

Why Network?

A network is a group of desktop or laptop computers (and other hardware devices, such as printers) that is connected together with the primary purpose of communicating and exchanging data. Networking is all about sharing, and it allows your computers to connect to the Internet, talk to each other, and share resources like files and printers.

Benefits of Networking

Networking adds a lot of flexibility in the way you work and spend time with your computers and electronic devices. With a network, you can:

- Share a high-speed, broadband cable or DSL Internet connection so everyone can surf the web simultaneously
- Access your own private e-mail account while others cruise the web
- Share all types of files, including music, digital pictures, and documents
- Store your library of music, pictures, and files all in one place
- View your digital pictures and listen to your music anywhere in the house
- Secure your computers against Internet threats, like viruses and worms
- Enjoy multiplayer and head-to-head gaming with friends or family from any room in the house
- Enjoy gaming over the Internet with someone anywhere in the world
- Save money and time by sharing printers, scanners and other peripherals
- Share storage space and access files on another computer through your LAN (local area network) when your hard drive is full.

Home Networking:

Everyone can share a broadband Internet connection.



There are two types of networks to choose from - wired and wireless. You need to determine which one best fits your home network, or you can even combine the two. Keep in mind that both has its advantages as well as disadvantages.

[Should I install a wired or wireless network?](#)

LAN and WAN

There are many different types of networks that range in size and proximity. Most can be categorized into one of two basic groups: local area networks (LAN) and wide area networks (WAN).

A local area network (LAN) is a group of networked computers, printers, or other hardware devices that are all connected relatively close to each other like an office, home, or school. It allows connected users to share files, printers, or other applications. Whether as small as two computers or much larger in size, a LAN's major purpose is to allow users to share information quickly and easily.

A wide area network (WAN) is a group of networked computers in a much larger geographical area, such as a state or country. The best example of a WAN is the Internet, which spans the entire world. A router connects your personal LAN to the WAN using a type of networking protocol called TCP/IP.



Client and Protocol

Every networked computer can communicate with each other through a type of software that is already included with your computer's operating system, such as Windows. The software runs in the background and plays an integral role in specifying the "techie" aspects of networking. Client and protocol are two important components in networking software.

Client - The software that provides your computer with access to the network's services. The computer that requests the information from a network is usually referred to as the client. For example, when you are surfing the Internet, your computer makes client requests to receive a Web site from somewhere in the U.S. or anywhere around the world.

Protocol - This is the language that the computers use to communicate with each other. The industry standard in networking today is called TCP/IP (Transmission Control Protocol/Internet Protocol). Along with your home network, it is the same protocol used most commonly on the Internet.



Network clients and protocols are necessary for a functioning network.

How Wireless Works

A wireless network is simply two or more computers linked together by invisible radio waves with the purpose of transferring data or sharing resources. The configuration is similar to cordless phones in that they can share one telephone line, which utilizes one central "base" station along with multiple handsets placed throughout the house. Wireless networking is an excellent solution because you don't have to deal with cables and it takes little effort to expand.

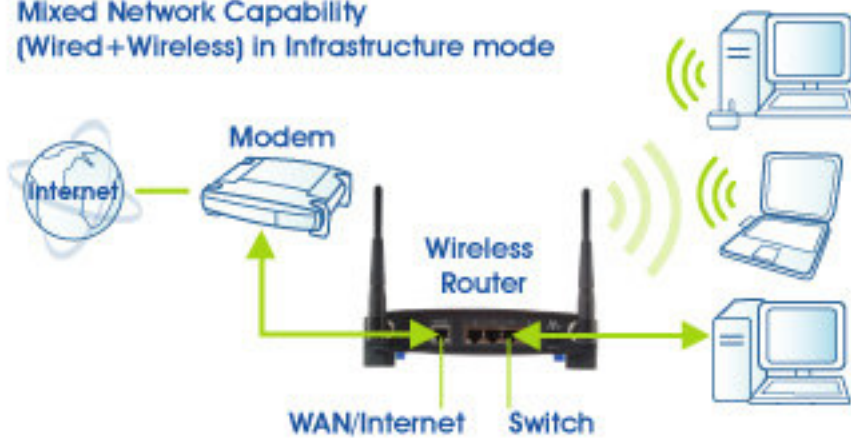
There are two kinds of wireless networks:

Ad-hoc mode: Each computer in the network with a wireless adapter can communicate directly with each other without the use of a router or access point. You can share files and printers with this method. However, it is more difficult to connect to networks - both wired and wireless. This mode is also known as peer-to-peer networking.

