

**BELKIN®**  
**N+ Wireless**  
**Modem Router**

**User Manual**

F5D8635-4



# TABLE OF CONTENTS

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
<b>1 Introduction</b> .....		<b>1</b>									
Advantages of a Wireless Network .....		1									
Placement of your N+ Wireless Modem Router .....		3									
<b>2 Product Overview</b> .....		<b>6</b>									
Product Features .....		6									
<b>3 Knowing your Router</b> .....		<b>8</b>									
Package Contents .....		8									
System Requirements .....		8									
Setup Assistant Software System Requirements .....		9									
<b>4 Connecting and Configuring your Router</b> .....		<b>14</b>									
<b>5 Alternate Setup Method</b> .....		<b>29</b>									
<b>6 Using the Web-Based Advanced User Interface</b> .....		<b>38</b>									
Changing LAN Settings .....		39									
Viewing the DHCP Client List Page .....		40									
Configuring the Wireless Network Settings .....		40									
Setting WPA Security .....		46									
Setting WEP Encryption .....		47									
Using the Access Point Mode .....		49									
Configuring the Firewall .....		49									
Using Dynamic DNS .....		53									
Utilities .....		56									
Restarting the Router .....		56									
Updating the Firmware .....		62									
<b>7 Manually Configuring Network Settings</b> .....		<b>69</b>									
<b>8 Recommended Web Browser Settings</b> .....		<b>74</b>									
<b>9 Troubleshooting</b> .....		<b>76</b>									
<b>10 Information</b> .....		<b>86</b>									

# INTRODUCTION

Thank you for purchasing the Belkin N+ Wireless Modem Router (the Router). Following are two short sections—the first discusses the benefits of home networking, and the other outlines best practices that maximize your wireless home network range and performance. Please be sure to read through this User Manual completely, and pay special attention to the section entitled “Placement of your N+ Wireless Modem Router” on page 3. By following our simple setup instructions you will be able to use your Belkin Home Network to:

- Share one high-speed Internet connection with all the computers in your home
- Share a USB storage device (not included) within your network
- Share documents, music, video, and digital pictures
- Store, retrieve, and copy files from one computer to another
- Simultaneously play games online, check Internet email, and chat

## Advantages of a Wireless Network

Here are some of the advantages of setting up a Belkin Wireless Network:

- Mobility – you’ll no longer need a dedicated “computer room”—now you can work on a networked laptop or desktop computer anywhere within your wireless range
- Easy installation – Belkin’s Easy Installation Wizard makes setup simple
- Flexibility – set up and access printers, computers, and other networking devices from anywhere in your home
- Easy Expansion – the wide range of Belkin networking products let you expand your network to include devices such as printers and gaming consoles
- No cabling required – you can spare the expense and hassle of retrofitting Ethernet cabling throughout the home or office
- Widespread industry acceptance – choose from a wide range of interoperable networking products.

# INTRODUCTION

## Revolutionary N+ Wireless Technology with MIMO (N MIMO)

Your Belkin N+ Wireless Modem Router uses a new smart-antenna technology called Multiple Input Multiple Output (MIMO). N MIMO complies with the IEEE draft 802.11n specification. It increases speed, range, reliability, and spectral efficiency for wireless networking systems.

The element that makes Belkin's N MIMO technology different from a conventional radio is the use of multiple antennas and two simultaneous data streams to deliver wireless transfers around your home or office. A conventional radio uses one antenna to transmit a data stream. Belkin's N MIMO, on the other hand, uses two antennas. This design helps combat distortion and interference. Belkin's N MIMO is multidimensional. It builds on one-dimensional smart-antenna technology by simultaneously transmitting two data streams through the same channel, which increases wireless capacity.

Another element that enhances Belkin's N MIMO is the use of aggregation as specified in the draft 802.11n specification. By shortening the space between packets and combining multiple smaller packets into one larger packet, Belkin's N MIMO can transmit more data through available bandwidth.

Think of conventional radio transmission as a two-lane highway. The speed limit governs the maximum allowable flow of traffic through that lane. Compared with conventional radios, one-dimensional smart antenna systems help move traffic through that lane faster and more reliably—analogous to a four-lane road on which traffic consistently moves at a rate closer to the speed limit. Belkin's N MIMO helps traffic move at the speed limit and opens more lanes—to become the superhighway in this example. The rate of traffic flow is multiplied by the number of lanes that are opened.

# INTRODUCTION

## Placement of your N+ Wireless Modem Router

### Important Factors for Placement and Setup

Your wireless connection will be stronger the closer your computer is to your Router. Typical indoor operating range for wireless devices is between 100 and 200 feet.

In the same way, your wireless connection and performance will degrade somewhat as the distance between your Router and connected devices increases. This may or may not be noticeable to you. As you move further from your Router, connection speed may decrease. Factors that can weaken signals simply by getting in the way of your network's radio waves are metal appliances or obstructions, and walls.

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the computer to a position between five and 10 feet from the Router in order to see if distance is the problem. If difficulties persist even at close range, please contact Belkin Technical Support.

**Note:** While some of the items listed below can affect network performance, they will not prohibit your wireless network from functioning; if you are concerned that your network is not operating at its maximum effectiveness, this checklist may help.

#### 1. Router Placement

Place your Router, the central connection point of your network, as close as possible to the center of your wireless network devices.

To achieve the best wireless network coverage for your "wireless clients" (i.e., computers enabled by Belkin Wireless Notebook Network Cards, Wireless Desktop Network Cards, and Wireless USB Adapters):

- Ensure that your Router's networking antennas are parallel to each other, and are positioned vertically (toward the ceiling). If your Router itself is positioned vertically, point the antennas as much as possible in an upward direction.
- In multistory homes, place the Router on a floor that is as close to the center of the home as possible. This may mean placing the Router on an upper floor.
- Try not to place the Router near a cordless 2.4GHz phone.

#### 2. Avoid Obstacles and Interference

Avoid placing your Router near devices that may emit radio "noise," such as microwave ovens. Dense objects that can inhibit wireless communication include:

- Refrigerators
- Washers and/or dryers
- Metal cabinets
- Large aquariums
- Metallic-based UV tinted windows

If your wireless signal seems weak in some spots, make sure that objects such as these are not blocking the signal's path (between your computers and Router).

# INTRODUCTION

## 3. Cordless Phones

If the performance of your wireless network is impaired after attending to the above issues, and you have a cordless phone:

- Try moving cordless phones away from your Router and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check manufacturer's information). If this fixes the problem, your phone may be interfering.
- If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network. For example, change the phone to channel 1 and move your Router to channel 11. See your phone's user manual for detailed instructions.
- If necessary, consider switching to a 900MHz or 5GHz cordless phone.

## 4. Choose the "Quietest" Channel for your Wireless Network

In locations where homes or offices are close together, such as apartment buildings or office complexes, there may be wireless networks nearby that can conflict with yours.

Use the Site Survey capabilities found in the Wireless Utility of your wireless adapter to locate any other wireless networks that are available (see your wireless adapter's user manual), and move your Router and computers to a channel as far away from other networks as possible.

- Experiment with more than one of the available channels, in order to find the clearest connection and avoid interference from neighboring cordless phones or other wireless devices.
- For Belkin wireless networking products, use the detailed Site Survey and wireless channel information included with your wireless network card. See your network card's user guide for more information.

These guidelines should allow you to cover the maximum possible area with your Router. Should you need to cover an even wider area, we suggest the Belkin Wireless Range Extender/Access Point.

## 5. Secure Connections, VPNs, and AOL

Secure connections typically require a user name and password, and are used where security is important. Secure connections include:

- Virtual Private Network (VPN) connections, often used to connect remotely to an office network
- The "Bring Your Own Access" program from America Online (AOL), which lets you use AOL through broadband provided by another cable or DSL service
- Most online banking websites
- Many commercial websites that require a user name and password to access your account

## INTRODUCTION

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

Secure connections can be interrupted by a computer's power management setting, which causes it to "go to sleep." The simplest solution to avoid this is to simply reconnect by rerunning the VPN or AOL software, or by re-logging into the secure website.

A second alternative is to change your computer's power management settings so it does not go to sleep; however, this may not be appropriate for portable computers. To change your power management setting under Windows, see the "Power Options" item in the Control Panel.

If you continue to have difficulty with Secure Connections, VPNs, and AOL, please review the steps above to be sure you have addressed these issues.

For more information regarding our networking products, visit our website at [www.belkin.com/networking](http://www.belkin.com/networking).

# PRODUCT OVERVIEW

## Product Features

In minutes you will be able to share your Internet connection and network your computers. The following is a list of features that make your new Belkin N+ Wireless Modem Router an ideal solution for your home or small office network.

### Works with Both PCs and Mac® Computers

The Router supports a variety of networking environments including Mac OS® 8.x, 9.x, X, v10.x, Linux®, Windows® 98, Me, NT®, 2000, XP, and Vista®. All that is needed is an Internet browser and a network adapter that supports TCP/IP (the standard language of the Internet).

### USB Port for External Storage Devices

The Router includes a USB port in the back panel for one storage device (flash drive or external hard drive). You can now have network-attached storage capabilities without having to purchase an expensive NAS.

### Patent-Pending Network Status Display

Lighted LEDs on the front of the Router indicate which functions are in operation. You'll know at-a-glance whether your Router is connected to the Internet. This feature eliminates the need for advanced software and status-monitoring procedures.

