

Chapter 1

Introducing Windows Home Server

In today's information technology culture, the term *server* is thrown around quite a bit. Web servers, print servers, proxy servers, file servers—all of these refer to various computer systems and applications that provide a service for others to use.

Defining a Server

The term *server* can refer to several different things. First of all, it can refer to the computer hardware used to run server applications. Unlike desktop and laptop computers that most of us see every day, servers traditionally sit in a data center somewhere with only other servers and the occasional technician to notice them. They quietly offer their applications to users over a network—whether on a corporate, local, or wide area network, or the Internet. Applications typically run on a server machine dedicated to that task. Computers that connect to the server are known as clients.

A server can also refer to a *server operating system*. A server OS usually differs from desktop operating systems in focus, if not in main functionality. While a desktop OS is concerned with providing a rich user interface, graphical abilities, and desktop applications, a server operating system tends to leave all of that stuff out to focus on performance, storage, and tools to make it easier to run server applications. Windows 2000 and 2003, Linux, and Unix are all typically used as server operating systems.

Finally, server can refer to a *server application* that accepts connections from other applications. A few common server applications (not to mention ones that are provided by Windows Home Server) are

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- **File server:** Many times, people need to be able to share access to the same files, and although it is possible to connect directly to another computer in a peer-to-peer fashion, it is more convenient to share files in a central location that is not dependent on the client computer being constantly available. The term NAS (Network Addressable Storage) has been adopted in recent years to refer to a device used for file server purposes.
- **Web server:** At the other end of the connection your browser makes to a Web site is an application that serves pages. Web servers have become quite complex in recent years, with sophisticated application frameworks generating pages dynamically being the norm.
- **Print server:** Although “personal computer” means that everyone needs one to themselves, the same is not usually true about printers. Print servers serve as an access point for computers to connect to in order to print. Some printers today are network enabled; in essence they have a print server built in.
- **Backup server:** Performing regular backups of important files has been a recommendation since the beginning of the computer era, and unfortunately it is one that is often ignored. A backup server can access files on a client computer and store them locally or on an archival storage medium such as tape. It can be used to schedule and check the status of backups of all client computers in one location.
- **Media server:** A media server is a specialized file server that can stream video, music, and photos to client devices. The advantages, of course, are that multiple users can make use of a single copy of these files, which can be large, without having to tie up space on their local hard drives.
- **Remote access server:** In our increasingly mobile world, it's often necessary to access files and systems remotely. A remote access server, sometimes called a communication server, provides the means for users to connect to the network remotely while also securing the network from unwanted intrusion.

Bringing Home a Server

It wasn't long ago that having even one computer in the home was a rare thing. It's easy to see why — personal computers once cost a great deal more and did a lot less than the machines of today. In addition, prior to the Internet and the World Wide Web becoming household terms, there simply wasn't as much of a pressing need for a computer, and especially not for more than one. Of course, home computers were still useful: they could be used to play games, write letters, do the taxes, and connect via dialup modem to online services and bulletin board systems. Still, they were limited.

Gradually, all of this has changed. As the information technology revolution changed the way offices worked, people became much more comfortable with computers, and in fact, often needed to take their work home with them. The World Wide Web became so ubiquitous that it is now a virtual necessity to have access at home. Parents use the Web for news, shopping, and following the stock markets. They connect to the office using VPNs. Kids do research for homework, play games, and download music. And everyone, it seems, likes to gather on Internet forums and social networking sites, such as MySpace and YouTube.

The rather dizzying drop in prices for computer technology in recent years has meant that it has become practical for many families to own more than one computer. The final piece of the puzzle was affordable broadband connectivity. Now, not only can you get on the Internet without tying up your phone line, but everyone in the house can do it at the same time at speeds that make dialup seem lethargic.