Infrastructure mode: Each computer in the network uses a router or access point to handle all data transfer and network traffic. You can easily access a wired network, whether it is a LAN or the Internet. For most home networking purposes, infrastructure mode is the best choice.

Wireless Network

Mixed Network Capability
(Wired + Wireless) in Infrastructure mode



In infrastructure mode, a router or access point handles all network traffic.

How to set up a Router.

Installation





Once the router has been taken out of the box, you should have the router, a blue folder with a CD and a small instruction book, a power supply and a blue Ethernet cable. To get started we will go ahead and set the router up next to the computer, plug the blue cable in to the computer and in to port 1 (one) on the router. Next plug the power in to the router. Now that the router is powered up, you should see the number 1 light on.

Login in to the router.

Connect to 192.168.1.1

WRT54G

User name:

Password:

Remember my password

OK Cancel

Now that we have plugged all the wires in where they need to go, we need to launch a browser (e.g. Firefox, Internet Explorer, and Safari). Next we need you to enter the address <http://192.168.1.1/> in your address bar. At this point the router is going to ask you for a user name and a password. By default the username is: admin and the password is: admin. Once the user name and password have been entered it will take you to the set up page.

Setup Page.

The screenshot shows the Linksys WRT54G router's setup page. The page is titled "Setup" and includes a navigation menu with options like "Setup", "Wireless", "Security", "Access Restrictions", "Applications & Gaming", "Administration", and "Status". The "Setup" section is active, and the "Internet Setup" tab is selected. The "Internet Setup" section includes "Internet Connection Type" (set to "Automatic Configuration - DHCP"), "Optional Settings (required by some ISPs)" (Router Name: WRT54G, Host Name, Domain Name, MTU: Manual, Size: 1492), "Network Setup" (Router IP: Local IP Address: 192.168.1.1, Subnet Mask: 255.255.255.0), "Network Address Server Settings (DHCP)" (DHCP Server: Enable, Starting IP Address: 192.168.1.100, Maximum Number of DHCP Users: 50, Client Lease Time: 0 minutes, Static DNS 1, 2, 3, and WINS: 0.0.0.0), and "Time Setting" (Time Zone: (GMT-08:00) Pacific Time (USA & Canada), Automatically adjust clock for daylight saving changes: checked). The page also features "Save Settings" and "Cancel Changes" buttons at the bottom.

On the setup page, you will be setting up basic networking configurations. No you don't have to be a network administrator to set this up. Most of these settings we will leave alone. Unless told otherwise by your ISP (Internet Service Provider), all the settings on this page will stay the same. If you are told by your ISP that you need to enter a username and a password, you will change you internet connection Type to PPPoE. Next we will set up the Wireless connection, for those of you with laptops or wireless computers, or just want to have it set up just in case.

Wireless page.



The Basic Wireless Settings page is a small and simple page; you will need only to make a few decisions. First you need to decide whether or not you want wireless to be broadcast.

Also if you have a cordless phone you will want to make sure that it is not a 2.4GHz Phone, if it is it can interfere. If you decide that you want wireless broadcast you can leave the first box alone (mode). However if you decide that you do not want it broadcast wireless change the mode to none, and you can go down to the Security portion of this guide.

