Things You'll Learn

- What networks are and how they work
- How a network can help you save money and reduce equipment clutter through sharing
- What types of entertainment a home network can provide
- How home networks can give you more time away from the office

Chapter 1

Why You Want Your Own Network

If you feel intimidated by the mere idea of trying to understand home networks, don't worry. In this chapter, you'll see that home networks are actually pretty simple to comprehend, are a useful addition to your home, and offer some interesting entertainment options for the whole family. By the end of this chapter, you will understand exactly why a network is something that you really do want for your home.

Big and Scary Networks: The Simplest Introduction You'll Ever Read

It's easy to be overwhelmed by technical jargon, and the subject of networks has certainly been one of the worst examples of this. It often seems as though the experts like to throw around a lot of complicated language for no better reason than to confuse the uninitiated. Maybe that makes the experts feel as though they know something that's their little secret, but it's not very helpful to people who simply want something that works. Phrases like "Wi-Fi infrastructure mode," "stateful packet inspection," and "upstream bandwidth" simply don't belong in our vocabulary!

The truth is that a home network doesn't really have to be difficult or complex. You don't have to join some geek squad or spend hours learning a new language to successfully create a functioning home network. In fact, you'll find that the project is fairly simple and pretty satisfying.

What Networks Really Are

So just what is a network, anyway? And how does a home network compare to an office network?

These are both good questions that get right to the heart of the matter. Let's start with the first question.

A network is nothing more than something that provides the means for different things to communicate with each other. You already use one of the world's biggest networks whenever you make a telephone call. Your phone number is the key that enables other people to pick up their phone, dial your number, and talk to you from virtually anywhere on the planet. Computer networks function very much like the telephone network because they were actually modeled after the telephone network to a large extent. Figure 1-1 gives you an idea of how home networks function, and Figure 1-2 shows how the telephone network is quite similar.

Figure 1-1 A Home Network Connects Your PCs and Other Devices So That They Can Communicate

