Chapter 1: Introduction

Welcome

Thank you for choosing the Linksys Wireless-G Broadband Router with SpeedBooster. The Wireless-G Broadband Router with SpeedBooster will allow you to network wirelessly better than ever, sharing Internet access, files and fun, easily and securely.

How does the Wireless-G Broadband Router with SpeedBooster do all of this? A router is a device that allows access to an Internet connection over a network. With the Wireless-G Broadband Router with SpeedBooster, this access can be shared over the four switched ports or via the wireless network, broadcast at either 11Mbps for Wireless-B or 54Mbps for Wireless-G. In addition, WEP encryption provides greater security opportunities while the whole network is protected through a Stateful Packet Inspection (SPI) firewall and NAT technology. All of these security features, as well as full configurability, are accessed through the easy-to-use browser-based utility.

__mbps__: one million bits per second; a unit of measurement for data transmission

__browser__: an application program that provides a way to look at and interact with all the information on the World Wide Web.

But what does all of this mean?

Networks are useful tools for sharing computer resources. You can access one printer from different computers and access data located on another computer's hard drive. Networks are even used for playing multiplayer video games. So, networks are not only useful in homes and offices, they can also be fun.

__lan__ (Local Area Network): The computers and networking products that make up the network in your home or office

PCs on a wired network create a Local Area Network. They are connected with Ethernet cables, which is why the network is called “wired”.

PCs equipped with wireless cards or adapters can communicate without cumbersome cables. By sharing the same wireless settings, within their transmission radius, they form a wireless network. The Wireless-G Broadband Router with SpeedBooster bridges wireless networks of both 802.11b and 802.11g standards and wired networks, allowing them to communicate with each other. And since this Router has SpeedBooster technology, your wireless network performance increases by up to 30% from old 802.11g standards. In fact, even non-SpeedBooster-equipped devices on your network will see a speed improvement when communicating with SpeedBooster-enhanced equipment!

__802.11b__: an IEEE wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

__802.11b__: an IEEE wireless networking standard that specifies a maximum data transfer rate of 54Mbps, an operating frequency of 2.4GHz, and backward compatibility with 802.11b devices.

With your networks all connected, wired, wireless, and the Internet, you can now share files and Internet access—and even play games. All the while, the Wireless-G Broadband Router with SpeedBooster protects your networks from unauthorized and unwelcome users.

You should always use the Setup CD-ROM when you first install the Router. If you do not wish to run the Setup Wizard on the Setup CD-ROM, then use the instructions in this Guide to help you connect the Wireless-G Broadband Router with SpeedBooster, set it up, and configure it to bridge your different networks. These instructions should be all you need to get the most out of the Wireless-G Broadband Router with SpeedBooster.

What's in this Guide?

This user guide covers the steps for setting up and using the Wireless-G Broadband Router with SpeedBooster.

- Chapter 1: Introduction
  This chapter describes the Router's applications and this User Guide.
- Chapter 2: Planning Your Wireless Network
  This chapter describes the basics of wireless networking.
- Chapter 3: Getting to Know the Wireless-G Broadband Router
  This chapter describes the Router's physical features.
- Chapter 4: Connecting the Wireless-G Broadband Router
  This chapter instructs you on how to connect the Router to your network.
- Chapter 5: Setting up the Wireless-G Broadband Router
  This chapter explains how to set up your Router.
- Chapter 6: Configuring the Wireless-G Broadband Router
  This chapter explains how to use the Router's Web-Based Utility.
- Chapter 7: Using the Linksys Parental Control Service
  This chapter explains how to sign up for the Service, manage your account, and use the Internet when the Service is actively controlling Internet traffic and messages.
- Appendix A: Troubleshooting
  This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Wireless-G Broadband Router.
- Appendix B: Wireless Security
  This appendix explains the risks of wireless networking and some solutions to reduce the risks.
- Appendix C: Upgrading Firmware
  This appendix instructs you on how to upgrade the Router's firmware should you need to do so.
- Appendix D: Windows Help
  This appendix describes how you can use Windows Help for instructions about networking, such as installing the TCP/IP protocol.