### Web-Based Advanced User Interface

You can set up the Router's advanced functions easily through your web browser, without having to install additional software onto the computer. There are no disks to install or keep track of and, best of all, you can make changes and perform setup functions from any computer on the network quickly and easily.

## NAT IP Address Sharing

Your Router employs Network Address Translation (NAT) to share the single IP address assigned to you by your Internet Service Provider while saving the cost of adding additional IP addresses to your Internet service account.

### SPI Firewall

Your Router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including IP Spoofing, Land Attack, Ping of Death (PoD), Denial of Service (DoS), IP with zero length, Smurf Attack, TCP Null Scan, SYN flood, UDP flooding, Tear Drop Attack, ICMP defect, RIP defect, and fragment flooding.

### Integrated 10/100 4-Port Switch

The Router has a built-in, four-port network switch to allow your wired computers to share printers, data and MP3 files, digital photos, and much more. The switch features automatic detection so it will adjust to the speed of connected devices. The switch will transfer data between computers and the Internet simultaneously without interrupting or consuming resources.

### Universal Plug and Play (UPnP)

UPnP is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant.

### Support for VPN Pass-Through

If you connect to your office network from home using a VPN connection, your Router will allow your VPN-equipped computer to pass through the Router and to your office network.



## PRODUCT OVERVIEW

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

### Built-In Dynamic Host Configuration Protocol (DHCP)

Built-In Dynamic Host Configuration Protocol (DHCP) on-board makes for the easiest possible connection of a network. The DHCP server will assign IP addresses to each computer automatically so there is no need for a complicated networking setup.

#### Setup Assistant

The Setup Assistant, second generation of Belkin's renowned Easy Install Wizard, takes the guesswork out of setting up your Router. This automatic software determines your network settings for you and sets up the Router for connection to your Internet Service Provider (ISP). In a matter of minutes, your Router will be up and running on the Internet.

**Note:** Setup Assistant software is compatible with Windows 2000, XP and Vista. If you are using another operating system, the Router can be set up using the Alternate Setup Method described in this User Manual (see page 28).

### Integrated N+ Wireless Access Point

N MIMO is an exciting new wireless technology based on the draft IEEE 802.11n specification. It employs MIMO (Multiple Input Multiple Output) smart-antenna technology that achieves data rates of up to 300Mbps.\* Actual throughput is typically lower than the connected data rate and will vary depending on your networking environment.

**\*NOTE:** The standard transmission rate—300Mbps—is the physical data rate. Actual data throughput will be lower.

### MAC Address Filtering

For added security, you can set up a list of MAC addresses (unique client identifiers) that are allowed access to your network. Every computer has its own MAC address. Simply enter these MAC addresses into a list using the Web-Based Advanced User Interface and you can control access to your network.

# KNOWING YOUR ROUTER

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

## Package Contents

- Belkin N+ Wireless Modem Router
- Quick Installation Guide
- Belkin Setup Assistant Software CD
- RJ11 Telephone Cord
- RJ45 Ethernet Networking Cable
- ADSL (Asymmetric Digital Subscriber Line) Microfilter\*
- Power Supply
- User Manual in CD
- Network Status Display Guide
- Wireless Security Setup Guide

\*ADSL microfilter varies by country. If it's not included, you will need to purchase one.

## System Requirements

- An active ADSL service with a telephone wall jack for connecting the Router
- At least one computer with an installed network interface adapter
- TCP/IP networking protocol installed on each computer
- No other DHCP server on your local network assigning IP addresses to computers and devices
- Internet browser

## KNOWING YOUR ROUTER

### Setup Assistant Software System Requirements (including Storage Manager)

- A computer running Windows® 2000, XP, or Vista; or Mac OS X v10.x
- Minimum 1GHz processor and 128MB RAM
- Internet browser

### Internet Connection Settings

The Setup Assistant contains a database of Internet Service Providers (ISP) in each country to help you set up your Router quickly. If your ISP is not on the list, please collect the following information from your ISP before setting up the Router:

- Internet connection protocol: \_\_\_\_\_ (PPPoE, PPPoA, Dynamic IP, Static IP)
- Multiplexing method or Encapsulation: \_\_\_\_\_ (LLC or VC MUX)
- Virtual circuit: VPI (Virtual Path Identifier) \_\_\_\_\_ (a number between 0 and 255)
- VCI (Virtual Channel Identifier) \_\_\_\_\_ (a number between 1 and 65535)

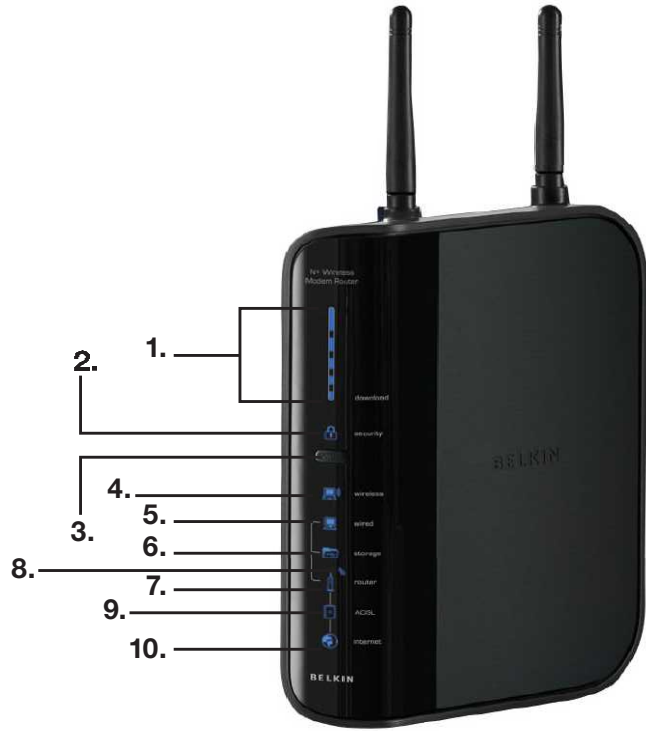
- For PPPoE and PPPoA users: ADSL account user name \_\_\_\_\_ and password \_\_\_\_\_
- For static IP users: IP Address \_\_\_\_ . \_\_\_\_ . \_\_\_\_ . \_\_\_\_
- Subnet Mask \_\_\_\_ . \_\_\_\_ . \_\_\_\_ . \_\_\_\_
- Default Gateway Server \_\_\_\_ . \_\_\_\_ . \_\_\_\_ . \_\_\_\_
- IP address for Domain Name Server \_\_\_\_ . \_\_\_\_ . \_\_\_\_ . \_\_\_\_ (If given by your ISP)

# KNOWING YOUR ROUTER

Table of Contents	<b>SECTIONS</b>	1	2	<b>3</b>	4	5	6	7	8	9	10
-------------------	-----------------	---	---	----------	---	---	---	---	---	---	----

## Knowing your Router

The Router has been designed to be placed on a desktop. All of the cables exit from the rear of the Router for better organization and utility. The Network Status Display is easily visible on the FRONT of the Router to provide you with information about network activity and status. See the Network Status Display Guide for more detailed information.



### 1. Broadband Download Speedometer

These lights will display a graphic representation of the current download speed being transferred through the Internet connection. The speed will be measured on the speedometer against the fastest speed that has been measured by the N+ since being activated.

### 2. Wireless Security

Off	Wireless security is off
Blinking Blue	WPS handshaking in process
Solid Blue	Wireless security is on

## KNOWING YOUR ROUTER

### 3. WPS Push Button

This button is set aside for the Wi-Fi Protected Setup™ feature. Refer to the “Changing the Wireless Security Settings” section for more details.

### 4. Wireless-Computer Status

Off	Wireless computer is not present
Solid Blue	Wireless computer is connected to the Router
Blinking Amber	Problem with wireless computer connecting properly to the Router

### 5. Wired-Computer Status

Off	Wired computer is not present
Solid Blue	Wired computer is connected to the Router
Blinking Amber	Problem with wired computer connecting properly to the Router

### 6. USB Port Status

OFF	No device is plugged into the USB port
Flashing Blue	Data is being read/written to the storage device
Flashing Amber	Unsupported device is plugged into the USB port
Solid Blue	Storage device is plugged in and ready to be accessed

### 7. Router/Power Status

When you apply power to the Router or restart it, a short period of time elapses while the Router boots up. During this time, the “router” icon blinks. When the Router has completely booted up, the “router” icon becomes a solid light, indicating the Router is ready for use.

Off	Router is off
Blinking Blue	Router is booting up
Solid Blue	Router is on and ready

## KNOWING YOUR ROUTER

### 8. Wireless Status

Off	Wireless is off
Solid Blue	Wireless is on

### 9. ADSL Line Status

This icon lights in blue to indicate that your Router is connected properly to the ADSL. It turns amber when problem is detected.

