# Dual-Band Wireless A+B Broadband Router

Use this guide to install:

WRT51AB

**User Guide**

**LINKSYS®**

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LIMITED WARRANTY

SAFETY AND REGULATORY NOTICES

FCC STATEMENT

The Instant Wireless Dual-Band Wireless A+B Broadband Router has been tested and found to comply with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna
• Increase the separation between the equipment or devices
• Connect the equipment to an outlet other than the receiver's
• Consult a dealer or an experienced radio/TV technician for assistance

FCC Caution: Any change or modification to the product not expressly approved by Linksys could void the user's authority to operate the device.

UG-WRT51AB-102202NC JL

FCC RF Radiation Exposure Statement

To comply with the FCC and ANSI C95.1 RF exposure limits, the antenna(s) for this device must comply with the following:
1.  Access points with 2.4 GHz or 5 GHz integrated antenna must operate with a separation distance of at least 20 cm from all persons using the cable provided and must not be co-located or operating in conjunction with any other antenna or transmitter.
2.  The Access Point's co-located 2.4 GHz and 5 GHz integrated antennas support a minimum separation distance of 10 cm (3.9 in.) and are compliant with the applicable FCC RF exposure limit when transmitting simultaneously.
End-users must be provided with specific operations for satisfying RF exposure compliance.
Note: Dual antennas used for diversity operation are not considered co-located.

Canadian Department of Communications Industry Canada (IC) Notice

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 et CNR-210 du Canada.
"To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing."
" Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence. "

EC DECLARATION OF CONFORMITY (EUROPE)

Linksys Group declares that the Instant Wireless® Series products included in the Instant Wireless® Series conform to the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC, EMC directive 89/336/EEC, and Low Voltage directive 73/23/EEC:

For 11Mpbs, 2.4 GHz access points with 100 mW radios, the following standards were applied:
•    ETS 300-826, 301 489-1 General EMC requirements for Radio equipment.
•    EN 609 50 Safety
•    ETS 300-328-2 Technical requirements for Radio equipment.

For 54 Mpbs, 5 GHz access points with 40 mW radios, the following standards were applied:
•    ETS 301 489-1, 301 489-17 General EMC requirements for Radio equipment.
•    EN 609 50 Safety
•    ETS 301-893 Technical requirements for Radio equipment.

Caution: The frequencies used by 802.11a wireless LAN devices are not yet harmonized within the European community, 802.11a products are designed for use only in specific countries, and are not allowed to be operated in countries other than those of designated use. Contact local Authority for procedure to follow.

Caution: This equipment is intended to be used in all EU and EFTA countries. Outdoor use may be restricted to certain frequencies and/or may require a license for operation. Contact local Authority for procedure to follow.

Note: Combinations of power levels and antennas resulting in a radiated power level of above 100 mW equivalent isotropic radiated power (EIRP) are considered as not compliant with the above mentioned directive and are not allowed for use within the European community and countries that have adopted the European R&TTE directive 1999/5/EC and/or the CEPT recommendation Rec 70.03.

For more details on legal combinations of power levels and antennas, contact Linksys Corporate Compliance.

- Linksys Group vakuuttaa täten että Instant Wireless Dual-Band A+B Broadband Router tyyppinen laite on direktiivin 1999/5/EY, direktiivin 89/336/EEC ja direktiivin 73/23/EEC oleellisten vaatimusten ja sitä koskevien näiden direktiivien muiden ehtojen mukainen.
- Linksys Group déclare que la Instant Wireless Dual-Band A+B Broadband Router est conforme aux conditions essentielles et aux dispositions relatives à la directive 1999/5/EC, la directive 89/336/EEC, et à la directive 73/23/EEC.
- Belgique B L'utilisation en extérieur est autorisé sur le canal 11 (2462 MHz), 12 (2467 MHz), et 13 (2472 MHz). Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour une utilisation publique à l'extérieur de bâtiments, une licence de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.
- France F:
  2.4 GHz Bande : les canaux 10, 11, 12, 13 (2457, 2462, 2467, et 2472 MHz respectivement) sont complétement libres d'utilisation en France (en utilisation intérieur). Pour ce qui est des autres canaux, ils peuvent être soumis à autorisation selon le départment. L'utilisation en extérieur est soumis à autorisation préalable et très restreint.
  5 GHz Bande: Conformément aux décisions de la CEPT, l'utilisation des fréquences de la bande 5150 MHz - 5350 MHz est autorisée à l'intérieur des bâtiments avec une puissance maximale de 200 mW, et interdite en extérieur. La bande 5470 MHz - 5725 MHz n'est pas ouverte aujourd'hui.
  Vous pouvez contacter l'Autorité de Régulation des Télécommunications (http://www.art-telecom.fr) pour de plus amples renseignements.

  2.4 GHz Band: only channels 10, 11, 12, 13 (2457, 2462, 2467, and 2472 MHz respectively) may be used freely in France for indoor use. License required for outdoor installations.
  5 GHz Band: frequencies in the 5150 MHz - 5350 MHz band may be used indoor with maximum power of 200 mW. Their use is forbidden outdoors. The 5470 MHz - 5725 MHz band is not currently open.
  Please contact ART (http://www.art-telecom.fr) for procedure to follow.

- Deutschland D: Anmeldung im Outdoor-Bereich notwending, aber nicht genehmigungspflichtig. Bitte mit Händler die Vorgehensweise abstimmen.
- Germany D: License required for outdoor installations. Check with reseller for procedure to follow.
- Italia I: E' necessaria la concessione ministeriale anche per l'uso interno. Verificare con i rivenditori la procedura da seguire. L'uso per installazione in esterni non e' permessa.
- Italy I: License required for indoor use. Use with outdoor installations not allowed.
- The Netherlands NL License required for outdoor installations. Check with reseller for procedure to follow.
- Nederlands NL Licentie verplicht voor gebruik met buitenantennes. Neem contact op met verkoper voor juiste procedure.

# Table of Contents

# Chapter 1: Introduction

## The Dual-Band Wireless A+B Broadband Router

The Dual-Band Wireless A+B Broadband Router is like four devices in one box! The Router function lets you securely share one high-speed Internet connection among your entire network, while the 4-port, 10/100 switch jump-starts your wired Ethernet network. Connect four PCs directly, or daisy-chain out to more hubs and switches to create as big a network as you need.

The Dual-Band Wireless A+B Broadband Router also contains two wireless access points, which let you connect with wirelessly networked PCs using either the popular 2.4GHz, 802.11b standard at 11Mbps, or the new, almost five times faster, 5GHz, 802.11a standard. Since both standards are built-in, you can protect your investment in existing 802.11b equipment today, and migrate to the 802.11a standard as your needs grow.

In addition to up to 152-bit encryption of wireless transmissions, the two access points in the Dual-Band Wireless A+B Broadband Router support the industrial-strength wireless security of 802.1x authentication and authorization. The Router also serves as a DHCP server, has NAT technology to protect against Internet intruders, supports VPN pass-through, and can be configured to filter internal users' access to the Internet. Configuration is a snap with the web browser-based configuration utility.

With the Linksys Dual-Band Wireless A+B Broadband Router at the center of your home or office network, you can share a high-speed Internet connection, files, printers, and multi-player games with the flexibility, speed, and security you need!

## Features

- Compatibility with 802.11a (5GHz) and 802.11b (2.4GHz) Standards
- Built-in, 4-Port, 10/100 Switch Supports Wired Ethernet Clients
- All Ethernet Ports Support Auto-MDI/MDI-X—No Need for Crossover Cables
- Unsurpassed Security Using 802.1x Authentication with up to 152-bit WEP Encryption
- Enhanced Security Management Functions: Port Filtering, MAC and IP Address Filtering, DMZ Hosting, and NAT Technology
- Access Your Corporate Network Remotely through Virtual Private Networking (VPN)—Supports IPSec and PPTP Pass-Through
- Easily Configurable through a Web Browser—Locally and over the Internet
- DHCP Server Capability to Assign IP Addresses Automatically
- Supports Static and Dynamic Routing (RIP1 and 2)
- Free Technical Support—24 Hours a Day, 7 Days a Week, Toll-Free US Calls
- 1-Year Limited Warranty

## The Router's Functions

Simply put, a router is a network device that connects two networks together.

In this instance, the Router connects your Local Area Network (LAN), or the group of PCs in your home or office, to the Internet. The Router processes and regulates the data that travels between these two networks.

The Router's NAT feature protects your network of PCs so users on the public, Internet side cannot "see" your PCs. This is how your network remains private. The Router protects your network by inspecting every packet coming in through the Internet port before delivery to the appropriate PC on your network. The Router inspects Internet port services like the web server, ftp server, or other Internet applications, and, if allowed, it will forward the packet to the appropriate PC on the LAN side.

Remember that the Router's ports connect to two sides. The 10/100 LAN ports connect to the LAN, and the Internet port connects to the Internet. The LAN ports transmit data at 10 Mbps or 100 Mbps, and the broadband port, or Internet port, transmits data at 10/100 Mbps.

