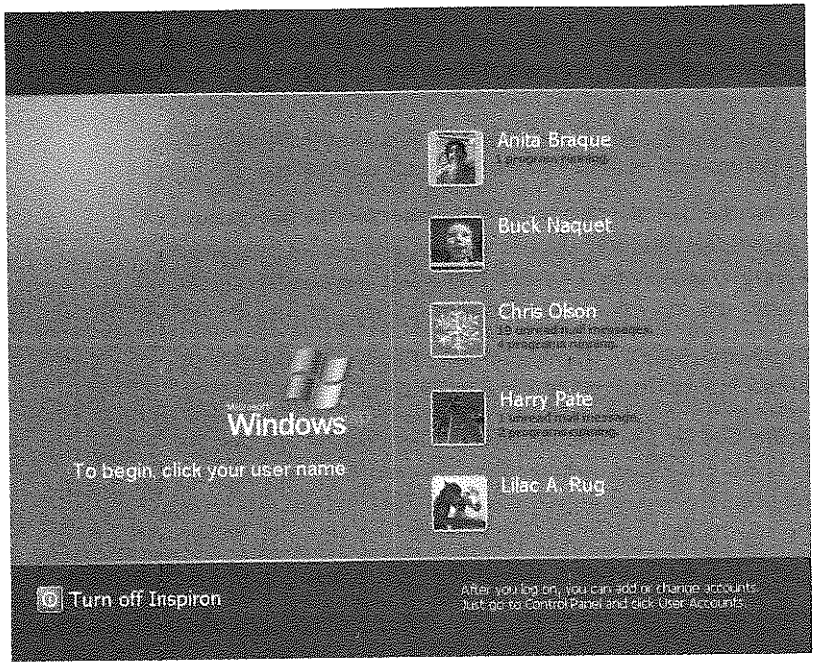


Figure 17-14: *When Fast User Switching is turned on, you can call up the Welcome screen shown here without even quitting your programs and closing your windows. If Outlook Express or Windows Messenger is running, the Welcome screen even shows you how many unread email messages are waiting for you. (Point without clicking to produce a tooltip that breaks down which email accounts they came in on.)*

This feature requires a good deal of memory, of course (don't even think about it on a machine with less than 96 MB of RAM). Otherwise, however, it's an enormous timesaver.

Tip: If Fast User Switching is turned *off*, its special keystroke—Windows logo key+L—is still special. Now it *locks* your PC, hiding all of your open programs and windows. The only thing on the screen is an Unlock Computer dialog box (which looks almost exactly like the one shown in Figure 17-14). At this point, nobody can even get into the machine except you or somebody with an Administrator account.

How to turn on Fast User Switching

To turn on this optional feature, open the User Accounts program in the Control Panel. Click "Change the way users log on or off"; the dialog box shown in Figure 17-12 appears. Make sure "Use the Welcome screen" is turned on (it's a requirement for Fast User Switching), and then turn on "Use Fast User Switching." Finally, click the Apply Options button.

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Note: You can't turn Fast User Switching off if anybody else's account is still open in the background. Before you can turn off the feature, you must first switch to each account in turn (press Windows key+L) and then sign off from each account.



Figure 17-15:
Top: If you choose Start→Log Off when Fast User Switching is turned off, you get this limited dialog box.

Bottom: When you choose Start→ Log Off while Fast User Switching is turned on, you get this choice: you can either log off for real (click Log Off), or use Fast User Switching to cede control of the computer to another account holder and put your work into background memory (click Switch User).

From now on, you have two options each time you decide that you're finished working for the moment. You can log off normally, closing all of your programs and windows—or you can *fast switch*, logging off temporarily, leaving your work open on the screen behind the scenes. Figure 17-15 shows you the difference.

Tip: Here's the power user's version of fast user switching (Administrator account required). Press Ctrl+Alt+Delete to open the Task Manager dialog box, whose Users tab reveals the list of logged-on accounts. Right-click the account you want, choose Connect from the shortcut menu, and *boom!*—you're switched. You don't even have to listen to the two-note musical switching theme.

Logging On

Once your account is set up, here's what it's like getting into, and out of, a Windows XP Professional machine.

Identifying Yourself

When it comes to the screens you encounter when you log onto a Windows XP computer, your mileage may vary. What you see depends on how your PC has been set up. For example:

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You zoom straight to the desktop

If you are the sole account holder, and you've set up no password at all for yourself, you cruise all the way to the desktop without any stops.

This password-free scenario, of course, is not very secure; any evildoer who walks by your machine when you're in the bathroom has complete access to all of your files (and all of your password-protected Web sites). But if you work in a home office, for example, where the threat of privacy invasion isn't very great, it's by far the most convenient arrangement.

You get the "Log On to Windows" dialog box

If you've turned off "Use the Welcome screen" (page 536), you don't get the usual Welcome screen shown in Figure 17-14 at startup. Instead, you must *type in* your name, as shown in Figure 17-13, rather than simply clicking it in a user-friendly list. (If you were the last person to use the machine, you might not have to type in the name, because Windows automatically fills the box with the name of the most recent user.)

You get the "Press Ctrl-Alt-Delete to Begin" dialog box

Either you added your PC to a domain while installing Windows XP Professional, or you have turned off the "Use the Welcome screen" feature and activated the "Require Users to Press Ctrl-Alt-Delete" option mentioned earlier. This is the most secure configuration, and also the least convenient.

You get the Windows XP Welcome screen

This is what people on stand-alone or workgroup computers see most of the time (Figure 17-14).

At this moment, you have several alternatives. If you click the "Turn off [computer name]" button (in the lower-left corner of the screen)—maybe in a sudden panic over the amount of work you have to do—you'll be offered the "Turn off computer" dialog box. It contains Stand By, Turn Off, Restart, and Cancel buttons. (If you press the Shift key, the Stand By button becomes a Hibernate button.)

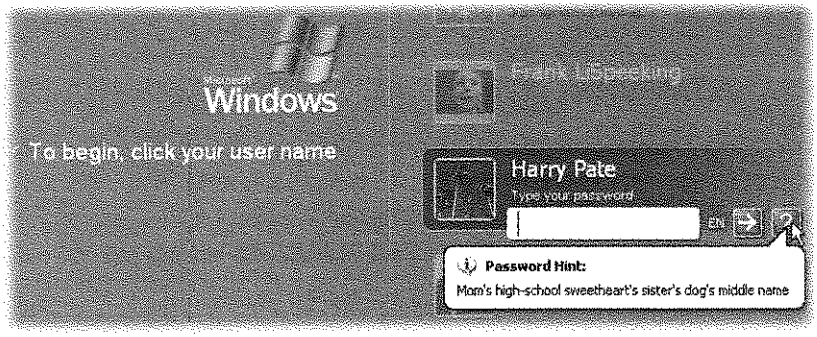


Figure 17-16: *If you can't remember the password, click the ? icon. It produces a balloon that reveals your password hint. And if you still can't remember, it's time to take out the Password Reset Disk (page 504).*

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Otherwise, to sign in, click your account name in the list. If no password is required for your account, you proceed to your personal Windows world with no further interruption.

If there *is* a password associated with your account, you'll see a place for it (Figure 17-16). Type your password and then press Enter (or click the green arrow button).

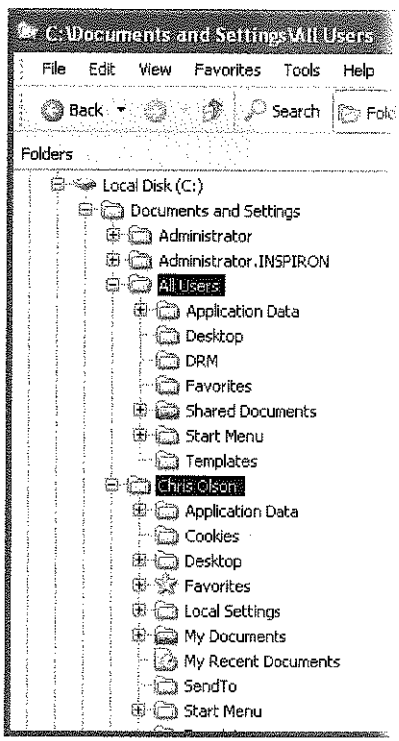
There's no limit to the number of times you can try to type in a password; with each incorrect guess, a tooltip balloon appears, tactfully inquiring, "Did you forget your password?" It reminds you that capitalization counts.

Tip: If your Caps Lock key is pressed, another balloon lets you know. Otherwise, because you can't see anything on the screen as you type except dots, you might be trying to type a lowercase password with all capital letters.

Profiles

As you've read earlier in this chapter, every document, icon, and preference setting related to your account resides in a single folder: by default, it's the one bearing your name in the Local Disk (C:)→Documents and Settings folder. This folder is technically known as your *user profile*.

Figure 17-17:
Behind the scenes, Windows XP maintains another profile folder, whose subfolders closely parallel those in your own. What you see—the contents of the Start menu, Desktop, Shared Documents folder, Favorites list, Templates folder, and so on—is a combination of what's in your own user profile folder and what's in the All Users folder.



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The All Users Profile

Each account holder has a separate user profile. But your PC also has a couple of profiles that aren't linked to human beings' accounts.

Have you ever noticed, for example, that not everything you actually see in your Start menu and on your desktop is, in fact, in *your* user profile folder?

The solution to this mystery is the All Users profile, which also lurks in the Documents and Settings folder (Figure 17-17). As you can probably tell by its name, this folder stores the same kinds of settings your profile folder does—except that anything in All Users appears on *everybody's* Start menu, desktop, and so on.

All of this is a long-winded way of suggesting another way of making some icon available to everybody with an account on your machine. Drag it into the corresponding folder (such as Desktop or Start Menu) in the All Users profile folder.

Whose software is it, anyway?

The All Users folder also offers a handy solution to the "Whose software is it, anyway?" conundrum: the burning question of whose Start menu and desktop reflects new software that you've installed using your own account.

As noted in Chapter 5, some software installers ask if you would you like the new program to show up only in your Start menu, or in *everybody's* Start menu. But not every installer is this thoughtful. Some installers automatically deposit their new software into the All Users folder, thereby making its Start menu listing available to everybody when they log on.

On the other hand, some installers may deposit a new software program only into *your* account (or that of whoever is logged in at the moment). In that case, other account holders won't be able to use the program at all, even if they know that it's been installed, because their own Start Menu and Desktop folders won't reflect the

TROUBLESHOOTING MOMENT

The Missing Security Tab

If you don't see a Security tab in the Properties dialog box for a file or folder, several things may have gone wrong.

You could be looking at a file or folder on a hard drive that uses the *FAT 32* formatting scheme instead of the NTFS file system. As the name implies, the NTFS permissions system is available only on drives formatted with NTFS. (See page 618 for definitions and instructions.)

You yourself might not have the appropriate permissions to view or change the permissions for a certain file or folder. The easiest way around this obstacle is to log on using the local Administrator account, or an account with equivalent privileges that you've created yourself.

Finally, you might have Windows XP's Simple File Sharing feature turned on (page 573), which hides the entire NTFS permissions system from you. To turn off Simple File Sharing, choose Tools→Folder Options in any desktop window, click the View tab, scroll down, and then turn off the "Use simple file sharing" checkbox. Then click OK.

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installation. Worse, some people, not seeing the program's name on their Start menus, might not realize that you've already installed it—and may well install it *again.*

The solution, of course, is to open the Start Menu→Programs folder in your user profile folder, copy the newly installed icon, and paste it into the All Users→Start Menu→Programs folder. (Repeat with the Desktop folder, if you'd like everyone to see a desktop icon for the new program.) You've just made that software available and visible to everybody who logs onto the computer.

The Default User Profile

When you first create a new account, who decides what the desktop picture will be—and its Start menu configuration, assortment of desktop icons, and so on?

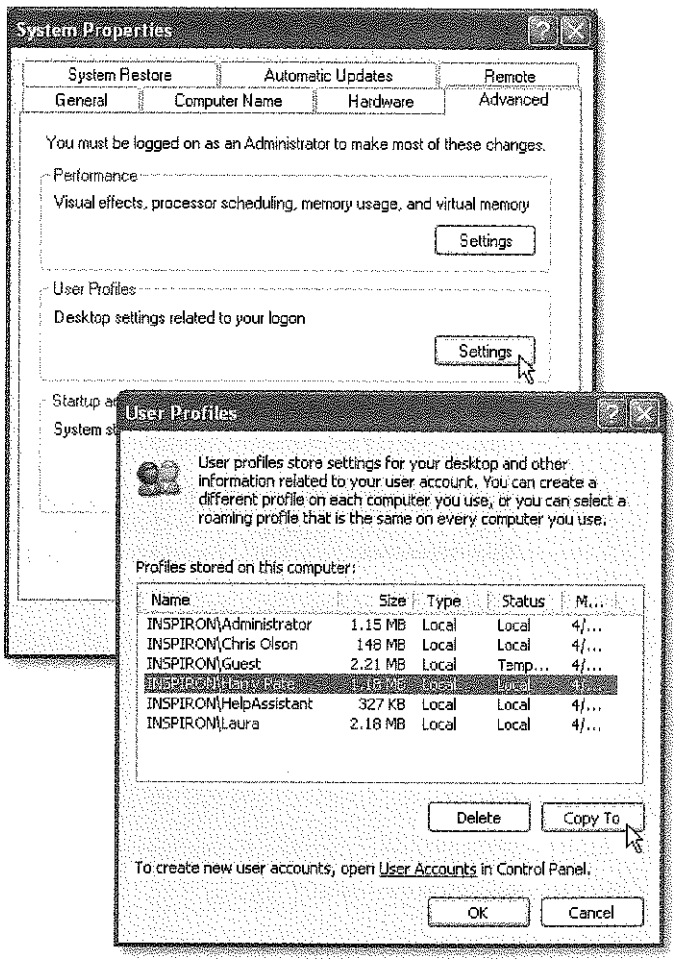


Figure 17-18:
Top: To open Profile Manager, open the System program in the Control Panel. Click the Advanced tab, and then click the Settings button in the User Profiles section, as shown here.

Bottom: To copy the settings from a person's profile into the Default User profile, highlight the name of the account whose settings you want to copy. Then click Copy To; in the next dialog box, click Browse, and then navigate to and select, the My Computer→Local Disk (C:)→ Documents and Settings→Default User folder. Click OK—and the deed is done.

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Well, Microsoft does, of course—but you can change all that. What a newly created account holder sees is only a reflection of the Default User profile. It's yet another folder—this one usually hidden—in your Documents and Settings folder, and it's the common starting point for all profiles.

If you'd like to make some changes to that starting point, start by tweaking a regular account—your own, for example. Make its desktop picture, Start menu, Web favorites, and other decorations look just the way you'd like the new default to be.

Then you need to fire up a little program called Profile Manager, whose job is to copy, move, and delete items among user profiles. Figure 17-18 has full instructions.

NTFS Permissions: Protecting Your Stuff

There's one final aspect of user accounts that's worth mentioning: *NTFS permissions*, a technology that's the heart of Windows XP Pro's security system. Using this feature, you can specify exactly which co-workers are allowed to open which files and folders on your machine. In fact, you can also specify *how much* access each person has. You can dictate, for example, that Gomez and Morticia aren't allowed to open your Fourth-Quarter Projections spreadsheet at all, that Fred and Ginger can open it but not make changes, and George and Gracie can both open it and make changes.

Your colleagues will encounter the permissions you've set up like this in two different situations: when tapping into your machine from across the network, or when sitting

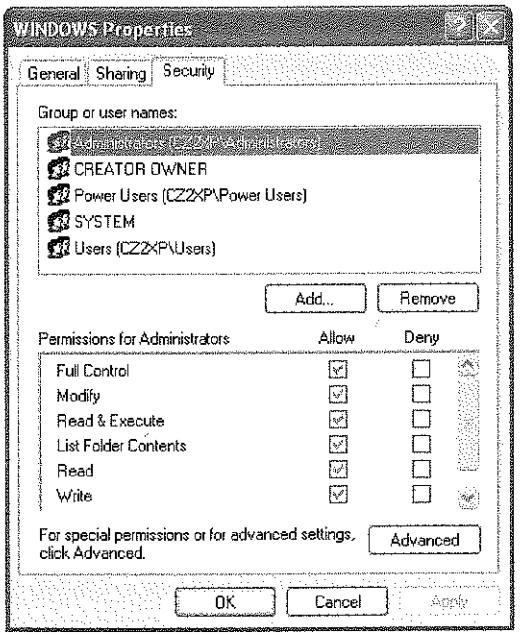


Figure 17-19:
The Security tab of an NTFS folder's Properties dialog box. If you have any aspirations to be a Windows XP power user, get used to this dialog box. You're going to see it a lot, because almost every icon on a Windows XP system—files, folders, disks, printers—has a Security tab like this one.

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down at it and logging in using their own names and passwords. In either case, the NTFS permissions you set up protect your files and folders equally well.

Tip: In Chapter 20, you can read about a very similar form of access privileges called *share permissions.* There's a big difference between share permissions and the NTFS permissions described here, though: share permissions keep people out of your stuff only when they try to access your PC from *over the network.*

Actually, there are other differences, too. NTFS permissions offer more gradations of access, for example. And using NTFS permissions, you can declare individual *files* accessible or inaccessible to specific co-workers—not just folders. See page 544 for details.

Using NTFS permissions is most decidedly a power-user technique because of the added complexity it introduces. Entire books have been written on the topic of NTFS permissions alone.

You've been warned.

Setting Up NTFS Permissions

To change the permissions for an NTFS file or folder, you open its Properties dialog box by right-clicking its icon, and then choosing Properties from the shortcut menu. The Properties dialog box appears; click the Security tab (Figure 17-19).

Step 1: Specify the Person

The top of the Security tab lists the people and groups that have been granted or denied permissions to the selected file or folder. When you click a name in the list, the Permissions box at the bottom of the dialog box shows you how much access that person or group has.

The first step in assigning permissions, then, is to click the person or group whose permissions you want to change.

If the person or group isn't listed, click the Add button to display the Select Users or Groups dialog box, where you can type them in (Figure 17-20).

