



N-CAP Users' Guide

Everything You Need to Know About Using the Internet!

How Home Networking Works

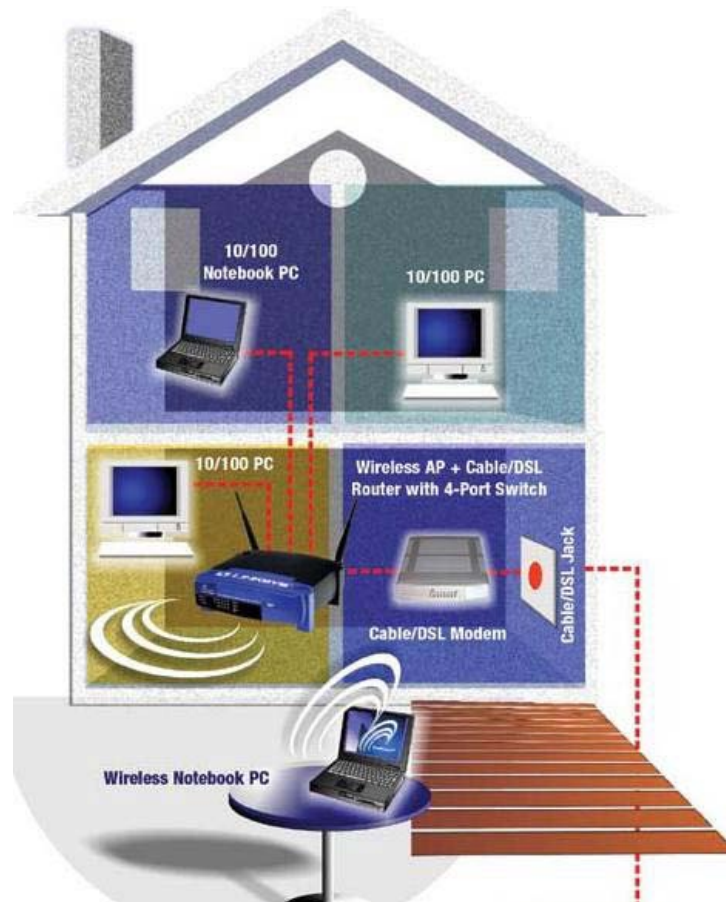


How Home Networking Works

by Tracy V. Wilson

Until recently, home networks were primarily the realm of technophiles -most families either didn't need or couldn't afford more than one computer. But now, one computer is no longer enough to go around for many families. In a household with multiple computers, a home network often becomes a necessity rather than a technical toy.

If you're thinking of networking the computers in your home, you have several options to explore. In this article, you'll learn about the different types of home computer networks, how they work and what to keep in mind if you're planning to create one.



A home network is simply a method of allowing computers to communicate with one another. If you have two or more computers in your home, a network can let them share:

- Files and documents
- An Internet connection
- Printers, scanners and other devices

The different network types use different hardware, but they all have the same essential components:

- More than one computer
- Hardware (such as a router) and software (either built in to operating system or as a separate application) to coordinate the exchange of information
- A path for the information to follow from one computer to another



Ethernet and Wireless

The two most popular home network types are wireless and Ethernet networks, in both of these types, the router does most of the Work by directing the traffic between the connected devices. By connecting a router to your dial-up, DSL or cable modem, you can also allow multiple computers to share one connection to the internet. Many new routers combine wireless and Ethernet technology and include a hardware firewall.

If you're going to connect your network to the Internet, you'll need a firewall. A firewall is simply a program or hardware device that protects your network from malicious users and offensive Web sites. Many software firewalls block all incoming information by default and prompt you for permission to allow the information to pass. In this way, a software firewall can learn which types of information you want to allow into your network.



A router connects your computers to one another. If you connect it to your modem it will also connect your network to the Internet.

The easiest, least expensive way to connect the computers in your home is to use a wireless network, which uses radio waves instead of wires. The absence of physical wires makes this kind of network very flexible. For example, you can move a laptop from room to room without fiddling with network cables and without losing your connection. The downside is that wireless connections are generally slower than Ethernet connections.

If you want to build a wireless network, you'll need a wireless router. Signals from a wireless router extend about 100 feet (30.5 meters) in all directions, but walls can interrupt the signal. Depending on the size and shape of your home and the range of the router, you may need to purchase a range extender or repeater to get thorough coverage.