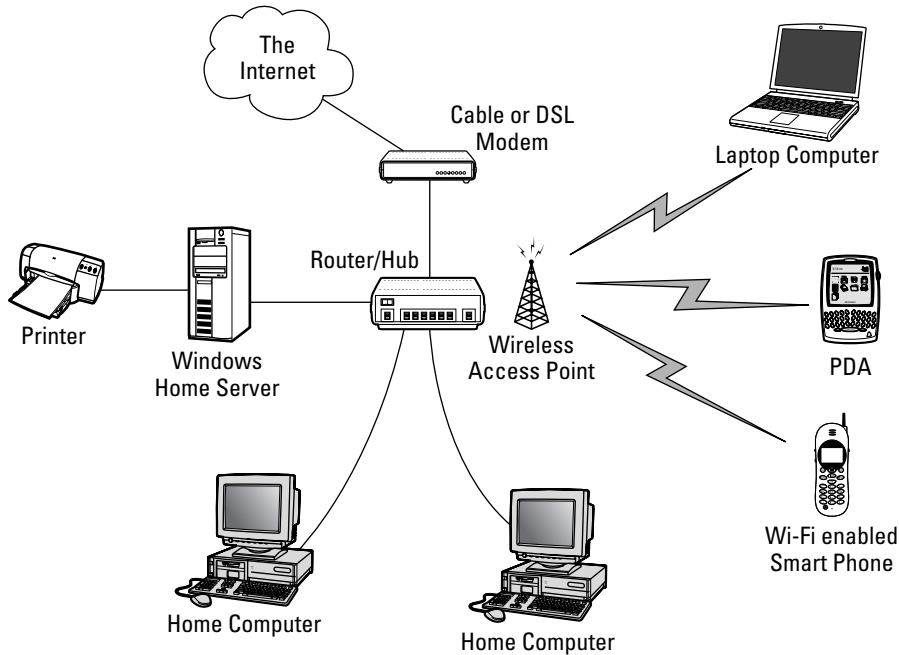
It's not just personal computers, either. In recent years, other network-enabled devices have invaded our homes. Personal video recorders have not only changed the way we watch TV, but they can be controlled over the network and in some cases can even share videos with other devices in the home. Video game consoles have evolved from the single-function devices of yesterday into multipurpose set-top computers. Now they can play incredible games as well as connect to the Internet to download movies, surf the Web, and play multi-player games with others around the world. They can also be used to play video, music, and view photo slide shows.

Along with this explosion of network connectivity has come some fresh chaos. Sharing files can be painful, because connecting directly to another computer can be problematic, especially if the computers are using different operating systems or security. Music is downloaded or ripped from CDs, but then every device in the house that plays that music ends up with a copy of each song, wasting valuable storage space. Sharing files or a printer that is hooked up to one computer depends on that computer being connected to the network at the time. This is becoming a greater problem as people replace their bulky desktop computers with portable notebooks, enabling them to leave the local network behind and work far afield. Backups are rarely if ever done, leaving data vulnerable to hardware failures.

Clearly, the time has come for our homes to be as organized as our offices. When families have two, three, or more personal computers, video game consoles, a printer, PDAs, and other devices connected to the network, creating a central hub that all of these devices can share makes a lot of sense. Although almost any PC running Windows or Linux could act as a server, Microsoft envisioned going one step further by leveraging their expertise in corporate server operating systems to create an easy-to-use product for the home. The result is the newest member of the Windows operating system family, Windows Home Server. This is the Windows operating system that is designed to bring everything together (see Figure 1.1).

FIGURE 1.1

A typical Windows Home Server network



Exploring the Windows Home Server

The first edition of Windows Home Server is based on Windows Server 2003, in particular Windows Server 2003 Standard SP2 (service pack 2). It includes features to make building a server for the home simple and easy. The next section describes what this new breed of server OS can do.