- Appendix E: Finding the MAC Address and IP Address for your Ethernet Adapter.
  This appendix describes how to find the MAC address for your computer's Ethernet adapter so you can use the Router's MAC filtering and/or MAC address cloning feature.

- Appendix F: Glossary
  This appendix gives a brief glossary of terms frequently used in networking.

- Appendix G: Specifications
  This appendix provides the Router's technical specifications.

- Appendix H: Warranty Information
  This appendix supplies the Router's warranty information.

- Appendix I: Regulatory Information
  This appendix supplies the Router's regulatory information.

- Appendix J: Contact Information
  This appendix provides contact information for a variety of Linksys resources, including Technical Support.

Chapter 2: Planning Your Wireless Network

Network Topology

A wireless local area network is exactly like a regular local area network (LAN), except that each computer in the wireless network uses a wireless device to connect to the network. Computers in a wireless network share the same frequency channel and SSID, which is an identification name shared by the wireless devices belonging to the same wireless network.

__network__: a series of computers or devices connected for the purpose of data sharing, storage, and/or transmission between users.

__ssid__: your wireless network's name.

Ad-Hoc versus Infrastructure Mode

Unlike wired networks, wireless networks have two different modes in which they may be set up: infrastructure and ad-hoc. An infrastructure configuration is a wireless and wired network communicating to each other through an access point. An ad-hoc configuration is wireless-equipped computers communicating directly with each other. Choosing between these two modes depends on whether or not the wireless network needs to share data or peripherals with a wired network or not.

__ad-hoc__: a group of wireless devices communicating directly to each other (peer-to-peer) without the use of an access point.

__Infrastructure__: a wireless network that is bridged to a wired network via an access point.

If the computers on the wireless network need to be accessible by a wired network or need to share a peripheral, such as a printer, with the wired network computers, the wireless network should be set up in Infrastructure mode. The basis of Infrastructure mode centers around a wireless router or an access point, which serves as the main point of communications in a wireless network. The Router transmits data to PCs equipped with wireless network adapters, which can roam within a certain radial range of the Router. You can arrange the Router and multiple access points to work in succession to extend the roaming range, and you can set up your wireless network to communicate with your Ethernet hardware as well.

__adpater__: a device that adds network functionality to your PC

__ethernet__: IEEE standard network protocol that specifies how data is placed on and retrieved from a common transmission medium

__access point__: a device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.

If the wireless network is relatively small and needs to share resources only with the other computers on the wireless network, then the Ad-Hoc mode can be used. Ad-Hoc mode allows computers equipped with wireless transmitters and receivers to communicate directly with each other, eliminating the need for a wireless router or access point. The drawback of this mode is that in Ad-Hoc mode, wireless-equipped computers are not able to communicate with computers on a wired network. And, of course, communication between the wireless-equipped computers is limited by the distance and interference directly between them.

Network Layout

The Wireless-G Broadband Router has been specifically designed for use with both your 802.11b and 802.11g products. Now, products using these standards can communicate with each other.

The Wireless-G Broadband Router is compatible with all 802.11b and 802.11g adapters, such as the Notebook Adapters (WPC54G, WPC11) for your laptop computers, PCI Adapter (WMP54G, WMP11) for your desktop PC, and USB Adapter (WUSB54G, WUSB11) when you want to enjoy USB connectivity. The Router will also communicate with the Wireless PrintServer (WPS54GU2, WPS11) and Wireless Ethernet Bridges (WET54G, WET11).

When you wish to connect your wireless network with your wired network, you can use the Wireless-G Broadband Router's four LAN ports. To add more ports, any of the Wireless-G Broadband Router's LAN ports can be connected to any of Linksys's switches (such as the EZXS55W or EZXS88W).

With these, and many other, Linksys products, your networking options are limitless. Go to the Linksys website at www.linksys.com for more information about products that work with the Wireless-G Broadband Router.

Chapter 3: Getting to Know the Wireless-G Broadband Router

The Back Panel

The Router's ports, where the cables are connected, are located on the back panel.

