LINKSYS®
A Division of Cisco Systems, Inc.

Wireless-G
Travel Router
with SpeedBooster

User Guide

WIRELESS

CISCO SYSTEMS

Model No. **WTR54GS**

Copyright and Trademarks

Specifications are subject to change without notice. Linksys is a registered trademark or trademark of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries. Copyright © 2005 Cisco Systems, Inc. All rights reserved. Other brands and product names are trademarks or registered trademarks of their respective holders.

> **WARNING:** This product contains chemicals, including lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. ***Wash hands after handling.***

How to Use This User Guide

This User Guide has been designed to make understanding networking with the Wireless-G Travel Router with SpeedBooster easier than ever. Look for the following items when reading this User Guide:

This checkmark means there is a note of interest and is something you should pay special attention to while using the Wireless-G Travel Router with SpeedBooster .

This exclamation point means there is a caution or warning and is something that could damage your property or the Wireless-G Travel Router with SpeedBooster

This question mark provides you with a reminder about something you might need to do while using the Wireless-G Travel Router with SpeedBooster .

In addition to these symbols, there are definitions for technical terms that are presented like this:

> ***word:*** *definition.*

Also, each figure (diagram, screenshot, or other image) is provided with a figure number and description, like this:

Figure 0-1: Sample Figure Description

Figure numbers and descriptions can also be found in the "List of Figures" section in the "Table of Contents".

Table of Contents

List of Figures

Chapter 1: Introduction

Welcome

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

How does the Wireless-G Travel Router with SpeedBooster do all of this? The Router has a built-in access point, which lets you connect SpeedBooster-enhanced and regular Wireless-G and Wireless-B devices to the network. There's also an Ethernet port to connect your wired PC. The Router function ties it together and lets your PCs share a wired or wireless Internet connection. The travel-friendly form factor includes a built-in power supply and antenna, and it comes with a travel case. Just plug the Router directly into the wall, and connect the hotel's fast Internet service cable. Then use the Router's push button setup feature to easily connect and configure your wireless devices. You just push the button on the Router and on your other SecureEasySetup-enabled wireless device to automatically create a WPA or WEP encryption-secured wireless connection. You can also use multiple devices on a single hotspot account in a coffee shop or airport lounge and be protected with WPA Personal encryption or a powerful SPI firewall. The Router also supports VPN pass-through and it can serve as a DHCP Server.

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.

PCs on a wired network create a LAN, or 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. This is sometimes called a WLAN, or Wireless Local Area Network. The Wireless-G Travel Router with SpeedBooster bridges wireless networks of 802.11a, 802.11b, and 802.11g standards and wired networks, allowing them to communicate with each other.

Linksys recommends using the Setup CD-ROM for first-time installation of 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 Travel Router with SpeedBooster, set it up, and configure it to bridge your network. These instructions should be all you need to get the most out of the Wireless-G Travel Router with SpeedBooster.

nat (network address translation): NAT technology translated IP addresses of a local area network to a different IP address for the Internet.

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.

lan (local area network): the computers and networking products that make up the network in your home or office.

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

802.11b: an IEEE wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

802.11g: 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.

What's in this Guide?

This user guide covers the steps for setting up and using the Wireless-G Travel 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 Travel Router with SpeedBooster
  This chapter describes the physical features of the Router.

- Chapter 4: Connecting the Wireless-G Travel Router with SpeedBooster
  This chapter instructs you on how to connect the Router to your network.

- Chapter 5: Configuring the Wireless-G Travel Router with SpeedBooster
  This chapter explains how to use the Web-Based Utility to configure the settings on the Wireless-G Travel Router with SpeedBooster.

- Appendix A: Troubleshooting
  This appendix describes some problems and solutions, as well as frequently asked questions, regarding installation and use of the Wireless-G Travel Router with SpeedBooster.

- 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 firmware on the Router 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 MAC filtering and/or MAC address cloning feature of the Router.

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

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

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

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

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

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 WLAN and wired LAN 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.

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, such as the Wireless-G Travel Router with SpeedBooster, 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.

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 Travel Router with SpeedBooster has been specifically designed for use with your 802.11b and 802.11g products. Now, products using these standards can communicate with each other.

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: *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.*

adapter: *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.*

The Wireless-G Travel Router with SpeedBooster is compatible with 802.11b and 802.11g adapters, such as the Notebook Adapter (WPC54GS) for your laptop computers, PCI Adapter (WMP54GS) for your desktop PC, and USB Adapter (WUSB54GS) when you want to enjoy USB connectivity.

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 Travel Router with SpeedBooster.

Chapter 3: Getting to Know the Wireless-G Travel Router with SpeedBooster

The Front Panel

The Router's ports, LEDs, and buttons are located here.