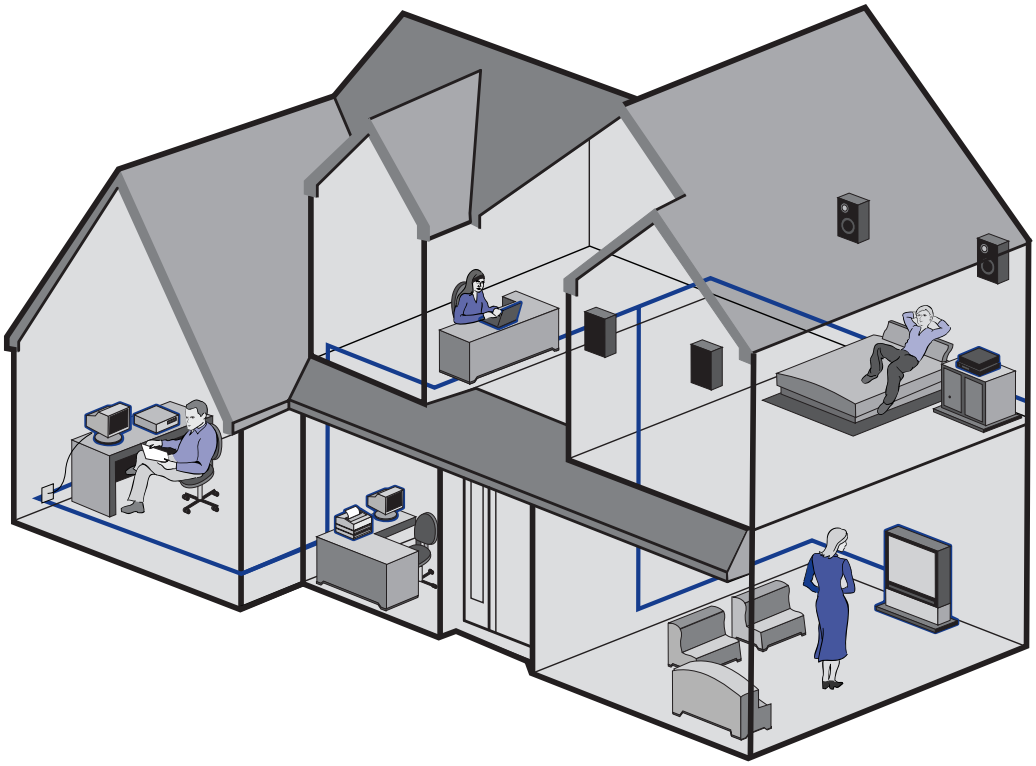
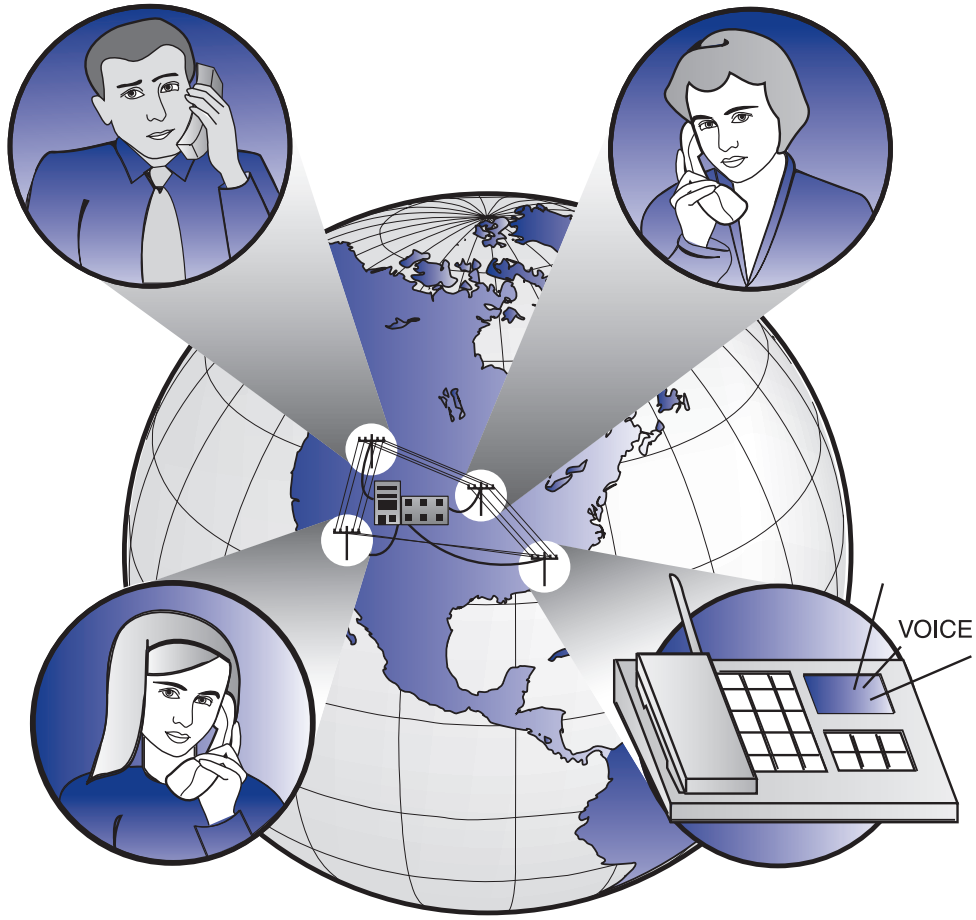


Figure 1-2 The Telephone Network Functions Much Like Your Home Network Except on a Larger Scale



It's true that when you use a computer network, you typically aren't expecting another person to be at the other end of the line, but you don't always expect that with the telephone network, either. After all, haven't you ever made a phone call hoping that you would get someone's answering machine instead of talking directly to that person? When you do get the answering machine, you're interacting with that machine in much the same manner as if you were using a typical computer network and the devices on that network. Similar to how two network devices might communicate, the answering machine gives you a message, waits for your response, and then saves your response so that it can be picked up later.