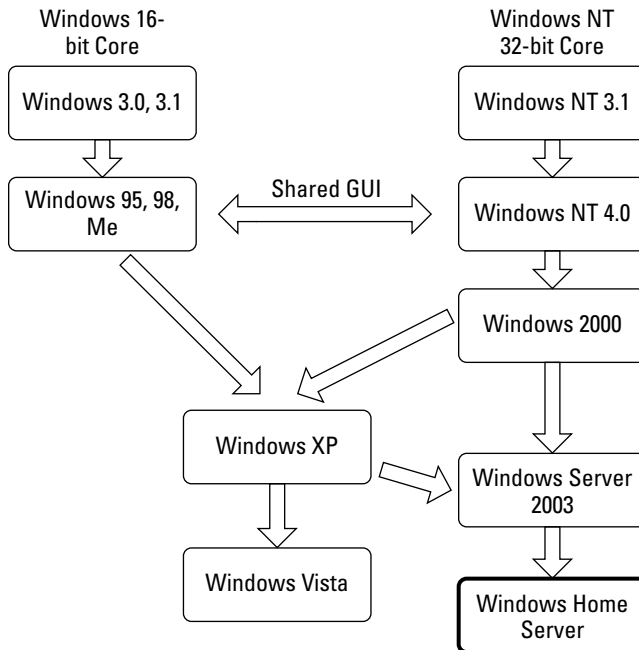
As the second Windows Operating System release in 2007, the approach taken with Windows Home Server could hardly be more divergent from that of its cousin, Windows Vista. Vista was focused on improving the desktop experience with enhanced navigation, new GUI features (Aero), and utilities (the Sidebar). Like its corporate server OS brethren, however, Windows Home Server has been streamlined to provide the functions necessary to act in the role of a file, Web, and application server, while stripping away the fluff of a desktop operating system. 3D graphics, sound, and desktop gadgets have been removed or hidden away so as to not distract from the purpose of acting as a central connectivity hub for all of the computers and other devices in the home. Solitaire is nowhere to be found.

Figuring out the Windows family tree

Windows Home Server is based on the Windows Server line of operating systems. Those not familiar with this line may be interested in learning how these operating systems relate to the desktop-oriented versions of Windows. Figure 1.2 shows the lineage of the major editions of Windows.

FIGURE 1.2

The Windows OS family tree



Windows started along two different branches: the 16-bit and 32-bit cores. Starting with XP, the 16-bit core was officially retired and two new product lines were created—the desktop and server lines, both now with 32-bit and 64-bit versions.

Windows desktop operating systems

The 32-bit (and 64-bit) Windows desktop operating systems include products that are familiar to both office and home users:

- **Windows XP:** XP was designed to replace both Windows 2000 Professional and Windows 98, the long-awaited convergence of the home and business product lines. The 32-bit NT core was finally utilized for the home market, replacing the previous 16-bit

Windows core once and for all. XP Professional, on the other hand, replaced Windows 2000 Professional to become the business desktop OS of choice.

A Graphical User Interface refresh ruled the day with this release, with the new Luna theme taking over from the look introduced way back with Windows 95. Windows XP Media Center Edition is a version of XP including features to allow it to function as an entertainment system hub, with special software called Media Center for TV recording and playback, DVD playback, and photo, video, and music playback in an entertainment center.

- **Windows Vista:** Windows Vista adds a completely new user interface (called Aero), small desktop applications called gadgets, and new connectivity and media center functionality. The Premium and Ultimate versions of Vista include the Media Center functionality from XP Media Center Edition.

Windows server operating systems

In addition to the desktop operating systems, Microsoft has created server-specific versions of Windows with the power and features necessary to act as servers for everyone from large data centers to small businesses. The most common Windows servers in use are

- **Windows 2000 Server:** A hugely successful release, with many new server functions, including Active Directory (providing security and domain server capabilities), and more advanced multimedia and game capabilities, allowing it to make inroads into the home market for advanced users. Windows 2000 was offered in four different server configurations to meet the needs of a wide variety of business needs. Windows 2000 server products are still in wide use in data centers.
- **Windows Server 2003:** Because the new GUI features of XP weren't necessary for servers, the Windows 2000 Server product line was advanced along a divergent path. The classic GUI was retained and features such as themes and audio that are nonessential for a server OS were either eliminated or disabled.

The minimalist philosophy

Rather than add yet another new user interface look, Windows Home Server doesn't even incorporate the XP Luna theme (although it is available — see Chapter 5 for an advanced tip on enabling the XP theme if you really miss it). Instead, Home Server makes do with the classic Windows look it borrows from 2003 Server. The idea is that you won't really miss it. Windows 2003 is designed to be configured and maintained almost exclusively through a new Console application accessible from client PCs.

In fact, some users may never see the desktop. Purchasers of prebuilt Windows Home Server boxes are expected to be able to literally plug and play — plug it into the network, power it on, and it'll automatically configure itself to allow client PCs to connect to it. In many cases, these server boxes may never need to be connected to a monitor or even a keyboard!

However, even though at first glance Windows Home Server may seem simple, don't be fooled. Under the hood is the power of the Windows Server 2003 OS, and that power can be leveraged to extend functionality beyond what can be attained just by using the Console.