## IP Addresses

**What's an IP Address?**
IP stands for Internet Protocol. Every device on an IP-based network, including PCs, print servers, and routers, requires an IP address to identify its "location," or address, on the network. This applies to both the Internet and LAN connections. There are two ways of assigning an IP address to your network devices. You can assign static IP addresses or use the Router to assign IP addresses dynamically.

> **Note:** Since the Router is a device that connects two networks, it needs two IP addresses—one for the LAN, and one for the Internet. In this User Guide, you'll see references to the "Internet IP address" and the "LAN IP address."
>
> Since the Router uses NAT technology, the only IP address that can be seen from the Internet for your network is the Router's Internet IP address.
>
> However, even this Internet IP address can be blocked, so that the Router and network seem invisible to the Internet—see the Block WAN Requests description under Filters in "Chapter 6: The Router's Web-based Utility."

**Static IP Addresses**
A static IP address is a fixed IP address that you assign manually to a PC or other device on the network. Since a static IP address remains valid until you disable it, static IP addressing ensures that the device assigned it will always have that same IP address until you change it. Static IP addresses must be unique and are commonly used with network devices such as server PCs or print servers.

If you use the Router to share your cable or DSL Internet connection, contact your ISP to find out if they have assigned a static IP address to your account. If so, you will need that static IP address when configuring the Router. You can get that information from your ISP.

### Dynamic IP Addresses

A dynamic IP address is automatically assigned to a device on the network, such as PCs and print servers.  These IP addresses are called "dynamic" because they are only *temporarily* assigned to the PC or device.  After a certain time period, they expire and may change. If a PC logs onto the network (or the Internet) and its dynamic IP address has expired, the DHCP server will automatically assign it a new dynamic IP address.

### DHCP (Dynamic Host Configuration Protocol) Servers

PCs and other network devices using dynamic IP addressing are assigned a new IP address by a DHCP server. The PC or network device obtaining an IP address is called the DHCP client. DHCP frees you from having to assign IP addresses manually every time a new user is added to your network.

A DHCP server can either be a designated PC on the network or another network device, such as the Router. By default, the Router's DHCP Server function is enabled.

If you already have a DHCP server running on your network, you *must* disable one of the two DHCP servers. If you run more than one DHCP server on your network, you will experience network errors, such as conflicting IP addresses. To disable DHCP on the Router, see the DHCP section in "Chapter 6: The Router's Web-based Utility."

> **Note:** Even if you assign a static IP address to a PC, other PCs can still use DHCP's dynamic IP addressing, as long as the static IP address is not within the DHCP range of the LAN IP Addresses.
>
> If the dynamic IP addressing fails to provide a dynamic IP address, refer to "Appendix A: Troubleshooting."

### Router Setup Overview

> **Note:** You should always you run the Setup Wizard CD-ROM to configure the Router for Internet access. If you wish to manually configure the Router, you may follow the instructions in the Quick Installation guide or this User Guide.

This User Guide covers the steps for setting up a network with the Router. After going through "Chapter 2: Getting to Know the Dual-Band Wireless A+B Broadband Router," most users will only need to use the following chapters:

• Chapter 3: Connect the Router
  This chapter instructs you on how to connect a cable or DSL modem to the Router and connect your PC(s) to the Router.
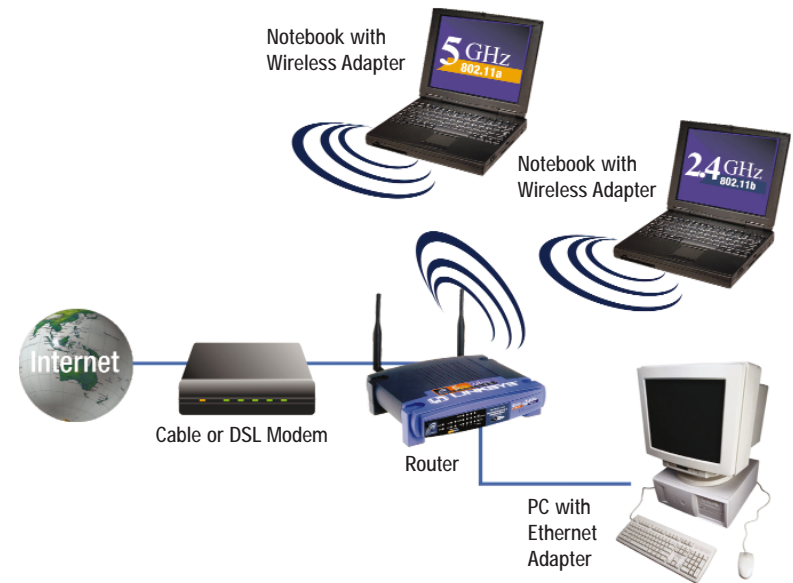


**Figure 1-1**

• Chapter 4: Configure the PCs
  This chapter instructs you on how to configure your PCs to be DHCP clients, if you have previously set static IP addresses on your PCs.

• Chapter 5: Configure the Router's Basic Settings
  This chapter explains how to configure the Router using your web browser and the Router's web-based utility. You will configure the Router for Internet access using the settings provided by your ISP.

When you're finished with these basic steps, you will be ready to connect to the Internet. You can also modify the Router's settings further; for example, you can adjust security features and other settings to enable online gaming (see "Chapter 6: The Router's Web-based Utility").

# Chapter 2: Getting to Know the Dual-Band Wireless A+B Broadband Router

## The Router's Back Panel



**Figure 2-1**

The Router's ports are located on the Router's back panel.

| | |
|---|---|
| **Internet** | The Internet port is where you connect your cable or DSL modem through an Ethernet network cable. Your modem connection will not work from any other port. |
| **Ports 1-4** | These four LAN (Local Area Network) ports connect to network devices, such as PCs, print servers, and network attached storage (NAS). Each of the ports will auto-detect whether a straight-through or crossover cable is plugged into it, so there is no need for an uplink port. Any one of the four ports can serve as an uplink port to other network devices. |
| **Power** | The Power port is where you will connect the power adapter. |

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### The Reset Button

The **Reset** button can be used in one of two ways:

1. If the Router is having problems connecting to the Internet, press the **Reset** button for just a moment with a paper clip or a pencil tip. This clears up any jammed connections, and is similar to pressing the **Reset** button on your PC to reboot it.

   This will reboot the Router while keeping all of the Router's settings.

2. If you are experiencing extreme problems with the Router and have tried all other troubleshooting measures, press the **Reset** Button and hold it down for 10 seconds.

   This will restore factory defaults and clear all of the Router's settings, including settings such as a new password or wireless settings.

## The Router's Front Panel LEDs



**Figure 2-2**

The Router's LEDs display information about the Router's status.

| | |
|---|---|
| **Power** | *Green*. The **Power** LED lights up when the Router is powered on. |
| **Diag** | *Red*. The **Diag** LED lights up when the Router goes through its self-diagnosis mode during every boot-up. It will turn off upon successful completion of the diagnosis.<br><br>If this LED stays on for one minute or longer, see "Appendix A: Troubleshooting." |

**The 802.11a WLAN Indicators**

**Act**  *Green*. When the **Act** LED flickers, the 802.11a wireless network is active.

**Link**  *Green*. When the **Link** LED is continuously lit, the 802.11a wireless network is available.

**The 802.11b WLAN Indicators**

**Act**  *Green*. When the **Act** LED flickers, the 802.11b wireless network is active.

**Link**  *Green*. When the **Link** LED is continuously lit, the 802.11b wireless network is available.

**The LAN Indicators**

**Link/Act**  *Green*. The **Link/Act** LED serves two purposes. If the LED is continuously lit, the Router is successfully connected to a device through the corresponding port. If the LED is flickering, the Router is actively sending or receiving data over that port.

**Full/Col**  *Green*. The **Full/Col** LED also serves two purposes. If this LED is lit up solidly, the connection made through the corresponding port is running in Full Duplex mode. If the LED flickers, the connection is experiencing collisions (when two PCs send data at the same time). Infrequent collisions are normal.

**100**  *Orange*. The **100** LED lights up when a successful 100Mbps connection is made through the corresponding port.

 If this LED does not light up, then your connection speed is 10Mbps.

**The Internet Indicators**

**Link/Act**  *Green*. The **Link/Act** LED lights up when a successful connection is made between the Router and your cable or DSL modem (the Internet). The **Link/Act** LED flickers when the Router is sending or receiving data over the **Internet** port.

**100**  *Orange*. The **100** LED lights up when a successful 100Mbps connection is made through the corresponding port.

 If this LED does not light up, then your connection speed is 10Mbps.

**Proceed to "Chapter 3: Connect the Router."**

# Chapter 3: Connect the Router

## Overview

The Router's setup consists of more than simply plugging hardware together. You will have to configure your networked PCs to accept the IP addresses that the Router assigns them (if applicable), and you will also have to configure the Router with setting(s) provided by your Internet Service Provider (ISP).