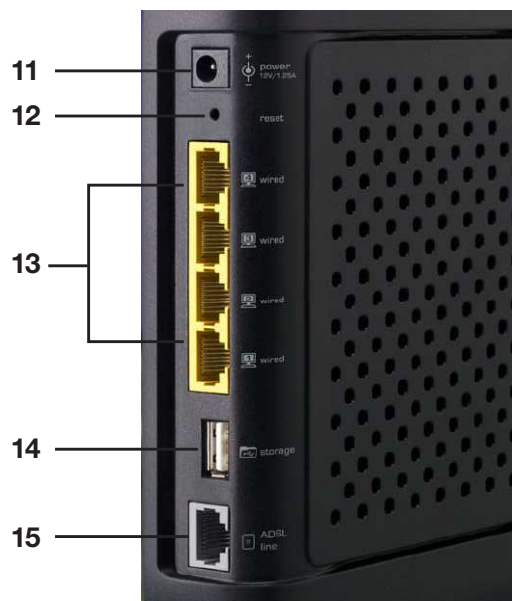
Off	Router is NOT connected to a functioning ADSL line
Solid Blue	Router is connected to an ADSL service and functioning properly
Blinking Amber	Problem with ADSL line

### 10. Internet Status

This unique icon shows you when the Router is connected to the Internet. When the light is off, the Router is NOT connected to the Internet. When the light is blinking amber, the Router is attempting to connect to the Internet. When the light is solid blue, the Router is connected to the Internet. When using the “Disconnect after x minutes” feature, this icon becomes extremely useful in monitoring the status of your Router’s connection.

Off	Router is NOT connected to the Internet
Blinking Blue	Router is attempting to connect to the Internet
Solid Blue	Router is connected to the Internet
Blinking Amber	Router is not connected to the Internet

## KNOWING YOUR ROUTER



### 11. Power Jack – Black

Connect the included 12V/1.25A DC power supply to this jack.

### 12. Reset Button

The “Reset” button is used in rare cases when the Router may function improperly. Resetting the Router will restore the Router’s normal operation while maintaining the programmed settings. You can also restore the factory default settings by using the “Reset” button. Use the restore option in instances where you may have forgotten your custom password.

### i. Resetting the Router

Push and release the “Reset” button. The lights on the Router will momentarily flash. The “Power/Ready” light will begin to blink. When the “Power/Ready” light becomes solid again, the reset is complete.

### ii. Restoring the Factory Defaults

Press and hold the “Reset” button for at least 10 seconds, then release it. The lights on the Router will momentarily flash. The “Power/Ready” light will begin to blink. When the “Power/Ready” light becomes solid again, the restore is complete.

### 13. Connections to Wired Computers – Yellow

Connect your wired (non-wireless) computers to these ports. These ports are RJ45, 10/100 auto-negotiation, auto-uplinking ports for standard UTP category 5 or 6 Ethernet cable. The ports are labeled 1 through 4, with onboard LEDs on the connectors.

### 14. USB Port

Plug in your USB storage device here.

### 15. Connection to ADSL – Gray

This port is for connection to your ADSL. Connect your ADSL to this port. An RJ11 telephone cord is provided in the package.

## CONNECTING AND CONFIGURING YOUR ROUTER

### Verify the contents of your box. You should have the following:

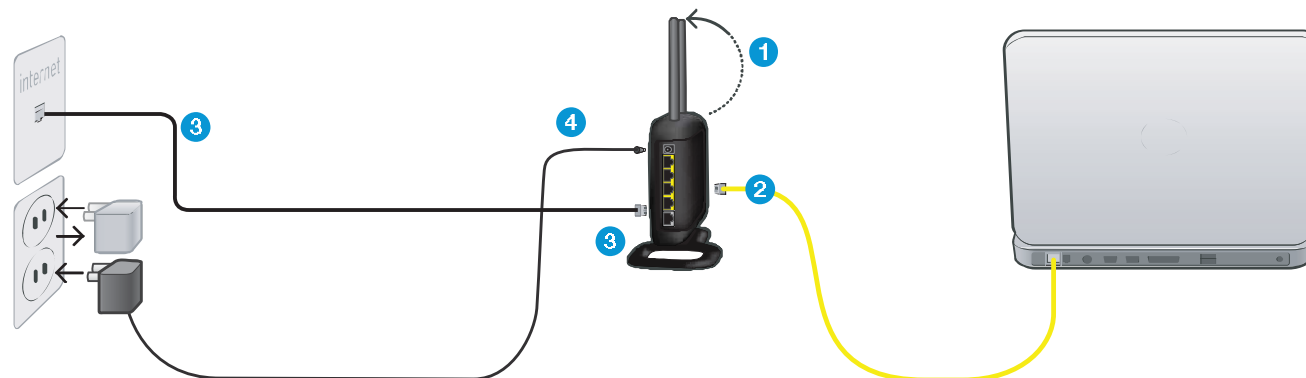
- Belkin N+ Wireless Modem Router
- RJ11 Telephone Cord
- RJ45 Ethernet Networking Cable
- Power Supply
- Belkin Setup Assistant Software CD
- User Manual on CD
- Network Status Display Guide
- Wireless Security Setup Guide
- ADSL Filter

### Setup Assistant

Belkin has provided our Setup Assistant software to make installing your Router a simple and easy task. You can use it to get your Router up and running in minutes. The Setup Assistant requires that your Windows 2000 or XP computer be connected directly to your ADSL and that the Internet connection is **active and working** at the time of installation. If it is not, you must use the “Alternate Setup Method” section of this User Manual to configure your Router. Additionally, if you are using an operating system other than Windows 2000, XP, or Vista, or Mac OS X v10.x, you must set up the Router using the “Alternate Setup Method” section of this User Manual.




## CONNECTING AND CONFIGURING YOUR ROUTER



### Step 1: Hardware Connections – Follow the Quick Installation Guide (QIG)

#### 1.1 Brand-New Setup

Follow these steps if you are not replacing an existing modem. If you are replacing an existing modem, skip to the next section, “Replacing an Existing Modem or Modem Router”, starting on page 16.

1. Unpack your new Router from the box and place it next to your computer. Raise the Router’s antennas.
2. Retrieve the yellow RJ45 cable that was included with your Router. First, connect one end to any yellow port labeled “to Wired Computers” on the back of your Router. Then, connect the other end to the networking port on the back of your computer. 
3. Retrieve the included gray RJ11 phone cord. Connect one end to the gray port labeled “to ADSL” on the back of your Router. Then connect the other end to your ADSL connection (either a wall jack or an ADSL splitter).

**Note:** Some ADSL connections require a microfilter. Your ADSL provider can tell you if you need one. Belkin includes a microfilter in regions known to use them. You may or may not have received one in your box.

4. Plug your Router’s power supply into the black port labeled “Power” on the back of your Router.
5. Wait 20 seconds for the Router to start up. Look at the display on the front of the Router. Make sure the “Wired” and “Router” icons are lit up in blue. If they are not, recheck your connections.

## CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents

SECTIONS

1

2

3

4

5

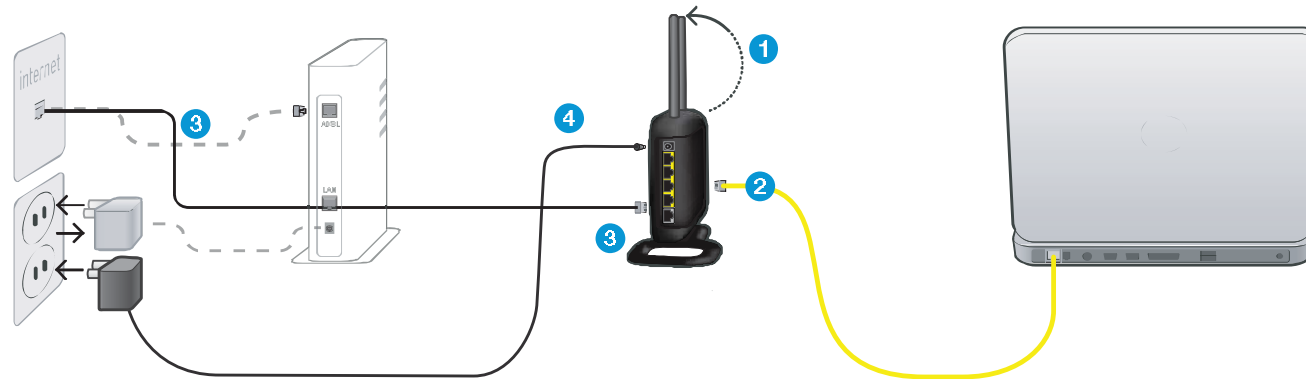
6

7

8

9

10



### 1.2 Replacing an Existing Modem or Modem Router

Follow these steps if you currently have a modem or a modem router that you will be replacing with your new Router.

1. Unpack your new Router from the box and place it next to your old modem. Raise the Router's antennas. Unplug your old modem's power cord.
2. Locate the cable that connects your old modem to your computer. Unplug that cable from your old modem, and plug it into any yellow port labeled "to Wired Computers" on the back of your new Router.
3. Locate the cable that connects your old modem to the ADSL wall jack. Unplug it from your old modem and then connect it to the gray port labeled "to ADSL" on the back of your Router.
4. Plug your Router's power supply into the black port labeled "Power" on the back of your Router.
5. Wait 20 seconds for the Router to start up. Look at the display on the front of the Router. Make sure the "Wired" and "Router" icons are lit in blue. If they are not, recheck your connections.

# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Step 2: Set Up the Router – Run the Setup Assistant Software

- A. Shut down any programs that are running on your computer at this time.

Turn off any firewall or Internet-connection-sharing software on your computer.

- B. Insert the CD into your computer. The Setup Assistant will automatically appear on your computer’s screen within 15 seconds. Click on “Setup Assistant” to run the Setup Assistant. Follow the instructions there.

**IMPORTANT:** Run the Setup Assistant from the computer that is directly connected to the Router from Step 1 – B.



**Note for Windows Users:** If the Setup Assistant does not start up automatically, select your CD-ROM drive from “My Computer” and double-click on the file named “SetupAssistant” to start the Setup Assistant.