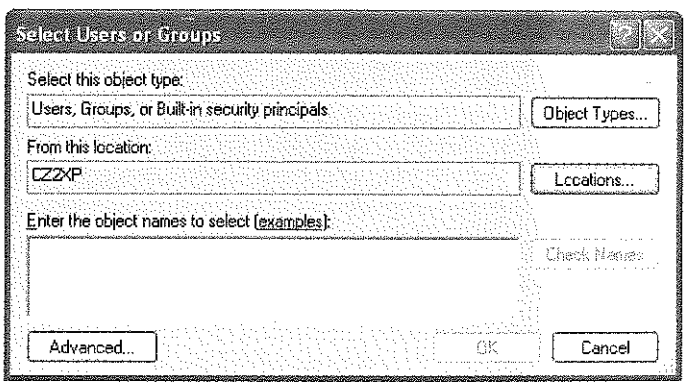


Figure 17-20:
Type the names of the people or groups in the "Enter the object names to select" box at the bottom, trying not to feel depersonalized by Microsoft's reference to you as an "object." If you're adding more than one name, separate them with semicolons. Because remembering exact spellings can be iffy, click Check Names to confirm that these are indeed legitimate account holders. Finally, click OK to insert them into the list on the Security tab.

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Tip: Instead of typing in names one at a time, as shown in Figure 17-20, you can also choose them from a list, which lets you avoid spelling mistakes and having to guess at the variations. To do so, click the Advanced button to display an expanded version of the dialog box, and then click Find Now to search for all of the accounts and groups on the computer. Finally, in the resulting list, click the names of the people and groups you want to add (Ctrl-click to select more than one at once). Click OK to add them to the previous dialog box, and click OK again to add the selected users and groups to the Security tab.

If you've used Windows 2000, in the meantime, you might wonder why this process is so much more convoluted in XP Pro that was in Windows 2000. The answer is: good question!

Step 2: Specify the Permissions

Once you've added the users and groups you need to the list on the Security tab, you can highlight each one and set permissions for it. You do that by turning on the Allow or Deny checkboxes at the bottom half of the dialog box.

The different degrees of freedom break down as follows (they're listed here from least to most control, even though that's not how they're listed in the dialog box):

- **List Folder Contents,** available only for folders, means that the selected individuals can see (but not necessarily open) the files and folders inside. That may sound obvious—but believe it or not, if you *don't* turn on this option, the affected people won't even be able to see what's in this folder. The folder will just appear empty.
- **Read** lets people examine the contents of the file or folder, but not make changes. (They can also examine the permissions settings of these files and folders—the ones that you're setting up right now.)
- **Read & Execute** is a lot like Read, except that it also lets people run any programs they find inside the affected folder. When applied to a folder, furthermore, this

FREQUENTLY ASKED QUESTION

Allow vs. Deny

Why do I see both Allow and Deny checkboxes in the Permissions dialog box? Isn't not allowing permission the same as denying it?

In this case, no. "Deny" permissions always take precedence over "Allow" permissions.

For example, if somebody has been granted access to a file or folder because he's a member of a group, you can explicitly revoke his permission by using the Deny checkboxes for his account. You've just overridden the group permission, just for him, leaving the rest of the group's permissions intact.

You can also use the Deny checkboxes to override permissions granted by *inheritance* from a parent folder. For example, you can grant somebody access to the C: drive by sharing it and assigning her Allow permissions to it, but then prevent her from accessing the C:\Program Files folder by sharing that and *denying* her permission.

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permission adds the ability to *traverse* folders. (Traversing means directly opening inner folders even when you're not allowed to open the outer folder. You might get to an inner folder by double-clicking a shortcut icon, for example, or by typing the folder's path into the Address bar of a window.)

- **Write** is like Read, but adds the freedom to make and save changes to the file. When applied to a folder, this permission means that people can create new files and folders inside it.
- **Modify** includes all of the abilities of the Write and Read & Execute level, plus the ability to *delete* the file or folder.
- **Full Control** confers complete power over the file or folder. The selected person or group can do anything they like with it, including trashing it or its contents, changing its permissions, taking ownership of it (and away from you, if they like), and so on.

Of course, turning on Allow grants that level of freedom to the specified user or group, and turning it off takes away that freedom. (For details on the Deny checkbox, see the box on the facing page.)

Note: If you're not careful, it's entirely possible to "orphan" a file or folder (or even your entire drive) by revoking everyone's permission to it, even your own, making it *completely* inaccessible by anyone. That's why, before you get too deeply into working with NTFS permissions, you might consider creating an extra user account on your system and granting it Full Control for all of your drives, just in case something goes wrong.

Groups and Permissions

Once you understand the concept of permissions, and you've enjoyed a thorough shudder contemplating the complexity of a network administrator's job (6 levels of permissions × thousands of files × thousands of employees = way too many

POWER USERS' CLINIC

Special Identities

When you open the Select Users or Groups dialog box, you may notice a number of groups listed there that you didn't create. What's going on?

These elements, which include Everyone, Authenticated Users, Creator Owner, and Terminal Service User, aren't exactly traditional groups. Microsoft calls them *built-in security principals*, or alternatively, *special identities*, but neither term is especially helpful. Whatever you want to call them, the idea is the same: these security principals are *roles*, not specific individuals. They're designed to give you more flexibility in applying permissions en masse.

For example, the Authenticated Users security principal affects anybody who logs on by supplying a user name and password (which is just about everybody except Guest people); everybody in this category automatically inherits any permissions you've set up for the Authenticated Users group. Similarly, the Everyone group—the most commonly used of the built-in security principals—means everybody.

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permutations), one other mystery of Windows XP Pro will fully snap into focus: the purpose of groups, introduced on page 531.

On those pages, you can read about groups as canned categories, complete with predefined powers over the PC, into which you can put different individuals to save yourself the time of adjusting their permissions and privileges individually. As it turns out, each of the ready-made Windows XP Pro groups also comes with predefined *permissions* over the files and folders on your hard drive.

Here, for example, is how the system grants permissions to your Windows folder for the Users, Power Users, and Administrators groups:

	Users	Power Users	Administrators
Full Control			X
Modify		X	X
Read & Execute	X	X	X
List Folder Contents	X	X	X
Read	X	X	X
Write		X	X

If you belong to the Users group, you have the List Folder Contents permission, which means that you can see what's in the Windows folder; the Read permission, which means that you can open up anything you find inside; and the Read & Execute permission, which means that you can run programs in that folder (which is essential for Windows XP itself to run). But people in the Users group aren't allowed to change or delete anything in the Windows folder, or to put anything else inside. Windows XP is protecting itself against the mischievous and clueless.

Members of the Power Users group have all of those abilities and more—they also have Modify and Write permissions, which let them add new files and folders to the Windows folder (so that, for example, they can install a new software program on the machine).

When Permissions Collide

If you successfully absorbed all this information about permissions, one thing should be clear: people in the Power Users group ought to be able to change or delete any file in your Windows folder. After all, they have the Modify permission, which ought to give them that power.

In fact, they can move or delete anything in any folder *in* the Windows folder, because the first cardinal rule of NTFS permissions is this:

NTFS permissions travel downstream, from outer folders to inner ones

In other words, if you save the Modify and Write permissions to a folder, then you ought to have the same permissions for every file and folder inside it.

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But if you are indeed in the Power Users group, you'll find that you can't, in fact, delete any of files or folders in the Windows folder. That's because each of them comes with Modify and Write permissions turned *off* for Power Users, even though the folder that encloses them has them turned on.

Why would Microsoft go to this trouble? Because it wants to prevent people in this group from inadvertently changing or deleting important Windows files—and yet it wants these people to be able to put *new* files into the Windows folder, so that they can install new programs.

This is a perfect example of the second cardinal rule of NTFS permissions:

NTFS permissions that have been explicitly applied to a file or folder always override inherited permissions

Here's another example: Suppose your sister, the technical whiz of the household, has given you Read, Write, Modify, Read & Execute, and List Folder Contents permissions to her own My Documents folder. Now you can read, change, or delete every file there. But she can still protect an individual document or folder *inside* her My Documents folder—the BirthdayPartyPlans.doc file, for example—by denying you all permissions to it. You'll be able to open anything else in there, but not that file.

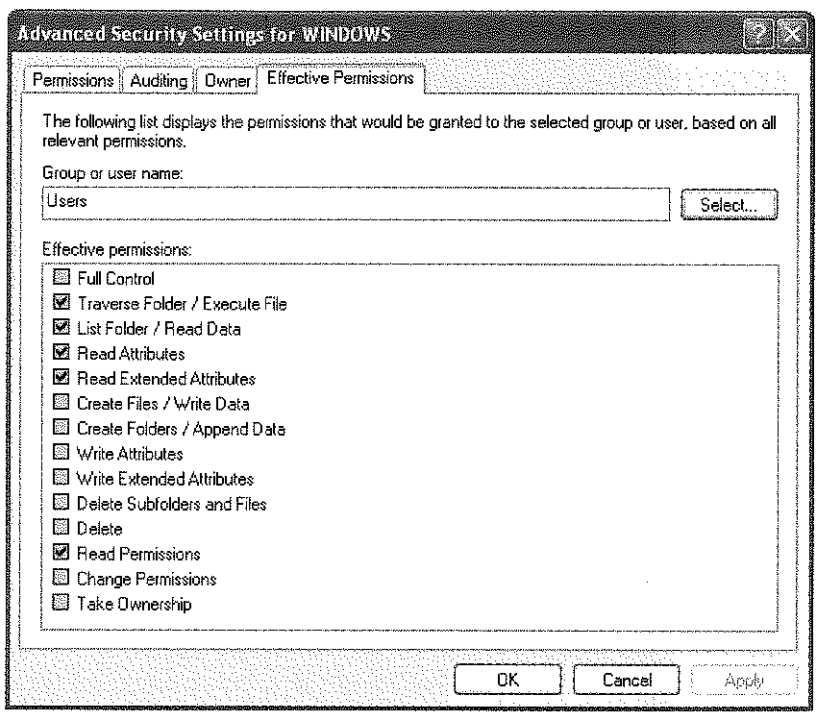


Figure 17-21: *The Effective Permissions tab for an NTFS folder. Note that you can't turn these checkboxes on or off; this is a read-only screen that tells you what permissions the selected user or group has for the file or folder. You can't modify the permissions here. You can't tell from this display how these effective permissions have been calculated, either (that is, where the permissions have been inherited from).*

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Believe it or not, NTFS permissions get even more complicated, thanks to the third cardinal rule:

Permissions accumulate as you burrow downward through folders inside folders

Now suppose your sister has given you the Read and List Folder Contents permissions to her My Documents folder—a "look, but don't touch" policy. Thanks to the first cardinal rule, you automatically get the same permissions to every file and folder *inside* My Documents.

Suppose one of these inner folders is called Grocery Lists. If she grants you the Modify and Write permissions to the Grocery Lists folder, so that you can add items to the shopping list, you end up having Read, Modify, *and* Write permissions for every file in that folder. Those files have *accumulated* permissions—they got the Read permission from My Documents, and the Modify and Write permissions from the Grocery Lists folder.

Because these layers of inherited permissions can get dizzyingly complex, Microsoft has prepared for you a little cheat sheet, a dialog box that tells you the bottom line, the net result—the *effective* permissions. To see it, follow these steps:

1. **Click the Advanced button on the Security tab.**

   The Advanced Security Settings dialog box appears.

2. **Click the Effective Permissions tab; finally, click Select.**

   Now you see the same Select User or Group dialog box you saw earlier when you were creating permissions.

3. **Click the user or group whose effective permissions you want to see, and then click OK.**

   You now see checkmarks next to the permissions that are in effect, taking into account folder-permission inheritance and all other factors, for the user or group for that particular file or folder, as shown in Figure 17-21.

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CHAPTER
18

Setting Up a Workgroup Network

It's a rare Windows XP Pro machine indeed that isn't connected, sooner or later, to some kind of office network (officially known as a *local area network,* or *LAN*). And no wonder: the payoff is considerable. Once you've created a network, you can copy files from one machine to another just as you'd drag files between folders on your own PC. Everyone on the network can consult the same database, phone book, or calendar. When the workday's done, you can play games over the network. You can even store your MP3 music files on one computer and listen to them on any other. Most importantly, you can share a single laser printer, cable modem or DSL Internet connection , fax modem, or phone line among all the PCs in the house.

If you work at a biggish company, you probably work on a *domain network,* which is described in the next chapter. You, lucky thing, won't have to fool around with building or designing a network; your job, and your PC, presumably came with a fully functioning network (and a fully functioning geek responsible for running it).

If you work at home, or if you're responsible for setting up a network in a smaller office, this chapter is for you. It guides you through the construction of a less formal *workgroup network,* which ordinary mortals can put together.

You'll soon discover that, when it comes to simplicity, setting up a network has a long way to go before it approaches, say, setting up a desk lamp. It involves buying equipment, installing adapters, and configuring software. Fortunately, Windows XP's Network Setup Wizard makes the software part as painless as possible.

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Kinds of Networks

You can connect your PCs using any of several different kinds of gear. Most of the world's offices are wired with *Ethernet cable*, but all kinds of possibilities await, including networking systems that rely on the phone or power lines already in your walls, and even wireless systems that don't need cables at all. Here's an overview of the most popular networking systems.

Note: Be sure that whatever networking gear you buy is compatible with Windows XP by checking the compatibility list at *www.microsoft.com/hcl*. Networking is complicated enough without having to troubleshoot some gadget that's not designed for XP.

Ethernet

Ethernet is the world's most popular networking protocol. It gives you fast, reliable, trouble-free communication that costs very little and imposes few limitations on where you can place the PCs in a home or small office.

In addition to the computers themselves, an Ethernet network requires three components:

- **Network adapters.** You need an adapter for each computer. (You may also hear a network adapter called a *network interface card* or NIC ["nick"].)

  The network adapter provides the jack, shown in Figure 18-1, where you plug in the network cable. If you have a desktop PC that doesn't already have an Ethernet jack, you can buy a network adapter either in the form of a PCI card (which you must open up your computer to install) or a USB box (which connects to the back of the computer and dangles off of it).

  If you have a laptop, you can use one of these USB adapters or a PC Card that slips into your computer's PC Card slot.

Tip: You can generally order a new PC with an Ethernet card preinstalled, often for less than what it would cost to buy one at your local computer store.

- **A hub.** An Ethernet network also requires an Ethernet *hub* (also shown in Figure 18-1), the nexus into which you plug the network cable from each PC. Hubs come in different sizes; five- and eight-port hubs are popular for home networking.

Tip: Buy a hub with a few more ports than you need. You may eventually add another computer to the network, not to mention shared network equipment like laser printers or a *router* (which lets you share a cable modem among all of the PCs on the network).

Of course, you can always expand your network by adding on *another* hub when the time comes, thanks to a special connector called an *uplink port* that lets you hook one hub into another.

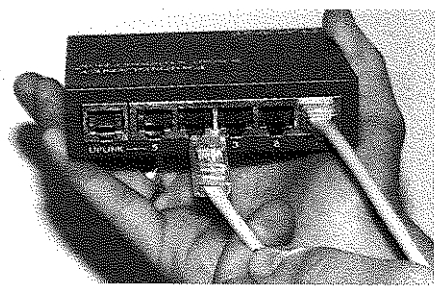
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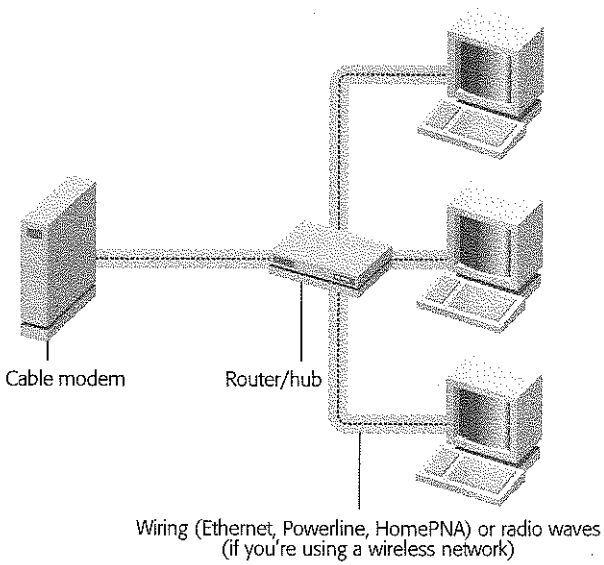
If you have a cable modem or DSL connection to the Internet, you may want consider buying a combination *router/hub* instead of a standard hub. (The dialog boxes in Windows XP call these boxes *residential gateways,* although almost no one else does.) In addition to serving as a hub, a special connector on this gizmo also accommodates your cable modem or DSL box, so that all of the PCs on your network can share the high-speed magic of just one Internet connection. (You can also purchase a router and hub separately.)

- **Ethernet cables.** The cables used for most Ethernet networks look something like telephone cables, but they're not the same thing—and they're definitely not interchangeable. Both the cable itself (called *10BaseT, 100BaseT cable,* or *Cat 5* cable) and the little clips at each end (called an *RJ-45* connector) are slightly fatter than those on a phone cable (Figure 18-1). You can buy ready-made Ethernet cables (that is, with the connectors already attached) in a variety of lengths and in many different colors. Each computer must be connected to the hub with a cable that's no longer than 100 yards or so long.

Figure 18-1:
Top: The Ethernet cable is connected to a computer at one end, and the hub (shown here) at the other end. The computers communicate through the hub; there's no direct connection between any two computers. The front of the hub has little lights for each connector port, which light up only on the ports that are in use. You can watch the lights flash as the computers communicate with one another.

Bottom: Here's what a typical "I've got three PCs in the house, and I'd like them to share my cable modem" setup might look like.





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Tip: Ethernet gear can be shockingly inexpensive; a search at *www.buy.com,* for example, reveals Ethernet cards for $10 and five-port Ethernet hubs for $30 from no-name companies. If you're willing to pay slightly more—$20 for the card, $50 for the hub, for example—you can get brand-name gear (like Microsoft, Netgear, 3Com, or LinkSys) whose support with installation, phone help, and driver updates through the years may reward you many times over. Setting up an Ethernet network generally goes very smoothly—but in the few cases where trouble arises, cheapo equipment is often the problem.

Network Hookups

On paper, the hardware part of setting up the network is simple: Just install a network adapter in each computer, and then connect each one to the hub using an Ethernet cable. It's that "using an Ethernet cable" part that sometimes gets sticky. Depending on where your PCs are and how concerned you are about the network's appearance, this wiring process may involve drilling holes in floors or walls, stapling cables to baseboard trim, or calling in an electrician to do the job.

When all of your computers are in the same room, you can run the cables along the walls and behind the furniture. Buying cables that are the same color as your walls or floors can help to hide the installation. If you have to run cables between rooms,

UP TO SPEED

Network Devices Have Speed Limits

Ethernet cards and hubs are available in different speeds. The most common are *10BaseT* (10 megabits/second, or Mbps) and *100BaseT* (100 megabits/second, sometimes cleverly called *Fast Ethernet*).