Touring the Features

Although Windows Home Server is designed to be easy to use, it is still quite capable out of the box, with a lot of complexity behind it. Later chapters go into more detail, but for now here is a look at the major features and capabilities provided by Windows Home Server.

Understanding the Windows Home Server Console

The Console is a unique application among the Windows Server products, and is the defining characteristic of Windows Home Server. All of the standard configuration and management tasks that can be accomplished with Windows Home Server can be done through this portal.

The major management tasks — configuring computers, maintaining users, setting up shared folders, and monitoring server storage and network health — are accessed with the tabs at the top of the Console. In addition, a button on the right side allows access to the server settings dialog box, where server settings can be configured.

The Console can be accessed from the desktop of the Windows Home Server computer itself. It can also be accessed remotely from any Windows XP or Vista client that you install the Connector software on, presuming the user knows the administration password for the server.

CROSS-REF The Console is discussed in more detail starting in Chapter 7. Installation of the Connector is described in Chapter 10.

Finding out about Shared folders

One of the main functions for any home server operating system is to act as a file server, and Windows Home Server is no exception. The Shared Folders tab on the console, shown in Figure 1.3, is used to view, configure, and manage folders that are being shared.

Shared folders can be set to be duplicated. What this means is that if you have more than one physical hard drive in your server, your duplicated folders are copied to another drive automatically, providing protection from the failure of any single drive.

The following shared folders are available by default:

- **Music:** A folder for sharing music.
- **Photos:** A place to share family photos and downloaded pictures.
- **Videos:** Store home movies, downloaded video, and other such media here.

- **Software:** This folder contains a copy of the Connector and Restore CD software just in case you don't have the CDs handy. It is also the location to copy add-in installation files so that they may be installed on the server.

CROSS-REF

The Connector and Restore CDs should be included with Windows Home Server. For information on the Connector, see Chapter 6. For information on using the Restore CD, see Chapter 22.

- **Public:** All users have access to the Public folder by default. This is a convenient place to share documents and other files with other members of your household.
- **Personal folders:** Each user account has a folder created for it automatically. By default, that user is the only one who can access it aside from the server administrator account.

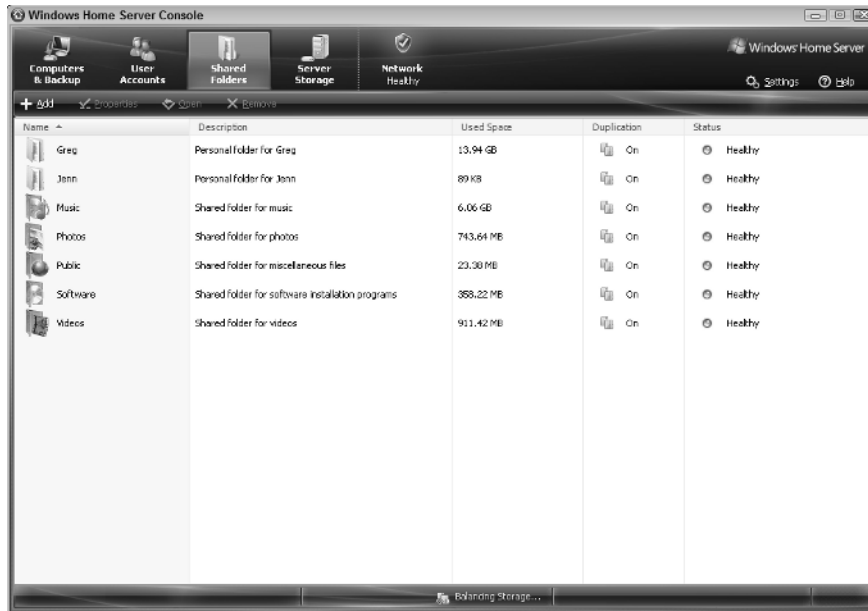
You are not limited to these default shared folders by any means. Additional shared folders can be added and maintained on this tab as well.

CROSS-REF

The Shared Folder tab in the console is discussed in more detail in Chapter 7. File sharing is discussed in detail in Chapter 12 and Chapter 13.