So, if networks aren't all that unfamiliar, it's time to answer the second question regarding how home networks compare to larger networks like those in an office. Actually, the typical home network is very similar to an office network, but in a generally simpler, friendlier, and far less expensive package. That is, a home network still allows your PCs to talk to each other and share things such as files, printers, and Internet connections, but the manufacturers of home networking gear, such as Linksys, have concentrated on reducing the complexity so that you don't have to be an engineer to make it all work. In addition, home networks typically use a much simpler security model that doesn't require you to put up with complications like usernames, passwords, and deciding who gets to share what (unless you want to).

How Networks Really Work

Computers aren't people, but they still communicate on a network similar to how a group of people communicates. That is, computers send out information that is addressed to a particular individual and then wait for a response that tells them that the message was successfully received. PCs perform this task quickly, and that's part of what makes networks so practical.

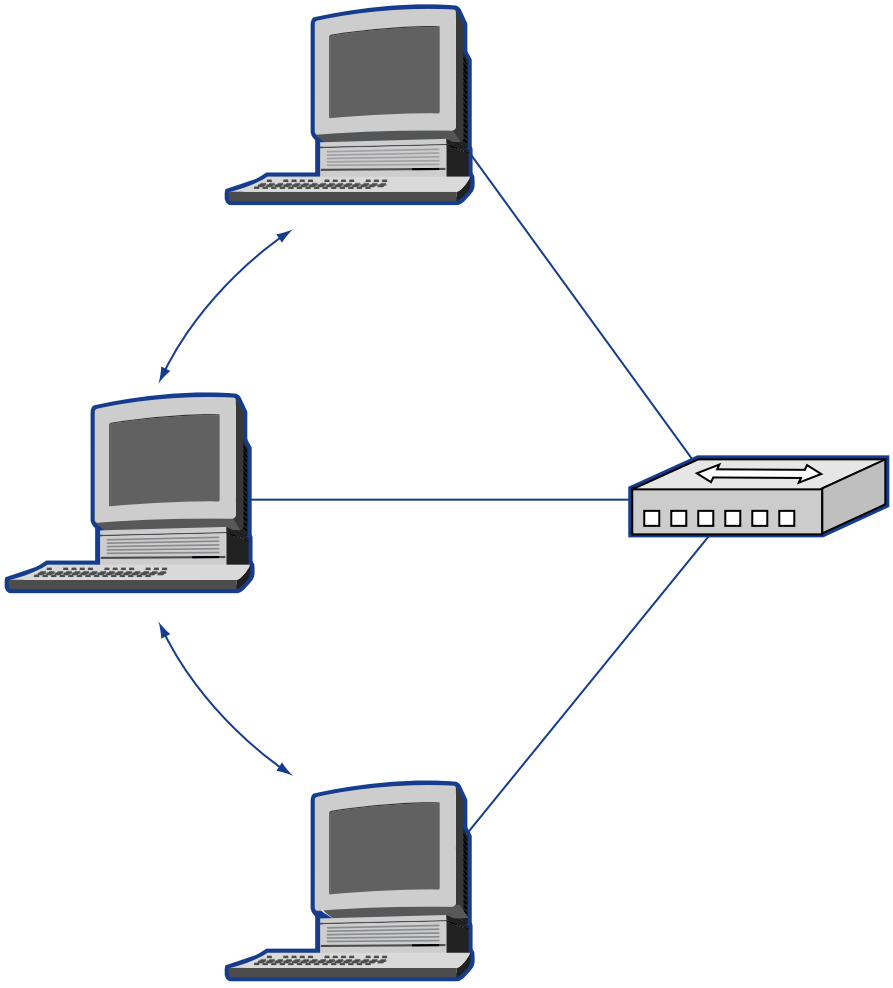
To get a better understanding of the process, imagine that Sarah is working on a homework assignment on the PC in her room. When she completes her book report, she needs a printed copy, but she doesn't have a printer connected to her PC. A printer is connected to the PC in the den, and she can use it to print out her report. The conversation between the PCs goes something like this:

"Hello den computer, this is Sarah's PC. I'm sending you this report to print."