For most home or small business networks, which you choose won't have much bearing on speed, unless you frequently transmit huge files between the computers on your network. For example, you can play MP3 music files stored on another computer over a 10BaseT connection with no problems at all. However, if you plan to install video cameras all around your palatial estate and want to watch all of the video feeds simultaneously, opt for Fast Ethernet—or even Gigabit Ethernet, the current Ethernet speed champ (1,000 megabits/second).

Note, however, that the speed of the network has no effect on your computers' *Internet* speed—Web surfing, email downloading, and so on. The reason: Even the slowest network operates far faster than your Internet connection. Remember, dial-up modems run no faster than 56 kilobits/second, and even a cable modem or DSL connection maxes out at 512 to 1,024 kilobits/second—still 10 to 20 times slower than a 10BaseT network. Even a T-1 line (a permanent leased telephone line commonly used for corporate Internet connections, costing thousands of dollars a month) only runs at 1,544 megabits/second.

Much of the Ethernet equipment on the market today is designed to run either at Fast Ethernet speed, or at *both* 10 and 100 Mbps. If you buy a *dual-speed* hub (often labeled "10/100"), each networking card connected to it will run at its own maximum speed. If one computer has a 10BaseT network card and one has 100BaseT, they'll still be able to communicate. But if your hub operates *only* at 100BaseT speed, then 10BaseT cards won't work at all.

That's the story on the hubs. As for the cards, virtually all of them these days are all dual-speed 10/100 devices.

The bottom line: As you shop for gear, buy Fast Ethernet (or 10/100) hubs, which aren't much more expensive than the slower, 10 Mbps hubs. You may as well go for the higher speed, so you'll be ready for any high-bandwidth application that comes down the pike.

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you can secure the cables to the floor or baseboards using staples (use the round kind that won't crush the cables) or plastic raceways with an adhesive backing.

Of course, you might not be thrilled about having *any* exposed cables in your home or office. In that case, the installation process can be much more complicated. You should probably hire a professional cable installer to do the job—or don't use cables at all. Read on.

Phone line networks

Instead of going to the trouble of wiring your home with Ethernet cables, you might consider using the wiring that's already *in* your house—telephone wiring. That's the idea behind a kind of networking gear called HomePNA. With this system, you can use the network even when using the modem or talking on the phone, although you can't make a modem and voice call simultaneously.

Unfortunately, the average American household has only two or three phone jacks in the *entire house,* meaning that you don't have much flexibility in positioning your PCs. If you're trying to avoid the plaster-dust experience of installing additional wiring, consider one of the networking types described next.

Power outlet networks

Here's another way to connect your computers without rewiring the building: use the electrical wiring that's already in your walls. Unlike phone jacks, electrical outlets are usually available in every room in the house.

If you buy *Powerline adapters* (also called HomePlug adapters), you get very fast speeds (14 megabits/second), very good range (1,000 feet, although that includes the twists and turns your wiring takes within the walls), and the ultimate in installation simplicity: You just plug the Powerline adapter from your PC's Ethernet or USB jack into any wall power outlet. Presto—all of the PCs are connected.

This isn't the cheapest avenue; at this writing, Powerline adapters cost about $100 apiece. But they afford a great deal of convenience, and a five-year-old could perform the installation.

Wireless networks (WiFi or 802.11)

All of the networking methods described so far involve various schemes for wiring your computers together. Millions of people, however, have embraced the flexibility of a networking system that involves no wires at all—a cordless networking technology that's based on a standard called *WiFi* or *802.11* ("eight-oh-two dot eleven"). (Your Macintosh friends probably call the same thing *AirPort,* because that's what Apple calls it.)

To create a WiFi network, you equip each PC with a special network adapter (about $60) whose little antenna pokes out of the computer. If all of your equipment is wireless, that's it: your PCs can now communicate with one another.

If you want to be able to get onto the Internet with them via a shared cable modem or DSL connection, though, you also need an *access point* (about $100)—a box that

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connects to your network router or hub and lets your wireless computers communicate with the cabled network. The usual gang—LinkSys, Netgear, 3Com, and others—sell these access points (also called base stations).

802.11 equipment has a range of about 150 feet, even through walls. In concept, this setup works much like a cordless phone, where the base station is plugged into the wall phone jack and a wireless handset can talk to it from anywhere in the house.

Wireless networking is not without its downsides, however. You may get intermittent service interruptions from 2.4-gigahertz cordless phones and other machinery, or even the weather. Furthermore, big metal things, or walls *containing* big metal things (like pipes) can sometimes interfere with communication among the PCs, much to the disappointment of people who work in subways and meat lockers.

Wireless networking isn't as secure as a cabled network, either. If you drive around a typical middle-class American neighborhood these days with your wireless-equipped laptop turned on, you'll be surprised at how many home wireless networks you can get onto, piggybacking onto other people's cable modems because they failed to turn on the optional password feature of their wireless systems.

Still, nothing beats the freedom of wireless networking, particularly if you're a laptop lover; you can set up shop almost anywhere in the house or in the yard, slumped into any kind of rubbery posture. No matter where you go within your home, you're online at full speed, without hooking up a single wire.

UP TO SPEED

802.11 Networks: Regular or Supersized?

Wireless gear comes in several flavors, each offering different degrees of speed, distance, and compatibility. They have such appetizing-sounding names as 802.11b, 802.11a, and 802.11g.

So what's the difference? Equipment bearing the "b" label transfers data through the air at up to 11 megabits per second; the "g" system is almost five times as fast. (Traditionally, geeks measure network speeds in megabits, not megabytes. Here's a translation: The older "b" gear has a top speed of 1.4 megabytes per second, versus more than 6 megabytes per second for the "a" and "g" stuff.)

The beauty of 802.11g gear, though, is that it's backwards-compatible with the older "b" gear. If your laptop has an 802.11b card, you can hop onto an 802.11g base station simultaneously with people using "g" cards. And if you have an 802.11g card, you can hop onto older base stations. You won't get better speed, of course, but at least you won't need a separate base station.

(That's not true of "a" equipment, though. 802.11a cards require 802.11a base stations, and vice versa, and have much shorter range. Word to the wise: Don't buy "a" gear. In fact, you should go for "g" whenever possible.)

But don't buy faster equipment thinking that you're going to speed up your email and Web activity important, though. A cable modem or DSL box delivers Internet information at only about *half* a megabyte per second. So the bottleneck is the Internet connection, not your network.

Instead, the speed boost you get with "g" gear is useful only for transferring files between computers on your own network—and playing network games.

Finally, the great thing about wireless networking is that it all works together, no matter what kind of computer you have. There's no such thing as an "Apple" wireless network or a "Windows" wireless network. All computers work with any kind of access point.

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FireWire Networks

Not many PCs have FireWire jacks (which are technically called, unpoetically, *IEEE-1394* connectors). If yours has a FireWire card, you probably bought it because you wanted to edit video you've captured on a DV camcorder.

But if you have a handful of computers with FireWire cards installed, Windows XP offers one of the world's simplest and fastest methods of connecting them in a network: just hook them together with six-pin-to-six-pin FireWire cables. That's it—no hubs or boxes to buy. (Because a typical FireWire card has *two* jacks, you can link several computers together this way, like a chain.)

Of course, this arrangement connects your computers only. It won't help if you want two computers in your house to be able to share a single cable modem or laser printer. Furthermore, FireWire cables can't be longer than 15 feet, which may cramp your networking style.

GEM IN THE ROUGH

Two-Computer Ethernet—and Direct Cable Connections

If your network has modest ambitions—that is, if you have only two computers you want to connect—you can ignore all this business about hubs, routers, and wiring. Instead, you just need an Ethernet *crossover cable*, costing about $10 from a computer store or online mail-order supplier. Run it directly between the Ethernet jacks of the two computers. Everything else in this chapter works exactly as though you had purchased a hub and were using a "real" Ethernet network.

Of course, even that solution requires a networking card in each PC. If that expenditure is a stretch for you, there's yet another way to connect two machines: a direct connection. You can create this kind of miniature homemade network only if (a) the computers are close to each other, (b) they both have parallel or USB ports, and (c) you've bought a high-speed DirectParallel or USB Net-LinQ cable from *www.lpt.com*.

To begin, open the Network Connections icon in your Control Panel. Click the "Create a new connection" link to start the New Connection Wizard.

Click Next. On the second screen, click "Set up an advanced connection," and then click Next. Click "Connect directly to another computer," and hit Next again.

Now Windows wants to know if the computer you're using will be the *host* (the machine whose files will be shared) or the *guest* (the one that will be accessing shared resources on the other machine). Choose Host (an option only if you're using an Administrator account), and then click Next.

On the next wizard screen, specify the port you're using to connect the machines (from the list of unused USB, serial, parallel, or infrared ports). Select USB or Parallel, as appropriate. Plug in the cable, if you haven't already.

Click Next again to view the list of user accounts; turn on the checkboxes of the people who should be allowed to tap into your machine via this direct-connect cable. Click Next, then Finish. The host computer starts "listening" for the guest to visit it.

Repeat all of this on the other machine, this time designating it the Guest (you don't need an Administrator account this time).

Once the two machines are connected by cable, you can open the My Network Places window on the guest machine. You'll see the shared folders, disks, and printers, just as though they were connected by a "real" network, as described in Chapter 20.

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Installing Drivers

Regardless of which kind of network adapters you install in your computers, your next obligation is to install their software drivers. Fortunately, Windows XP comes with built-in drivers for almost all recent networking cards. When you turn the PC on after installing the card, you'll generally see XP install its driver almost automatically. If you're not so lucky—say you're using an old or nonstandard (read: cheap) network adapter—see Chapter 14 for advice on what to do when Plug and Play fails.

Sharing an Internet Connection

If you have cable modem or DSL service, you're a very lucky individual. Not only do you get spectacular speed when surfing the Web or doing email, but you also have a full-time connection. You never have to wait for some modem to dial (screeching all the way), and wait again for it to disconnect. It's just too bad that only one PC in your household or office can enjoy these luxuries.

Fortunately, it doesn't have to be that way. You can spread the joy of high-speed Internet to every PC on your network in either of two ways:

- **Buy a router.** A *router* (a *residential gateway* in Microsoft lingo) is a little box, costing about $60, that connects directly to the cable modem or DSL box. In some cases, it doubles as a hub, providing multiple Ethernet jacks into which you can plug your PCs. Others offer only a single jack into which you plug your existing hub. As a bonus, the router provides excellent security, serving as a firewall that isolates your network computers from the Internet and keeps out hackers. (See Chapter 10 for much more on firewalls.)

  If you need to change a router's settings, you use your Web browser. You "sign onto" it using the account name and password you use to log onto the cable or DSL network. The router then logs onto your Internet service and stands ready to transmit Internet data to and from all of the computers on your network.

- **Use Internet Connection Sharing (ICS).** ICS is a built-in feature of Windows XP Professional that serves as a software router. Like a hardware router, ICS distributes a single Internet connection to every computer on the network—but unlike a router, it's free. You just fire it up on the *one* PC that's connected directly to your cable modem or DSL box—or, as networking geeks would say, the *gateway* or *host* PC.

  But there's a downside: If the gateway PC is turned off, nobody else in the house can go online. Furthermore, you have to install *two* Ethernet cards into the gateway PC: one that goes to the cable modem or DSL box, and the other that connects it to the hub or router.

  Most people think of ICS in terms of high-speed Internet accounts like cable modems and DSL. But it offers advantages even for PCs with standard dial-up modems. For example, more than one PC can be online at the same time, which

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can be a sanity saver in certain households. ICS also lets you park PCs in rooms that don't actually have phone jacks.

Even if you don't intend to share an Internet connection in this way, it's important to have some understanding of these concepts before running the Network Setup Wizard. Many of the questions it will ask pertain to the notion of connection sharing.

Tip: If you do intend to use Internet Connection Sharing, make sure the gateway PC can already get onto the Internet, on its own, before you attempt to run the Network Setup Wizard. The gateway PC should also be running Windows XP, although the other computers can be running earlier versions of Windows.

The Network Setup Wizard

Once you've set up the networking equipment, you have to inform Windows XP Pro about what you've been up to. You also have to configure your computers to share their files, folders, printers, modems, Internet connections, and so on. Fortunately, the Network Setup Wizard handles this duty for you. (You must have an Administrator account to run this wizard.)

To launch the wizard, choose Start→Control Panel, and then open Network Connections. In the task pane at the left side of the window (Figure 18-2), click the link that says, "Set up a home or small office network."

Tip: If you've chosen to hide your task pane, you can choose Start→All Programs→Accessories→Communications→Network Setup Wizard instead.

A welcome message appears; click Next. The remaining screens of the wizard are as follows.

"Before you continue"

The screen contains a link called "checklist for creating a network." If you click it, you see a help page that guides you through the steps of setting up a network. It incorporates much of the information you've read so far in this chapter.

It also reminds you that if you plan to use Internet Connection Sharing, described earlier, you should ensure that your gateway Windows XP machine can get online *before* proceeding with the wizard. When you're finished reading the checklist, close its window and then click Next.

"Select a connection method"

The next wizard window starts the process of setting up Internet Connection Sharing (see Figure 18-2, right).

Your next step depends on your plans for your network and Internet use:

- **Each PC will go online independently.** If sharing a single Internet connection isn't the point of your networking efforts, click the Other button (Figure 18-2); on the

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next screen, click "This computer connects to the Internet directly or through a network hub." In other words, your various networked PCs will each connect directly to the Internet. No connection sharing is involved.

- **This is the computer with the connection.** If the computer you're at now is the one connected to the Internet—that is, if it's the gateway computer—click the first option: "This computer connects directly to the Internet. The other computers on my network connect to the Internet through this computer" (Figure 18-2).

Tip: If your DSL service is for *multiple fixed IP addresses*, then your computers can share the connection without having to choose one single computer as the host.

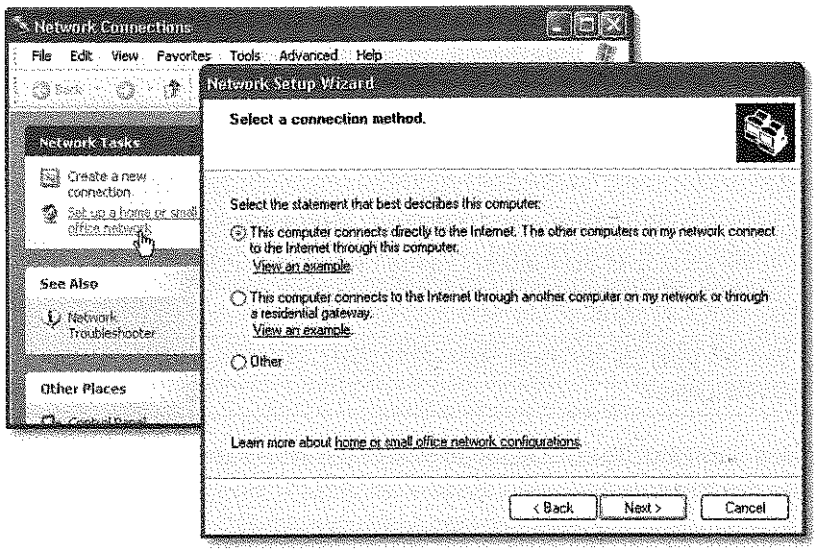


Figure 18-2: *Left: Start the Network Setup Wizard by clicking this link.*

Right: Select the option that best describes this computer's relationship to the Internet. If the PC will be the gateway to the Internet for other PCs on the network, choose the first option. Otherwise, just choose Other to tell the wizard as much.

- **This isn't the computer with the connection.** If you like the idea of sharing a PC's Internet connection, but the machine you're using now isn't the gateway machine, choose the second option: "This computer connects to the Internet through another computer on my network or through a residential gateway."
- **You have a router.** If you've bought a router (residential gateway), you won't be needing the built-in Windows Internet Connection Sharing feature. Once again, you should click the second option ("This computer connects to the Internet through another computer on my network or through a residential gateway").
- **You don't plan to use the Internet at all.** If you just want to set up connections among your computers—but none of them ever goes online—click Other, then click Next, and then turn on "This computer belongs to a network that does not have an Internet connection."

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"Select your Internet connection"

If you indicated that the computer you're setting up will indeed be connecting to the Internet, the wizard now shows you a list of the ways you've set up for your PC to get online (Figure 18-3). Each represents a different method of getting onto the Internet—network (Local Area Connection), America Online dial-up, your DSL account, or whatever. Turn on the one you want to use, and then click Next.

"Give this computer a description and name"

On this wizard screen (Figure 18-3), you see a place to give your PC its unique name. For example, if you have a laptop and a desktop PC, you might give them names like *Portegé* and *Millennia* (or *Kirk* and *Spock,* for all Windows cares). Of course, you already gave your computer a name when you installed Windows XP; that should be the name you see here.

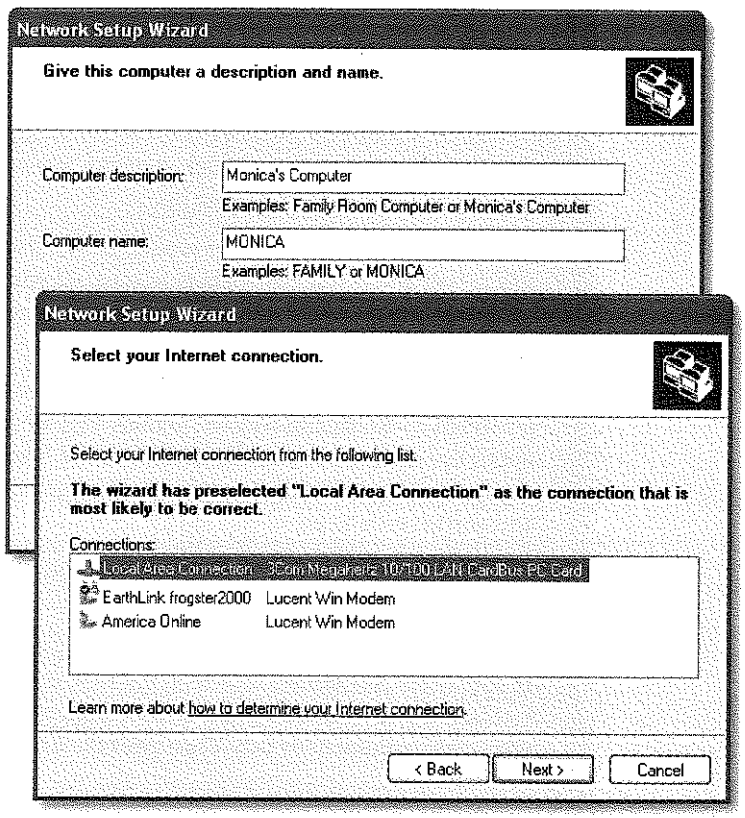


Figure 18-3: *Top: Every computer on a Windows network (even a big network in a business environment) must have a unique name. Computer names and workgroup names are limited to 15 characters, without spaces. Hyphens and apostrophes are OK, but most other punctuation is forbidden.*

Bottom: Tell the wizard how this machine connects to the Internet. See Chapter 9 to find out how these account names got here.