### Select Country

Select your country from the drop-down box. Click “Begin” to continue.



Note to US model owner : To comply with US FCC regulation, the country selection function has been completely removed from all US models. The above function is for non-US models only.

# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

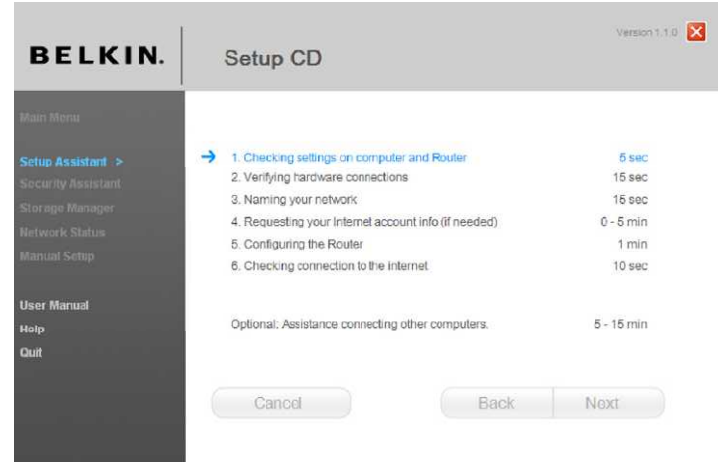
## Confirmation Screen

Verify that you have completed all QIG steps by checking the box to the right of the arrow. Click “Next” to continue.



## Progress Screen

Setup Assistant will show you a progress screen each time a step in the setup has been completed.

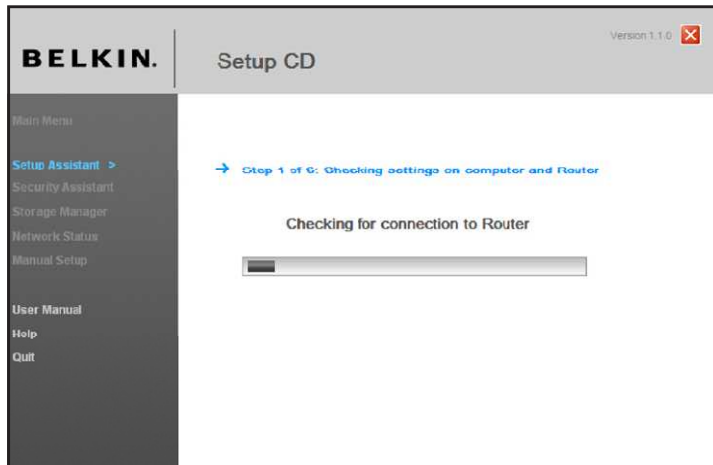


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

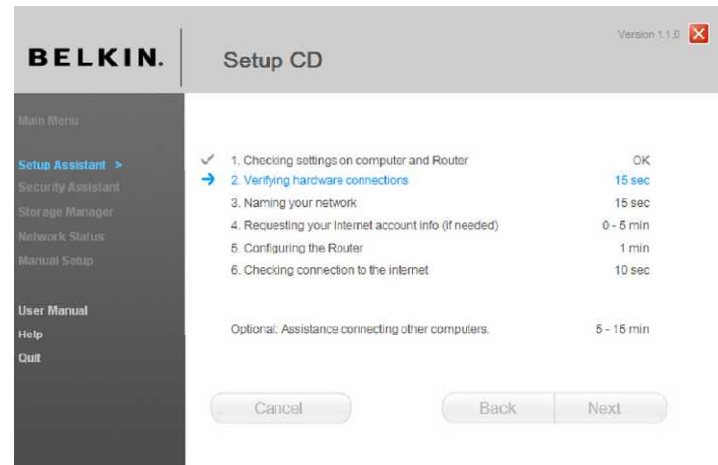
## 2.1 Checking Settings

The Setup Assistant will now examine your computer's network settings and gather information needed to complete the Router's connection to the Internet.



## 2.2 Verifying Hardware Connections

The Setup Assistant will now verify your hardware connection.



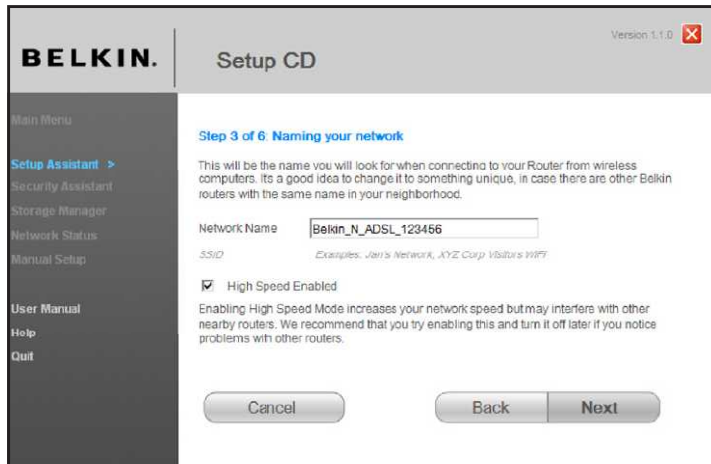
# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## 2.3 Naming your Wireless Network

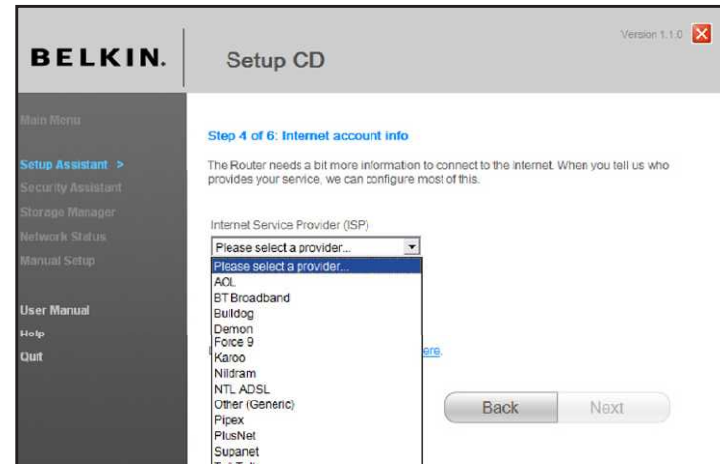
The Setup Assistant will display the default wireless network name or Service Set Identifier (SSID). This is the name of your wireless network to which your computers or devices with wireless network adapters will connect. You can either use the default or change it to something unique. Write down this name for future reference.

If the Router is capable of a “High Speed Mode”, this option will be checked. You can turn off this option later using the Bandwidth Switch described in this **User Manual** (see page 41). Click “Next” to continue.



## 2.4 Requesting Internet Account Info (if needed)

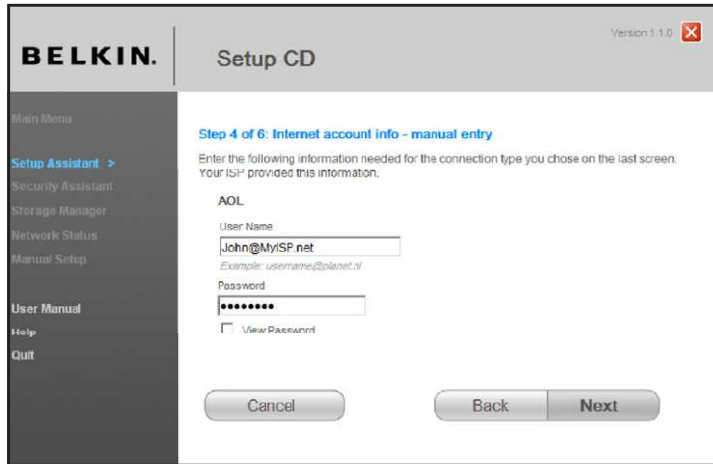
Select your ISP from the drop-down boxes.



# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

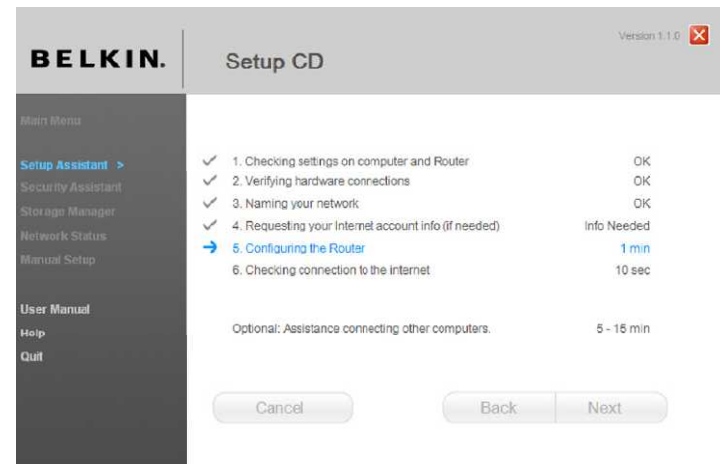
If your Internet account requires a login and password, you will be prompted with a screen similar to the illustration below.. Click “Next” to continue.



## 2.5 Configuring the Router

The Setup Assistant will now configure your Router by sending data to the Router and restarting it. Wait for the on-screen instructions.

**Note:** Do not disconnect any cable or power off the Router while the Router is rebooting. Doing so will render your Router inoperable.