The installation technician from your ISP should have left the setup information for your modem with you after installing your broadband connection. If not, you can call your ISP to request that data.

Once you have the setup information you need for your specific type of Internet connection, you can begin installation and setup of the Router.

If you want to use a PC with an Ethernet adapter to configure the Router, go to "Wired Connection to a PC and Boot-Up." If you want to use a PC with a wireless adapter to configure the Router, go to "Wireless Connection to a PC and Boot-Up."

## Wired Connection to a PC

1. Before you begin, make sure that all of your network's hardware is powered off, including the Router, PCs, and cable or DSL modem.

2. Connect one end of an Ethernet network cable to one of the LAN ports (labeled 1-4) on the back of the Router, and the other end to an Ethernet port on a PC.



**Figure 3-1**

   Repeat this step to connect more PCs, a switch, or other network devices to the Router.

3. Connect a different Ethernet network cable from your cable or DSL modem to the Internet port on the Router's rear panel. This is the only port that will work for your modem connection.



**Figure 3-2**

4. Power on the cable or DSL modem.

5. Connect the power adapter to the Router's Power port, and then plug the power adapter into a power outlet.



> ✓ **Note:** You should always plug the Router's power adapter into a power strip with surge protection.

**Figure 3-3**

• The **Power** LED on the front panel will light up green as soon as the power adapter is connected properly.

• The **Diag** LED will light up red for a few seconds. It will turn off when the self-test is complete. If this LED stays on for one minute or longer, see "Appendix A: Troubleshooting."

6. Power on one of your PCs.

> ? **Have you** checked that the **Link/Act** LEDs for all your LAN connections and the **Link** LED for your Internet connection light up?
>
> If all of your **Link** LEDs are not lighting up, make sure that all your cables are securely plugged in, and that all of your hardware is powered on properly. Verify that the modem is plugged into the Internet port on the Router.

## Wireless Connection to a PC

If you want to use a wireless connection to access the Router, follow these instructions:

1. Before you begin, make sure that all of your network's hardware is powered off, including the Router, PCs, and cable or DSL modem.

2. Connect an Ethernet network cable from your cable or DSL modem to the Internet port on the Router's rear panel. This is the only port that will work for your modem connection.



**Figure 3-4**

3. Power on the cable or DSL modem.

4. Connect the power adapter to the Power port, and then plug the power

   ![✓] **Note:** You should always plug the Router's power adapter into a power strip with surge protection.

   adapter into a power outlet.
   • The **Power** LED on the front panel will light up green as soon as the power adapter is connected properly.

   • The **Diag** LED will light up red for a few seconds and turn off when the self-test is complete. If this LED stays on for one minute or longer, see "Appendix A: Troubleshooting."

4. Power on one of the PCs on your wireless network(s).

5. For initial access to the Router through a wireless connection, make sure the PC's wireless adapter has its SSID set to **linksys** (the Router's default setting), and its WEP encryption is **disabled**. After you have accessed the Router, you can change the Router and this PC's adapter settings to match the your usual network settings.

   ![✓] **Note:** You should always change the SSID from its default, **linksys**, and enable WEP encryption.

**The Router's hardware installation is now complete.**
**Go to "Chapter 4: Configure the PCs."**

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# Chapter 4: Configure the PCs

## Overview

The instructions in this chapter will help you configure each of your computers to be able to communicate with the Router.

To do this, you need to configure your PC's network settings to obtain an IP (or TCP/IP) address automatically, so your PC can function as a DHCP client. Computers use IP addresses to communicate with the Router and each other across a network, such as the Internet.

First, find out which Windows operating system your computer is running. You can find out by clicking the **Start** button. Read the side panel of the Start menu to find out which operating system your PC is running.

You may need to do this for each computer you are connecting to the Router.

The next few pages tell you, step by step, how to configure your network settings based on the type of Windows operating system you are using. Make sure that an Ethernet or wireless adapter (also known as a network adapter) has been successfully installed in each PC you will configure. Once you've configured your computers, continue to "Chapter 5: Configure the Router's Basic Settings."

![⚠] **Important:** By default Windows 98, 2000, Me, and XP has TCP/IP installed and set to obtain an IP address automatically.

If your PC does not have TCP/IP installed, click **Start** and then **Help**. Search for the keyword **TCP/IP**. Then follow the instructions to install TCP/IP.

## Configuring Windows 98 and Millennium PCs

1. Click the **Start** button. Select **Settings** and click the **Control Panel** icon. Double-click the **Network** icon.

2. On the Configuration tab, select the **TCP/IP** line for the applicable Ethernet adapter. Do not choose a TCP/IP entry whose name mentions DUN, PPPoE, VPN, or AOL. If the word **TCP/IP** appears by itself, select that line. Click the **Properties** button.
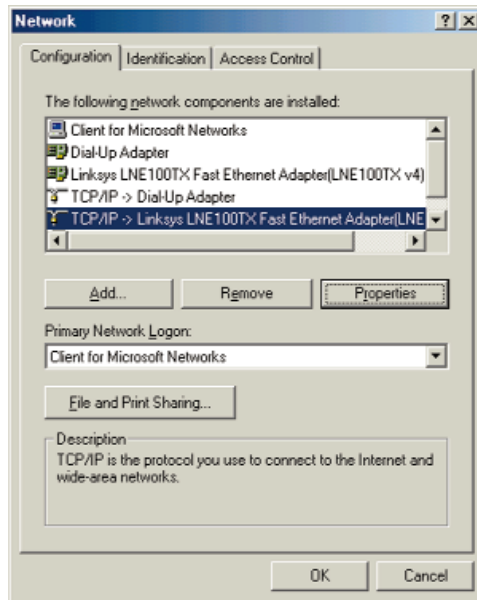


**Figure 4-1**

3. Click the **IP Address** tab. Select **Obtain an IP address automatically**.
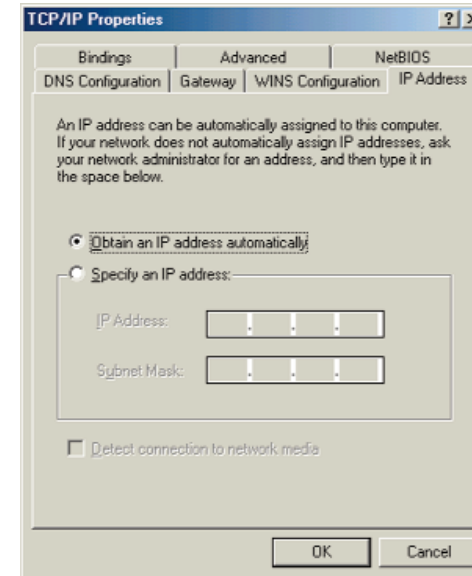


**Figure 4-2**

4. Now click the **Gateway** tab, and verify that the *Installed Gateway* field is blank. Click the **OK** button.

5. Click the **OK** button again. Windows may ask you for the original Windows installation disk or additional files. Check for the files at c:\windows\options\cabs, or insert your Windows CD-ROM into your CD-ROM drive and check the correct file location, e.g., D:\win98, D:\win9x, etc. (if "D" is the letter of your CD-ROM drive).

6. Windows may ask you to restart your PC. Click the **Yes** button. If Windows does not ask you to restart, restart your computer anyway.

**Go to "Chapter 5: Configure the Router's Basic Settings."**

## Configuring Windows 2000 PCs

1. Click the **Start** button. Select **Settings** and click the **Control Panel** icon. Double-click the **Network and Dial-up Connections** icon.

2. Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection**. Click the **Properties** button.



**Figure 4-3**

3. Make sure the box next to *Internet Protocol (TCP/IP)* is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.



**Figure 4-4**

4. Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again to complete the PC configuration.



**Figure 4-5**

5. Restart your computer.

**Go to "Chapter 5: Configure the Router's Basic Settings."**

## Configuring Windows XP PCs

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

1.  Click the **Start** button and then the **Control Panel** icon. Click the **Network and Internet Connections** icon. Then click the **Network Connections** icon.