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"Name your network"

On the screen, you're supposed to make up a name for your *workgroup* (mini-network). Every PC on your network should have the same workgroup name (it doesn't have to be *MSHome*, as much as Microsoft might like it).

"Ready to apply network settings"

Click Next. On the next wizard screen, you see a summary of your settings. If it all looks good, click Next, and wait a few minutes while the wizard scurries around, applying various internal settings.

"You're almost done"

Your first PC may now be correctly configured to be part of an office network, but it faces the problem of the first telephone owner: Who ya gonna call?

Your next step, therefore, should be to run the Network Setup Wizard again on each of your other PCs. As indicated by the wizard screen before you now, getting the wizard onto those other machines depends on what version of Windows they're using:

- **If the next PC has Windows XP.** Click the bottom option here, "Just finish the wizard." Click Next, and then click Finish.

  Now move to the next computer; start the Network Setup Wizard on *it*, exactly the way you did on the first machine.

- **If the next PC has some earlier version of Windows.** You'll probably want to run the XP version of the networking wizard. (If you're comfortable plugging in IP addresses, subnet mask numbers, and default gateway settings, you can enter them manually—but the wizard automates all of this.)

  XP offers you two ways to go about it: First, you can insert your Windows XP Professional CD-ROM into each of the other PCs. When the Windows Setup program opens up, click the link at the left side called "Perform additional tasks." On the next screen, click "Set up home or small office networking." The wizard appears, and you're ready to go.

  Second, you can create a *networking setup disk* for your older computers. That is, the wizard will transfer a copy of itself to a floppy disk that you can carry to the non-XP machines on your network.

  If you select this option and then click Next, you're instructed to put a blank formatted disk into the floppy drive. Click Next again to create the disk, which takes only a moment or two. Then eject the disk; for best results, label it for easy identification.

  Now insert the disk into the floppy drive on the older PC. Open the My Computer icon on your desktop, double-click the floppy drive icon, and double-click the Setup.exe icon. The by-now-familiar Network Setup Wizard appears.

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No matter how you get the wizard onto the other machines, the experience of using it is precisely as described on the preceding pages—with two exceptions:

- If you've decided to set up the first computer as the gateway for Internet Connection Sharing, you don't see the complex array of choices illustrated in Figure 18-2. Instead, you see only the simplified options of Figure 18-4.

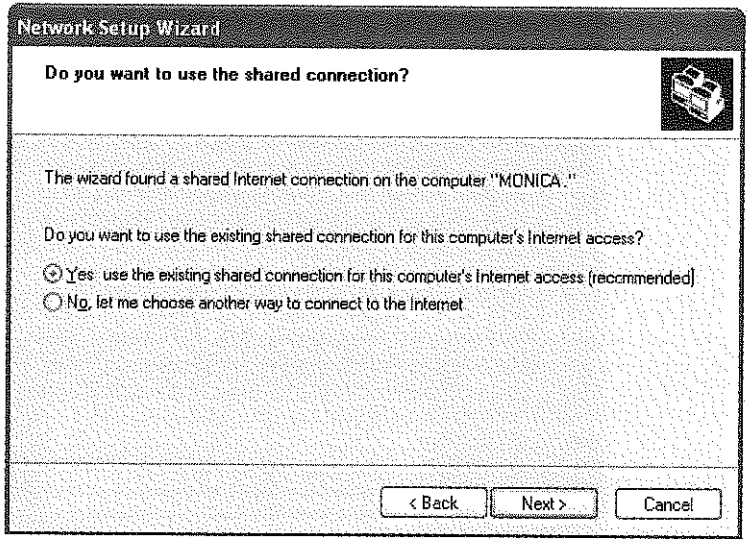


Figure 18-4: *If you're using Internet Connection Sharing, the second, third, and subsequent PCs you set up automatically detect the presence of the first one (the gateway computer). Instead of the dialog box shown in Figure 18-2, you get this far simpler version—and in general, you'll want to select the first option.*

- There's no need to create a network setup floppy disk on the final wizard screen.

When it's all over, Windows lets you know that you should restart the computer. At that point, each PC you've visited is ready for network action.

Testing the Network

After all of this setup, here's how you can find out whether or not the gods are smiling on your new network. Seated at your Windows XP Pro machine, choose Start→ My Network Places.

The network window opens, revealing the folders and disks that your machine can "see" (detect) on other computers of the network. The first time you try this experiment, there may not be much to see here.

Tip: All recent generations of Windows can "see" each other and work joyously side-by-side on the same network. On the older machines, you would open the equivalent window by double-clicking the My Network Places or Network Neighborhood icon on the desktop instead of using the Start menu.

However, if you click "View workgroup computers" in the task pane at the left side of the window, you should see the names and icons of the other computers you've set up, as shown in Figure 18-5. In Chapter 20, you'll find out how to burrow into these

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icons, using the files and folders of other networked PCs exactly as though they were on your own computer.

If you don't see the icons for your other computers, something has gone wrong. Check to see that:

- Your cables are properly seated in the network adapter card and hub jacks.

TROUBLESHOOTING MOMENT

Troubleshooting Internet Connection Sharing

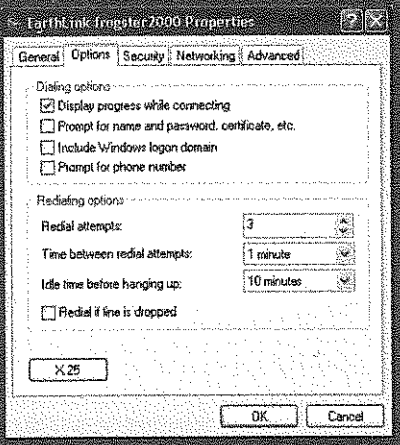
The Internet Connection Sharing (ICS) feature of Windows XP is worth its weight in gold—or, to be more precise, it's worth $60. That's about how much you would spend on a piece of equipment called a router, which you would otherwise need to share one Internet connection among all the PCs on your network.

If you have a high-speed connection like a cable modem or DSL, keeping your shared Internet system working is fairly simple. Just remember that the gateway PC must be turned on—and turned on *before* the other computers on the network—in order for the other PCs to get online. Remember, also, that the Windows Firewall feature should be on for all PCs *except* the gateway computer. (See page 526.)

If you use a dial-up modem, however, you may wind up having to do a little more fine-tuning. For example, if you open your Web browser on a *client* computer (that is, not the one with the Internet connection), the host computer dials. Unfortunately, dialing and connecting take time, before the host computer has finished making the connection, your Web browser may already have reported that the Web page can't be opened. Similarly, your email program may report that "the server isn't available," simply because it took an especially long time for the host computer to make the connection.

In either case, simply wait a moment and then try again: in your Web browser, click the Refresh button; in the email program, click the Send/Receive button again. This time, your PC should find the connection and succeed in getting online.

Another typical problem: The host computer insists on connecting to your Internet service provider 24 hours a day, tying up the household phone line all day long, redialing every time it loses the connection.



Fortunately, it's easy enough to give Internet sharing some behavior-modification therapy. On the gateway PC, open the Network Connections icon in your Control Panel. Right-click the connection icon for your Internet service provider from the shortcut menu, choose Properties, and click the Options tab. Make sure "Redial if line is dropped" is turned off, and set "Idle time before hanging up" to a reasonable number—say, ten minutes.

While you're here, you may as well turn off "Prompt for name and password" and "Prompt for phone number" to streamline the connection process, so that Windows XP won't bother you for this information every time you try to connect.

Also while you're here, you may as well visit the Advanced tab. On the gateway PC—the one connected directly to the Internet—all of these checkboxes should be turned on. On the other machines, these checkboxes should be turned off.

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- Your Ethernet hub (if any) is plugged into an electrical outlet.
- Your networking card is working. To do so, open the System program in the Control Panel. Click the Hardware tab; click the Device Manager button. Look for an error icon next to your networking card's name (see Chapter 13 for more on the Device Manager).

If you don't find a problem, rerun the Network Setup Wizard. If that doesn't work, you'll have to call Microsoft or your PC company for help.

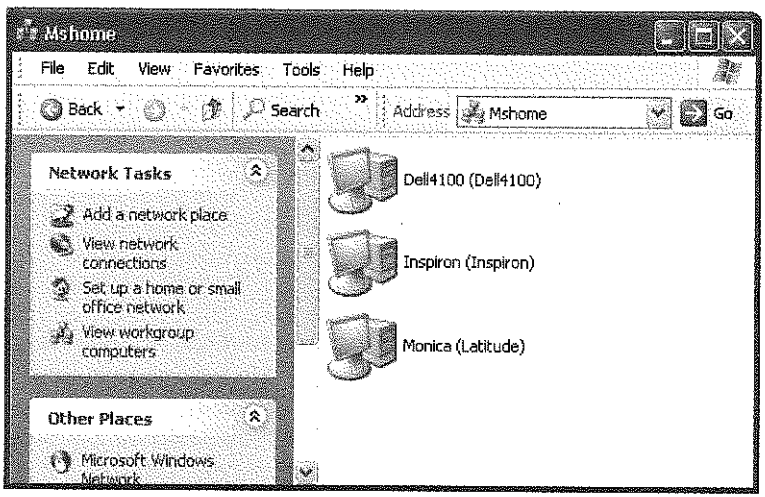


Figure 18-5: *We have network! Your My Network Places window should reveal the presence of other PCs in your network, complete with the names you gave them when plowing through the Network Setup Wizard. This illustration shows Tiles view for clarity, but Windows starts out in Details view.)*

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CHAPTER
19

Introducing Network Domains

As you may remember from page 23, Windows XP Pro was designed to thrive on two very different kinds of network worlds: the *workgroup* (an informal, home or small-office network) and the *domain* (a hard-core, security-conscious corporate network of dozens or thousands of PCs). Depending on which kind of network your PC belongs to, the procedures and even dialog boxes you experience are quite a bit different.

Chapter 18 guides you through the process of setting up a workgroup network, but no single chapter could describe setting up a corporate domain. That's a job for Super Geek, otherwise known as the network administrator—somebody who has studied the complexities of corporate networking for years.

This chapter is designed to help you learn to *use* a corporate domain. If your PC is connected to a workgroup network or no network at all, on the other hand, feel free to use these pages as scratch paper.

Note: In the context of this chapter, the term *domain* refers to a group of Windows computers on the same network. It's not the same as an *Internet* domain, which you may occasionally see mentioned. An Internet domain is still a group of computers, but they don't have to be connected to the same network, and they don't have to be running Windows. In addition, the domain name (like *amazon.com*) must be registered to ensure that there's no duplication on the Internet. Because Windows domains are private, they can be named any way the administrator chooses.

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The Domain

As you may remember from Chapter 18, nobody else on a workgroup network can access the files on your PC unless you've created an account for them on your machine. Whenever somebody new joins the department, you have to create another new account; when people leave, you have to delete or disable their accounts. If something goes wrong with your hard drive, you have to re-create all of the accounts.

What's Wrong with Workgroups

You must have an account on each shared PC, too. If you're lucky, you have the same name and password on each machine—but that isn't always the case. You might have to remember that you're *pjenkins* on the front-desk computer, but *JenkinsP* on the administrative machine.

Similarly, suppose there's a network printer on one of the computers in your workgroup. If you want to use it, you have to find out whose computer the printer is connected to, call him to ask if he'll create an account for you, and hope that he knows how to do it. You either have to tell him your user name and password, or find out what user name and password he's assigned to you. In that case, every time you want to use that printer, you might have to log on by typing that user name and password.

If you multiply all of this hassle by the number of PCs on your small network, it's easy to see how you might suddenly find yourself spending more time managing accounts and permissions than doing the work the PC was supposed to help you with.

The Domain Concept

The solution to all of these problems is the network domain. In a domain, you only have a single name and password, which gets you into every shared PC and printer on the network. Everyone's account information resides on a central computer called a *domain controller*—a computer so important, it's usually locked away in a closet or a data-center room.

A domain controller keeps track of who is allowed to log on, who *is* logged on, and what each person is allowed to do on the network. When you log onto the domain, your PC communicates with a domain controller, which verifies your credentials and permits (or denies) you access.

Most domain networks have at least two domain controllers with identical information, so that if one computer dies, the other one can take over. (Some networks have many more than two.) This redundancy is a critical safety net; without a happy, healthy domain controller, the entire network is dead.

Without budging from their chairs, network administrators can use a domain controller to create new accounts, manage existing ones, and assign permissions. The domain takes the equipment-management and security concerns of the network out of the hands of individuals and puts them into the hands of trained professionals. You may sometimes hear this kind of networking called *client/server networking*. Each *workstation*—that is, each mere mortal PC like yours—relies on a central server machine for its network access.

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If you use Windows XP Professional in a medium- to large-sized company, you probably use a domain every day. You may not even have been aware of it.

In fact, knowing what's been going on right under your nose isn't especially important to your ability to get work done. After all, it's not your job—it's the network administrator's. But understanding the domain system can help you take better advantage of a domain's features.

Active Directory

As you know, Microsoft sells two versions of Windows XP: Home Edition and Professional. One key difference is that Windows XP Home Edition computers can't join a domain.

There are other versions of Windows, however: the specialized ones that run on the above-mentioned domain controller computers. To create a domain, at least one computer must be running either Windows .NET Server 2003 or Windows 2000 Server. These are far more expensive operating systems (the price depends on the number of machines that they connect) and they run only on high-octane PCs. They also require high-octane expertise to install and maintain.

One key offering of these specialized Windows versions is an elaborate application called *Active Directory.* It's a single, centralized database that stores every scrap of information about the hardware, software, and people on the network. (The older operating system called Windows NT Server can create domains, but it doesn't include Active Directory.)

After creating a domain by installing Active Directory on a server computer, network administrators can set about filling the directory (database) with information about the network's resources. Every computer, printer, and person is represented by an *object* in the database and *attributes* (properties) that describe it. For example, a *user object's* attributes specify that person's name, location, telephone number, email address, and other more technical elements.

Active Directory lets network administrators maintain an enormous hierarchy of computers. A multinational corporation with tens of thousands of employees in offices all over the world can all be part of one Active Directory domain, with servers distributed in hundreds of locations, all connected by wide-area networking links. (A group of domains is known as a *tree.* Huge networks might even have more than one tree and are called, of course, a *forest.*)

The objects in an Active Directory domain are arranged in a hierarchy, something like the hierarchy of folders within folders on your hard drive. Some companies base their directory-tree designs on the organization of the company, using departments and divisions as the building blocks. Others use geographic locations as the basis for the design, or use a combination of both.

Unless you've decided to take up the rewarding career of network administration, you'll never have to install an Active Directory domain controller, design a directory tree, or create domain objects. You very well may encounter the Active Directory at

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your company, however; you can use it to search for the mailing address of somebody else on the network, for example, or locate a printer that can print on both sides of the page at once. Having some idea of the directory's structure can help in these cases.

Domain Security

Security is one of the primary reasons for Active Directory's existence. First of all, all of the account names and passwords reside on a single machine (the domain controller), which can easily be locked away, protected, and backed up. The multiple domain controllers automatically *replicate* the changes to one another, so that every one of them has up-to-date information.

Active Directory is also a vital part of the network's other security mechanisms. When your computer is a member of a domain, the first thing you do is log on, just as in a workgroup. But when you log into a domain, Windows XP Professional transmits your name and password (in encrypted form) to the domain controller, which checks your credentials and grants or denies you access.

Joining a Domain

If you work in a corporation, the computer supplied to you generally has Windows XP already installed and joined to the domain, ready to go.

But if you ever have occasion to add a PC to a domain yourself, here's how you go about it. (You can make your PC join a domain either during the installation of Windows XP Pro, or any time afterward.)

1. **Log on using the local Administrator account.**

   See page 517 for details.

2. **Choose Start→Control Panel→System. In the resulting dialog box, click the Computer Name tab (see Figure 19-1).**

   You should now be able to see the names of your computer and any workgroup or domain it belongs to.

3. **Click the Network ID button.**

   The Network Identification Wizard appears.

4. **Click Next to bypass the Welcome screen.**

   The Connecting To The Network screen appears.

5. **Click "This computer is part of a business network," and then click Next.**

   Now the wizard wants to know: "What kind of network do you use?"

6. **Click "My company uses a network with a domain" and click Next.**

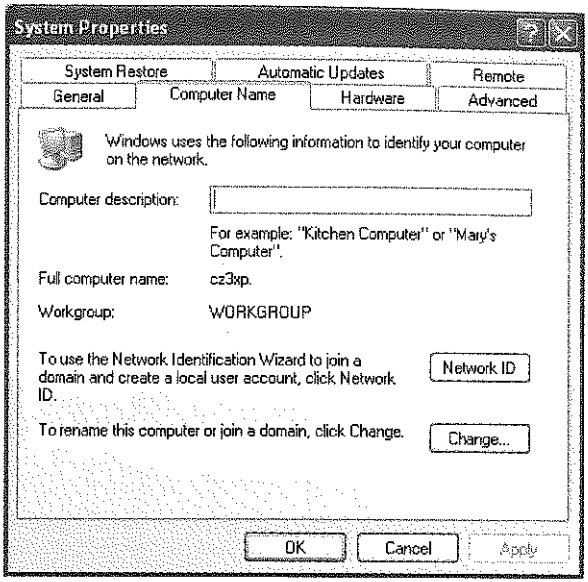
   A Network Information screen appears. It lets you know that, before you can join a domain, you need both a domain user account and a computer account. Your network administrator should create and give these to you in advance.

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7. Click Next. On the User Account and Domain Information page, enter the user account name and password supplied by your administrator, plus the name of the domain in which your account has been created.

   Remember this domain name; you'll need it again later to log on.

Figure 19-1:
The Computer Name tab of the System control panel displays the name of your computer and the workgroup or domain of which it is currently a member. From here, you can change the computer or workgroup name or join a new domain. The Network ID button launches a Network Identification Wizard, while the Change button displays a dialog box in which a more experienced person can perform the same tasks.



8. Click Next again.

   A Computer Domain screen may appear next, requiring you to specify the name of your computer and the domain the *computer object* is in. If you see this page, it means that your computer isn't listed in the Active Directory domain you specified on the previous wizard screen. Flag down your network administrator and point out the problem. Then click Next to proceed.

   In any case, you should now arrive at the User Account page, where you can create a *local* account for your computer. Of course, if you're going to be logging onto a domain, you don't really need a local account on your PC.