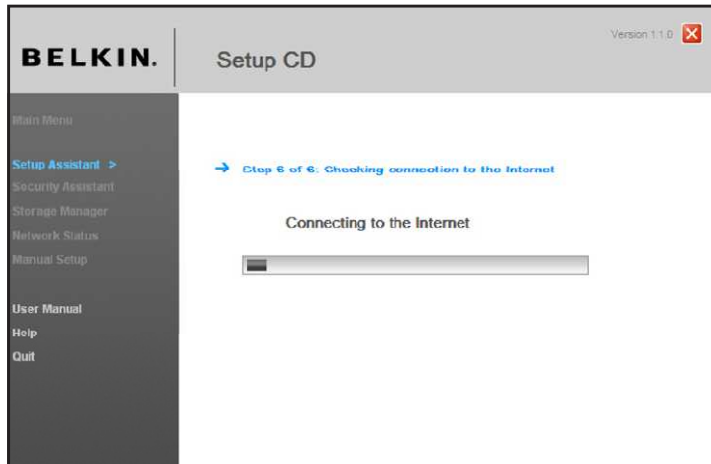


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## 2.6 Checking Internet Connection

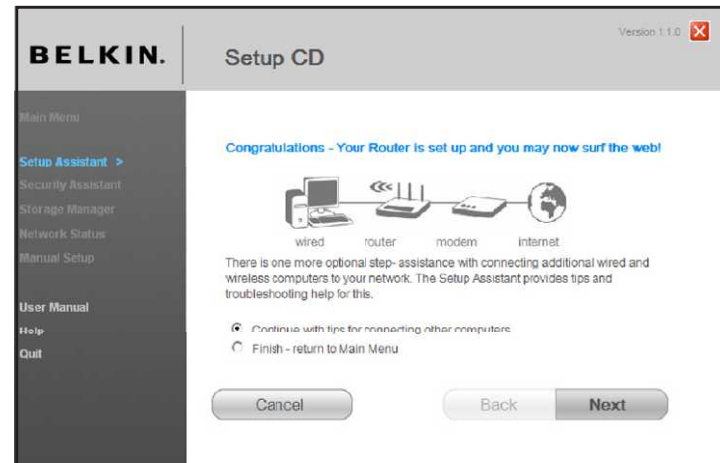
We are almost done. The Setup Assistant will now check your connection to the Internet.



## Congratulations

You have finished installing your new Belkin Router. You will see the Congratulations screen when your Router can connect to the Internet. You can begin surfing by opening your browser and going to any website.

You can use the Setup Assistant to set up your other wired and wireless computers to connect to the Internet by clicking “Next”. If you decide to add computers to your Router later, select “Finish – return to Main Menu” and then click “Next”.



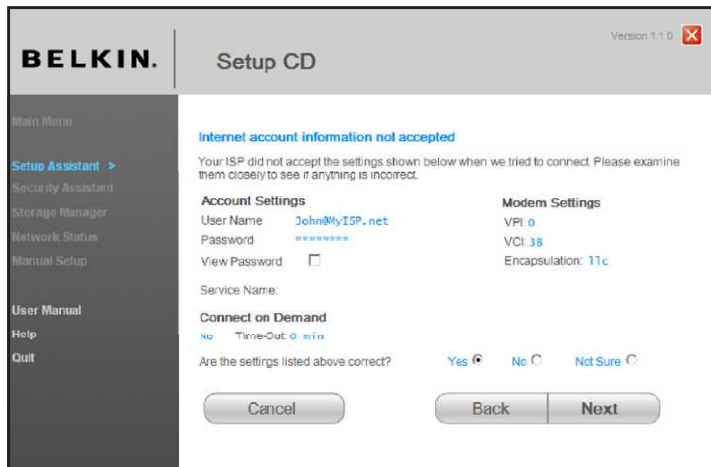


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

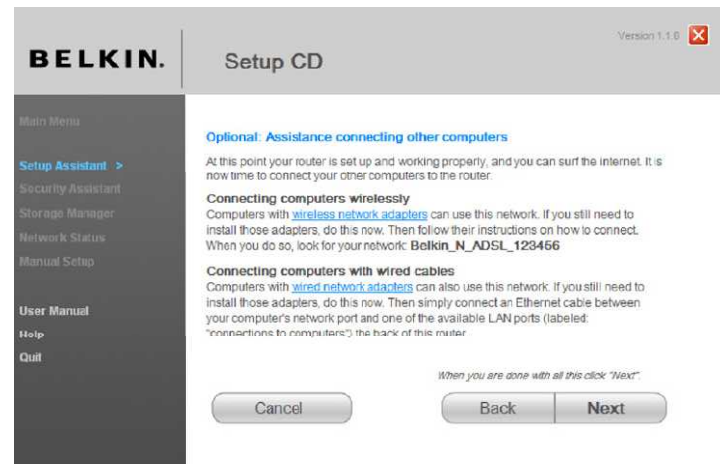
## Troubleshooting

If the Setup Assistant is not able to connect to the Internet, you will see the following screen. Follow the on-screen instructions to go through the troubleshooting steps.



## 2.7 Optional: Assistance Connecting Other Computers

This optional step will help you to connect additional wired and wireless computers to your network. Follow the on-screen instructions.

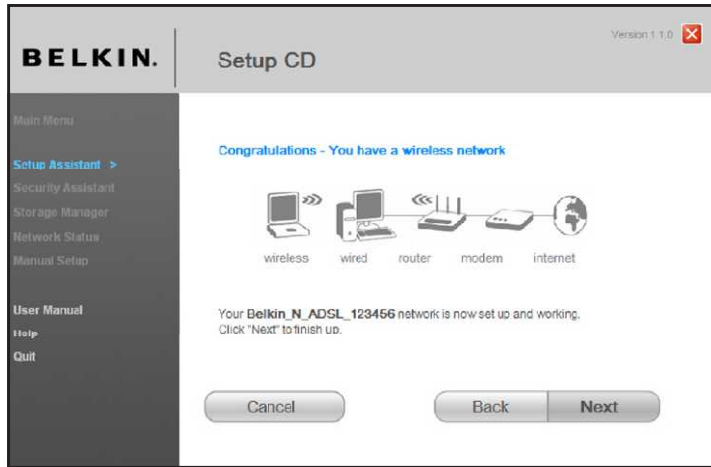


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Congratulations

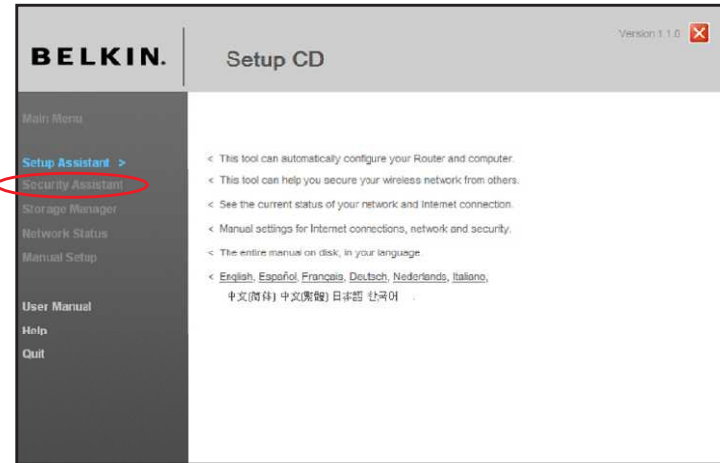
Once you have verified that your other wired and wireless computers are properly connected, your network is set up and working. You can now surf the Internet. Click “Next” to take you back to the main menu.



## Step 3: Set Up Wireless Security – Run the Security Assistant Software

Now that your network is setup and working, it is recommended to turn on wireless security to prevent unauthorized access to your network from neighboring wireless-enabled computers. The Security Assistant will guide you through the process. Click “Security Assistant” and follow the on-screen instructions.

**IMPORTANT:** Run the Setup Assistant from the computer that is directly connected to the Router from Step 1 – B.

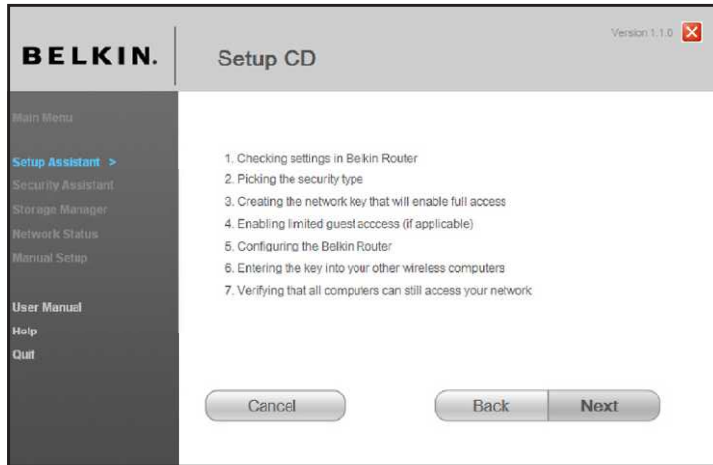


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

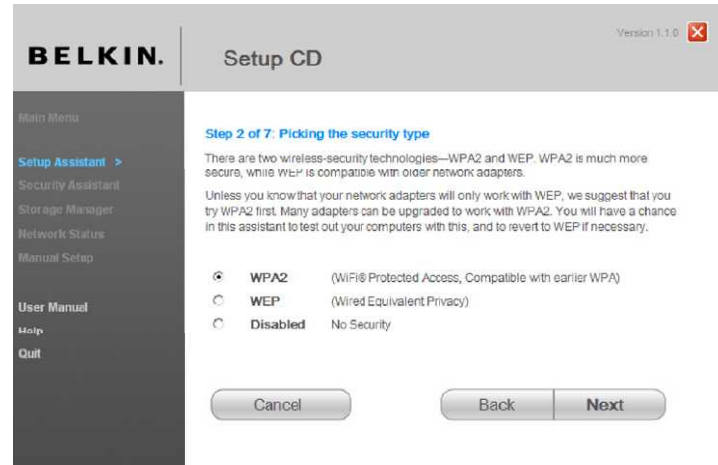
## Progress Screen

The Security Assistant will show you a progress screen each time a step has been completed.