2.  Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection**. Click the **Properties** button.
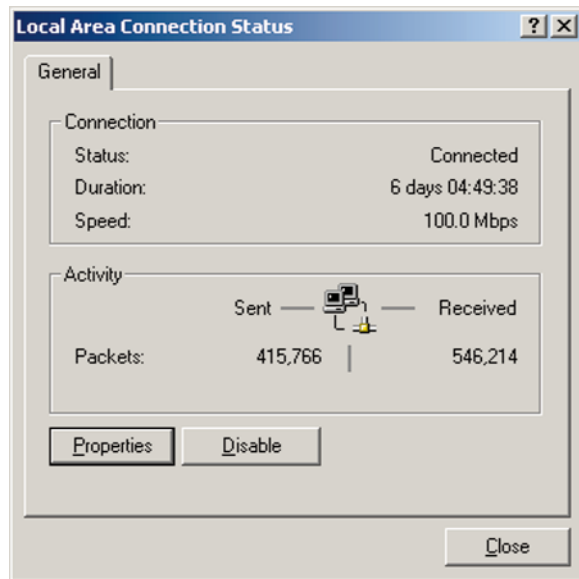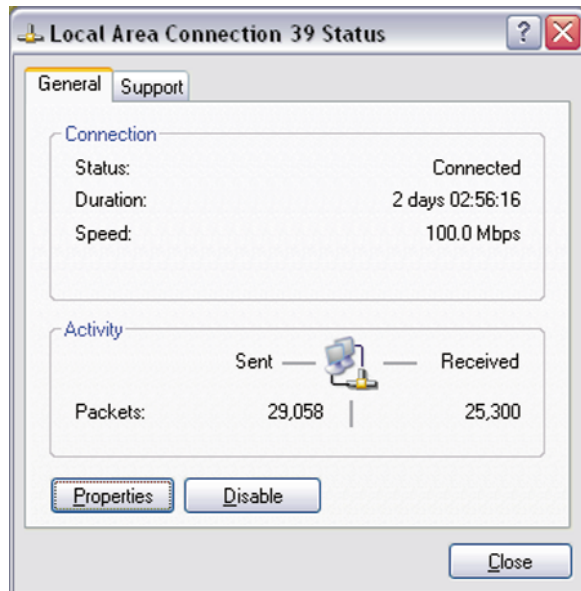


**Figure 4-6**

3.  Make sure the box next to *Internet Protocol (TCP/IP)* is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.
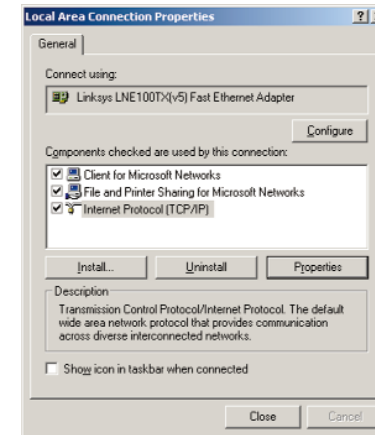


**Figure 4-7**

4.  Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again to complete the PC configuration.
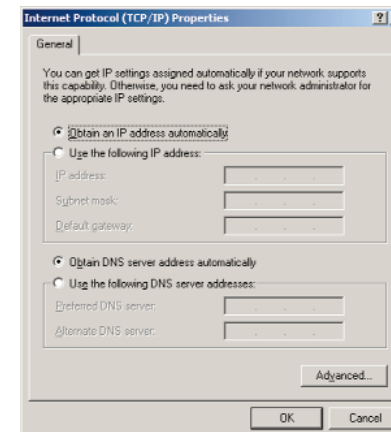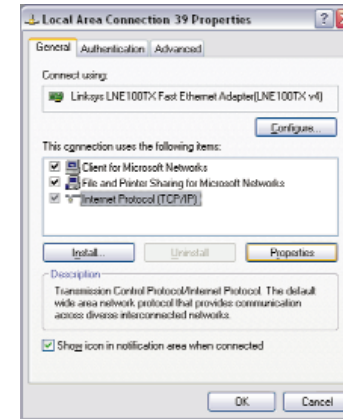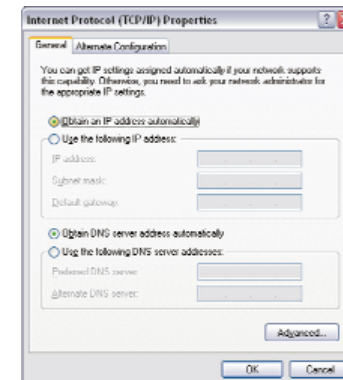


**Figure 4-8**

5.  Restart your computer.

**Go to "Chapter 5: Configure the Router's Basic Settings."**

# Chapter 5: Configure the Router's Basic Settings

This chapter will show you how to configure the Router to function in your network and gain access to the Internet through your Internet Service Provider (ISP). Detailed description of the Router's web-based utility can be found in "Chapter 6: The Router's Web-based Utility."

The instructions from your ISP tell you how to set up your PC for Internet access. Because you are now using the Router to share Internet access among several computers, you will use the setup information to configure the Router instead of your PC. You only need to configure the Router once using the first computer you set up.

1. Open your web browser. Enter **http://192.168.1.1** (the Router's default IP address) in the web browser's *Address* field. Press the **Enter** key.

**Figure 5-1**

2. An *Enter Network Password* window, shown in Figure 5-2, will appear. Windows XP users will see a *Connect to 192.168.1.1* window, shown in Figure 5-3. Leave the *User Name* field empty, and enter **admin** in lowercase letters in the *Password* field (**admin** is the default password). Then, click the **OK** button.
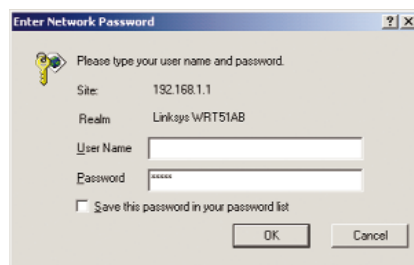
**Figure 5-2**

**Figure 5-3**

**Note:** For added security, you should change the password through the *Password* screen of the web-based utility.

3. The web-based utility will appear with the Setup tab selected. Based on the setup instructions from your ISP, you may need to provide the Host Name and Domain Name (usually cable ISPs require them). These fields allow you to provide a host name and domain name for the Router and are usually left blank.

   The values for the Router's LAN IP Address and Subnet Mask are shown on the *Setup* screen. The default values are 192.168.1.1 for the IP Address and 255.255.255.0 for the Subnet Mask.

4. The Router supports four connection types: Automatic Configuration - DHCP (obtain an IP automatically), Static IP, PPPoE, and PPTP. These types are listed in the drop-down menu for the Configuration Type setting. Each *Setup* screen and available features will differ depending on what kind of connection type you select. Proceed to the instructions for the connection type you are using, and then continue to step 5.

**IMPORTANT:** If you have previously enabled any **Internet-sharing proxy server software** on any of your PCs, you must disable it now.

Some examples of Internet-sharing software are Internet LanBridge, Wingate, ICS, and Sygate. To disable your Internet-sharing software:

• If you are running Netscape Navigator, click **Edit**, **Preferences**, **Advanced**, and **Proxies**. Click **Direct Connection to the Internet**.
• If you are running Internet Explorer 5.x or higher, click **Tools**, **Settings**, **Control Panel**, **Internet Options**, **Connections**, and **LAN Settings**. Remove checkmarks from all three boxes. Click the **OK** button to continue.

You must also disable any **Internet log-on software** (such as Ivasion Winpoet or Enternet 300) and any **firewall software** (such as ZoneAlarm and Watchdog) on all of your PCs.

**Automatic Configuration - DHCP**

If you are connecting through DHCP or a dynamic IP address from your ISP, perform these steps:

A. Keep the default setting, **Automatic Configuration - DHCP**, as the Configuration Type.

B. Click the **Apply** button to save the setting, or click the **Cancel** button to clear the setting and start over. When you are finished, proceed to step 5.

**Figure 5-4**

**Static (or Fixed) IP Address**

If you are connecting through a static or fixed IP address from your ISP, perform these steps:

A. Select **Static IP** as the Configuration Type.

B. Enter the **Internet IP Address**.

C. Enter the **Subnet Mask**.

D. Enter the **Default Gateway**.

E. Enter the **DNS** in the 1, 2, and/or 3 fields. You need to enter at least one DNS address.

F. Click the **Apply** button to save the settings, or click the **Cancel** button to clear the settings and start over. When you are finished, proceed to step 5.

**Figure 5-5**

**PPPoE**

If your DSL provider says that you are connecting through PPPoE (you use a user name and password to access the Internet), perform these steps:

A. Select **PPPoE** as the Configuration Type.

B. Enter the **User Name**.

C. Enter the **Password**.

D. Click the **Apply** button to save the settings, or click the **Cancel** button to clear the settings and start over. When you are finished, proceed to step 5.

**Figure 5-6**

⚠️ **Important:** If you enable PPPoE, remember to remove any PPPoE applications already installed on any of your PCs.

**PPTP**

PPTP is a service used in Europe only. If you are using a PPTP connection, check with your ISP for the necessary setup information.