"Okay, Sarah's PC, this is the den PC. I received the data and sent it to my printer."

Sure, that exchange sounds trivial, but it does provide a nutshell description of what's going on, as further illustrated by Figure 1-3. At a basic level, a network functions quite simply by sending different messages as needed. The information in those messages—the data—can be something like Sarah's book report, digital images from your recent vacation, music files that you've saved on one of your PCs, or whatever other types of information you want to share.

Figure 1-3 The PCs on Your Home Network Talk to Each Other Through the Network



Things are more complicated inside the inner workings of the network. In Sarah's case, for example, the printer and the den PC actually engage in quite a bit of additional conversation, discussing whether the printer is out of paper, how many pages have finished printing so far, and details of what other reports the printer has been asked to print recently. Just like the telephone network, your computer network has to keep track of who is supposed to get each bit of information and make sure that everyone else isn't drowned by a sea of data that's not intended for them. Fortunately, your network automatically handles this additional complication, and you don't have to worry about it.

A Network Really Isn't Too Complicated for You

Setting up your own home network probably sounds like a great idea, but you might still have some doubts about whether it's really something that you can do. That's understandable, especially if you've heard horror stories about how difficult and complicated anything related to networks can be.

Well, don't believe those stories. The honest truth is that if you're willing to follow some simple directions, you can choose the proper equipment and install your own home network. You can then enjoy the benefits of having your own network without depending on someone else to make sure it all works, and if something goes wrong in the future, you'll know how to fix it. You really can do it yourself!