## 3.1 Picking the Security Type

Select the security type for your wireless network and click “Next” to continue.

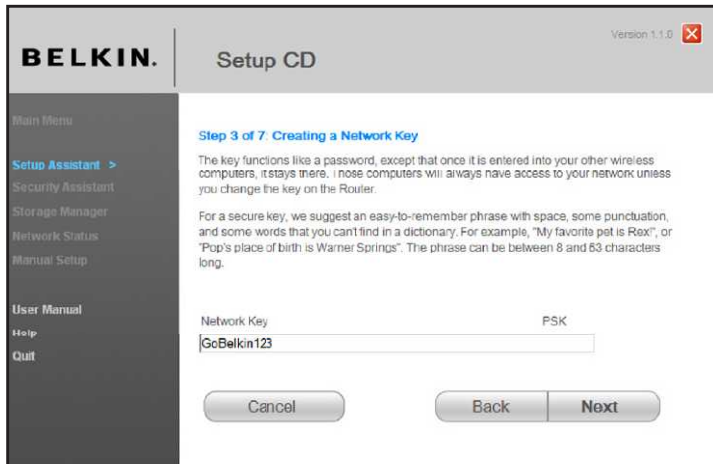


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

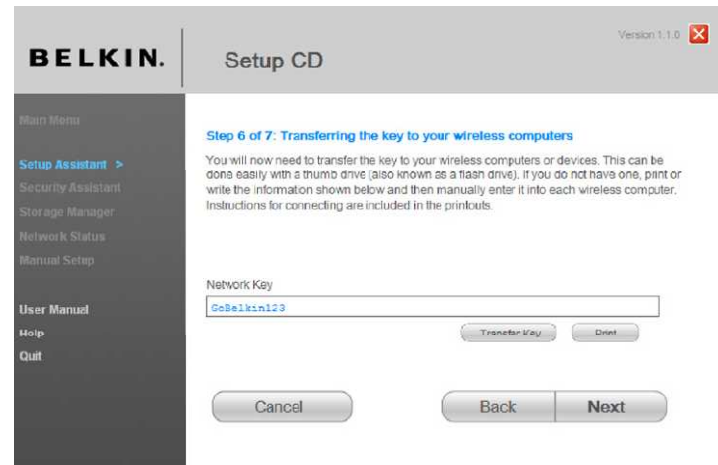
## 3.2 Creating a Network Key

Enter a network key (PSK) for your wireless network and click “Next” to continue.



## 3.3 Transferring the Key

After setting up your wireless security, you will have to transfer the network key to each of your wireless computer. Click on “Transfer Key” if you have an USB flash drive. Follow the on-screen instructions. Or click on “Print” to print the information. Manually enter it to each wireless computer. Then click “Next” to continue.

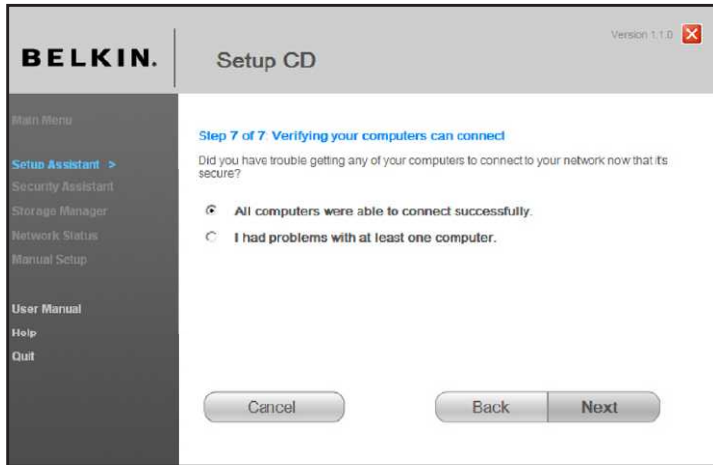


# CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

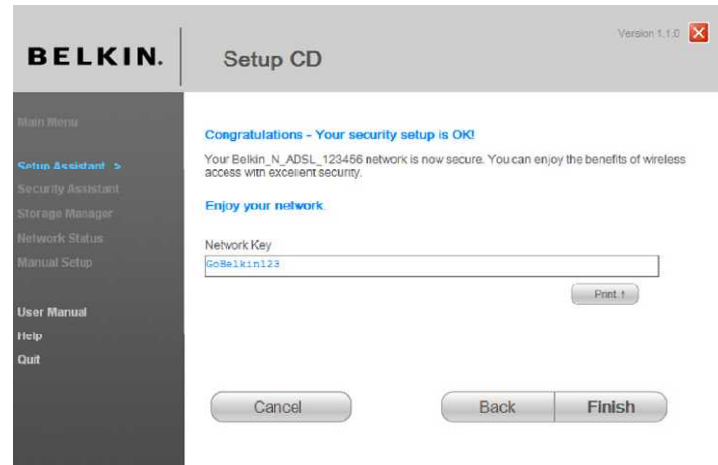
### 3.4 Verifying the Connection

If all your wireless computers are able to connect to the Router, click “Next”. If you are having trouble, select “I had problem with at least one computer” and click “Next”. Then follow on-screen instructions.



### Congratulations

Once you have verified that your wireless computers are properly connected, your wireless network is set up and secured. You now can run your network wirelessly and securely. Click “Finish” to take you back to the main menu.



## CONNECTING AND CONFIGURING YOUR ROUTER

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

### Storage Manager

The Storage Manager is an application that provides easy access to your USB storage device. Once this is installed, your storage device will appear as a drive letter (e.g., D:\) in your “My Computer” folder. You may read and write to this drive as if it were directly attached to your computer. Note that the Router currently supports FAT, FAT32, and NTFS file systems.

Click “Next” to install the Storage Manager application.

Click “Finish” to go back to the main menu. You may now access the drive as if it were directly attached to your computer. Once installed, please use the CD to install this application on all computers on which you wish to access the storage device.

Storage Manager also allows you to safely eject the storage device before unplugging it from your Router. This is recommended before unplugging the USB storage device as there might be another user on your network who is accessing the drive. Simply right-click on the “Storage Manager” icon in the system tray and select the appropriate button.

Alternatively, you do not need to install the Storage Manager in order to access your storage device. Open a file explorer window and type in the address field:

`\\192.168.2.1\DeviceName` where “*DeviceName*” is the name that was assigned to the storage device.

Your Belkin N+ Wireless Modem Router supports up to four USB storage devices through a separate USB hub (not included). Note that the Router can supply a maximum of 500mA of current to the port, so it is recommended that the hub be externally powered. Additionally, some USB hard drives require more than 500mA and must be externally powered to function.

## ALTERNATE SETUP METHOD

### Step 1: Hardware Connections – Follow the Quick Installation Guide

See the QIG or Step 1: Hardware Connections from the previous section.

### Step 2: Set your Computer's Network Settings to Work with a DHCP Server

See the section in this User Manual called “Manually Configuring Network Settings” for directions.

### Step 3: Configuring the Router Using the Web-Based Advanced User Interface

Using your Internet browser, you can access the Router's Web-Based Advanced User Interface. In your browser, type “192.168.2.1” (do not type in anything else such as “http://” or “www”). Then press the “Enter” key.

Address	192.168.2.1
---------	-------------

### Logging into the Router

You will see the Router's home page in your browser window. The home page is visible to any user who wants to see it. To make any changes to the Router's settings, you have to log in. Clicking the “Login” button or clicking on any one of the links on the home page will take you to the login screen. The Router ships with no password entered. In the login screen, leave the password blank and click the “Submit” button to log in.

**Login**

Before you can change any settings, you need to login with a password. If you have not yet set a custom password, then leave this field blank and click "Submit."

**Password**

Default = leave blank

# ALTERNATE SETUP METHOD

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Logging out of the Router

One computer at a time can log into the Router for the purposes of making changes to the settings of the Router. Once a user has logged in to make changes, there are two ways that the computer can be logged out. Clicking the “Logout” button will log the computer out. The second method is automatic. The login will time out after a specified period of time. The default login time-out is 10 minutes. This can be changed from one to 99 minutes. For more information, see the section in this manual titled “Changing the Login Time-Out Setting”.

## Understanding the Web-Based Advanced User Interface

The home page is the first page you will see when you access the Advanced User Interface (UI). The home page shows you a quick view of the Router’s status and settings. All advanced setup pages can be reached from this page.

## 1. Quick-Navigation Links

You can go directly to any of the Router’s advanced UI pages by clicking directly on these links. The links are divided into logical categories and grouped by tabs to make finding a particular setting easier to find. Clicking on the purple header of each tab will show you a short description of the tab’s function.