LEDs

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 be orange. When the diagnostic is complete, the LED will be solidly lit.

Wireless　　　Green. The **WLAN** LED flashes when there is a successful wireless connection.

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

Ethernet　　　Green. 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.

Ports

Ethernet　　　This port connects the Router to your networked PC and other Ethernet network devices.

Internet　　　The **Internet** port is where you will connect your broadband Internet connection.
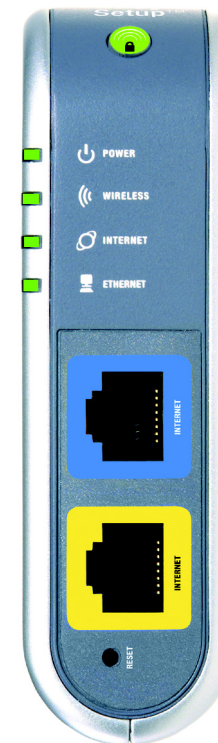
Figure 3-1: The Router's Front Panel

broadband: an always-on, fast Internet connection.

Buttons

Reset

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

Secure Easy Setup

The Secure Easy Setup sets up and configures your wireless devices. Push the Secure Easy Setup button on the Router and on your other SecureEasySetup-enabled wireless devices to automatically create a wireless connection.

IMPORTANT: If you reset the Router, all of your settings, including Internet connection, wireless, and security, will be deleted and replaced with the factory defaults. Do not reset the Router if you want to retain these settings.

The Power Plug and Slide

The Router's Power Plug is located on the back panel and the Power Slide is located on the top panel.

Power Plug

The **Power plug** is where you will connect the Router to the electrical outlet.

Power Slide

Slide the **Power Slide** button in one direction to release the power plug and the other direction for it to return inside the Router.

POWER PLUG

POWER SLIDE

Figure 3-2: The Router's Power Plug and Slide

Chapter 4: Connecting the Wireless-G Travel Router with SpeedBooster

Overview

Linksys recommends using the Setup Wizard on the Setup CD-ROM for first-time installation of the Router. For advanced users, you may follow the instructions in this chapter, and then configure the Router through its Web-based Utility (refer to "Chapter 5: Configuring the Wireless-G Travel Router with SpeedBooster").

NOTE: For first-time installation of the Router, Linksys recommends using the Setup Wizard on the Setup CD-ROM.

Hardware Installation

1. Power down your network devices.

2. Connect a standard Ethernet network cable from the Router's Internet port to your Internet connection.
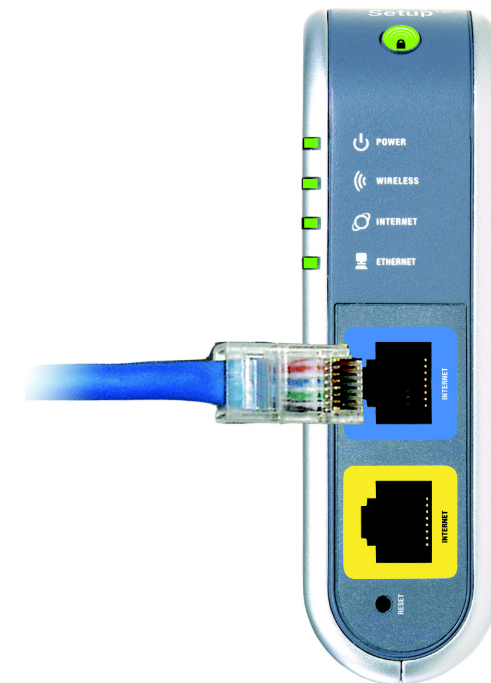
Figure 4-1: Connecting to the Internet

3. For setup or if using a wired connection, connect a standard Ethernet network cable from the Router's Ethernet port to your PC.
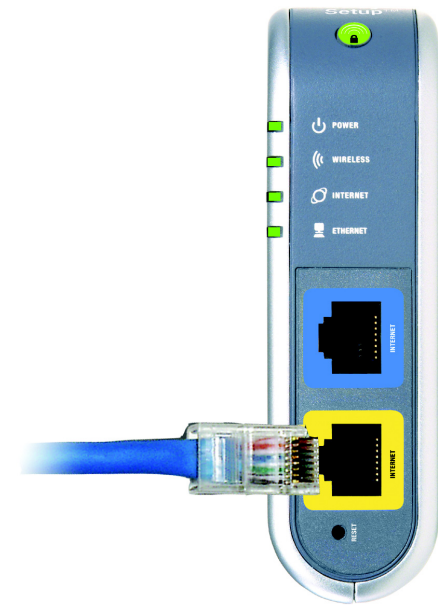
Figure 4-2: Connecting to the PC

4. Slide the Power Slide until the Power Plug is fully extended. Then, plug the Power Plug to an electrical outlet.

Now that the hardware installation is complete, proceed to "Chapter 5: Configuring the Wireless-G Travel Router with SpeedBooster."