9. Click "Do not add a user at this time." Click Next, and finally click Finish to complete the wizard.

   Restart the computer for your changes to take effect.

Five Ways Life Is Different on a Domain

As described in Chapter 18, the domain and workgroup personalities of Windows XP Professional are quite a bit different. Here are some of most important differences.

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Logging On

What you see when you log onto your PC is very different when you're part of a domain. Instead of the standard Welcome screen (which shows a list of people with accounts on your PC), you generally encounter a two-step sign-in process:

- First, you see a Welcome to Windows dialog box. It instructs you to press Ctrl+Alt+Delete to begin. (As noted on page 536, this step is a security precaution.)
- Now the Log On to Windows dialog box appears (see Figure 19-2).

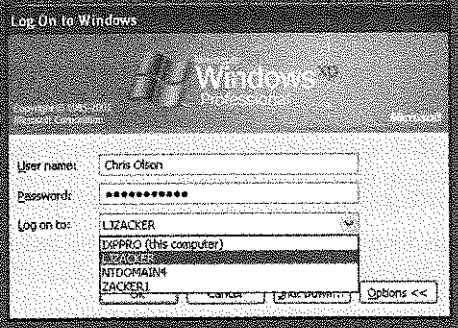
Tip: You can turn off the requirement to press Ctrl+Alt+Delete at each log on, if you like. Log on using the local Administrator account (or another administrator account), and then choose Start→Control Panel→User Accounts. Then click the Advanced tab and turn off the "Require users to press Ctrl-Alt-Delete" checkbox.

As you see in Figure 19-2, the Log On to Windows dialog box provides a place for you to type your user name and password. To save you time, Windows fills in the User Name box with whatever name was used the last time somebody logged in.

UP TO SPEED

Knowing What You're Logging Onto

You may remember from Chapter 18 that there are two kinds of accounts: *domain* accounts, maintained by a highly paid professional in your company, and *local* accounts—accounts that exist only on the PC itself. It's actually possible to find domain accounts and local accounts that have the same name—a perennial source of confusion for beginners (and occasionally experts).



For example, you know that every Windows XP Pro computer has an Administrator account, which the Windows XP installer creates automatically. The trouble is, so does the domain controller.

In other words, typing *Administrator* into the User Name text box might log you onto either the local machine or the domain, depending on what password you supply. (With luck, the two accounts won't have the same password, but you never know.)

To avoid this kind of confusion, click the Options button on the Log On to Windows screen. As shown here, you're now privy to the "Log on to" drop-down menu. It lists the name of the domain you just joined, any other domains on the network, and your computer's name (which is marked "this computer"). It's important to select the correct item before you click OK.

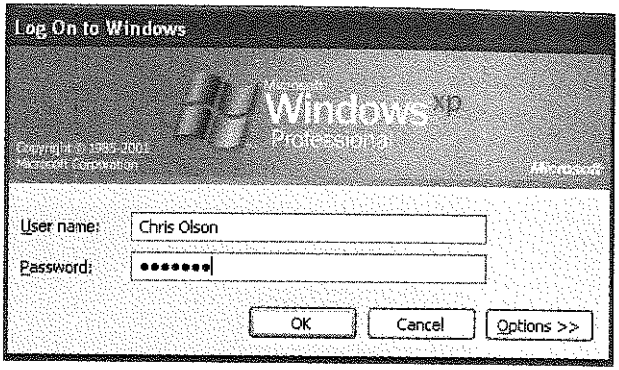
For this reason, it's a good idea to keep the Log On to Windows dialog box in its expanded state all the time, so that you can easily see whether you are logging onto the domain or the local machine.

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Browsing the Domain

When your PC is part of the domain, all of its resources—printers, shared files, and so on—magically appear in your desktop windows, the My Network Places window, and so on (see Figure 19-3).

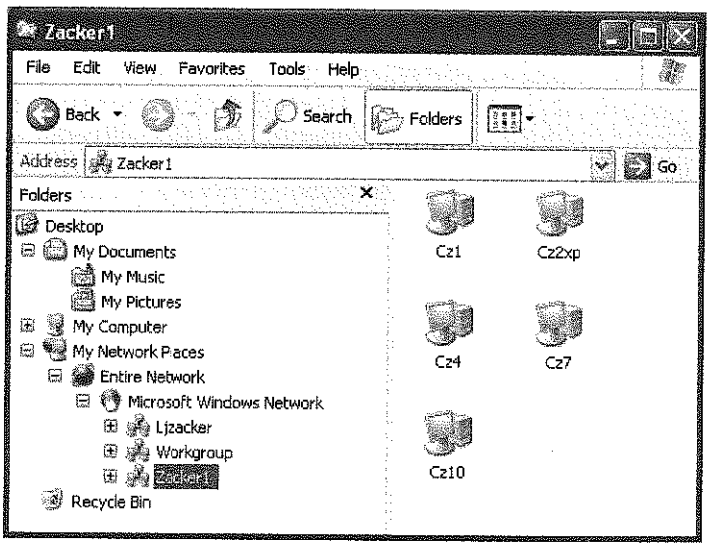
Figure 19-2: *Joining a domain disables Fast User Switching and the Windows XP Welcome screen, presenting a simple Log On to Windows dialog box instead. If you know Windows 2000, you should feel right at home, because this is the standard Welcome screen for that operating system, too.*



Searching the Domain

You can read all about the Windows XP Search command in Chapter 1. But when you're on a domain, this tool becomes far more powerful—and more interesting.

Figure 19-3: *When you open a Windows Explorer window and expand the My Network Places and Microsoft Windows Network icons, you see an icon for each workgroup on the network (see Figure 19-4). You can browse through the computers in a domain and access their shared folders (if you have the appropriate permissions) just as you would those of a workgroup. On a large network, you'll just see a lot more computers.*



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For example, when you choose Start→Search, the Computers or People search option changes to say Printers, Computers, or People. (Microsoft figures that you wouldn't need a search command for printers on a small network workgroup. After all, if you've only got two printers in your small office, you probably don't forget where they are very often. It's a different story if you work in a huge building with hundreds of computers and printers.)

When you choose Start→My Computer and click the My Network Places link on the left side of the window, the screen changes to show the list of your network places (if any). On the left side of this window, you can click the Search Active Directory link to open the dialog box shown at top left in Figure 19-4.

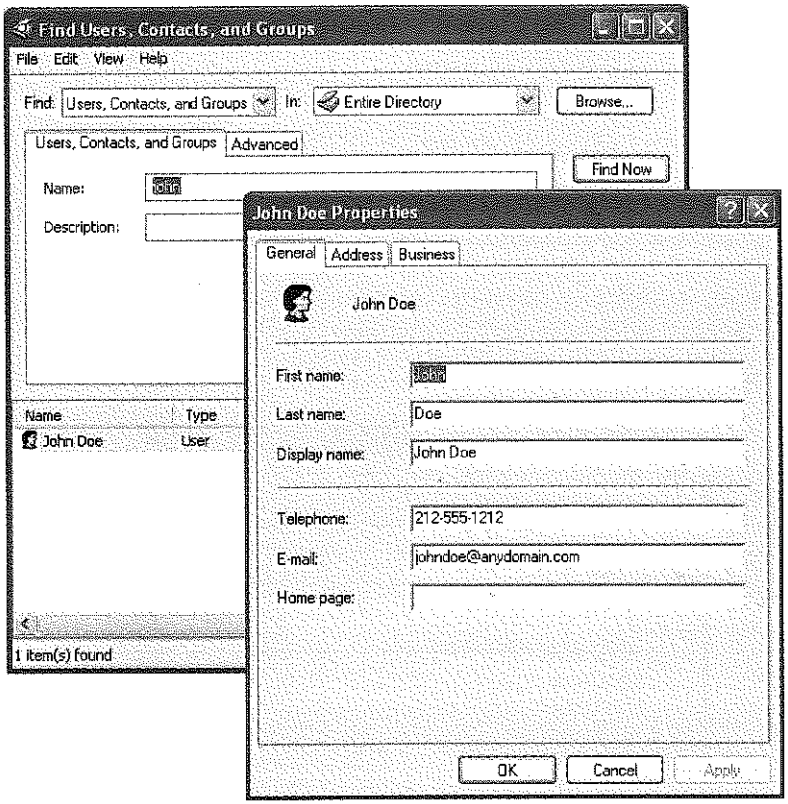


Figure 19-4: *Top left: Searching for people in your network's Active Directory is like using a phone book. You supply the information you know about the person.*

Lower right: When you find that person (technically, her user object*), you can view the information stored in its attributes. Of course, the usefulness of this feature depends on how much information your network administrators enter when creating the user objects.*

The name of this dialog box changes depending on what you're looking for. Your choices are:

- **Users, Contacts, and Groups.** Use this option to search the network for a particular person or network group (Figure 19-4). If your search is successful, you can find

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out someone's telephone number, email address, or mailing address, for example, or see what users belong to a particular group.

- **Computers.** This option helps you find a certain PC in the domain. It's of interest primarily to network administrators, because it lets them open a Computer Management window for the computers they find and manage many of its functions by remote control.
- **Printers.** In a large office, it's entirely possible that you might not know where you can find a printer with certain features—tabloid-size paper, for example, or double-sided printing. That's where this option comes in handy (see Figure 19-5).

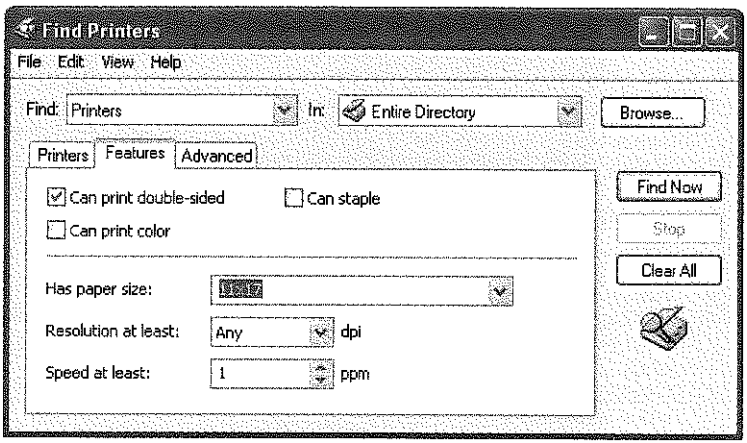


Figure 19-5: *Searching for a printer in Active Directory lets you find the printing features you need. Network administrators may also record the physical locations of the network printers. This way, when your search uncovers a printer that can handle 11 x 17-inch paper and print double-sided too, you can simply look at its attributes to find out that it's located on the fourth floor on the west side of the building.*

- **Shared Folders.** In theory, this option lets you search for shared folders on the domain's computers—but you'll quickly discover that searches for a certain shared folder generally come up empty-handed.

  That's because just sharing a folder on your computer doesn't "publish" it to Active Directory, which would make it available to this kind of search. Only network administrators can publish a shared folder in Active Directory.
- **Organizational Units.** You may not have heard of organizational units, but your network administrator lives and breathes them. (They're the building blocks of an Active Directory hierarchy.) You, the mere mortal, can safely ignore this search option.

Custom Searches

In addition to these predefined searches, you can also create a custom search of your own by looking for information in specific fields (that is, attributes) of Active Directory, as shown in Figure 19-6.

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When used creatively, these custom searches can be powerful indeed, in ways you might not expect. For example, suppose your car won't start, and you need a ride home from the office. You can open this dialog box, click the Field button, and choose User→Home Phone. Change the Condition drop-down menu to Starts With; type your own area code and telephone exchange into the Value text box. When you click the Find Now button, you'll get a list of co-workers who live in your neighborhood (as indicated by the first three digits of their phone numbers).

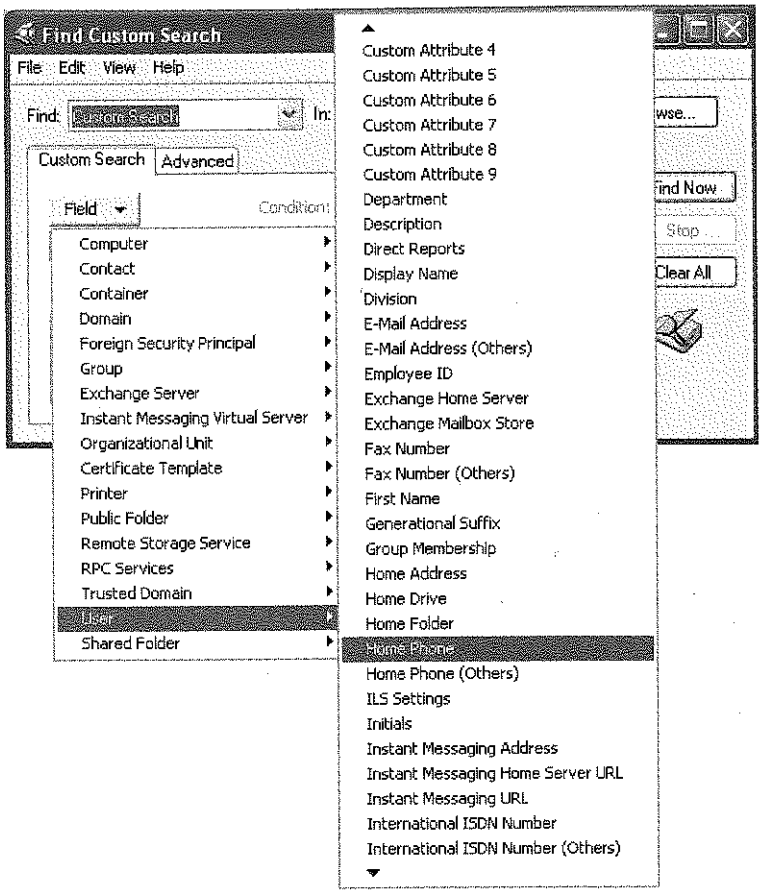


Figure 19-6: *To perform a custom search, you use the drop-down menus to select an object type and then a particular field in that object. You then specify a condition (such as whether you want to search for an exact value or just the beginning or end of the value) and the value you want to look for. When you click Find Now, a list of the objects matching your criteria appears.*

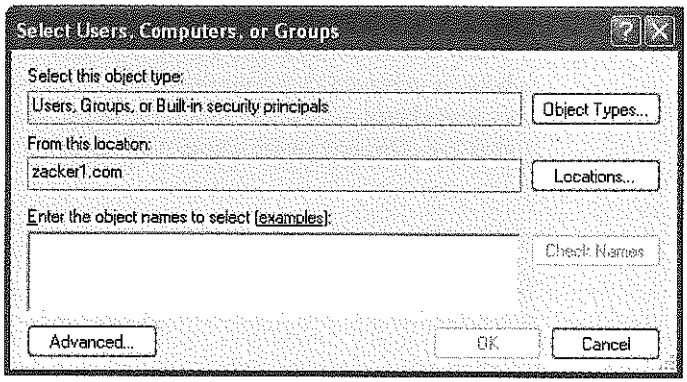
Assigning Permissions to Domain Members

Chapter 17 describes the process of assigning permissions to certain files and folders, so that only designated people and groups can open them from across the network. When you're a member of a domain, the process is the same, except that you can select people and groups from the domain as well.

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When you open the Properties dialog box for a file or folder, click the Security tab, and then click Add, you don't get the same dialog box that you'd see on a workgroup network. On a domain, it's called the Select Users, Computers, or Groups dialog box (Figure 19-7).

Figure 19-7:
When you click the Object Types button, you can specify whether you want to search for Built-in Security Principals (special-purpose groups like Everyone and Authenticated Users), Computers, Groups, or Users. Also, the standard location for the objects is your current domain. You can still click the Location button and select your computer's name (to specify local user and group accounts), or even choose another domain on the network, if others are available.

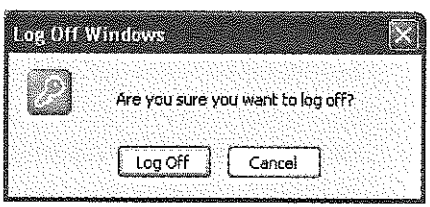


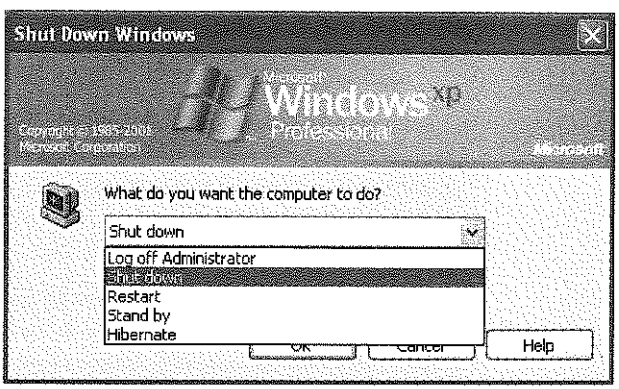
Logging Off and Shutting Down

When you're on a domain PC, you sacrifice one useful feature of Windows XP Pro: the Fast User Switching feature described on page 536. (On the other hand, you're

Figure 19-8:
Top: Logging off on a Windows XP Professional domain computer is simpler than on a workgroup, because you can't switch users.

Bottom: Selecting Shut Down on a Windows XP Pro computer that's a member of a domain lets you log off the domain or perform one of the usual shutdown options.





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less likely to need it, since you're less likely to share your PC with other employees during the course of the workday.) Instead, you must completely log off before other people can access their accounts.

When you choose Start→Log Off, you don't get the Switch User and Log Off buttons you'd see in a workgroup. Instead, you see a simple Log Off Windows dialog box, as shown at top in Figure 19-8.

When you Start→Shut Down, on the other hand, you see the dialog box shown at bottom in Figure 19-8. This dialog box, too, is slightly different from the one you see on a workgroup—but the idea is the same. You specify whether you want to log off, shut the computer down completely, restart it, or put it into hibernation.

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CHAPTER
20

Sharing Network Files

Whether you built the network yourself (Chapter 18) or work in an office where somebody has done that work for you (Chapter 19), all kinds of fun can come from having a network. You're now ready to share the following components among the various PCs on the network:

- **Your Internet connection.** Having a network means that all the PCs in your home or office can share a single connection. This is a *huge* feature, one that can save you hundreds of dollars a year if you have a cable modem or DSL. On a small network, it's called Internet Connection Sharing, and it's described in Chapter 18.
- **Printers.** Another excellent justification for creating a network is that you don't need a printer for every PC; all of the PCs can share a much smaller number of printers. If several printers are on your network—say, a high-speed laser printer for one computer, a color printer for another—everyone on the network can use whichever printer is appropriate to a particular document. You'll find step-by-step instructions starting on page 579.
- **Files, folders, and disks.** No matter what PC you're using on the network, you can open the files and folders on any *other* networked PC (and its mounted disks), as long as the other PCs' owners have made these files available for public inspection. That's where *file sharing* comes in, and that's what this chapter is all about. (File sharing also lets you access your files and folders using a laptop on the road.)