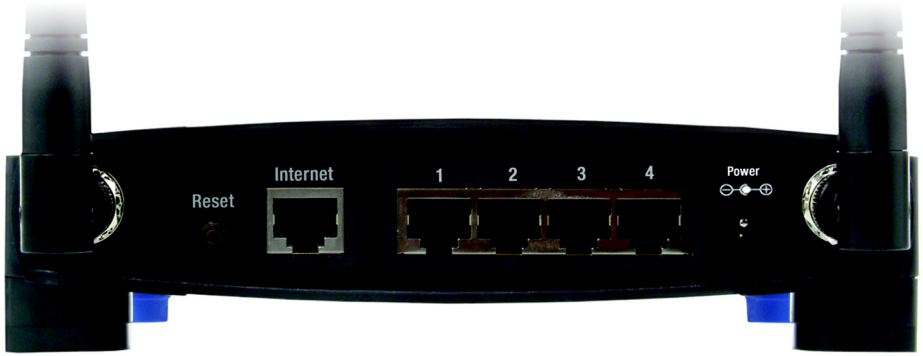

Figure 3-1: The Router's Back Panel

Reset Button There are two ways to reset the Router's factory defaults. Either press the **Reset Button**, for approximately five seconds, or restore the defaults from the Administration tab - Factory Defaults in the Router's Web-based Utility.

Internet The **Internet** port is where you will connect your broadband Internet connection.

1, 2, 3, 4 These ports (1, 2, 3, 4) connect the Router to PCs on your wired network and other Ethernet network devices.

Power The **Power** port is where you will connect the power adapter.

Important: Resetting the Router will erase all of your settings (WEP Encryption, network settings, etc.) and replace them with the factory defaults. Do not reset the Router if you want to retain these settings.

***port**: the connection point on a computer or networking device used for plugging in cables or adapters*

***broadband**: an always-on, fast Internet connection*

The Front Panel

The Router's LEDs, where information about network activity is displayed, are located on the front panel.

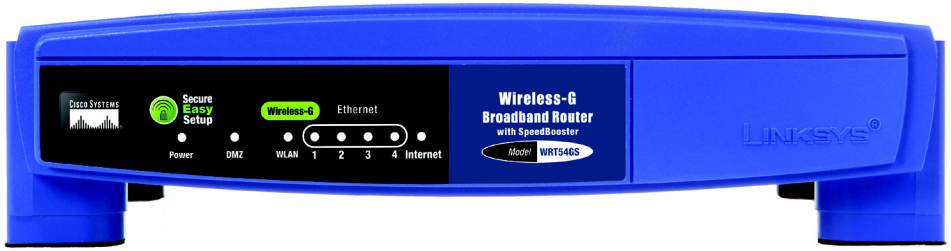

Figure 3-2: The Router's Front Panel

NOTE: SecureEasySetup is a feature that makes it easy to set up your wireless network. If you have SecureEasySetup devices, run the Router's Setup Wizard CD-ROM and follow the on-screen instructions to use SecureEasySetup.

(Cisco logo) Orange/White. The Cisco logo is the Router's SecureEasySetup button. It lights up and will stay orange when the Router is powered on. The color orange indicates that the Router is not using the SecureEasySetup feature, while the color white indicates that the Router is using the SecureEasySetup feature. When the Router enters SecureEasySetup mode, the Cisco logo will turn white and start flashing. After the Router has generated the SSID and WPA-PSK (also called WPA-Personal) key, the Cisco logo will stop flashing and stay white.

To clear the SSID and WPA-PSK key, press and hold down the Cisco logo for five seconds. The Cisco logo will flash slowly as the Router resets itself. The Cisco logo will turn orange to indicate a successful reset.

***dmz**: removes the Router's firewall protection from one PC, allowing it to be "seen" from the Internet*

Power Green. The **Power** LED lights up and will stay on while the Router is powered on. When the Router goes through its self-diagnostic mode during every boot-up, this LED will flash. When the diagnostic is complete, the LED will be solidly lit.

DMZ Green. The **DMZ** LED indicates when the DMZ function is being used. This LED will remain lit as long as DMZ is enabled.

WLAN Green. The **WLAN** LED lights up whenever there is a successful wireless connection. If the LED is flashing, the Router is actively sending or receiving data over the network.