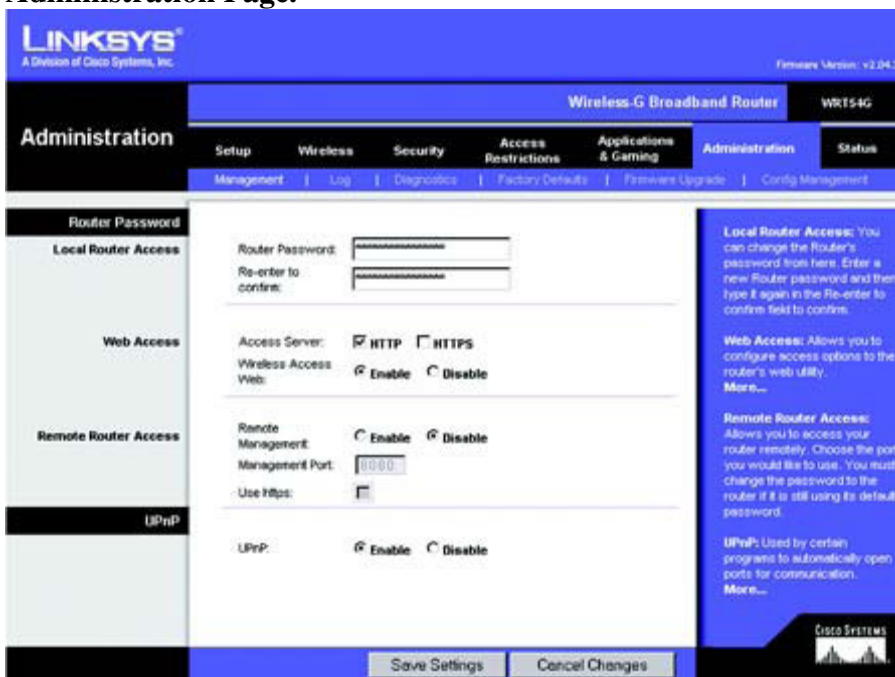
Next we will pick a name for your wireless, this is the name that a computer will see when looking for a wireless network. By default the router is broadcasting the name linksys, we want to change this to something else (e.g. mtzhome, mywireless, or stayout), now enter it in to the space labeled Wireless Network Name (SSID). After you have entered all the info Press save setting at the bottom of the page and follow next steps till you are back at this page. Next we will go to the tab labeled Wireless security.



Wireless Security is important because you do not want just any one using the internet connection that you are paying for. Now we will set up the internet network security. Under the Wireless security tab you will find only one option for now, Security Mode. Click on the

drop down menu and select WPA Personal, It is the easiest to set up and the hardest to crack of the options. Once that the option is selected you will see (3) more options. The only option you need to do anything with is the Passphrase. You will now need to pick a pass phrase, and it must be at least eight (8) characters long. This pass phrase will be used to let your wireless computer connect to the wireless. Without it you can not connect and use the connection, with that said pick a pass phrase that you can remember or write it down somewhere in the house. Once you have picked a pass phrase enter it in to the Pass phrase box. Again hit save settings and follow the instructions. There are many many more things you can do to lock down a router however this is all we are going to cover in this article. If you would like to do more advanced security you can always get on the Linksys website <http://linksys.com/> and get more info from them. Last we will change the password to the router so only you can make changes to your router.

Administration Page.



Now we will click on the Administration tab at the top. Under this page there is a lot of Setting and options. At this point your router will work fine when you plug the internet connection in to it, but we will make one more change so that only you can make changes to the router. Now we will enter a new password under router password and re-entering it in the box below for verification. Make sure that you enter the password in the same both times or it will give you an error when you click on save settings. Also you may want to write the password down somewhere you can find it later, incase you forget it and need to make a change later. As always pick strong password keep them private. Now let connect your router to the internet.

Connecting the router to the internet



With your High speed internet connection you should have gotten a modem (Wildblue or Cable) or it will connect directly to an Ethernet cable (fixed wireless connection). If you have a modem unplug your modem from the wall and plug the Ethernet cable in from your modem to the Internet port on the back of the router. Next plug the modem back in. If you have wireless plug the cable that was plugged in to your computer before, into the internet port on the router. Wait for a few minutes until the internet light on the router is light. Once the light is on go back to the computer and click on the last tab of the page, The Status Page. In this page you should see two sections; in the lower section you should see internet connection. Under internet connection you should see a line that says IP Address. That line should have numbers in it. If it has 0.0.0.0 it dose not have an address and you will need to press the IP Renew at the bottom of the page. If it does have numbers in it then you are all set and you can browse the internet.