Computer Briefs

The Wireless Internet

*Michael J. Ackerman, Ph.D.**

Look through the office supply or computer supply advertisements in any Sunday newspaper, and you will find advertisements for wired and wireless computer network components. The cost for these parts is now down to under $100 per computer. Is there a computer network in your future?

LAN (LOCAL AREA NETWORK) FOR THE HOME?

A computer network is made up of two or more computers. This environment, called the local area network (LAN) has been traditionally found at business locations. Many households today are the home to two or more computers. The opportunity for networking is moving into the home. Why a home network? The same reason as in the office: access to files from any computer and sharing printers. In addition, many teens are interested in playing games against another person instead of against a computer.

The opportunity for networking is moving into the home.

Access to the Internet was traditionally available through the workplace. Internet access, however, is becoming ubiquitous at home. With higher-speed Internet access becoming available and affordable to the home, it becomes practical for multiple computers to use the same Internet connection—another reason for a LAN.

Business locations have used wired networks for many years. Wired networks, as the name implies, requires wires to connect the computers together. This required infrastructure was practical for business locations. The installation of the required cabling is an acceptable business expense. A LAN support contract, to deal with the networking software, is also expected and considered part of the cost of doing business. The times they are changing, however.

Wiring a home for a LAN had not been difficult, but it was a challenge perhaps best accomplished just before redecorating. I had my opportunity and I changed my mind. Approximately 2 years ago, I had the siding replaced on my home. To do this, the original siding was completely removed before the new siding was put on. I asked the contractor if he could wire the house for a network from the outside before the new siding was put on. He said that he would be willing to do this but asked me why I wanted a wired network when he heard that networks were going wireless. Now I'm the consultant that is usually paid for such advice so I decided if my non-technical siding contractor already knew about wireless networks, the times were changing—or maybe they had already changed.

Wiring a home for a LAN . . . was a challenge . . .

There have been several attempts at creating home networks without special wiring. All used well-understood carrier-current technology, and all were somewhat slow. Carrier-current technology is a way of converting a signal, in this case a digital signal, to a radio signal and then injecting the signal into the home's electric or telephone wiring rather than broadcasting it into the air. These systems were available before the introduction of the now ubiquitous USB port. They were designed to share the always-present printer port with a printer so no internal computer connection was needed. The network/carrier-current box was connected between a computer's printer port and either an electric outlet or a telephone wall plug. All the computers in the home equipped in this way could talk to each other. The hardware came with a software package that discovered which computers and printers were on the home network and asked the installer a set of questions about whether access to these resources would be allowed. If one of the networked computers had access to the Internet, all the computers in the home network could gain access to the Internet simultaneously through that machine. These systems were reasonably reliable, but no industry standard emerged, so there was little to no way to communicate between vendors. Network speeds were generally below 2 Mb/s.

ENTER "WI-FI"

About three years ago, the world of wireless networking started to change. A new technology called "Wi-Fi" appeared in the marketplace. Wi-Fi was based on an industry-recognized standard, technically known as IEEE 802.11b. It was designed to be capable of speeds up to 11 Mb/s. This was comparable to most office LANs at the

*Assistant Director for High Performance Computing and Communications, National Library of Medicine, Building 38A, Room B1N30, 8600 Rockville Pike, Bethesda, MD 20894; phone: 301-402-4100; fax: 301-402-4080; E-mail: ackerman@nlm.nih.gov.

time, which had speeds rated under 10 Mb/s. Its initial use was as a convenient way to allow portable laptop computers to connect to the Internet without the usual need for cabling. It was targeted at the business environment so company guests could gain easy access to the Internet. At the time, a wireless interface to the office LAN cost approximately $1,000 and required a network expert for its proper setup. The interface needed by the visiting laptop computer cost approximately $150 and was only available in a credit card–shaped PCMCIA format. This format could only be connected to laptop computers.

Query A

In the past three years, a lot has happened. The cost of the wireless LAN interface, now called a base station, can be purchased for under $100. A computer expert is no longer needed. In fact, the software needed to set-up the network is part of the base station itself and is activated through the use of your favorite Internet browser. The computer interface is available, not only as a PCMCIA card for a laptop, but also as a USB accessory for a desktop. Many new laptops have this wireless interface already built in. Printers can be added to the wireless network using a wireless print server, and even videogames can interface with each other and with computers using a wireless bridge.

[A] wireless LAN interface . . . can be purchased for under $100 . . . [and] a computer expert is no longer needed . . .

Because the cost of wireless interfaces have become relatively inexpensive, public wireless Internet access points are becoming available in a wide variety of places including shopping centers, coffee shops, hotels, and airports. Many of these locations started out providing free access. As their popularity and use increases, however, access fees are becoming the norm. Inexpensive interfaces, coupled with ease of installation, also means that wireless Internet technology is ready for the home or small office network environment. More about that next time. ■

QUERY

A Please expand PCMCIA at first use.