Figure 4-3: Connecting the Power

Chapter 5: Configuring the Wireless-G Travel Router with SpeedBooster

Overview

Linksys recommends using the Setup Wizard on the Setup CD-ROM for first-time installation of the Router. For advanced users, you may follow the instructions in the previous chapter, "Chapter 4: Connecting the Wireless-G Travel Router with SpeedBooster", and then configure the Router through its Web-based Utility.

This chapter will describe each web page in the Utility and each page's key functions. The utility can be accessed via your web browser through use of a computer connected to the Router. For a basic network setup, most users will use these two screens of the Utility:

- Basic Setup. On the *Basic Setup* screen, enter the settings provided by your ISP.

- Management. Click the **Administration** tab and then the **Management** tab. The Router's default password is **admin**. To secure the Router, change the Password from its default.

There are seven main tabs: Setup, Wireless, Security, Access Restrictions, Applications & Gaming, Administration, and Status. Additional tabs will be available after you click one of the main tabs.

Make the necessary changes through the Web-based Utility. On each screen, click the **Save Settings** button to apply your changes or **Cancel Changes** to cancel your changes. Help information is shown on the right-hand side of the screen.

NOTE: For first-time installation of the Router, Linksys recommends using the Setup Wizard on the Setup CD-ROM.

HAVE YOU: Enabled TCP/IP on your PCs? PCs communicate over the network with this protocol. Refer to "Appendix D: Windows Help" for more information on TCP/IP.

How to Access the Web-based Utility

To access the Web-based Utility, launch Internet Explorer or Netscape Navigator, and enter the Router's default IP address, **192.168.16.1**, in the *Address* field. Then press **Enter**.

A password request page will appear. Leave the *User Name* field blank. The first time you open the Web-based Utility, use the default password **admin**. (You can set a new password from the Administration tab's *Management* screen.) Then click the **OK** button.

The Setup Tab - Basic Setup

The first screen that appears displays the Setup tab. This allows you to change the Router's general settings.

Internet Setup

The Internet Setup section configures the Router to your Internet connection. Most of this information can be obtained from your ISP.

Incoming Internet Type

There are two options for Internet connection. You can use a wired connection or a wireless connection. The wireless connection can be used as a single incoming wireless connection that others can share. Select the type of connection you want to use, **Wired** or **Wireless,** then continue to the section for that option.

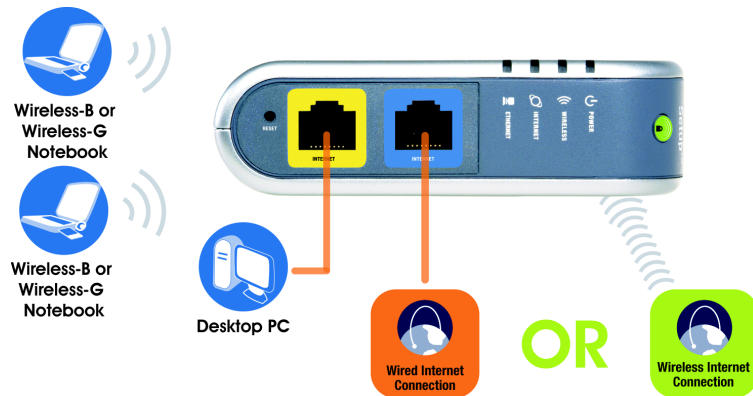**Figure 5-1: Router's IP Address**

Figure 5-2: Router Login Screen

ip (internet protocol): a protocol used to send data over a network.

ip address: the address used to identify a computer or device on a network.

Figure 5-3: Basic Setup

Wireless Internet Type

Wireless Network. Select the network that you want to connect to from the list and click **Select**. Click the **Refresh** button if your network does not appear.

Internet IP Address. Select your Internet connection type.

- **Automatic Configuration - DHCP**. By default, the Router's Internet Connection Type is set to **Automatic Configuration - DHCP**, which should be kept only if your ISP supports DHCP or you are connecting through a dynamic IP address.

- **Static IP**. If you are required to use a permanent IP address to connect to the Internet, select **Static IP**.

   Internet IP Address. This is the Router's IP address, when seen from the Internet. Your ISP will provide you with the IP Address you need to specify here.

   Subnet Mask. This is the Router's Subnet Mask, as seen by users on the Internet (including your ISP). Your ISP will provide you with the Subnet Mask.

   Default Gateway. Your ISP will provide you with the Gateway Address, which is the ISP server's IP address.