FIGURE 1.3

Viewing shared folders in the console



Making backups

Windows Home Server finally allows home users the ability to easily and quickly back up their computers, providing a simple way to address this often neglected task.

The console's Computers & Backup tab, shown in Figure 1.4, is the place where you can choose which folders on each Windows XP and Vista computer you want to back up. You can also see the status of each backup, enable and disable backups, and view backup history, all from the convenience of the console.

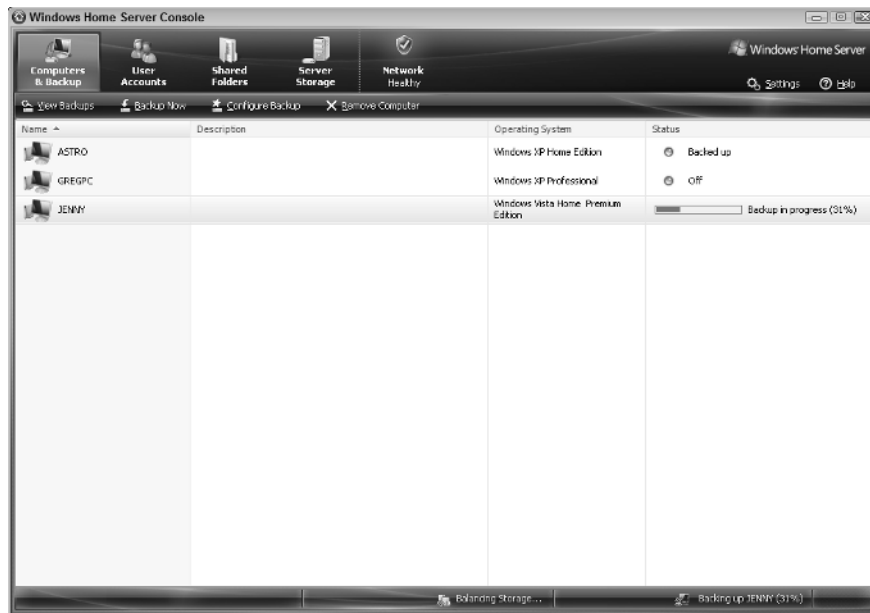
You can also use Windows Home Server to back up other operating systems, as long as they can map to a shared folder. Simply point the backup software of your Linux, Macintosh, or other computer capable of accessing Windows shared folders.

CROSS-REF

You can learn about Windows Home Server backups in Part V, starting with Chapter 20.

FIGURE 1.4

The Computers & Backup tab lets you see at a glance the status of all computer backups.



Media library sharing

Now we are getting to the fun stuff. The next feature of Windows Home Server is the ability to stream media to connected computers or other devices such as capable game consoles using Windows Media Connect. Streaming media allows you to keep one copy of your photos, video, and music on the server, and play them from any supported digital media reader (DMR) device.

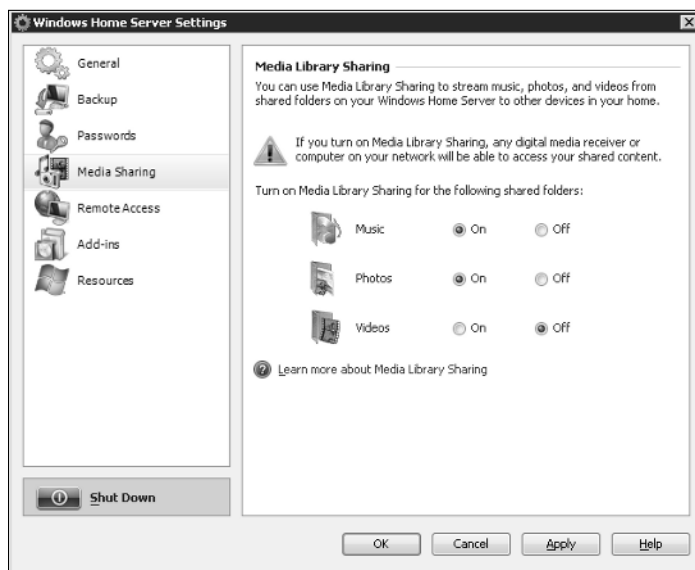
Although the Shared Folders tab is used to manage the file-level access for all of the photos, music, and video folders, you can also enable streaming for each of those types of media separately, as shown in Figure 1.5.