The uses for file sharing are almost endless. At its simplest, you can use file sharing to finish writing a letter in the bedroom that you started downstairs at the kitchen table—without having to carry a floppy disk around. But you can also store your library of MP3 music files on one computer and play them from any other com-

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puter on the network. You can even run a program like Microsoft Bookshelf from any computer on the network without removing the CD-ROM from the drive.

Note: Your network may include only one Windows XP computer, along with a Windows 95, 98, or Me machine or two. That's perfectly OK; all of these PCs can participate as equals in this party. This chapter points out whatever differences you may find in the procedures.

Accessing Other Computers

Later in this chapter, you can read the steps for making one of your own disks or folders public, so that other people on the network can rifle through it and enjoy its contents.

More often, though, you'll probably be on the receiving end of that transaction—that is, you'll connect to other PCs whose disks and folders have been shared.

Fortunately, doing so is extremely easy.

Method 1: My Network Places

Most people view their network contents using a special window:

- **In Windows XP or Windows Me:** Choose Start→My Network Places.
- **In earlier versions:** Double-click the desktop icon called Network Neighborhood or My Network Places.

The very first time you open the network window, you see icons that correspond to the shared folders and files on the computers of your network (including those on your own machine), as shown in Figure 20-1. Just double-click one to open it.

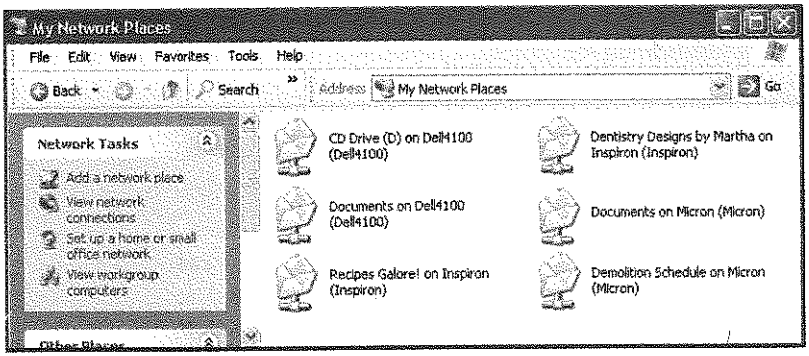


Figure 20-1: *In Windows XP, all of the shared disks and folders show up automatically in the My Network Places window—including shared disks and folders on your own PC, which can be a bit confusing.*

"View workgroup computers"

If you find the My Network Places window overwhelmingly crowded as your network grows, you might find clarity in the "View workgroup computers" link at the left side

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of the window. It shows you the icons of the *computers* on your network—not every last shared folder on all of them. Double-click one of these computer icons to see a list of the shared folders and printers on it (Figure 20-2).

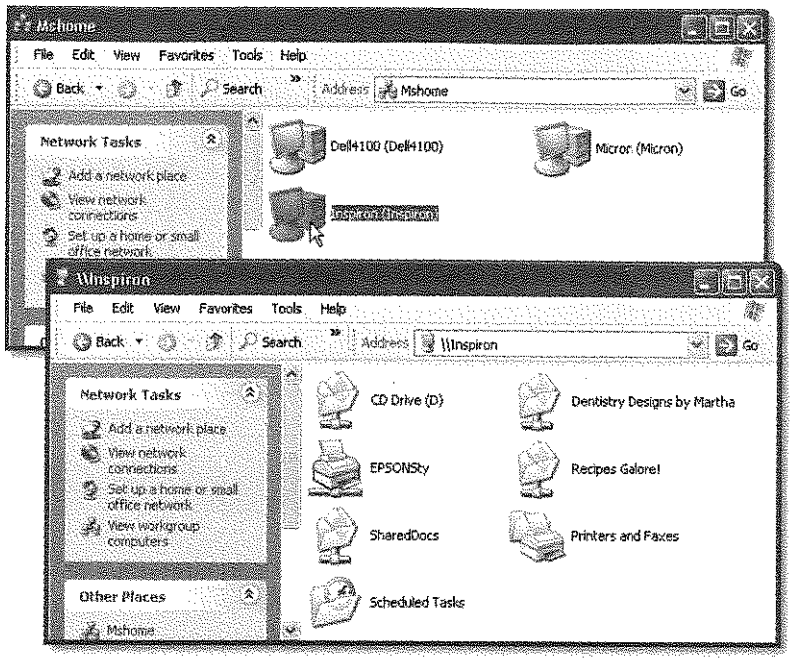


Figure 20-2:
Top: If you know that the folder or file you're looking for resides on a particular PC, it's often more convenient to start your quest at this window.

Bottom: Double-click one of these computers to see a list of its shared resources (folders, disks, and printers), as shown here.

Older PCs: Network Neighborhood

If you're using a networked PC that's still running Windows 95 or Windows 98, you won't find a My Network Places icon on the desktop. Instead, you get its ancestor: Network Neighborhood.

When you open Network Neighborhood, Windows displays an icon in the window for each computer it finds on the workgroup (see Figure 20-3), along with an Entire Network icon. (If you're on a domain network, you may see a list of domains here. Click the one you want.) Just double-click a computer's icon to see the shared disks, folders, and printers attached to it. (Once again, you may have to type in the correct password to gain access.)

Method 2: Windows Explorer

Instead of using the My Network Places or Network Neighborhood icon on the desktop, some people prefer to survey the network landscape using Windows Explorer. (See page 112 for details on opening Windows Explorer.)

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The left pane of the window lists an icon for My Network Places or Network Neighborhood. As shown in Figure 20-4, you can click the + button to see a list of the computers and shared resources on them.

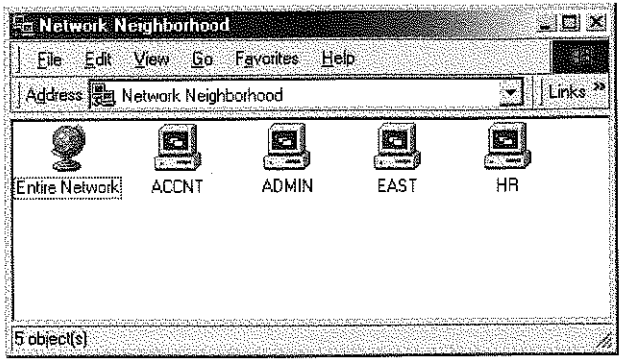


Figure 20-3: *This workgroup has four computers. The Entire Network icon lets you drill down from the workgroup to the computers–but because you see the networked workgroup PCs immediately, there's little reason to do so.*

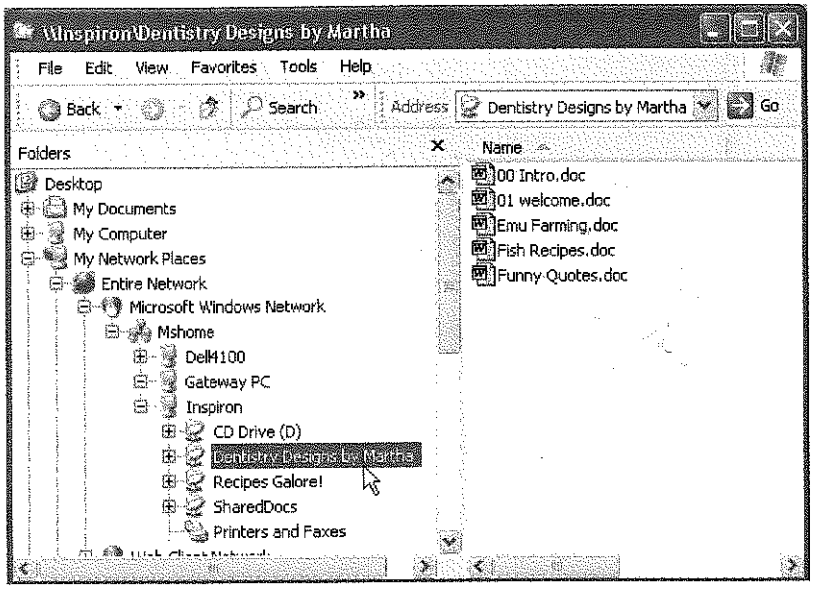


Figure 20-4: *The advantage of using Windows Explorer to look over your network is that you can simultaneously access folders and files on your own computer from this window, making it easier to copy files between the computers. You get a good overview of the network all at once.*

Method 3: Universal Naming Convention (UNC)

For hard-core nerds, that business of burrowing into the My Network Places folder is for sissies. When they want to call up a shared folder from the network, or even a particular document *in* a shared folder, they just type a special address into the Address bar of any folder window, or even Internet Explorer—and then press the

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Enter key. You can also type such addresses into the Run dialog box, accessible from the Start menu.

It might look like this: *\\laptop\shared documents\salaries 2002.doc.*

Tip: Actually, you don't have to type nearly that much. The AutoComplete feature proposes that full expression as soon as you type just a few letters of it.

This path format (including the double-backslash before the PC name and a single backslash before a folder name) is called the *Universal Naming Convention (UNC).* It was devised to create a method of notating the exact location of a particular file or folder on a network. It also lets network geeks open various folders and files on networked machines without having to use the My Network Places window.

You can use this system in all kinds of interesting ways:

- Open a particular folder like this: *\\computer name\folder name.*
- You can also substitute the IP address for the computer instead of using its name, like this: *\\192.1681.44\my documents.*
- You can even substitute the name of a shared *printer* for the folder name.
- As described later in this chapter, Windows XP can even access shared folders that sit elsewhere on the Internet (offline backup services, for example). You can call these items onto your screen (once you're online) just by adding *http:* before the UNC code and using regular forward slashes instead of backwards slashes, like this: *http://Computer Name/Folder Name.*

Tip: A great place to type UNC addresses is in the address bar that you can bring to the top of any desktop window.

Working with Network Files

Now that you know how to open shared drives and folders from across the network, you can start using the files you find there. Fortunately, there's nothing much to it. Here are some of the possibilities.

At the Desktop

When you're working at the desktop, you can double-click icons to open them, drag them to the Recycle Bin, make copies of them, and otherwise manipulate them exactly as though they were icons on your own hard drive. Chapter 3 contains much more detail on manipulating files. (Of course, if you weren't given permission to change the contents of the shared folder, you have less freedom.)

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Tip: There's one significant difference between working with "local" icons and working with those that sit elsewhere on the network: When you delete a file from another computer on the network (if you're allowed to do so), either by pressing the Delete key or by dragging it to the Recycle Bin, it disappears instantly and permanently, without ever appearing in the Recycle Bin.

Using Start→Search

As noted in Chapter 1, the Windows XP Search program stands ready to help you find files not just on your own machine, but also elsewhere on the network. When the Search window opens up (choose Start→Search), open the "Look in" drop-down list and choose Browse. You're offered a list of disks and folders to search—and one of them is My Network Places. Click it and then click OK. You've just confined your search to the shared disks and folders on your network. In the Search Results list, you'll be able to see, along with each found file, the name of the PC that contains it.

Inside Applications

When you're working in a program, opening files that sit elsewhere on the network requires only a couple of extra steps. Just summon the Open dialog box as usual (choose File→Open) and then, when it appears, click the My Network Places icon in the left-side panel (or choose My Network Places from the "Look in" drop-down menu).

Now just double-click your way to the folder containing the file you want to use. Once you've opened the file, you can work on it just as though it were sitting on your own computer.

At this point, using the File→Save command saves your changes to the original file, wherever it was on the network—unless you weren't given permission to make changes, of course. In that case, you can choose File→Save As and then save a copy of the file onto your own PC.

Shared Folders Online

One of Windows XP's slickest features is its ability to treat hard drives out on the Internet as though they were directly connected to your system. You can create shortcuts that bring servers like these directly onto your screen, where they appear in standard folder windows:

- FTP sites (private, password-protected sets of folders on the Internet).
- Web sites that have been specially prepared to serve as online "folders." Certain data-backup Web sites work this way: they provide you with, say, a 50 MB hard drive in the sky—actually on the Internet—that you can use to store whatever files you like.
- Folders on corporate intranets.

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The trick to bringing these servers online is the "Add a network place" link, which you'll find in the task pane at the left side of the My Network Places window.

Tip: There's actually a quicker, simpler way to immortalize a server as a shortcut on your desktop: just drag its icon out of the Address bar of Internet Explorer or an open folder, as shown in Figure 20-5.

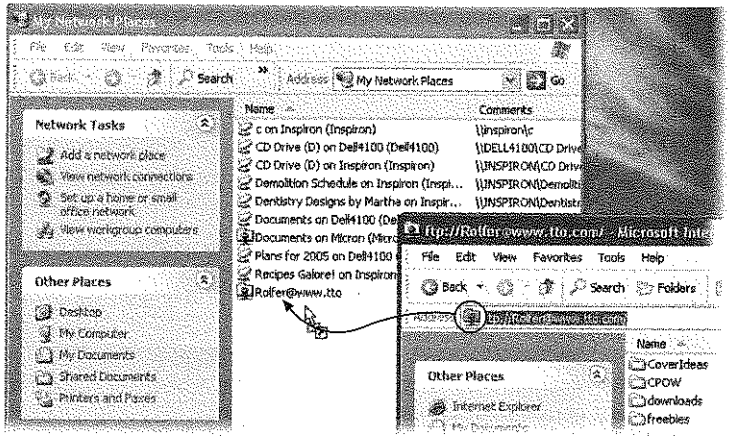


Figure 20-5: *If you've already connected to some network server—whether on your network or on the Internet—here's a very quick way to create a shortcut of it on your desktop for faster access next time. Just drag the tiny folder icon out of the Address bar. (You can put it on your desktop or, if it feels more consistent to do so, into your My Network Places folder.)*

Bringing an FTP or Web Server Online

To view the contents of an FTP server or an offline backup service, start by clicking the "Add a network place" link. When the wizard appears (see Figure 20-6), click Next. Wait, if necessary, while your PC goes online. Then, on the second screen, click "Choose another network location." Click Next.

Tip: You can also use this wizard to sign up for one of the above mentioned Web-based "offline disk" services. The second wizard screen lists, for example, the MSN Communities service ("Share your files with others, or store them for your personal use"). In theory, Microsoft may add other, similar services to this screen.

Finally you arrive at the critical screen, where you can type in the address of the Web site, FTP site, or other network location that you want your new shortcut to open.

Into the first text box, you can type any of these network addresses:

- **The UNC code.** As described earlier in this chapter, a UNC code pinpoints a particular shared folder on the network. For example, if you want to open the shared folder named FamilyBiz on the computer named Dad, enter *\\dad\familybiz*. Capitalization doesn't matter. Or, to open a specific file, you could enter something like *\\dad\finances\budget.xls*.

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Tip: Remember that you're specifying the *share name*, which isn't necessarily the same as the actual folder name. If you get an error message when you try to add a folder or file to your My Network Places window, this distinction may be at the heart of the problem.

- **http://website/folder.** To see what's in a folder called Customers on a company Web site called BigBiz.com, enter *http://bigbiz.com/customers*. (You can't just type in any old Web address. It has to be a Web site that's been specifically designed to serve as a "folder" containing files.)
- **ftp://ftp.website/folder.** This is the address format for FTP sites. For example, if you want to use a file in a folder named Bids on a company site named WeBuyStuff.com, enter *ftp://ftp.webuystuff.com/bids*.

What happens when you click Next depends on the kind of address you specified. If it was an FTP site, you're offered the chance to specify your user name. (Access to every FTP site requires a user name and password. You won't be asked for the password until you actually try to open the newly created folder shortcut.)

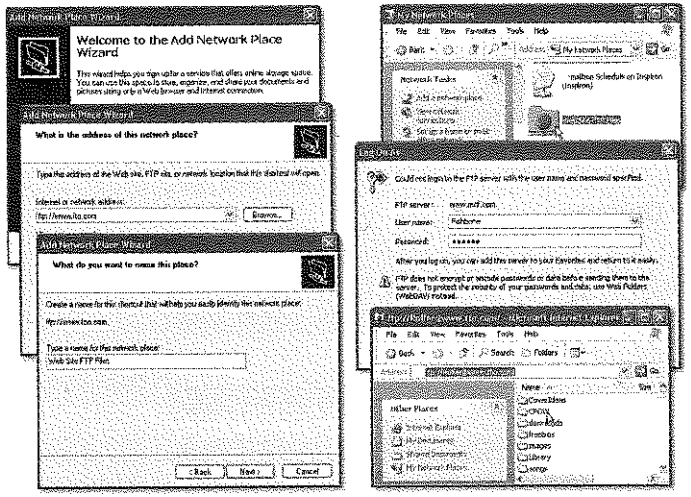


Figure 20-6:
Left: The Add Network Place Wizard (top) walks you through setting up a desktop icon for your Web, FTP, or intranet site, including (middle) entering the location of the folder or file for which you want to create a shortcut in your My Network Places window—in this case, an FTP server (bottom).

Right: When you double-click the newly created FTP icon (top), you'll be asked for your password (middle). Thereafter, depending on the speed of your connection, the files in the FTP folder might show up on your screen as though they were sitting on a very, very slow floppy disk (bottom).

Click Finish to complete the creation of your network shortcut, which now appears in the My Network Places window. To save you a step, the wizard also offers to connect to and open the corresponding folder.

The beauty of all this is that these remote folders appear in everyday, ordinary folder windows (or in Internet Explorer), as shown at bottom right in Figure 20-6. You can work with them exactly as though they were sitting on your own hard drive. The only difference is that because you're actually communicating with a hard drive via the Internet, the slower speed may make it feel as if your PC has been drugged.

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Mapping Shares to Drive Letters

If you access network shares on a regular basis, you may want to consider another access technique called *mapping shares*. Using this trick, you can assign a *letter* to a particular shared disk or folder on the network. Just as your hard drive is called C: and your floppy drive is A:, you can give your Family Stuff folder the letter F: and the Jaz drive in the kitchen the letter J:.

Doing so confers several benefits. First, these disks and folders now appear directly in the My Computer window. Getting to them can be faster this way than navigating to the My Network Places window. Second, when you choose File→Open from within one of your applications, you'll be able to jump directly to a particular shared folder instead of having to double-click, ever deeper, through the icons in the Open File dialog box. You can also use the mapped drive letter in pathnames anywhere you would use a path on a local drive, such as the Run dialog box, a File→Save As dialog box, or the command line.

To map a drive letter to a disk or folder, open any folder or disk window. Then:

1. **Choose Tools→Map Network Drive.**

   The Map Network Drive dialog box appears, as shown in Figure 20-7.