   DNS (1-3). Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

> ⚠️ **IMPORTANT:** You can only connect wirelessly to an open access network. You cannot connect to a secured network.

Figure 5-4: Wireless Internet Type

Wired Internet Type

Internet Connection Type

- **Automatic Configuration - DHCP**. By default, the Router's Internet Connection Type is set to **Automatic Configuration - DHCP**, which should be kept only if your ISP supports DHCP or you are connecting through a dynamic IP address.
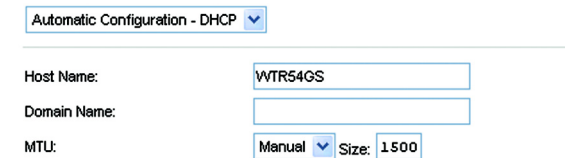

Figure 5-5: Setup Tab - Basic Setup - DHCP Internet Connection Type

- **Static IP**. If you are required to use a permanent IP address to connect to the Internet, select **Static IP**.

  Internet IP Address. This is the Router's IP address, when seen from the Internet. Your ISP will provide you with the IP Address you need to specify here.

  Subnet Mask. This is the Router's Subnet Mask, as seen by users on the Internet (including your ISP). Your ISP will provide you with the Subnet Mask.

  Default Gateway. Your ISP will provide you with the Gateway Address, which is the ISP server's IP address.

  DNS (1-3). Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

- **PPPoE**. Some DSL-based ISPs use PPPoE (Point-to-Point Protocol over Ethernet) to establish Internet connections. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoE. If they do, you will have to enable **PPPoE**.

  User Name and Password. Enter the User Name and Password provided by your ISP.

  Connect on Demand: Max Idle Time. You can configure the Router to cut the Internet connection after it has been inactive for a specified period of time (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate Connect on Demand, click the radio button. In the *Max Idle Time* field, enter the number of minutes you want to have elapsed before your Internet connection terminates.

  Keep Alive: Redial Period. If you select this option, the Router will periodically check your Internet connection. If you are disconnected, then the Router will automatically re-establish your connection. To use this option, click the radio button next to *Keep Alive*. In the *Redial Period* field, you specify how often you want the Router to check the Internet connection. The default Redial Period is 30 seconds.

- **PPTP**. Point-to-Point Tunneling Protocol (**PPTP**) is a service that applies to connections in Europe only.

  Server IP Address. This is server's IP address, as seen from the Internet. Your ISP will provide you with the IP Address you need to specify here.

  Local IP Address. This is the Router's IP address, as seen from the Internet. Your ISP will provide you with the IP Address you need to specify here.

Figure 5-6: Static IP Connection Type

static ip address*: a fixed address assigned to a computer or device connected to a network.*

subnet mask*: an address code that determines the size of the network.*

default gateway*: a device that forwards Internet traffic from your local area network.*

Figure 5-7: PPPoE Connection Type

pppoe*: a type of broadband connection that provides authentication (username and password) in addition to data transport*

packet*: a unit of data sent over a network*

Connection ID/Name. This is the name of the connection.

Subnet Mask. This is the Router's Subnet Mask, as seen by users on the Internet (including your ISP). Your ISP will provide you with the Subnet Mask.

User Name and Password. Enter the User Name and Password provided by your ISP.

Connect on Demand: Max Idle Time. You can configure the Router to cut the Internet connection after it has been inactive for a specified period of time (Max Idle Time). If your Internet connection has been terminated due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. If you wish to activate Connect on Demand, click the radio button. In the *Max Idle Time* field, enter the number of minutes you want to have elapsed before your Internet connection terminates.

Keep Alive Option: Redial Period. If you select this option, the Router will periodically check your Internet connection. If you are disconnected, then the Router will automatically re-establish your connection. To use this option, click the radio button next to *Keep Alive*. In the *Redial Period* field, you specify how often you want the Router to check the Internet connection. The default Redial Period is 30 seconds.

Optional Settings

Some of these settings may be required by your ISP. Verify with your ISP before making any changes.

Host Name and Domain Name. These fields allow you to supply a host and domain name for the Router. Some ISPs, usually cable ISPs, require these names as identification. You may have to check with your ISP to see if your broadband Internet service has been configured with a host and domain name. In most cases, leaving these fields blank will work.

MTU. MTU is the Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. Select **Manual** if you want to manually enter the largest packet size that will be transmitted. The recommended size, entered in the *Size* field, is 1500. You should leave this value in the 1200 to 1500 range. To have the Router select the best MTU for your Internet connection, keep the default setting, **Auto**.

Network Setup

The Network Setup section changes the Router's local network settings. Changes to the Router's wireless network settings are performed through the Wireless tab.

Figure 5-8: PPTP Connection Type