1, 2, 3, 4 Green. These numbered LEDs, corresponding with the numbered ports on the Router's back panel, serve two purposes. If the LED is continuously lit, the Router is successfully connected to a device through that port. A flashing LED indicates network activity over that port.

Internet Green. The **Internet** LED lights up when there is a connection made through the Internet port.

Chapter 4: Connecting the Wireless-G Broadband Router

Overview

This chapter includes two sets of instructions. If the Wireless-G Broadband Router will be the only router in your network, follow the instructions in “Hardware Installation for Connection to Your Broadband Modem.” You may wish to run some applications, such as Parental Control, for only certain PCs on your network and will need to run the Wireless-G Broadband Router behind another router to do this. If you want to install the Wireless-G Broadband Router behind another router in your network, follow the instructions in “Connecting One Router to Another.”

Hardware Installation for Connection to Your Broadband Modem

***hardware**: the physical aspect of computers, telecommunications, and other information technology devices*

1. Power down your network devices.
2. Locate an optimum location for the Router. The best place for the Router is usually at the center of your wireless network, with line of sight to all of your mobile stations.
3. Fix the direction of the antennas. Try to place the Router in a position that will best cover your wireless network. Normally, the higher you place the antenna, the better the performance will be.
4. Connect a standard Ethernet network cable to the Router’s Internet port. Then, connect the other end of the Ethernet cable to your cable or DSL broadband modem.

***dsl**: an always-on broadband connection over traditional phone lines*

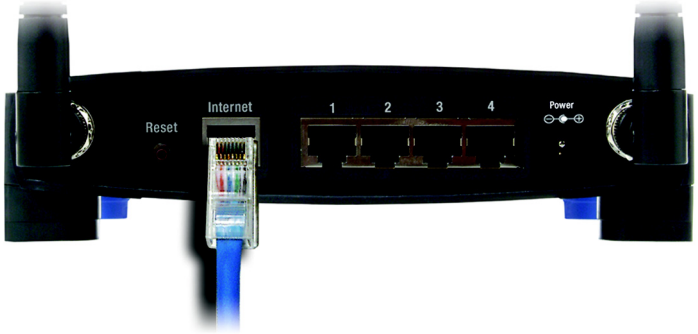

Figure 4-1: Connecting Your Modem

5. Connect your network PCs or Ethernet devices to the Router's numbered ports using standard Ethernet network cabling.

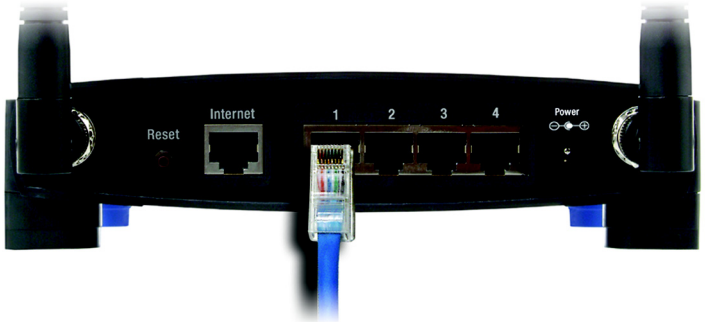

Figure 4-2: Connecting Your Network Devices

6. Connect the AC power adapter to the Router's Power port and the other end into an electrical outlet. Only use the power adapter supplied with the Router. Use of a different adapter may result in product damage.

IMPORTANT: Make sure you use the power adapter that is supplied with the Router. Use of a different power adapter could damage the Router.

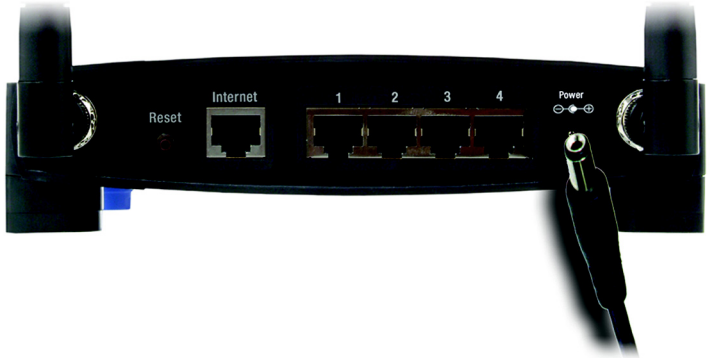

Figure 4-3: Connecting the Power

Now that the hardware installation is complete, proceed to "Chapter 5: Configuring the Wireless-G Broadband Router," for directions on using the Router's Web-Based Utility to configure the Router's settings for your network.