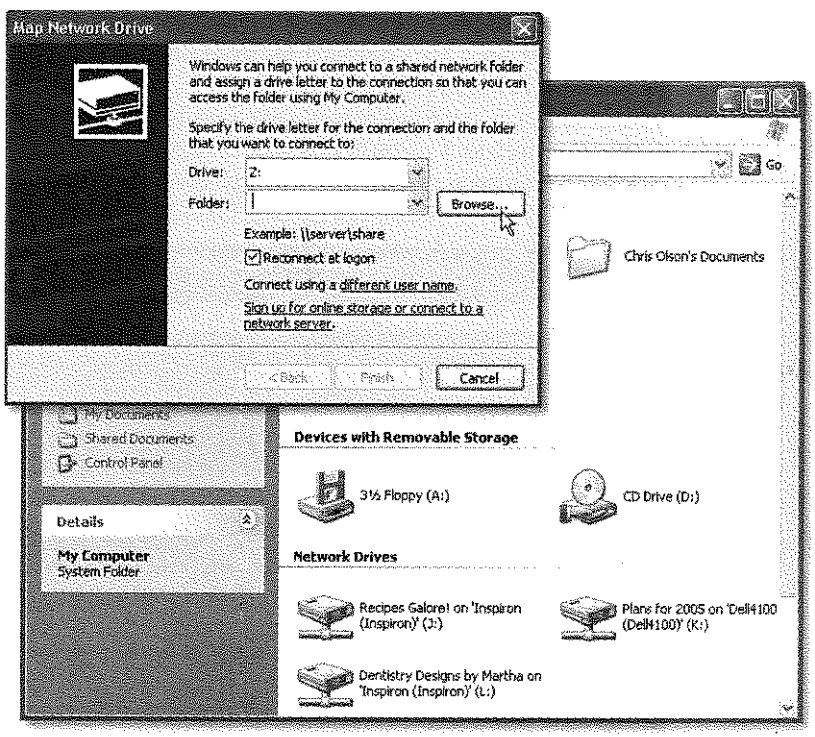


Figure 20-7: *Top: The "Reconnect at logon" option tells Windows to locate the share and map this drive letter to it every time you start your computer.*

Bottom: Once you've mapped a few folders or disks to their own letters, they show up in the Network Drives group within your My Computer window. (Note the drive letters in parentheses—in this example, J:, K:, and L:.)

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2. **Using the drop-down list, choose a drive letter.**

   You can select any unused letter you like (except B, which is still reserved for the second floppy disk drive that PCs don't have anymore).

3. **Indicate which folder or disk you want this letter to represent.**

   You can type its UNC code into the Folder box, choose from the drop-down list of recently accessed folders, or click Browse.

Tip: Most people use the mapping function for disks and drives elsewhere on the network, but there's nothing to stop you from mapping a folder that's sitting right there on your own PC.

4. **To make this letter assignment stick, turn on "Reconnect at logon."**

   If you don't use this option, Windows will forget this assignment the next time you turn on the computer. (Use the "Connect using a different user name" option if your account name on the shared folder's machine isn't the same as it is on this one.)

5. **Click Finish.**

   A window opens to display the contents of the folder or disk. If you don't want to work with any files at the moment, just close the window.

From now on (depending on your setting in step 4), that shared disk or folder will show up in your My Computer list alongside the disks that are actually in your PC, as shown at bottom in Figure 20- 7.

Tip: If you see a red X on one of these mapped icons, it means that the PC on which one of the shared folders or disks resides is either off the network or turned off completely.

WORKAROUND WORKSHOP

Automatic Reconnections Can Be Tricky

If you select "Reconnect at logon" when mapping a shared disk or folder to a letter, the order in which you start your computers becomes important. The PC containing the shared disk or folder should start up before the computer that refers to it as, say, drive K:. That way, when the second computer searches for "drive K" on the network, its quest will be successful.

On the other hand, this guideline presents a seemingly insurmountable problem if you have two computers on the network, and each of them maps drive letters to folders or disks on the other.

In that situation, you get an error message to the effect that the permanent connection is not available. It asks if you want to reconnect the next time you start the computer. Click Yes.

Then, after all the computers have started up, open My Computer or Windows Explorer. You can see the mapped drive, but there's a red X under the icon. Ignore the X. Just double-click the icon. The shared folder or disk opens normally (because the other machine is now available), and the red X goes away.

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Two Roads to File Sharing

But enough about accessing the shared folders on *other* computers. Half the fun is sharing your *own* folders, making them available to other people on the network. This can be a much more complex proposition, which is why the rest of this chapter covers only this part of the equation.

First, however, a word of warning: As with so many other features, Windows XP Pro has two different personalities, depending on where you're using it (see Figure 20-8). In this case, Microsoft has created two different file-sharing systems:

- **Simple file sharing.** If you're working on a home network, and you have nothing to hide from the other people in the house, you may appreciate Windows XP's new *Simple file sharing* feature. It lets you share certain folders with a minimum of red tape and complexity. If you need a peek at the spreadsheet that Harold was working on yesterday, no big deal—you just open up his My Documents folder from across the network.

  If it's just you and your spouse, or you and a co-worker, this scenario is almost ideal: maximum convenience and minimum barriers. On the other hand, when you share a folder this way, anybody on the network can not only read your files, but also change or delete them. In other words, Simple file sharing isn't especially secure. Kids horsing around on the computer, young geniuses experimenting with your data, or a disgruntled co-worker could, in theory, send important data to Never-Never Land.

Note: Simple file sharing is the *only* form of file sharing in Windows XP Home Edition.

- **Standard file sharing.** If you want to specify exactly who has access to your files, and how much access they have, then you may prefer Windows XP Pro's *Standard* file sharing option, which it inherited from Windows 2000. This method is more complicated than Simple file sharing, but it gives you much more flexibility and protection.

WORD TO THE WISE

Job Number One?

In workgroup (or nonnetworked) PCs, the factory setting is the Simple file sharing system. Among Windows critics, that's yet another example that Microsoft doesn't take security seriously.

Some experts, therefore, strongly recommend that the first thing you should do on a new Windows XP machine is to turn off Simple file sharing.

That advice may be a bit on the extreme side. In an office environment, sure, you may want to consider turning off Simple file sharing. In its place, either learn how to use the Standard file sharing method or store your shared files on a server, where a network administrator controls the shared files and their security.

If you use your PC at home, or in a small office with a few trusted employees, Simple file sharing is a viable option that can save you a lot of bother.

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Of course, you may not have a choice of these two methods at all. If your PC is part of a corporate domain, Standard is the only method available. (You can actually turn on the Simple file sharing checkbox, but doing so has no effect.)

In any case, the following pages tackle the two file sharing systems one at a time.

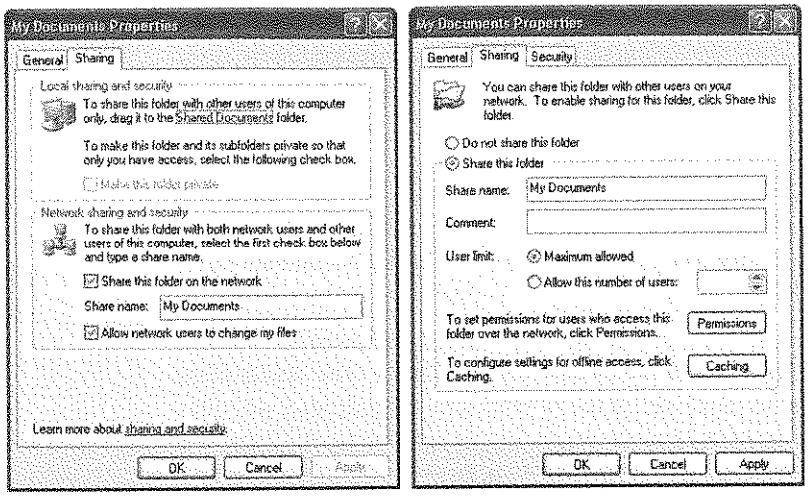


Figure 20-8:
Left: When Simple file sharing is on, you share designated folders and files with everyone in your workgroup whether you like it or not.

Right: In Standard file sharing, this Sharing tab appears. You can click the Permissions button to specify who is allowed to access it on a person-by-person (or group) basis.

Turning Simple File Sharing On and Off

On any Windows XP Pro machine that isn't part of a corporate domain network, Simple file sharing is turned on automatically.

GEM IN THE ROUGH

File Sharing Without a Network

Most people think of file sharing in the context of an office network. But in fact, you can use file sharing to your advantage even if your PC isn't connected to anything but the desk. You can also use file sharing to make certain folders available to other account holders on the *same* PC (see Chapter 17).

As described in Chapter 17, the mere act of assigning a password to your user account triggers Windows XP—with your approval—to make all of your files and folders private, so that no other account holders can access them.

If you try to open anybody else's files or folders, you see a dialog box so nice, it tells you twice: "[This folder] is not accessible. Access is denied."

That's all well and good if you'd just as soon your fellow PC users keep their noses out of your stuff. But it doesn't bode well for the kinds of exciting collaboration that computers are supposed to make possible. If your worlds are completely separate, how can you collaborate on a document? What are you supposed to do, email the thing to another account on the exact same computer?

Fortunately, you don't have to do that. You can share your files with the other users on the computer using any of the techniques described in this chapter.

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To turn it off or on again, choose Tools→Folder Options from the menu bar of any desktop window (or open the Folder Options icon in the Control Panel). Click the View tab, scroll all the way down to the bottom of the Advanced Settings list, and click "Use Simple File Sharing (Recommended)" to turn Simple file sharing on or off.

Strangely enough, this checkbox still appears when your PC is connected to a domain; you can even click it on or off. But it's a trick—don't fall for it. No matter what this checkbox says, you'll be using all Standard file sharing, all the time.

Simple File Sharing

This section is for you, workgroup (or nonnetworked) PC fans.

Sharing Your Own Folders

It's easy enough to "publish" any of your folders or disks for inspection by other people on your network. (Actually, sharing a folder, as you're about to do, also makes it available to other people who log into this PC under their own accounts, sitting at it in person.)

The trick is to use the Properties dialog box, like this:

1. **Locate the icon of the folder or disk that you want to share.**

   Your disk icons, of course, appear when you choose Start→My Computer. You can share any kind of disk; hard drive, floppy, CD-ROM, removable drive, and so on.

   Sharing an entire disk means that every folder on it, and therefore every file, is available to everyone on the network. If security isn't a big deal at your place (because it's just you and a couple of family members, for example), this feature can be a timesaving convenience that spares you the trouble of sharing every new folder you create.

   On the other hand, people with privacy concerns generally prefer to share individual *folders*. By sharing only a folder or two, you can keep *most* of the stuff on your hard drive private, out of view of curious network comrades. For that matter, sharing only a folder or two does *them* a favor, too, by making it easier for them to find files you've made available. This way, they don't have to root through your entire drive looking for the appropriate folder.

Note: If you're logged in using a normal account, of course, you may share only the disks and folders to which you've been given access. If you've logged in using the local Administrator account, on the other hand, you can share *any* disk or folder, but you should still avoid sharing critical system folders like the Windows folder and the Program Files folder. There's no reason other people on the network would need to get to these folders anyway—and if they did, they could do serious damage to your PC.

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2. **Right-click the disk or folder icon. From the shortcut menu, choose Sharing and Security.**

   The Sharing tab of the Properties dialog box opens (Figure 20-9). (The shortcut menu includes the Sharing command only if you've set up the computer for networking, as described in Chapter 18. And if you don't see a Sharing and Security command, just choose Properties from the shortcut menu—and then, in the resulting dialog box, click the Sharing tab.)

   If you're trying to share an entire disk, you now see a warning to the effect that, "sharing the root of a drive is not recommended." Click the link beneath it that says, "If you understand the risk but still want to share the root of the drive, click here" and then proceed with the next step.

3. **Turn on "Share this folder on the network" (see Figure 20-9).**

   The other options in the dialog box spring to life.

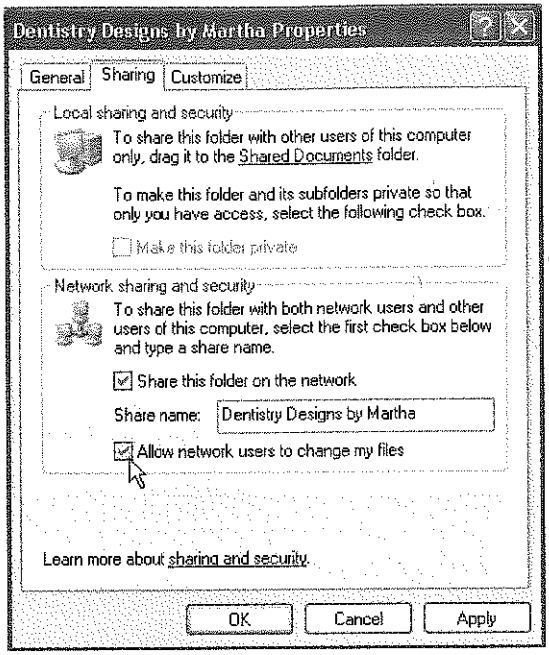


Figure 20-9:
The Sharing tab for a disk or folder on a Windows XP workgroup computer. (The dialog box refers to a "folder" even if it's actually a disk.) You can turn on "Share this folder on the network" only if "Make this folder private" is turned off. (If a folder is private, you certainly don't want other network citizens rooting around in it.)

4. **Type a name for the shared disk or folder.**

   This is the name other people will see when they open their My Network Places windows.

   Make this name as helpful as possible. For example, you may want to name the kitchen computer's hard drive *Kitchen Documents Drive.*

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Tip: If any of the other PCs on your network aren't running Windows XP, the shared folder's name can't be longer than twelve characters, and most punctuation is forbidden. You can type it here, all right, but—as a warning message will tell you—the other machines won't be able to see the shared disk or folder over the network.

5. **Turn off "Allow network users to change my files," if you like.**

   If the "Allow network users to change my files" checkbox is turned *off*, you create a "look, don't touch" policy. Other people on the network can open and read what's inside this disk or folder, but won't be able to save changes, rename anything, delete anything, or deposit any new files. (In technical lingo, you've established a "read-only" shared folder.)

   Otherwise, your co-workers can theoretically run wild, trashing your files, renaming things at random, and painting a mustache onto your face in the JPEG family photo.

   Remember, however, that making the shared folder read-only means that *you* won't be able to modify its files from another computer on the network, either. You've just run up against one of the fundamental shortcomings of Simple file sharing: You must give full access to your files to either *everybody on the network*—or nobody.

Note: Turning off the "Allow network users to change my files" checkbox isn't much of a security safeguard. True, other people on the network won't be able to change what's *in* your folder—but there's nothing to stop them from copying stuff *out* of it. Once they've saved copies of your files on their own hard drives, they can do with them whatever they like. They just can't copy the changed files back *into* your shared folder or disk. In other words, if you don't want other people to see or distribute what's in your folders (using Simple file sharing), don't share them.

6. **Click OK.**

   As shown in Figure 20-10, the icon changes for the disk or folder you just shared. It's also gained a new nickname: you may hear shared folders geekily referred to as *shares*.



Figure 20-10:
When you share a folder or a disk, a tiny hand cradles its icon from beneath—a dead giveaway that you've made it available to other people on the network.

Notes on Simple File Sharing

The preceding steps show you how to make a certain folder or disk available to other people on the network. The following footnotes, however, are worth skimming, especially for Windows 2000 veterans:

- You can't share individual files—only entire folders or disks.

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- The "Share this folder on the network" checkbox is dimmed for *all* folders if your PC is not, in fact, on the network—or, more specifically, if you haven't experienced the thrill of the Network Setup Wizard described in Chapter 18.

- Unless you specify otherwise, sharing a folder also shares all of the folders inside it, including new ones you create later. Your "Allow network users to change my files" setting gives permission to change or delete files in all of those folders, too.

  If you right-click one of these inner folders and inspect the Sharing tab of its Properties dialog box, you'll find the Sharing checkbox turned off, which can be a bit confusing. But you'd better believe it: those inner folders are actually shared, no matter what the checkbox says.

- On the other hand, it's OK to right-click one of these inner folders and *change* its sharing settings. For example, if you've shared a folder called America, you can make the Minnesota folder inside it off-limits by making it private. Similarly, if you've turned *off* "Allow network users to change my files" for the America folder, you can turn it back *on* for the Minnesota folder inside it.

- Be careful with nested folders. Suppose, for example, that you share your My Documents folder, and you permit other people to change the files inside it. Now suppose that you share a folder that's *inside* My Documents—called Spreadsheets, for example—but you turn *off* the ability for other people to change its files.

  You wind up with a strange situation: Both folders, My Documents and Spreadsheets, show up in other people's Network Places windows, as described earlier in this chapter. If they double-click the Spreadsheets folder, they won't be able to change anything inside it. But if they double-click the My Documents folder and open the Spreadsheets folder inside *it*, they *can* modify the files.

- You're not allowed to share important system folders like Windows, Program Files, and Documents and Settings. If you've set up your PC with multiple user accounts (Chapter 17), you can't share folders that belong to other people, either—only your own stuff. The exception: You can share them when you've logged in using an Administrator account (page 517).

POWER USERS' CLINIC

Un-Hiding Hidden Folders

As sneaky and delightful as the hidden-folder trick is, it has a distinct drawback: *You* can't see your hidden folder from across the network, either. Suppose you want to use another computer on the network—the one in the upstairs office, for example—to open something in your hidden My Novel folder (which is downstairs in the kitchen). Fortunately, you can do so—if you know the secret.

On the office computer, choose Start→Run. In the Run dialog box, type the path of the hidden folder, using the format *Computer Name**Folder Name*.

For example, enter *kitchen**my novels*$ to get to the hidden folder called My Novels on the PC called Kitchen. (Capitalization doesn't matter, and don't forget the $ sign.) Then click OK to open a window showing the contents of your hidden folder. (See page 564 for more on the Universal Naming Convention system.)

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Hiding Folders

If a certain folder on your hard drive is really private, you can hide the folder so that other people on the network can't even *see* it. The secret is to type a $ symbol at the end of the share name (see step 4 on page 592).

For example, if you name a certain folder My Novel, anyone else on the network will be able to see it. But if you name the share My Novel$, it won't show up in anybody's My Network Places window. They won't even know that it exists. (It still shows up on *your* machine, of course. And it will also be visible to other network computers if you shared the *disk* on which the folder sits.)

Standard File Sharing

If you need more security and flexibility than Simple file sharing affords—or if your computer is part of a corporate domain—then the time has come to tackle Standard file sharing.