After you have entered your setup information, click the **Apply** button to save the settings, or click the **Cancel** button to clear the settings and start over. When you are finished, proceed to step 5.
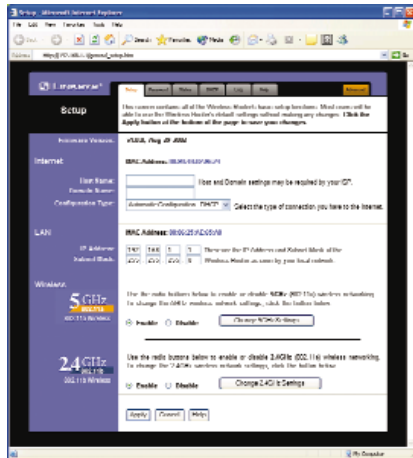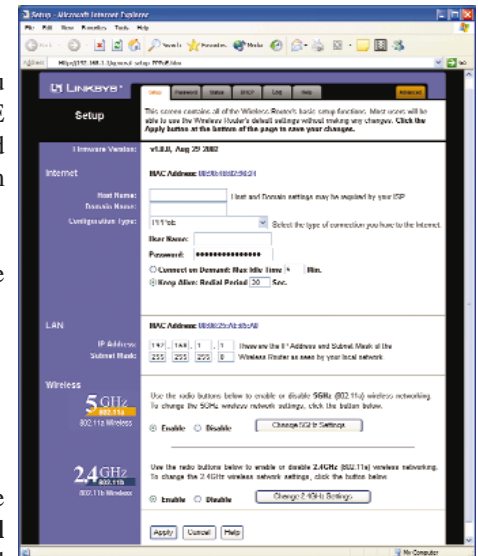
**Figure 5-7**

5. To configure the Router for your wireless network(s), perform these steps:

A. To enable 5GHz, 802.11a wireless networking, make sure the 5GHz, 802.11a **Enable** radio button is selected. Then click the **Change 5GHz Settings** button, and customize the SSID, Channel, and WEP encryption settings as needed. Then click the **Apply** button to save your changes. For more information, refer to "Chapter 6: The Router's Web-based Utility."

B. To enable 2.4GHz, 802.11b wireless networking, make sure the 2.4GHz, 802.11b **Enable** radio button is selected. Then click the **Change 2.4GHz Settings** button, and customize the SSID, Channel, and WEP encryption settings as needed. Then click the **Apply** button to save your changes. For more information, refer to "Chapter 6: The Router's Web-based Utility."

6. If you haven't already done so, click the **Apply** button to save your Setup settings. Close the web browser.

7. Restart your computers so that they can obtain the Router's new settings.

If you need more details or advanced setting information, please refer to "Chapter 6: The Router's Web-based Utility" or the Linksys support website at *support.linksys.com*.

Test the setup by opening your web browser from any computer and entering *http://www.linksys.com/registration*.


**Figure 5-8**

Congratulations! You've successfully configured the Router.

If you are unable to reach our website, you may want to review what you did in this section or refer to "Appendix A: Troubleshooting."

**Proceed to "Chapter 6: The Router's Web-based Utility" for more details and advanced settings information.**

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# Chapter 6: The Router's Web-based Utility

## Overview

Use the Router's web-based utility to administer it. 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.

The *Setup*, *Password*, *Status*, *DHCP*, *Log*, and *Help* screens are available for basic setup. For advanced setup, click the **Advanced** tab to access these screens: *Advanced Wireless* (including *802.1x*), *Filters*, *Port Forwarding*, *Routing*, *DMZ Host*, and *MAC Address Clone*.

## 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, **192.168.1.1**, in the *Address* field. Then press **Enter**.


**Figure 6-1**

A password request page, shown in Figure 6-2 will pop up. (Windows XP users will see a *Connect to 192.168.1.1* window, shown in Figure 6-3). Leave the *User Name* field blank, and enter **admin** (the default password) in the *Password* field. Then click the **OK** button.
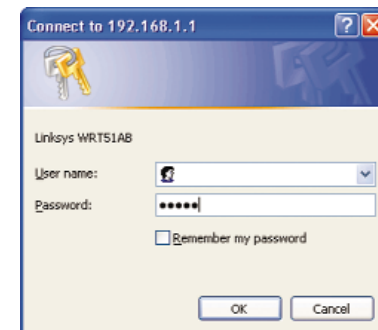


**Figure 6-2**                    **Figure 6-3**

**Note:** For added security, you should always change the password through the Password screen of the web-based utility.

To apply any of the settings you change on a page, click the **Apply** button. To cancel any changes you've entered on any page, click the **Cancel** button. To get additional information about any screen's features, click the **Help** button.

## Setup

The *Setup* screen is the first screen you see when you access the web-based utility. If you have already installed and set up the Router, you have already seen this screen and properly configured all of the screen's values.

**Firmware Version**  This shows the version and date of the firmware you are using. Future versions of the Router's firmware will be posted and available for download on the Linksys website at *www.linksys.com*.

**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.

**Configuration Type**  The Router supports four connection types: Automatic Configuration - DHCP, Static IP, PPPoE, and PPTP. Each *Setup* screen and available features will differ depending on what kind of connection type you select.

**Note:** You can verify that the Internet configuration settings are correct by successfully connecting to the Internet.

## Automatic Configuration - DHCP

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

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.
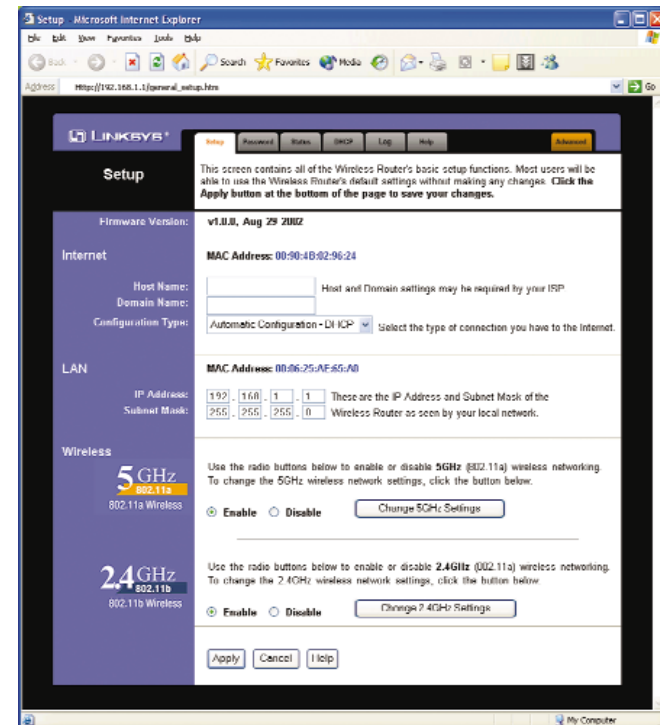


**Figure 6-5**

## Static IP

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



**Figure 6-6**

*Specify Internet IP Address*  This is the Router's IP address, when seen from the WAN, or 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 external 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 Default Gateway Address, which is the ISP server's IP address.

*DNS 1 (Required) and DNS 2-3 (Optional)*  Your ISP will provide you with at least one DNS (Domain Name System) Server IP Address.

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## 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.



**Figure 6-7**

*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.

> ⚠️ **Important:** For ADSL users, if you enable PPPoE, remember to remove any PPPoE applications that are already installed on any of your PCs.

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## PPTP

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

**Figure 6-8**

*Specify 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 external 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 Default Gateway Address.

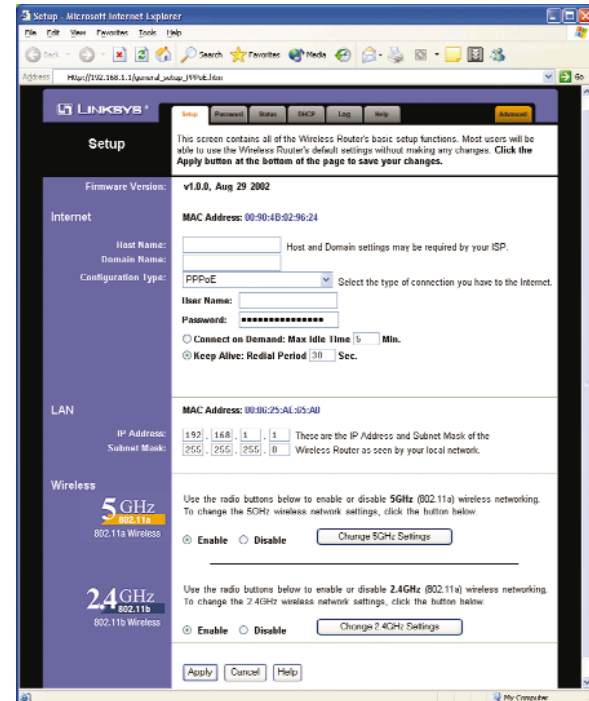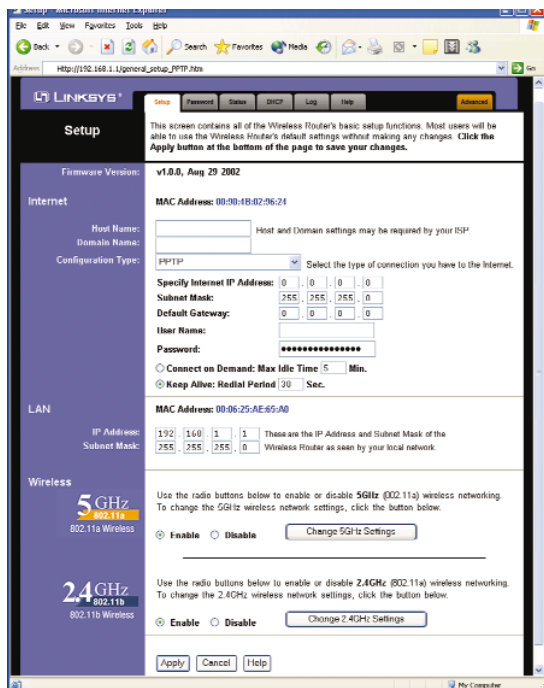*User Name and Password* Enter the **User Name** and **Password** provided by your ISP.