CROSS-REF

Media library sharing is covered in detail starting in Chapter 25.

FIGURE 1.5

You can specify the media folders to share in the Windows Home Server Settings dialog box.



Remote access

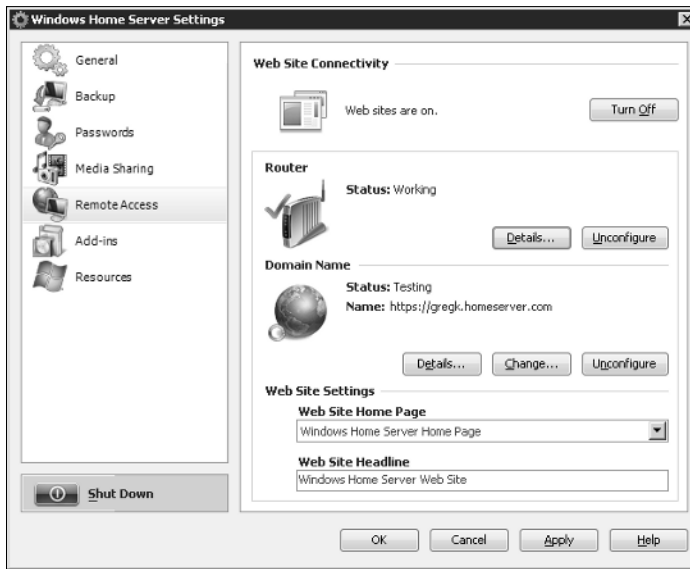
With Windows Home Server, you are not limited to accessing your shared files or your home computers from inside your home. You can use the remote access feature to gain access to your shared files and computers from anywhere over the Internet. All you need to do is configure your server with a dynamic domain name (shown in Figure 1.6) and you can access your server's Web site, shared files, and even the desktop of some of the computers on your network. Windows Home Server can even automatically configure your router to direct all Web site access to it.

CROSS-REF

Remote Access is the subject of Part IV, starting with Chapter 17.

FIGURE 1.6

The Windows Home Server Settings dialog box allows remote access to be configured.



Add-ins

Do you want your home server to do even more? Fortunately, you are not limited to the functionality provided by Windows Home Server itself. Microsoft has included an add-in facility, as shown in Figure 1.7, which allows you to install third-party extensions that are specifically designed to work with Windows Home Server. Add-ins can be installed and uninstalled directly from the Console. The add-ins themselves are managed from the console: an add-in that requires user configuration adds a tab to the configuration utility.

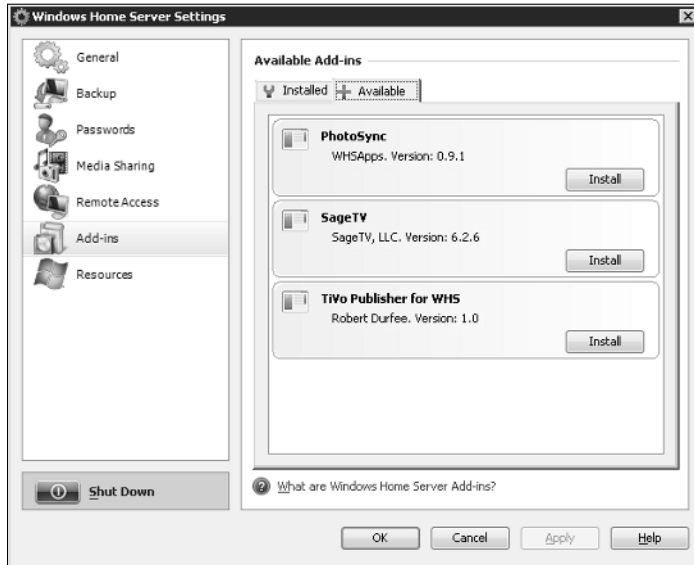
Even though Windows Home Server is a new operating system, it seems to have already inspired a wave of creativity among users, and new add-ins are being created and released all the time.

CROSS-REF

Some popular add-ins are discussed in detail in Chapter 32. If you are a programmer, you may want to develop your own add-ins. See Chapter 36 for an example.

FIGURE 1.7

Add-ins are managed from the console.