The process of sharing a folder is much the same as it is in Simple file sharing, except that there's an additional step: specifying who else on the network can access the share, and what they're allowed to do with it.

Note: Before you can create Standard file shares, you must disable Windows XP's Simple file sharing feature, as described on page 589.

Step 1: Turn on Sharing

After you've located the icon of the drive, folder, or printer you want to share, proceed like this:

1. **Right-click the disk or folder icon. From the shortcut menu, choose Sharing and Security.**

   The Sharing tab of the Properties dialog box opens (see Figure 20-11). If you've ever seen this dialog box when using Simple file sharing, you'll notice that it looks quite a bit different now.

2. **Turn on "Share this folder."**

   The other options in the dialog box become active.

3. **Type a name for the shared disk or folder.**

   This is the name other people will see when they open their My Network Places windows. Windows XP proposes the name of the folder as the share name, which is fine, but you can change it to anything you like.

   If you want to limit the number of network users that can access the shared file or folder simultaneously—to avoid slowing down your PC, for example—click "Allow this number of users" radio button, and specify the maximum number of people who can access the share at one time (3 or 5, for example).

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If you were to click OK at this point, you would make this item available to everyone on the network. But before leaving the dialog box, take a moment to survey the security options. This, after all, is one of the big advantages of Standard file sharing.

Step 2: Limit Network Access

When you make a folder or drive available to the network, you don't necessarily want to give your co-workers permission to run wild, running roughshod over the files inside it. In many cases, you may prefer to share a folder or drive *selectively*. If you're in Accounting, for example, you might want to make the company salary spreadsheet accessible by the other accountants in your workgroup, but off-limits to everyone else in the company.

Fortunately, you can limit people's access on an individual (or group-by-group) basis, thanks to the Permissions button shown in Figure 20-11.

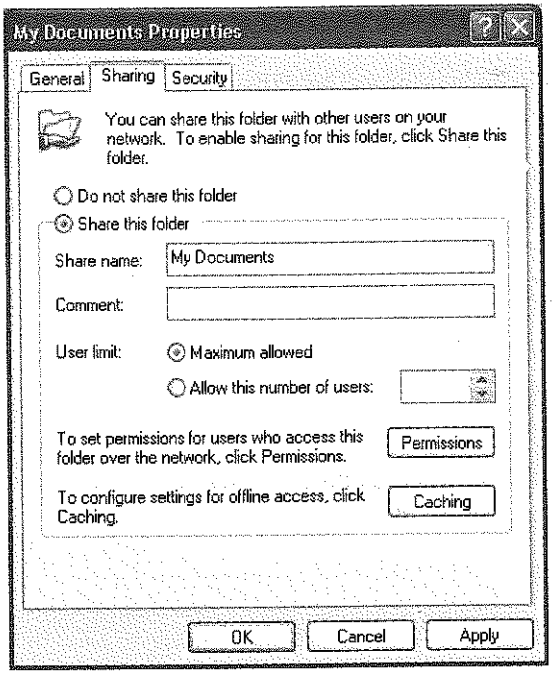


Figure 20-11:
The Sharing tab for a disk or folder on a Windows XP domain system. From here, you can share this folder, specify the maximum number of people who can access it at once, and specify who can access the share and to what degree.

When you click it, you get the dialog box shown at left in Figure 20-12. Setting up permissions involves two steps: identifying the person (or group) to whom you're granting permission, and then specifying how much access you want to grant them.

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NTFS permissions vs. share permissions

If you read the discussion of NTFS permissions in Chapter 17, you should at this point be getting a distinct feeling of déja vu. Both the Permissions dialog box and the entire concept of protecting your folders should be familiar.

To put it bluntly, Windows XP Pro offers two separate and overlapping systems for protecting folders. First, there are the *NTFS permissions* described in Chapter 17; second, there are the *share permissions* described below. Each system lets you choose which network citizens (or groups of them) may view, make changes to, or have full control over certain folders.

Understanding the ramifications of two separate and overlapping permissions systems involves some serious technical slogging. Here are the most important differences:

- NTFS permissions guard a folder no matter how someone tries to get at it: from across the network or seated in person at the PC. Share permissions, on the other hand, govern access only from over the network.

  So suppose you've got a folder full of confidential files. Hoping to protect them from inspection by your co-workers, you might turn off *all* forms of access (Figure 20-12)—but all you've done is keep people *elsewhere on the network* out of it. People who sit down at your machine can still rifle through your private file stash.

- Nobody can access shared files from across the network unless they have *both* share permissions *and* NTFS permissions to those files. Even if somebody has given you Full Access using one permissions system, if the other is set to No Access, you're out of luck.

- NTFS permissions are more flexible than share permissions. For example, there are five or six degrees of NTFS standard permissions, compared with only three levels of share permissions. NTFS permissions can also protect individual *files,* whereas share permissions affect only entire *folders.*

If you think maintaining a duplicate set of overlapping permissions is complex and confusing, imagine being a network administrator whose job it is to keep them all straight—not only for each folder on each computer, but for each person on the network. It's just an overwhelming number of permutations.

As a result, most network administrators simply grant everyone Full Access to network shares, effectively eliminating share permissions as the complicating factor. The administrators then use NTFS permissions to control access to specific files and folders, confident that these settings will correctly protect shared folders and disks *both* from across the network and in person.

Specify whose freedom you're about to limit

If you've read the preceding paragraphs of warning, but you've decided to protect certain folders with share permissions anyway, read on. This discussion assumes that you're poised with the Sharing tab (Figure 20-11) open before you.

1. **Click the Permissions button.**

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A Permissions dialog box appears (Figure 20-12), a close cousin to the Security tab you use to set NTFS permissions (page 544). The top half lists the people or groups that have been allowed or denied permission to the share; the bottom half tells you how much access the selected person or group has been given.

When you first share a folder or disk, you'll see only Everyone in this list. If you're on a workgroup network, you'll see that Everyone starts out with Full Control permission, on the assumption that security isn't such a big deal in your household or small business. If you're using a *domain* computer, on the other hand, Everyone starts out with only Read permission, which affords more security. More about these permissions settings in a moment.

Tip: When a permission checkbox is selected but also shaded gray, it means that its permissions settings have been inherited from the folder that it's in.

Now you can start assigning permissions on a person-by-person (or group-by-group) basis. (If the person's name doesn't appear here, click Add. The dialog box shown back in Figure 17-20 appears, providing you the delightful opportunity of adding a name to the list by typing it, letter-perfect, into the "Enter the object names to select" box and then clicking OK. The users and groups you selected appear in the "Group or user names" list.)

Note: See page 532 for details on groups—and remember that an individual account's permissions take precedence over group permissions.

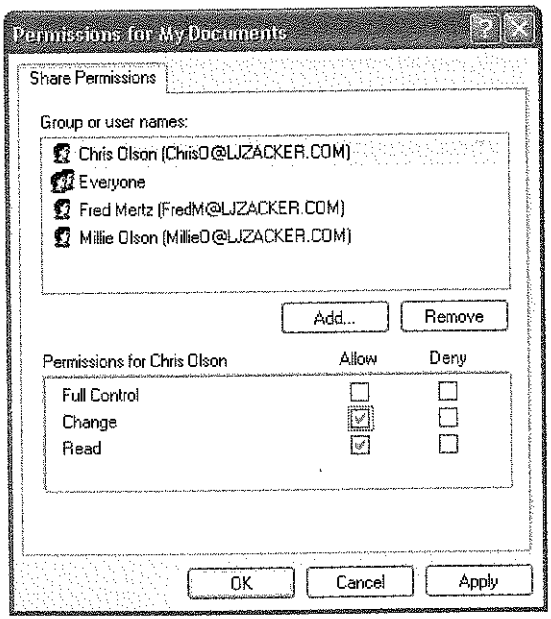


Figure 20-12:
Top: The Permissions dialog box lets you control how much access each person has to the folder you're sharing. Using the top list, specify which people (or groups of people) can access your shared folder over the network.

Bottom: When you click Add in the box above, this box appears. Click Find Now to locate a person's name; click the name and then click OK.

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2. **Click the name of a person or group in the list. Set the appropriate permissions by turning on the relevant checkboxes.**

   You have three options. If you turn on **Read**, this person (or group of people) will encounter a "look, don't touch" policy when they try to open this folder from across the network. They'll be allowed to open and read what's inside (and run any programs they find there), but won't be able to save changes, rename anything, delete anything, or deposit any new files.

Note: Other people on the network can *copy* folders and files from a Read folder or disk onto their own computers. From there, they can do whatever they like. But they can't copy the changed files back to your shared folder or disk.

If you choose **Change** instead, the people you've identified can not only open the shared files, but also edit and even delete them. They can also put new files and folders into the shared folder or disk.

Finally, if you choose **Full Control**, the selected person or group can run wild, fooling around not only with the contents of the disk or folder, but also with its permissions. They can change whatever permissions settings you make here, and

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Administrative Shares

When you try to share a disk when your PC is a member of a domain, you may be surprised to see that the "Share this Folder" option is already selected, and it already has a share name (the drive letter followed by a $ symbol). As it turns out, Windows XP Professional automatically shares the outer level (the *root* level) of all hard drives on a domain computer.

To be specific, it creates what's known as an *administrative* share: a shared disk that's invisible to ordinary peons on the network, but available to administrators who know its secret, hidden name. (See page 576 for more on hidden shares, which also have the $ symbol at the end of their names.)

You're not allowed to change the permission settings for the administrative shares. You can stop sharing them, but Windows XP will re-share them automatically the next time you start up the computer.

But what if you want to share a drive yourself, so that other people on the network can access it?

Open its Properties dialog box, click the New Share button, and—in the New Share dialog box—specify a share name, a maximum number of users (if you like), and then click the Permissions button to set access permissions for the new share. (The administrative share permissions remain unaffected.) When you click OK, the new share name appears on the Sharing tab in the Share Name text box instead of the administrative share's name.

Notice, however, that the Share Name text box has now become a drop-down list. You can use it to choose either of the shares at the root of the drive, so that you can change the properties of each independently. You can also click the Remove Share button to delete the currently displayed share name, or click New Share to create as many shares at the root of the disk as you want. (Why you would want to so is another question.)

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even claim *ownership* of the folder or disk—they could even lock you out of your own stuff.

Note: When you first turn on sharing for a folder, it inherits the permission settings from the disk or folder it's in (that is, its *parent* folder). But if you *change* the settings for one of these inner folders, your new settings override any permissions that are inherited from parent folders.

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3. **Click OK to close the Properties dialog box.**

   You'll see that the icon for the resource you just shared has changed. A hand now cradles the icon to help you remember what you've made available to your network colleagues.

Clever Share Tricks

Sharing files and folders using Standard file sharing may be a lot more trouble than Simple file sharing, but it has its rewards. Only in Standard file sharing, for example, can you interesting scenarios like these:

- You can access your files from different computers on the network, but still protect them from interference by other people. To do that, share the file or folder, give yourself the Full Control permission, and deny all permissions to the Everyone group.

  Yes, you are also part of the Everyone group—but an individual's permissions always override any group permissions that may affect that person. As a result, you end up with Full Control over your files, and no one else can even read them. On a home network, you can start working on a document in the bedroom upstairs—and then, when you go downstairs to cook dinner, you can continue working on the kitchen computer while the pasta is boiling. Meanwhile, the kids can be using their own computer, but won't be able to see what's in your file or folder.

- You can also create a drop box: a folder into which people can deposit documents for your inspection, but which is otherwise off-limits to them.

  For example, you might create a drop box so that your fellow employees can leave insurance claim forms they've filled out with a word processor. After sharing the folder, you could grant yourself (and other people in your department) Full Control—but you would give everyone else in the company only the Change permission. Now people in other departments can copy their claim forms into the drop-box folder, because they have permission to create new files in it. But because they lack the Read permission, they can't open the folder to see what's inside.

Offline Files

The Windows XP Professional feature called *offline files* is designed primarily for laptop lovers. It lets you carry away files that generally live on your office network, so that you can get some work done while you're away.

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Then, when you return and connect your laptop to the office network, Windows automatically copies your edited, updated documents back to their original locations on the network, intelligently keeping straight which copies are the most recent. (And vice versa: If people changed the network copies while you were away, Windows copies them onto your laptop.) It's a great feature, and, by the way, one that isn't available in Windows XP Home Edition.

Note: Although Microsoft developed Offline Files primarily for laptops that sometimes leave the network, it can also be a useful feature for desktop computers that belong to a network that isn't always up and running. Even so, this chapter refers to your computer as *the laptop,* to avoid having to repeat "the laptop or desktop computer that isn't always on the network" 50 million times.

Phase 1: Turn on Offline Files

To turn on this feature, open any window at the desktop, such as My Documents. Choose Tools→Folder Options, click the Offline Files tab, and then make sure that Enable Offline Files is turned on (see Figure 20-13).

Note: If you can't seem to turn this feature on, it's probably because Fast User Switching is turned on. Unfortunately, you're not allowed to use both features at the same time. Turn Fast User Switching off as described on page 536.

Here are some of the options you should inspect before closing this dialog box:

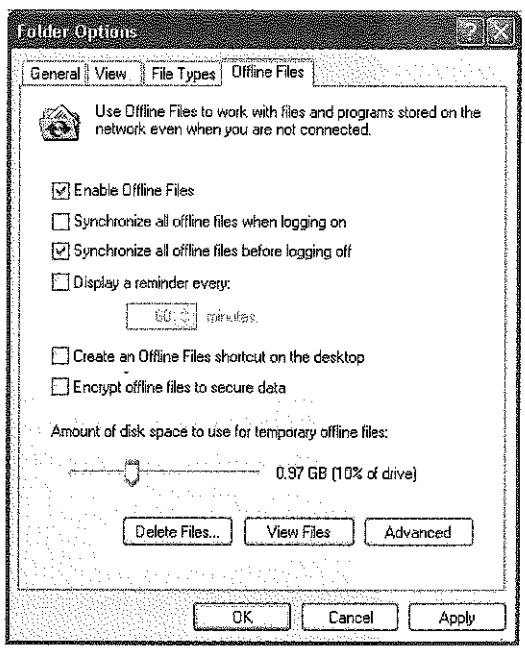


Figure 20-13:
You must turn on Enable Offline Files to activate this feature. This is also your opportunity to specify when the synchronizing takes place, so that the process is automated and the files are kept up-to-date on both your hard drive and the network.

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- **Synchronize all offline files when logging on.** This setting is meant for laptop luggers who are often away from the network (or for people with shaky connections to the network even at the best of times). It means that has soon as you're back on the network, whatever files you edited while you were away get transferred back to the appropriate places on the network.

Note: If you don't select this setting, you'll get a Quick synchronization (page 608) each time you log onto the network. As you'll find out in a moment, that means that your documents may not be the most current versions.

- **Synchronize all offline files before logging off.** You'll almost certainly want this option turned on. It ensures that whenever you leave the office with your laptop, it will contain copies of the most recent version of your files.

Note: This setting isn't available when you connect to the network by dialing in as described in Chapter 21.

- **Display a reminder every ____ minutes.** A reminder balloon will appear on your taskbar at regular intervals to let you know that you're off the network. If you suffer from intermittent network dropouts, it can be nice to know when you just been cut off; otherwise, these reminders can be annoying.
- **Create an Offline Files shortcut on the desktop.** When you select this box, Windows places a handy Shortcut to Offline Files icon on your desktop. When you double-click it, you open a window that lists all of the files and folders that you've marked for offline use, as described later in this chapter.
- **Encrypt offline files to secure data.** This option encodes the copies of the files on your laptop, which can be useful if you carry confidential files with you away from the office. (It doesn't do anything to the corresponding copies of these files that remain on the network.)

Note: Some programs, including Microsoft Word, create temporary copies of open documents (for example, in a folder called Temp). A dedicated spy who stole your laptop could, in theory, view some of your confidential information by opening these folders. That's a good argument for learning which folders these are and encrypting them too.

- **Amount of disk space to use for temporary offline files.** You can set an upper limit for the amount of hard drive space Windows XP uses for files you've copied from the network. (If XP Pro reaches whatever limit you've set, it begins to delete older offline files to make room for the new ones.)
- **Delete Files button.** Use this button when you're desperate to reclaim some disk space on your laptop; it deletes your laptop copies of the offline files. (This option doesn't affect the master copies of these documents that reside on the network.)
- **View Files button.** This button opens a list of all of the files you've marked for offline use.

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- **Advanced button.** The Advanced dialog box lets you tell Windows how to handle specific computers when they become unavailable: to stop working with the offline files, or to notify you and start working with offline files (see Figure 20-14).

Phase 2: Choose the Files You Want

To tell Windows XP Pro which files and folders you want to take away with you on the laptop, navigate to them on the network. Right-click each of them, choosing Make Available Offline from the shortcut menu. (Alternatively, highlight some file or folder icons and then choose File→Make Available Offline.)

Note: When you select a folder that contains other folders, Windows asks how you want to handle its subfolders. You have two choices: "Yes, make the folder and all its subfolders available offline," or "No, make only this folder available offline."

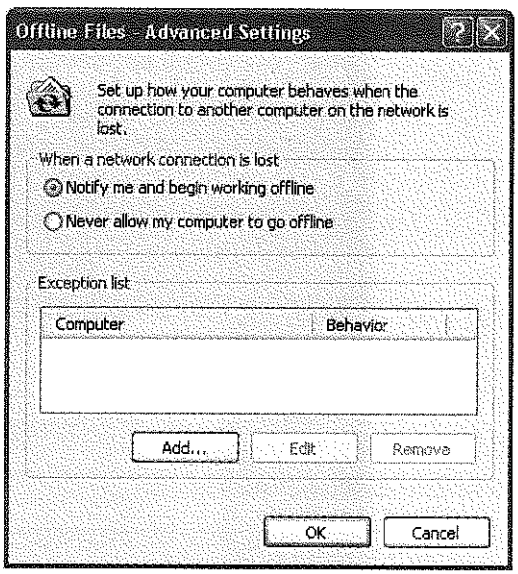


Figure 20-14:
"Never allow my computer to go offline" doesn't actually prevent your computer from disconnecting from the network; it means that you'd rather stop working with offline files when the network connection is lost.

Now your machine takes a quick moment to copy the files onto your own hard drive (that is, on the client machine—your laptop).

Phase 3: Log Off

As long as your laptop's still connected to the network, double-clicking a file or folder icon opens the original network copy. But when you log off the network, Windows checks to make sure that your computer has the most recent copies of the files. (All of this works only if you choose Log Off or Turn Off Computer from the Start menu. If you just yank out the network cable, you catch Windows by surprise, and you don't get the benefit of its intelligent Offline Files copying.)

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