*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**. 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.

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

**LAN IP Address and LAN Subnet Mask** The values for the Router's IP Address and Subnet Mask are shown here. The default values are 192.168.1.1 for the LAN IP Address and 255.255.255.0 for the Subnet Mask.

**5GHz, 802.11a Wireless** To enable 5GHz, 802.11a wireless networking, make sure the **Enable** radio button is selected. Click the **Change 5GHz Settings** button to customize the 802.11a configuration (see Figure 6-9).

**2.4GHz 802.11b Wireless**  To enable 2.4GHz, 802.11b wireless networking, make sure the **Enable** radio button is selected. Click the **Change 2.4GHz Settings** button to customize the 802.11b configuration (see Figure 6-11).

## 5GHz, 802.11a

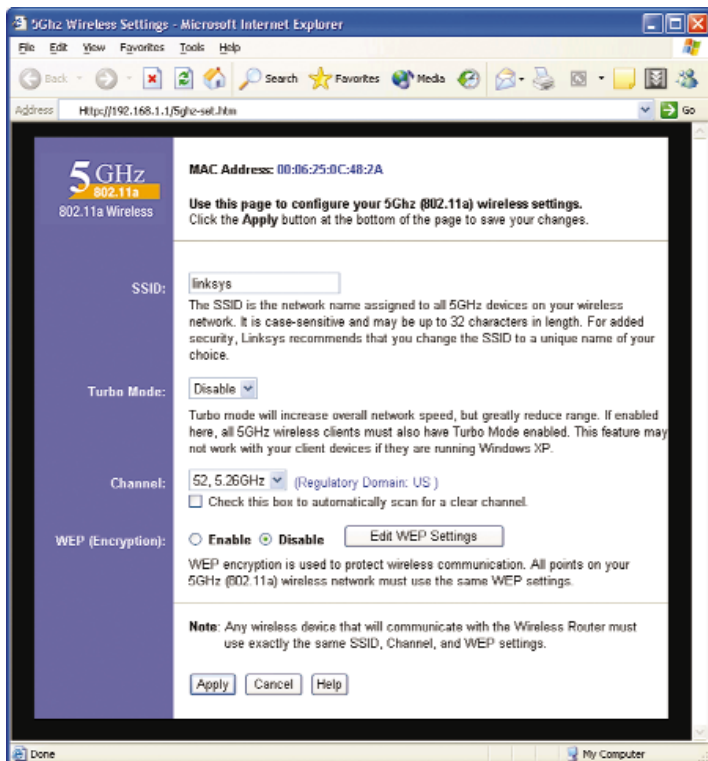The *5GHz, 802.11a* screen allows you to configure your 5GHz, 802.11a network settings.



**Figure 6-9**

*SSID*  The SSID is the network name shared among all points in a wireless network. The SSID must be identical for all points in the wireless network. It is case-sensitive and must not exceed 32 characters (use any of the characters on the keyboard). Make sure this setting is the same for all points in your wireless network. For added security, you should change the default SSID (**linksys**) to a unique name.

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*Turbo Mode*  This enables high-speed connections, but severely limits range. Turbo Mode must be enabled on both the Router and the wireless PCs to function. Turbo Mode is not compatible with Windows XP and functions only with Linksys 5GHz, 802.11a wireless adapters.

Select **Enable** to increase the speed of your wireless transmissions up to 72 Mbps. Keep in mind that the Router's range diminishes in Turbo Mode. If you do not wish to utilize Turbo Mode, select **Disable**.

*Channel*  Select the appropriate channel from the list provided to correspond with your network settings, between 36 and 64. All devices in your wireless network must use the same channel in order to function correctly. If you want the Router to automatically scan for a clear channel, then click the checkbox.

> **Note:** If Turbo Mode is enabled, then auto-scan will not function, and you must select one of the following channels: **42**, **50**, or **58**.

> **Note:** If auto-scan is enabled, then you cannot specify a channel setting.

*WEP (Encryption)*  An acronym for Wired Equivalent Privacy, WEP is an encryption method used to protect your wireless data communications. WEP uses 64-bit, 128-bit, or 152-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each device in a network must use an identical key. Higher encryption levels offer higher levels of security, but due to the complexity of the encryption, they may decrease network performance. Click the **Edit WEP Settings** button to configure the WEP keys for your 5GHz, 802.11a network (see Figure 6-10).

Check all the values, and click the **Apply** button to save your 5GHz, 802.11a settings. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

### 5GHz, 802.11a (WEP)

The *5GHz, 802.11a (WEP)* screen allows you to configure your 5GHz, 802.11a WEP settings. WEP encryption should always be enabled to increase the security of your wireless network.
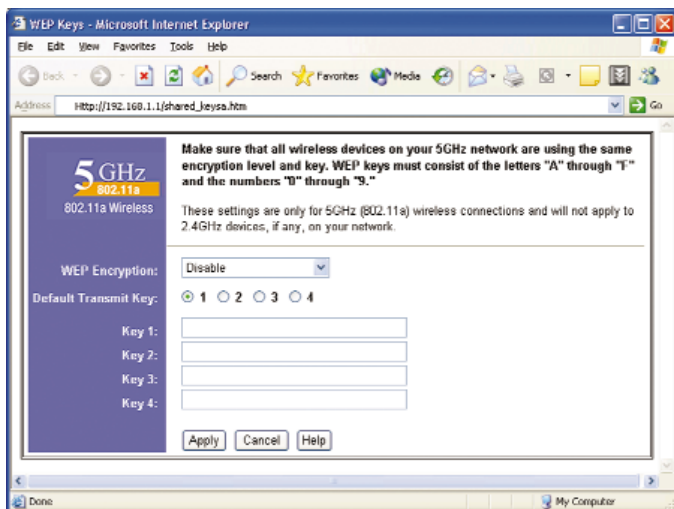


**Figure 6-10**

**WEP Encryption**　Keys 1-4 offer 64-bit, 128-bit, or 152-bit encryption; select the type of encryption you want from the drop-down box. To disable WEP Encryption, select **Disable**.

**Default Transmit Key**　Select which WEP key (1-4) will be used when the Router sends data. Make sure the receiver is using the same key.

**Keys 1-4**　WEP keys enable you to create an encryption scheme for wireless LAN transmissions. Manually enter a set of values. (Do not leave a key field blank, and do not enter all zeroes. These are not valid key values.) Keys 1-4 offer 64-bit, 128-bit, or 152-bit encryption.

If you are using 64-bit WEP encryption, then the key must be exactly 10 hexadecimal characters in length. If you are using 128-bit WEP encryption, then the key must be exactly 26 hexadecimal characters in length. If you are using 152-bit WEP encryption, then the key must be exactly 32 hexadecimal characters in length. Valid hexadecimal characters are "0"-"9" and "A"-"F".

Check all the values, and click the **Apply** button to save your 5GHz, 802.11a WEP settings. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

### 2.4GHz, 802.11b

The *2.4GHz, 802.11b* screen allows you to configure your 2.4GHz, 802.11b network settings.

**SSID**　The SSID is the network name shared among all points in a wireless network. The SSID must be identical for all points in the wireless network. It is case-sensitive and must not exceed 32 characters (use any of the characters on the keyboard). Make sure this setting is the same for all points in your wireless network. For added security, you should change the default SSID (**linksys**) to a unique name.

**Channel**　Select the appropriate channel from the list provided to correspond with your network settings, between 1 and 11 (in North America). All devices in your wireless network must use the same channel in order to function correctly.
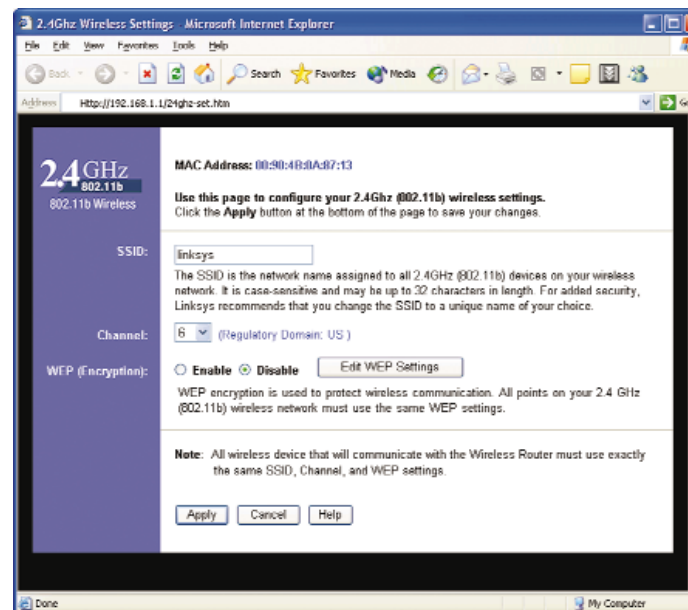


**Figure 6-11**

***WEP (Encryption)***  An acronym for Wired Equivalent Privacy, WEP is an encryption method used to protect your wireless data communications. WEP uses a combination of 64-bit or 128-bit keys to provide access control to your network and encryption security for every data transmission. To decode a data transmission, each device in a network must use an identical 64-bit or 128-bit key. Higher encryption levels offer higher levels of security, but due to the complexity of the encryption, they may decrease network performance.  Click the **2.4GHz WEP Settings** button to configure the WEP keys for your 2.4GHz, 802.11b network (see Figure 6-12).