## 2. Home Button

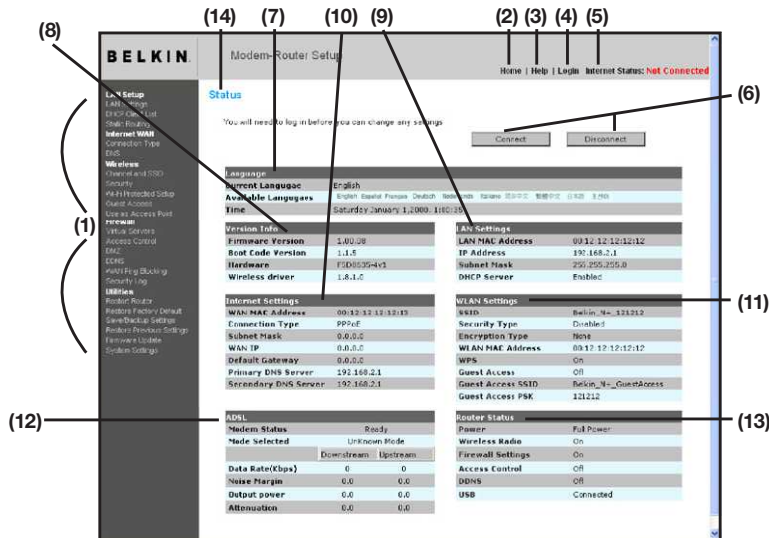
The home button is available in every page of the UI. Pressing this button will take you back to the home page.

## 3. Help Button

The “Help” button gives you access to the Router’s help pages. Help is also available on many pages by clicking “more info” next to certain sections of each page.

## 4. Login/Logout Button

This button enables you to log in and out of the Router with the press of one button. When you are logged into the Router, this button will change to read “Logout”. Logging into the Router will take you to a separate login page where you will need to enter a password. When you are logged into the Router, you can make changes to the settings. When you are finished making changes, you can log out of the Router by clicking the “Logout” button. For more information about logging into the Router, see the section called “Logging into the Router”.





## ALTERNATE SETUP METHOD

### 5. Internet-Status Indicator

This indicator is visible in all pages of the Router, indicating the connection status of the Router. When the indicator says “Connected” in blue, the Router is connected to the Internet. When the Router is not connected to the Internet, the indicator will read “No Connection” in RED. The indicator is automatically updated when you make changes to the settings of the Router.

### 6. Connect/Disconnect Buttons

Use these buttons to manually connect or disconnect your ADSL connection as needed.

### 7. Language

Shows the active language for the Advanced User Interface. Select a desirable language by clicking one of the available languages.

### 8. Version Info

Shows the firmware version, boot-code version, hardware version, and serial number of the Router.

### 9. LAN Settings

Shows you the settings of the Local Area Network (LAN) side of the Router. Changes can be made to the settings by clicking on any one of the links (IP Address, Subnet Mask, DHCP Server) or by clicking the “LAN” quick-navigation link on the left side of the screen.

### 10. Internet Settings

Shows the settings of the Internet/WAN side of the Router that connects to the Internet. Changes to any of these settings can be made by clicking on the links or by clicking on the “Internet/WAN” quick-navigation link on the left side of the screen.

### 11. WLAN Settings

Shows the status of the Router’s Wireless and Guest Access features. Changes can be made to the settings by clicking on any one of the links or by clicking the quick-navigation links on the left side of the screen.

### 12. ADSL Info

Shows the ADSL status and transmission rates.

### 13. Router Status

Shows the status of various features of the Router, including the power mode and USB port.

### 14. Page Name

The page you are on can be identified by this name. This User Manual will sometimes refer to pages by name. For instance “LAN > LAN Settings” refers to the “LAN Settings” page.

# ALTERNATE SETUP METHOD

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Step 4: Configuring your Router for Connection to your Internet Service Provider (ISP)

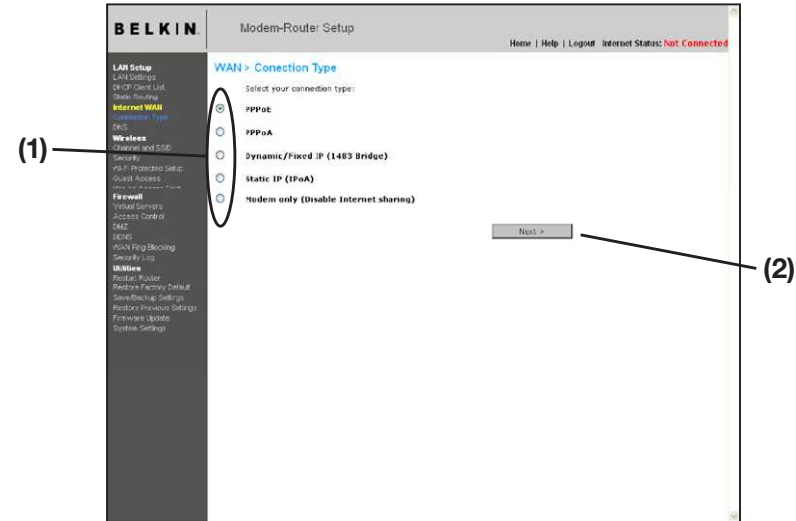
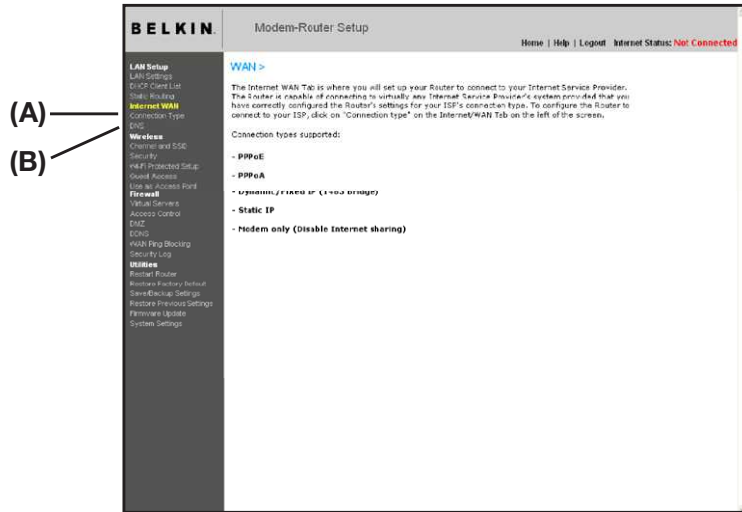
The “Internet/WAN” tab is where you will set up your Router to connect to your Internet Service Provider (ISP). The Router is capable of connecting to virtually any ISP’s system provided you have correctly configured the Router’s settings for your ISP’s connection type. Your ISP connection settings are provided to you by your ISP. To configure the Router with the settings that your ISP gave you, click “Connection Type” **(A)** on the left side of the screen. Select the connection type you use. If your ISP gave you DNS settings, clicking “DNS” **(B)** allows you to enter DNS address entries for ISPs that require specific settings. Clicking “MAC Address” will let you clone your computer’s MAC address or type in a specific WAN MAC address, if required by your ISP. When you have finished making settings, the “Internet Status” indicator will read “connection OK” if your Router is set up properly.

## Connection Type

From the “Connection Type” page, you can select one of these five connection types based on the instruction provided by your ISP:

- PPPoE
- PPPoA
- Dynamic/Fixed IP (1483 Bridged)
- Static IP (IPoA)
- Modem Only (Disable Internet Sharing)

Select the type of connection you use by clicking the radio button **(1)** next to your connection type and then clicking “Next” **(2)**.



## ALTERNATE SETUP METHOD

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

### Setting your ISP Connection Type to PPPoE or PPPoA

PPPoE (Point-to-Point Protocol over Ethernet) is the standard method of connecting networked devices. It requires a user name and password to access the network of your ISP for connecting to the Internet. PPPoA (PPP over ATM) is similar to PPPoE, but is mostly implemented in the UK. Select PPPoE or PPPoA and click “Next”. Then enter the information provided by your ISP, and click “Apply Changes” to activate your settings.

The screenshot shows the Belkin Modem-Router Setup interface. The left sidebar contains navigation links for LAN Setup, Internet WAN, Wireless, Firewall, and Utilities. The main content area is titled 'WAN > Connection Type > PPPoE'. It includes a note: 'To enter your PPPoE settings, type in your information below and click "Apply changes" [here](#).' Below this are input fields for Username, Password, Re-type Password, Service Name, VPI / VCI (0 / 38), Encapsulation (LLC), and MTU (1432). There is a checkbox for 'Disconnect after' with a field for minutes of inactivity. At the bottom are 'Clear Changes' and 'Apply Changes' buttons.

1. **User Name** – Enter the user name. (Assigned by your ISP).
2. **Password** – Enter your password. (Assigned by your ISP).
3. **Retype Password** – Confirm the password. (Assigned by your ISP).
4. **VPI/VCI** – Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. (Assigned by your ISP).
5. **Encapsulation** – Select your encapsulation type (supplied by your ISP) to specify how to handle multiple protocols at the ATM transport layer.

**VC-MUX:** PPPoA Virtual Circuit Multiplexer (null encapsulation) allows only one protocol running per virtual circuit with fewer overheads.

**LLC:** PPPoA Logical Link Control allows multiple protocols running over one virtual circuit (more overhead).

6. **MTU** – Enter the MUT value for your ISP.

7. **Disconnect after of x minutes of no activity** – Checking the box and enter the number of minute that you want the modem router to auto disconnect after no activity. After this time has been exceeded, the connection will be terminated.