Learning How to Share

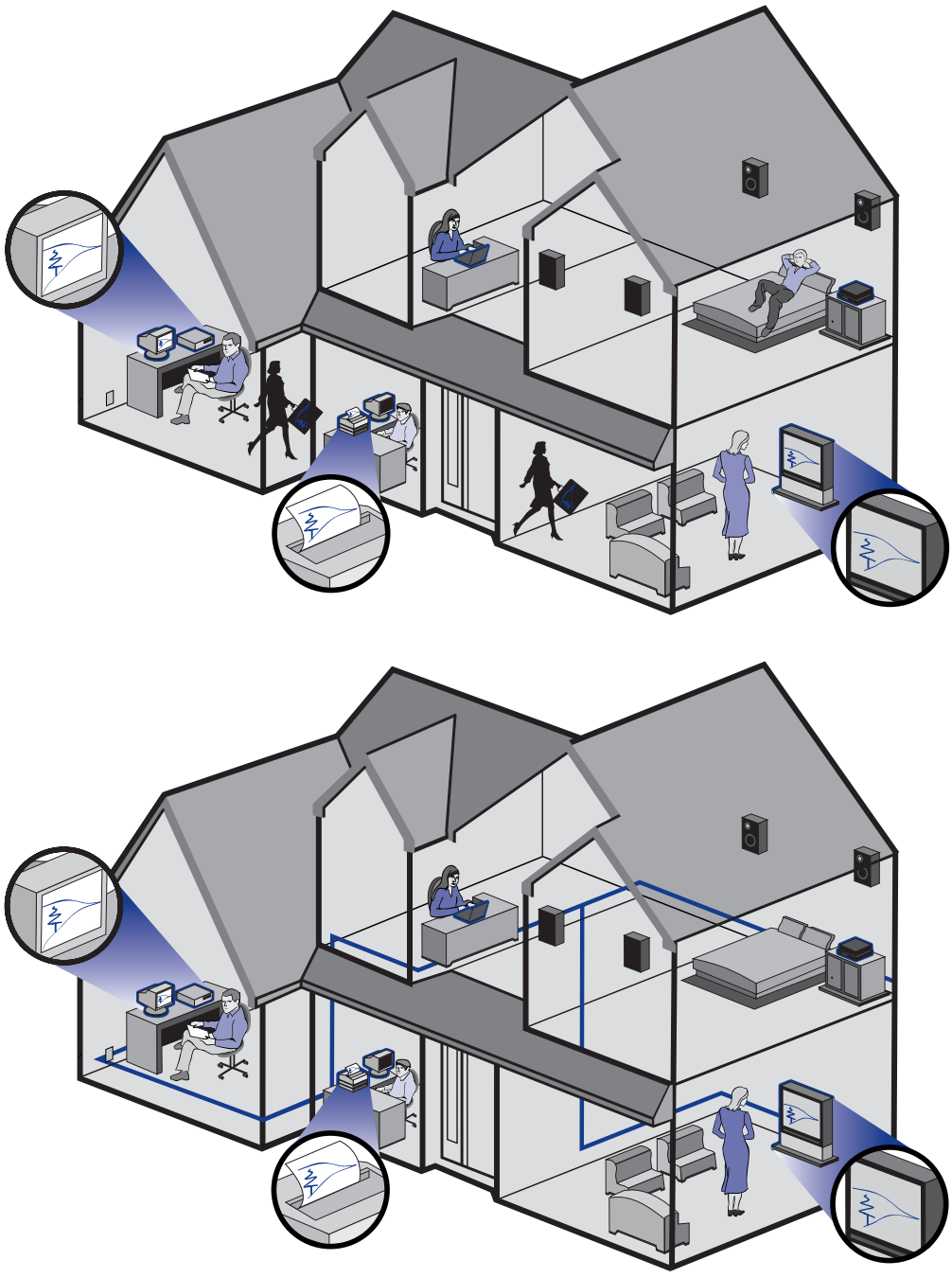
The basic idea behind networks is something everyone learned in kindergarten or even preschool—sharing. Networks are about sharing. It wouldn't make any sense for you to create a home network if you had only a single PC (and no other network devices) because then there would be nothing to share.

It doesn't matter if you are a single person with multiple PCs or if you live in a house full of people, because the idea is the same. A network makes it far easier to share the assets and resources that are spread across the network.

Sharing Your Files

Home networks were originally created to make file sharing easier. Prior to the existence of home networks, if you wanted to use a file that was on someone else's computer, you had to go to that person's computer, copy the file to a removable disk (or tape in the really distant past), go back to your computer, and finally copy the file onto your system. This was sometimes called a "sneakernet" because the files were transferred by someone walking around in sneakers. Figure 1-4 gives you an idea of how networking has changed things.

Figure 1-4 Your Home Network Allows You to Share Files Without Running from Room to Room



File sharing has never been the same since two or more computers were networked. Now it's almost as easy to open a file stored elsewhere on your network as it is to open one that's right on your PC. If Mom wants to browse through last summer's vacation photos that are stored on the PC in the home office, she doesn't have to bother Dad when he's paying the bills. She can simply use one of the other PCs and have instant access to the shared files.

NOTE Sharing files is an essential step in setting up your home network, and it's something that is easily overlooked in your haste to "get it connected and see if it works." In Chapter 8, "Sharing Your Network," you learn how to share the files that you want other people on your home network to be able to access.

Sharing Printers

Another great way to take advantage of your home network is by sharing one or more printers. Few home PC users print enough to make a really good printer worthwhile, but it can make a lot of sense to get a better printer that you're going to share. Printing to a network printer is faster and easier than putting your files on a floppy disk and taking them to another PC for printing.