Check all the values, and click the **Apply** button to save your 2.4GHz, 802.11b settings. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## 2.4GHz, 802.11b (WEP)

The *2.4GHz, 802.11b (WEP)* screen allows you to configure your 2.4GHz, 802.11b WEP settings. WEP encryption is recommended to increase the security of your wireless network.

***WEP Encryption***  Keys 1-4 offer 64-bit or 128-bit encryption; select the type of encryption you want from the drop-down box. To disable WEP Encryption, select **Disable**.
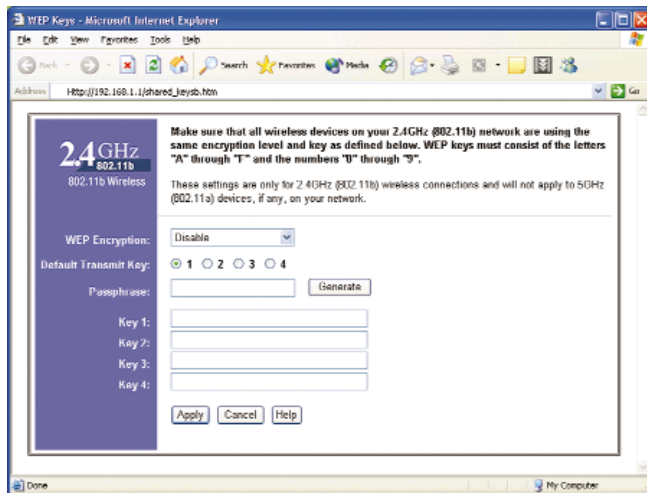


**Figure 6-12**

***Default Transmit Key***  Select which WEP key (1-4) will be used when the Router sends data. Make sure the receiver is using the same key.

***Passphrase***  Instead of manually entering WEP keys, you can enter a Passphrase. This Passphrase is used to generate one or more WEP keys. It is case-sensitive and should not be longer than 16 alphanumeric characters. This Passphrase function is compatible with Linksys wireless products only. [If you want to communicate with non-Linksys wireless products, enter the WEP key(s) manually on the non-Linksys wireless products.] After you enter the Passphrase, click the **Generate** button to create WEP keys.

***Keys 1-4***  WEP keys enable you to create an encryption scheme for wireless LAN transmissions. Manually enter a set of values. (Do not leave a key field blank, and do not enter all zeroes. These are not valid key values.) Keys 1-4 offer 64-bit or 128-bit encryption.

If you are using 64-bit WEP encryption, then the key must be exactly 10 hexadecimal characters in length. If you are using 128-bit WEP encryption, then the key must be exactly 26 hexadecimal characters in length. Valid hexadecimal characters are "0"-"9" and "A"-"F".

Check all the values, and click the **Apply** button to save your 2.4GHz, 802.11b WEP settings.

To apply any of the settings you change on this page, click the **Apply** button.  To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## Password

The *Password* screen allows you to change the Router's password. You should change the factory default password, which is **admin**, to your own as soon as possible All users who try to access the Router's web-based utility will be prompted for the Router's password.
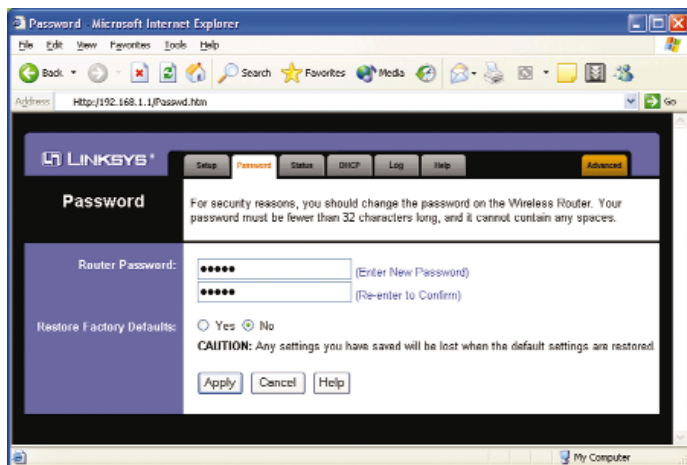
**Figure 6-13**

**Router Password** The new Password must not exceed 32 characters in length and must not include any spaces. Enter the new Password in the second field to confirm it.

**Restore Factory Defaults** Click the **Yes** button to reset all configuration settings to their default values. Any settings you have saved will be lost when the default settings are restored. Click the **No** button to disable the Restore Factory Defaults feature.

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## Status

The *Status* screen displays the Router's current status and configuration. All information is read-only.

**Figure 6-14**

**Note:** The information provided and buttons available may vary depending on the Router's settings.

**Host Name**  The Host Name is the name of the Router. This entry is necessary for some ISPs.

**Domain Name**  The Domain Name is the name of the Router's domain. This entry is necessary for some ISPs.

**Firmware Version**  The version number of the firmware currently installed is displayed here.

## LAN

**IP Address and Subnet Mask**  The current IP Address and Subnet Mask of the Router, as seen by users on your local area network (LAN), are displayed here.

**DHCP Server**  The status of the Router's DHCP server function is displayed here.

### Wireless 5GHz, 802.11a

**SSID**  The SSID of the 5GHz, 802.11a network is displayed here.

**Encryption Function**  The status of the WEP encryption is displayed here.

**Channel**  The channel for the 5GHz, 802.11a wireless network is displayed here.

### Wireless 2.4GHz, 802.11b

**SSID**  The SSID of the 2.4GHz, 802.11b network is displayed here.

**Encryption Function**  The status of the WEP encryption is displayed here.

**Channel**  The channel for the 2.4GHz, 802.11b wireless network is displayed here.

## Internet

**Configuration Type**  The type of Internet connection is displayed here.

**Status**  For PPPoE or PPTP, the status of the Internet connection is displayed here. If there is no connection, you can click the **Connect** button to re-establish it. If there is a connection, you can click the **Disconnect** button to end it.

**IP Address, Subnet Mask, and Default Gateway**  The Router's IP Address, Subnet Mask, and Default Gateway Address, as seen by external users on the Internet, are displayed here.

**DNS**  The DNS (Domain Name System) IP Addresses currently used by the Router are shown here. Multiple DNS IP settings are common. In most cases, the first available DNS entry is used.

**DHCP Release**  Click the **DHCP Release** button to delete the Router's current Internet IP address.

**DHCP Renew**  Click the **DHCP Renew** button to get a new Internet IP address for the Router.

To refresh the *Status* screen, click the **Refresh** button. To get more information about the features, click the **Help** button.

## DHCP

The *DHCP* screen allows you to configure the settings for the Router's Dynamic Host Configuration Protocol (DHCP) server function. The Router can be used as a DHCP server for your network. A DHCP server automatically assigns an IP address to each computer on your network.
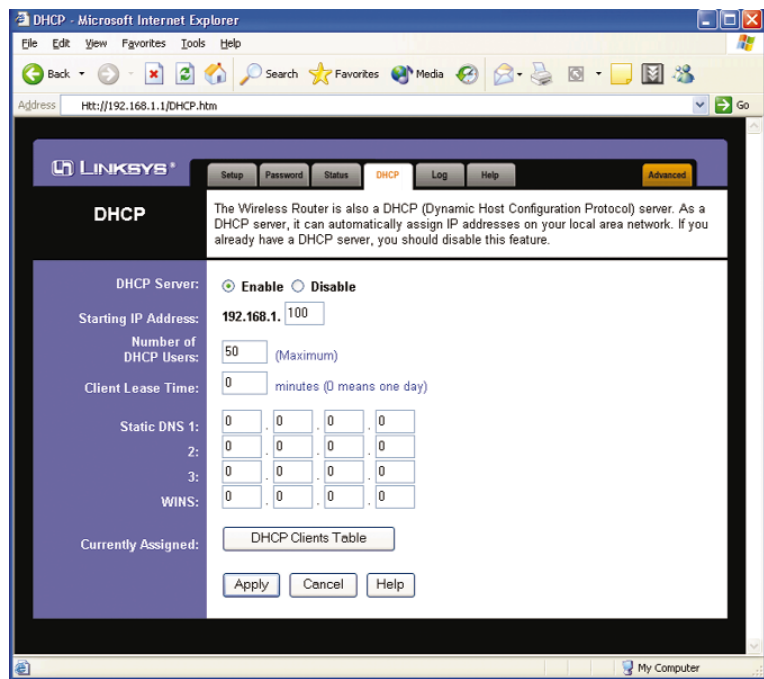


**Figure 6-15**

If you choose to enable the Router's DHCP server option, you must configure all of your network PCs to connect to a DHCP server (the Router), and make sure there is no other DHCP server on your network.

