Decisions You’ll Need to Make

► Will your home network will be wired, wireless, or both?
► How many computers you will be connecting?
► Will you want to include printers, game consoles, or any other peripherals?

Wired vs. Wireless (WiFi) – Which to Choose?

**Wired Networks:**

► Usually less expensive than wireless
► Provides faster data transmission (up to 1,000MB/sec, but depends on the networking hardware)
► Works across larger areas (not hampered by wireless limitations)
► To network computers in different rooms or on different floors of your home, you will need to run cabling throughout the walls or along the baseboards

**Wireless Networks:**

► Ability to set up computer anywhere, even go outside (within specified distance of home networking hardware)
► Generally a quicker installation than wired (due to lack of wires and ease of installing laptop wireless networking cards)
► Easy to expand your home network (just add computers and wireless adapters)

It is possible to build a home network using both wired and wireless connections. Usually, the main desktop computer is connected to the router (explained later) using home networking cable, while laptops and peripheral computers are connected wirelessly using PC and PCI cards (explained later).

Wireless - What are 802.11a, 802.11b and 802.11g?

802.11a/b/g are protocols, or standards, that describe how
data is transmitted wirelessly. The differences among them:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Data Speed</th>
<th>Avg. Data Speed</th>
<th>Signal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.11a</td>
<td>5.9 GHz</td>
<td>Up to 54M</td>
<td>75 feet</td>
</tr>
<tr>
<td>802.11b</td>
<td>2.4 GHz</td>
<td>Up to 11MB</td>
<td>150 feet</td>
</tr>
<tr>
<td>802.11g</td>
<td>2.4 GHz</td>
<td>Up to 54MB</td>
<td>150 feet</td>
</tr>
</tbody>
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**802.11g combines the best of 802.11a and 802.11b.** Currently, most wireless home networking hardware uses 802.11b or 802.11g. Some companies make home networking hardware that is compatible with both 802.11b (more widely used until recently) and 802.11g.

While 802.11a works in a frequency range that other products (like electric garage doors, microwaves, etc.) do not operate in, home networking equipment that works with the 802.11a standard is often more expensive than home networking gear that works with 802.11b/g. 802.11b/g satisfies most home networking users.

**What Will I Need?**

1. **Modem**

   When you sign up for broadband service from an Internet Service Provider, they will either provide you with an appropriate broadband modem, or they will direct you to an electronics store where you can purchase one.

   When not networking your home computers, the modem simply plugs into your home computer and into a phone jack (if you have DSL) or a cable connection (for cable Internet connections).

   The ISP may also include phone filters (for DSL subscribers) which keep your phone lines clear of static. Phone filters are required to share DSL and phone signals on the same line.

2. **Router or Gateway**

   The term "router" and "gateway" are often used interchangeably. Both act as entry points to a different network, e.g. Internet <> your home network. Each has the ability to connect multiple computers together, share a broadband connection, etc.

   Many people go to a local electronics store and purchase a DSL router or cable router. DSL and cable routers come in various flavors: wired (2-port, 4-port, 8-port, etc.), wireless, and combined wired/wireless.

   The number of ports indicates the number of computers or peripherals you can inter-connect. If you plan to expand your home network in the future, it’s a good idea to purchase a router that offers more ports than you currently need. If you find yourself needing more ports than your router has, you can "bridge" your routers using a switch (piece of hardware) or bridge (another name for a switch). Switches/bridges can also be purchased at a local electronics store.

   Some ISPs will provide new subscribers with a "gateway" as an incentive to sign up for their service. These gateways often incorporate both the modem and the router, thereby reducing the need to purchase a router separately.

3. **PC and PCI Cards**

   If you will be connecting an older computer (4+ years) to your home network, or installing a wireless home network, you will likely need to install network adapter cards on each computer.

   Most new computers (both desktops and laptops) already have adapters built in. A built-in adapter looks like an over-sized phone jack and is usually found on the back of a computer (sometimes on the side of laptops).

   If you have an older computer, or wish to connect your computers using a wireless router, you will need to obtain wireless network cards for each computer you wish to network.
It is a good idea to purchase the adapter cards at the same time you are purchasing your router so that you obtain adapter cards that work with your router.

4. Cable
If you decide to use a wired router to connect your home computers, you will need enough cable to hook each computer to your router. The type of cable you want to purchase is called Category 5. It is available at most electronic stores.

Make sure you know the approximate distance between each computer that you would like to plug into the router. You will need a separate cable for each connection.

5. Installation CDs
For each piece of equipment you purchase, whether a router, adapter card, gateway, etc., you will likely receive an installation CD that contains the necessary software for your equipment to work. It is often very easy and quick to install, even if you have a CD for multiple components. You will see that the benefits of home networking are worth the time to set it up!

6. Home Networking Kits
Many vendors sell home networking kits for wired and wireless home networks. These kits include the router, cables, and adapter cards. You can purchase them online or at electronic stores.

How Do I Hook Up All the Equipment?
Once you have everything you need, it is relatively easy to install and connect your equipment.

The most important item to understand is the overall layout and where each piece fits. The simplest way to think about it is in this order:
1. The first thing to do is hook up the modem to the cable or DSL connection in your wall.
2. Next, install the PC and/or PCI adapter cards in your computers (if hooking up an older computer or setting up a wireless home network).
3. Connect the modem and router (using a cable provided by your ISP).
4. Connect each computer to the router either using cable, or wireless adapter card. You may be required to insert a CD and install the necessary network drivers.
How to Set Up a Home Network

Will my home network be secure?

Routers, which sometimes have built-in hardware firewalls, can protect computers from incoming hacker attacks. But even if your computer is connected to a router, software firewalls are an essential computer security component. Routers and software firewalls work hand-in-hand to protect your home network.

Computers have multiple entry points (also known as ports) similar to your home. Routers can block certain attacks, like those coming from a hacker trying to get into your computer.

Software firewalls are needed to protect all entry points because any entry point, whether the front, side, or back door, can be used to send your personal information to questionable third-parties, or use your email address book to forward scams and inappropriate content. To help protect all the "doors" to your computer, it is best to use a router and software firewall.