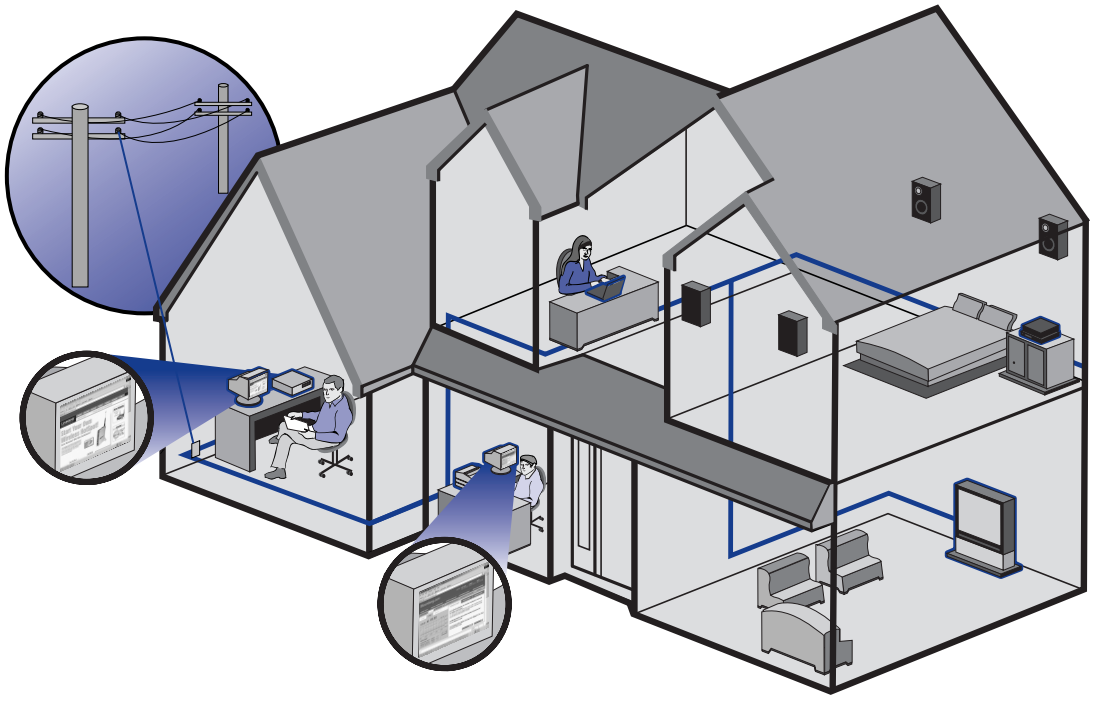
As you will learn in Chapter 8, you have a couple of options to share a printer on your home network. Depending on what works best for your family, you can share a printer that is connected directly to a PC, or you can place that printer in a separate location where it is convenient for everyone to use.

You can even share more than one printer on your home network. For example, you might want to have a laser printer for fast, high-quality text printing and a photo-quality color inkjet for printing graphics.

Sharing an Internet Connection

One of the newer uses for a home network is to allow everyone to share an Internet connection. This is especially true in homes where a broadband connection such as cable or DSL makes it possible for several people to surf the Web at the same time. Rather than a broadband connection being used by only one person directly connected to it at a time, a shared Internet connection gives everyone access when they want it, as shown in Figure 1-5.

Figure 1-5 With a Home Network, Everyone Can Share a Broadband Internet Connection



TIP As you'll learn in Chapter 7, "Making Your Network Secure: Locking the Network's Door," it's very important to keep your home network secure from outside attacks. It turns out that the equipment that you use to share an Internet connection can actually make the task of keeping your network secure considerably easier.

The Linksys WRT54G Wireless-G Router shown in Figure 1-6 is an example of the type of equipment you can use to easily and securely share your Internet connection.

Figure 1-6 A Wireless Router Makes It Easy to Share Your Broadband Internet Connection

Sharing Multimedia

Regardless of all the other uses for your home network, the one that will ultimately provide you with the most enjoyment will probably be sharing various types of digital media content. You might not realize it yet, but a home network is going to make a big change in the way your family plays.