If you disable the Router's DHCP server function, you must have a separate DHCP server for your network, or you must configure the IP Address, Subnet Mask, and DNS for each network computer (make sure each IP Address is unique).

**DHCP Server**   DHCP is enabled by factory default. If you already have a DHCP server on your network, or you don't want a DHCP server, then click the **Disable** radio button.

**Starting IP Address**   Enter a value for the DHCP server to start with when issuing IP addresses.  Because the Router's default IP address is **192.168.1.1**, the Starting IP Address must be 192.168.1.2 or greater, but smaller than 192.168.1.253. The default Starting IP Address is **192.168.1.100**.

**Number of DHCP Users**   (Optional) Enter the maximum number of PCs that you want the DHCP server to assign IP addresses to. This number cannot be greater than 253. The default is **50**.

**Client Lease Time**   The Client Lease Time is the amount of time a network user will be allowed connection to the Router with their current dynamic IP address. Enter the amount of time, in minutes, that the user will be "leased" this dynamic IP address. After the time is up, the user will be automatically assigned a new dynamic IP address. The default is **0** minutes, which means one day.

**Static DNS 1-3**   The Domain Name System (DNS) is how the Internet translates domain or website names into Internet addresses or URLs. Your ISP will provide you with at least one DNS Server IP Address. If you wish to use another, type that IP Address in one of these fields. You can type up to three DNS Server IP Addresses here. The Router will use these for quicker access to functioning DNS servers.

**WINS**   The Windows Internet Naming Service (WINS) manages each PC's interaction with the Internet. If you use a WINS server, enter that server's IP Address here. Otherwise, leave this blank.

**Currently Assigned: DHCP Clients Table**   Click the **DHCP Clients Table** button to view the list of PCs that are given IP addresses by the Router. For each PC, the list shows the client hostname, IP address, MAC address, and and the amount of DHCP client lease time left. Click the **Refresh** button to display the most current information.

To apply any of the settings you change on this page, click the **Apply** button.  To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## Log

The *Log* screen provides you with a log of all incoming or outgoing traffic for your Internet connection.
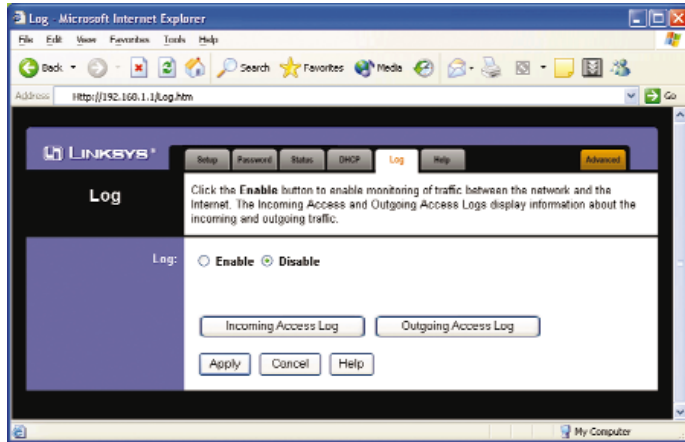


**Figure 6-16**

**Log** To monitor traffic between the network and the Internet, select the **Enable** radio button next to *Access Log*. The Log function can be disabled by clicking the **Disable** radio button.

**Incoming Access Log and Outgoing Access Log** Temporary logs can be accessed by clicking either the **Incoming Access Log** or **Outgoing Access Log** button. The Incoming Access Log gives you a log of all the incoming Internet traffic, displaying the source IP address and port number of the Router for each activity. The Outgoing Access Log gives you a log of all outgoing Internet traffic. For each activity, it displays the LAN IP address, the URL or IP address of the Internet site accessed, as well as the service or port number used.

To apply any of the settings you change on this page, click the **Apply** button. To cancel any changes you've entered on this page, click the **Cancel** button. To get more information about the features, click the **Help** button.

## Help

The *Help* screen offers links to all of the Router's technical support resources and the application that upgrades the Router's firmware. For additional information about each screen of the web-based utility, click the appropriate link on the lefthand side of the *Help* screen.
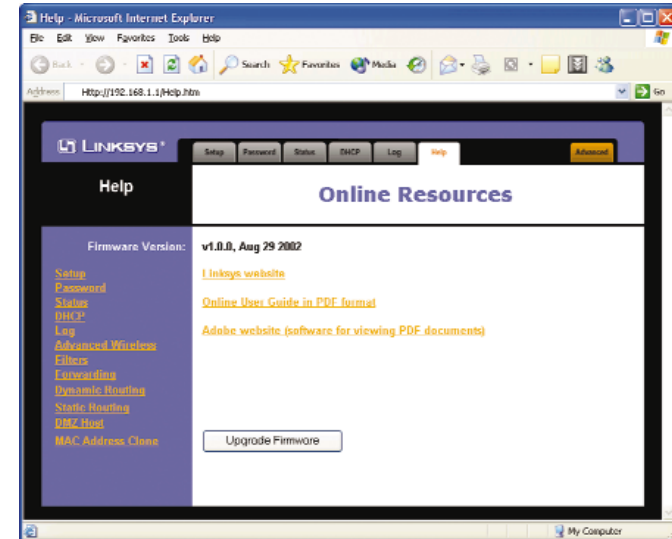


**Figure 6-17**

**Firmware Version** The version number of the firmware currently installed is displayed here. Firmware should only be upgraded if you are experiencing problems with the Router. Visit *www.linksys.com* to find out if there is updated firmware.

**Linksys Website** Clicking this link will take you to Linksys's website, *www.linksys.com*, provided you are connected to the Internet.

**Online User Guide in PDF Format and Adobe Website** Clicking the **Online User Guide in PDF format** link opens the Router's User Guide. The User Guide is in Adobe Acrobat Portable Document File (.pdf) format, so you need the Adobe Acrobat Reader to view it. If you do not have the Acrobat Reader, click the **Adobe website** link to download it.

**Upgrade Firmware**  New firmware versions are posted at *www.linksys.com* and can be downloaded for free. If the Router already works well, there's no need to download a newer firmware version, unless that version has a new feature that you want to use. (To learn about any new firmware with new features, visit *www.linksys.com*.) Loading new firmware onto the Router does not always enhance the speed or the quality of your connection.

> ✓ **Note:** By upgrading the Router's firmware, you may lose the Router's configuration settings.

To upgrade the Router's firmware:

1. Download the firmware upgrade file from *www.linksys.com*, and extract the file using a file archive utility such as WinZip.

2. Select the **Help** tab, if you haven't already (see Figure 6-17).

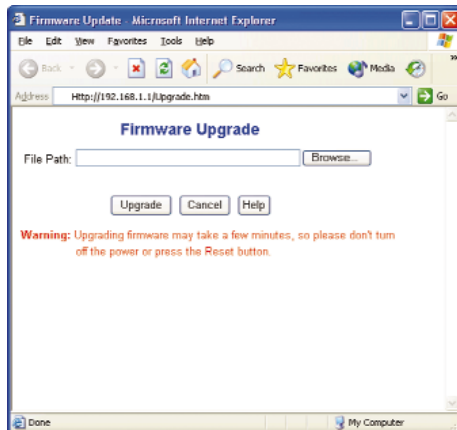3. Click **Upgrade Firmware** to display a new window, shown in Figure 6-18.

**Figure 6-18**

4. Click the **Browse...** button to find the firmware upgrade file you extracted.

5. Double-click the firmware upgrade file you extracted.

6. Click the **Upgrade** button, and follow the on-screen instructions.

> ⚠️ **Important:** When you are upgrading the firmware, do NOT turn off the Router, and do NOT press the Reset button.

## Advanced Tabs

The following instructions are for advanced users or users whose setup needs require special configuration. When you click the **Advanced** tab, you will be able to set up these features. There are six additional tabs available.

**Advanced Wireless** - Allows you to customize data transmission and 802.1x settings for your wireless network(s).

**Filters** - Enables you to set up filters that block specific internal users from Internet access.

**Port Forwarding** - Lets you set up public services on your network, such as an ftp server, mail server, or web server.

**Routing** - Enables you to configure the routing mode of the Router.

**DMZ Host** - Allows one local user to be exposed to the Internet for use of special-purpose services such as online gaming or videoconferencing.

**MAC Address Clone** - Allows you to copy or "clone" your Ethernet adapter's MAC address onto the Router.

If you need to access the basic configuration tabs, click the **Setup** tab.