Automating storage maintenance

It's easy to expand your server when you add new devices that need to be backed up. When you add a new hard drive to the server, either internally or externally through an eSATA or USB port, Windows Home Server recognizes it when you reboot and allows you to format it automatically and add it to the total pool of storage. There is no need to worry about drive letter assignment.

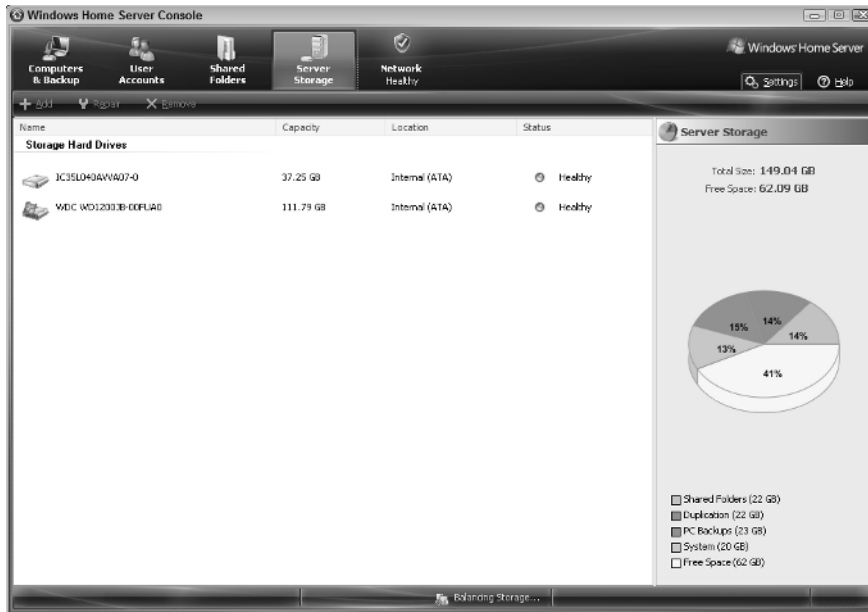
CROSS-REF

See Chapter 3 for information on adding storage to your server.

The Server Storage tab on the console, shown in Figure 1.8, is where you can see at a glance how much of your server's storage is allocated and for what purpose. From here you can also add, remove, and repair hard drives.

FIGURE 1.8

The console shows you at a glance how storage is allocated on the server.



Buying or Building

By now you may be wondering how you can take advantage of Windows Home Server yourself. There are essentially two ways to go about it. One is to purchase a complete ready-to-go server with the OS preinstalled and configured, and the other is to build a computer or repurpose an existing computer for the job.

The complete solution

In keeping with the desire to make Windows Home Server the server operating system for everyone, Microsoft is teaming up with a number of ISVs (integrated software vendors) and OEM partners to build server systems with Windows Home Server preinstalled and configured. At the time of this writing the list of OEMs include such companies as HP, Gateway, Lacie, Medion, Fujitsu-Siemens, and Iomega.

The expectation is that in most cases you will be able to plug one of these devices into your network, and then simply install the Connector software onto each client on the network. The connector will automatically find the server on the network and allow it to be managed through the console. It may be a cliché, but quite literally a plug and play experience.

CROSS-REF See Chapter 2 for information on features of turnkey Windows Home Server systems.

The DIY option

If you have an older computer or laptop lying around gathering dust, you may have the ability to run Windows Home Server already. The hardware requirements are not very stringent. Likewise, if you have built a computer from parts before, you already have the skills necessary to build a machine to act as a server.

To satisfy the do-it-yourselfer, Windows Home Server is available in a System Builder edition which will be available through many online retailers, generally the same ones that supply OEM system builder versions of Windows now.

CROSS-REF Chapter 3 goes into detail on what you need to do in order to build your own Windows Home Server machine.

Summary

Windows Home Server is a brand-new operating system from Microsoft that can simplify and improve your digital lifestyle. With many households having more than one computer or other device capable of accessing shared files, streaming media and the Web, the time is right for a solution to address the increasing needs of a connected home in the same way that offices have done for several years.

Although there are other ways to achieve the server functionality that Windows Home Server provides, the plug and play nature of the system along with the power of Windows Server behind it is a pretty potent solution that should not only be able to meet the current needs of the majority of home users, but also grow with them in the future.