Connecting One Router to Another

Some applications, such as Parental Control, apply setting to all PCs connected to the Router. Sometimes, you may not want those settings to apply to all settings in your network. When this is the case, you may want to connect the Router behind another, so you can have some PCs connected to the Router with Parental Control and some connected to a Router without.

Before you connect one Router to another, you must make sure that both have different IP Addresses. This is mandatory because both routers may be set to the same IP address by default, right out of the box. If both routers have the same IP address, then you may not be able to set up the Router with Parental Control.

First, make sure the Router is NOT connected to your network. Then follow these instructions:

1. To access the other router's Web-based Utility, launch Internet Explorer or Netscape Navigator, and enter the other router's default IP address, **192.168.1.1**, or whatever IP Address you have set it to, in the *Address* field. Then, press **Enter**.
2. A password request page will appear. Leave the *User Name* field blank. In the *Password* field, enter the password you have set (the default password is **admin**). Then click the **OK** button.
3. The first screen that appears will display the Setup tab. In the *Network Setup* section, there is a setting called *Local IP Address*, which is set to 192.168.1.1. Change this to **192.168.2.1**.
4. Click the **Save Settings** button to save your change, and then exit the Web-based Utility.
5. Power down your network devices. Now you will begin the hardware installation of Broadband Router.
6. Locate an optimum location for the Broadband Router. The best place for the Broadband Router is usually at the center of your wireless network, with line of sight to all of your mobile stations.
7. Fix the direction of the antennas. Try to place the Router in a position that will best cover your wireless network. Normally, the higher you place the antenna, the better the performance will be.

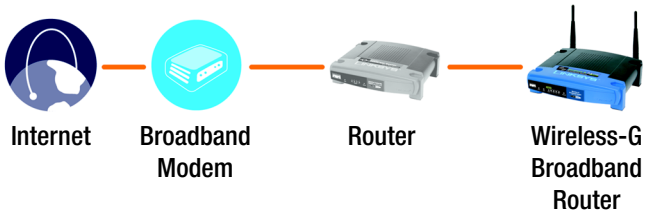

Figure 4-4: Connecting the Router Behind Another

NOTE: Steps 1-4 are instructions for a typical Linksys router; however, if you are using a non-Linksys router, refer to the other router's documentation for instructions on how to change its local IP address to 192.168.2.1.

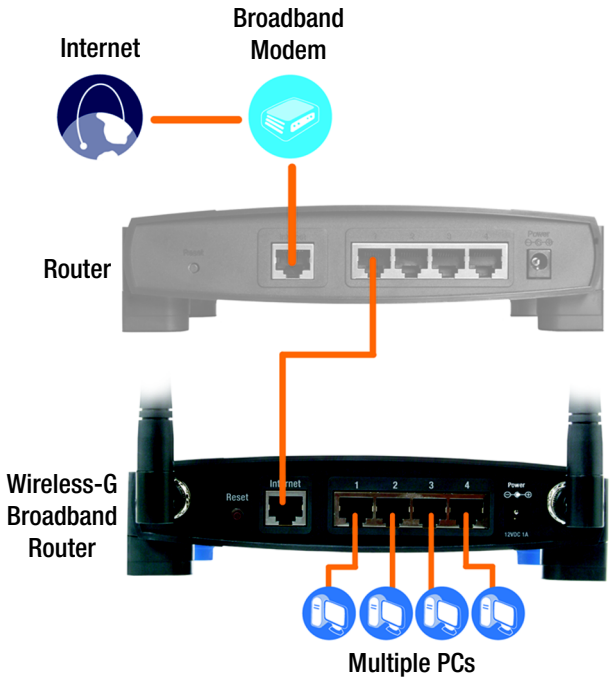

Figure 4-5: Diagram for Connection to Another Router