Headline: Entertainment Network Wows Friends and Neighbors

If you really want to wow your friends and neighbors, it's hard to beat the effect of a well-thought-out system of entertainment options connected to your home network. Just imagine the possibilities:

- You can have thousands of songs arranged in play lists to match any occasion.
- You can play multiplayer video games via your broadband Internet connection.
- You can listen to countless Internet radio stations in virtually any format around the world.

- You can rent movies for instant viewing without ever leaving your home.
- You (or others) can view your prized exotic fish tank using a wireless webcam.

NOTE You can find out more about the Linksys gear mentioned in this section on the Web at www.linksys.com.

Home Entertainment Centers

Listening to music has certainly changed over the years. Instead of playing one song or a single disc at a time, PCs have made it easy to set up play lists of your favorite songs so that you never have to play DJ during a party again. Until recently, it simply wasn't very convenient to play music that was stored on your computer through your stereo because most people didn't want a PC in their living room. That all changed with the introduction of products such as the Linksys WMA11B Wireless-B Media Adapter shown in Figure 1-7. This handy device wirelessly bridges the gap between your PC and your stereo to create a home entertainment center.

Figure 1-7 A Wireless Media Adapter Channels the Music from Your PC to Your Home Stereo System

Wireless Game Consoles

Does your home have a video game console such as a Sony PS2 or a Microsoft Xbox? If so, you probably already know that multiplayer games are even more fun than single player games. What you might not know is that by using your broadband Internet connection, you can open up a whole new world of challenging multiplayer games where your opponent might literally be halfway around the world!

The Linksys WGA54G Wireless-G game adapter shown in Figure 1-8 can be the key to connecting your video game console to the Internet through your home network.

Figure 1-8 A Wireless Game Adapter Connects Your Video Game Console to the Internet

Internet Radio

The Internet can be an amazing source of entertainment. In addition to millions of websites, another part of the Internet exists of which you might not be aware. Radio stations all over the world broadcast their programs across the Internet for free. You can listen to rock music from New York, opera from Rome, or new age music from Tokyo as easily as listening to your local FM stations on your radio—and without the static! For example, Figure 1-9 shows just a few of the stations that are available in the world music category in Windows Media Player.

Figure 1-9 The Whole World Is Within Range When You Listen to Internet Radio Stations

TIP Remember that your home network's wireless media adapter is just as adept at playing your favorite Internet radio stations on your stereo system as it is at playing music from your PC's play lists.

Wireless Webcams

If you need one more reason why you'll want your own home network, consider the many different ways you could use a wireless webcam. Earlier I mentioned monitoring your exotic fish tank, but what about some of these ideas:

- Place a wireless camera where you can see who is at your front door on the screen of your PC.
- Set up a webcam so that you can check on the status of your home when you're at work.
- Keep track of your infant's room using a wireless camera.
- Use the motion detection feature of your wireless webcam to record the neighbor's dog when it visits your rose garden.

Figure 1-10 shows the Linksys WVC11B Wireless-B Internet Video Camera. This handy unit might just be the crowning touch for your home network.

Figure 1-10 A Wireless Internet Video Camera Enables You to See What's Going on Even if You Can't Be There Yourself

Working Remotely

Finally, a home network can give you more time at home away from your office. Here are a few ways:

- Save the time of a commute by quickly logging in to the office in emergencies. Check e-mail, get documents, or publish your web pages.
- Attend scheduled meetings virtually from the comfort of your home.
- With a wireless network, work comfortably from the comfort of your own living room, backyard, or porch on a nice sunny day.

Summary

A network can add a lot of entertainment and convenience to your home. In this chapter, you learned about some of the many things that you can do with your own home network, but that's only the beginning.

In the next chapter, you'll learn the basics of what makes up a home network. After you understand how a network functions, you will have an easier time understanding exactly what you will need to make your home network a reality.