You'll also need a wireless adapter in each computer you plan to connect to the network. You can add printers and other devices to the network as well. Some new models have built-in wireless communication capabilities, and you can use a wireless Ethernet bridge to add wireless capabilities to ones that don't.

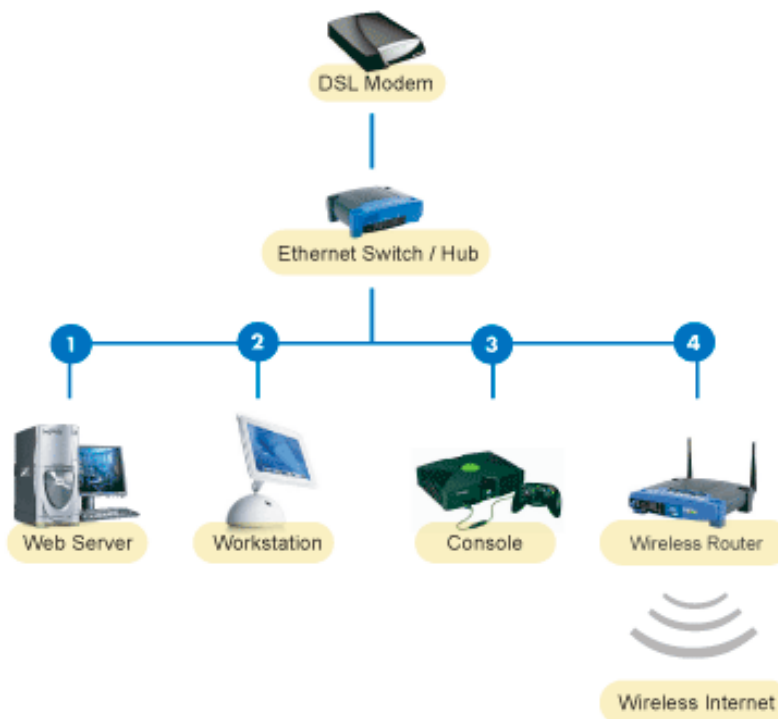
Faster Wireless:

Most home wireless networks use 802.11g wireless networking, which transmits data at 2.4 GHz with a speed of 54 megabits. A newer wireless standard is 802.11n, which is designed to be faster and offer a longer range than 802.11g.

If you decide to build a wireless network, you'll need to take steps to protect it - you don't want your neighbours hitchhiking on your wireless signal. Wireless security options include:

- Wired Equivalency Privacy (WEP)
- WiFi Protected Access (WPA)
- Media Access Control (MAC) address filtering

You can choose which method (or combination of methods) you want to use when you set up your wireless router.



Even though they're easy and flexible, wireless networks aren't for everyone. Some people simply feel more secure when using a wired network, and others want to move lots of data very quickly. In either case, a wired Ethernet network is the better choice. Ethernet networks are faster than wireless networks, and they can be very affordable. However, the cost of Ethernet cable adds up - the more computers on your network and the farther apart they are, the more expensive your network will be. In addition, unless you're building a new house and installing Ethernet cables in the walls, you'll be able to see the cables running from place to place around your home.



If you plan to connect only two computers, all you'll need is a network interface card (NIC) in each computer and a cable to run between them. The most commonly used cable is Category 5 Unshielded Twisted Pair (DTP) cable. If you want to connect several computers or other devices, you'll need an additional piece of equipment - an Ethernet router. You'll also need a cable to connect each computer or device to the router.

Once you have all of your equipment, all you need to do is install it and configure your computers so they can talk to one another. Exactly what you need to do depends on the type of network and your existing hardware. For example, if you choose an Ethernet network and your computers came with network cards already installed, all you'll need to do is buy a router and cables and configure your computers to use them. Regardless of which type you select, the routers, adapters and other hardware you buy should come with complete setup instructions.

The steps you'll need to take to configure your computers will also vary based on your hardware and your operating system.

If neither wireless nor Ethernet seems right for you, you have other options for connecting your computers. If your computers have USB or FireWire ports, you can use cables, jump drives or file transfer devices to move files from place to place. Other options include power-line and phone-line networks. Both power- and phone-line networks use existing wiring in your home to connect your computers, so you don't need to worry about concealing extra cable.