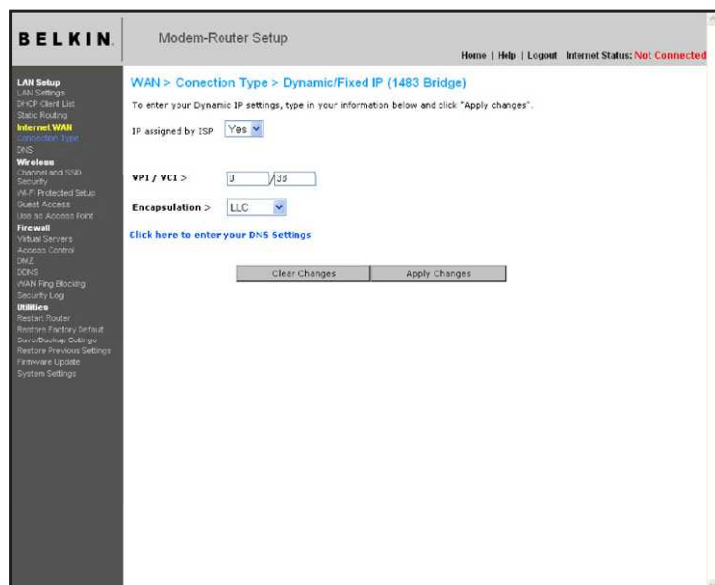
Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless your click “Apply Changes”.

# ALTERNATE SETUP METHOD

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Setting your Connection Type to Dynamic/Fixed IP (1483 Bridged)

This connection method bridges your network and ISP's network together. The Router can obtain IP address automatically from your ISP's DHCP server or accept fixed IP address assigned by your ISP.

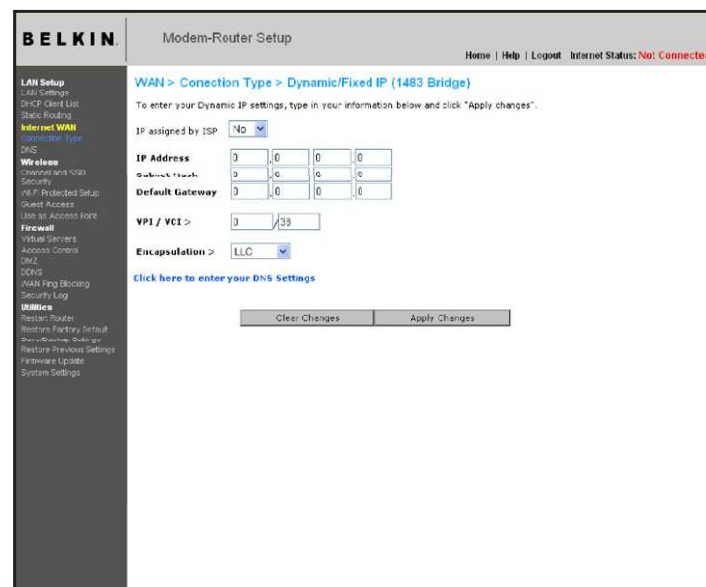


### For Dynamic IP connection:

**1. VPI/VCI** – Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. These identifiers are assigned by your ISP.

**2. Encapsulation** – Select LLC or VC MUX your ISP uses.

Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless you click “Apply Changes”.



## ALTERNATE SETUP METHOD

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

### For Static IP connection:

- 1. IP assigned by ISP** – Select “No” if your ISP instructed you to use fixed IP.
- 2. IP Address** – Enter an IP address assigned by your ISP for the Router WAN interface.
- 3. Subnet Mask** – Enter a subnet mask assigned by your ISP.
- 4. Default Gateway** – Enter a default gateway IP address assigned by your ISP.
- 5. VPI/VCI** – Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. These identifiers are assigned by your ISP.
- 6. Encapsulation** – Select LLC or VC MUX your ISP uses.

Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless you click “Apply Changes”.

## ALTERNATE SETUP METHOD

Table of Contents

SECTIONS

1

2

3

4

5

6

7

8

9

10

### Setting your ISP Connection Type to Static IP (IPoA)

This connection type is also called “Classical IP over ATM” or “CLIP”, which your ISP provides a fixed IP for your Router to connect to the Internet.

The screenshot shows the Belkin Modem-Router Setup interface. The left sidebar contains a navigation menu with categories: LAN Setup, Internet WAN, Wireless, Firewall, and Utilities. The main content area is titled 'WAN > Connection Type > Static IP (IPoA)'. It includes instructions: 'To enter your Static IP settings, type in your information below and click "Apply changes". [More Info](#)'. The configuration fields are: WAN IP Address (0.0.0.0), Subnet Mask (0.0.0.0), Gateway IP Address (0.0.0.0), VPI / VCI (0 / 38), and Encapsulation (LLC). A link for DNS settings is provided. At the bottom are 'Clear Changes' and 'Apply Changes' buttons.

- 1. WAN IP Address** – Enter an IP address assigned by your ISP for the Router WAN interface.
- 2. Subnet Mask** – Enter a subnet mask assigned by your ISP.
- 3. Use static Default Gateway** – Enter a default gateway IP address. If the Router cannot find the destination address within its local network, it will forward the packets to the default gateway assigned by your ISP.
- 4. VPI/VCI** – Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. These identifiers are assigned by your ISP.
- 5. Encapsulation** – Select LLC or VC MUX your ISP uses.

Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless you click “Apply Changes”.

## ALTERNATE SETUP METHOD

Table of Contents

SECTIONS

1

2

3

4

5

6

7

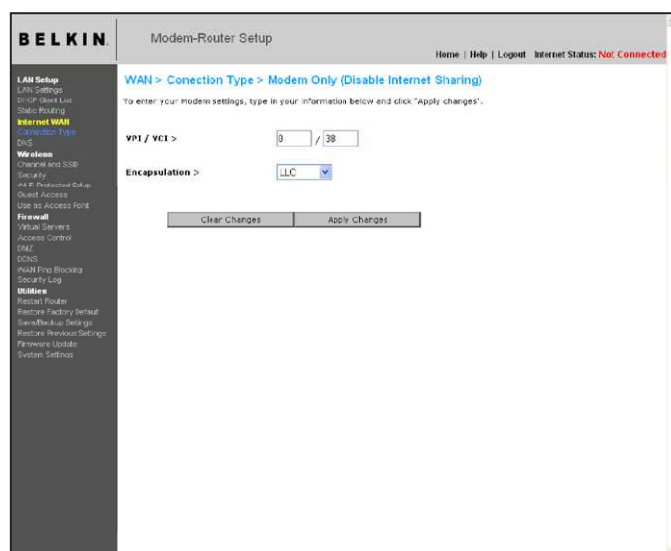
8

9

10

### Setting your Connection Type to Modem Only (Disable Internet Sharing)

In this mode, the Router simply acts as a bridge passing packets across the DSL port. It requires additional software to be installed on your computers in order to access the Internet.

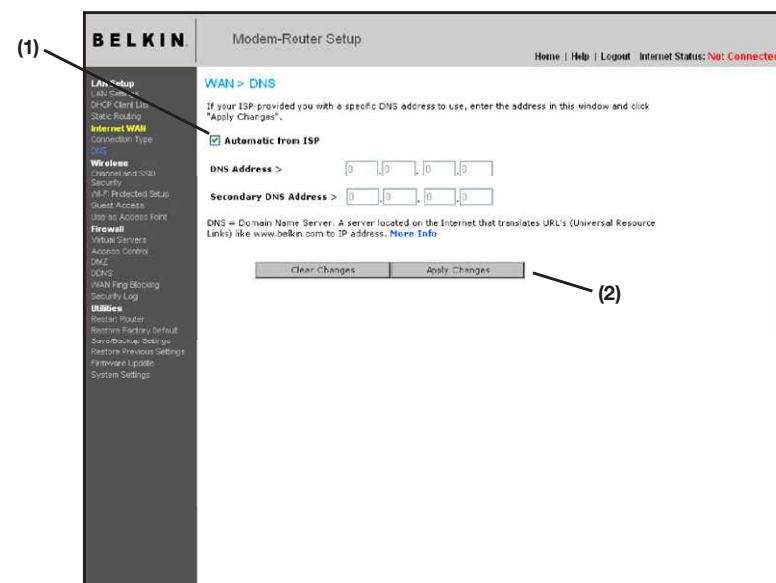


1. **Enable Bridge Service** – Check this box to enable bridge service
2. **VPI/VCI** – Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. (Assigned by your ISP).
3. **Encapsulation** – Select LLC or VC MUX your ISP uses.

Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless you click “Apply Changes”.

### Setting Custom Domain Name Server (DNS) Settings

A “Domain Name Server” is a server located on the Internet that translates Universal Resource Locators (URLs) like “www.belkin.com” to IP addresses. Many Internet Service Providers (ISPs) do not require you to enter this information into the Router. The “Automatic from ISP” box **(1)** should be checked if your ISP did not give you a specific DNS address. If you are using a static IP connection type, then you may need to enter a specific DNS address and secondary DNS address for your connection to work properly. If your connection type is dynamic or PPPoE, it is likely that you do not have to enter a DNS address. Leave the “Automatic from ISP” box checked. To enter the DNS address settings, uncheck the “Automatic from ISP” box and enter your DNS entries in the spaces provided. Click “Apply Changes” **(2)** to save the settings.



# USING THE WEB-BASED ADVANCED USER INTERFACE

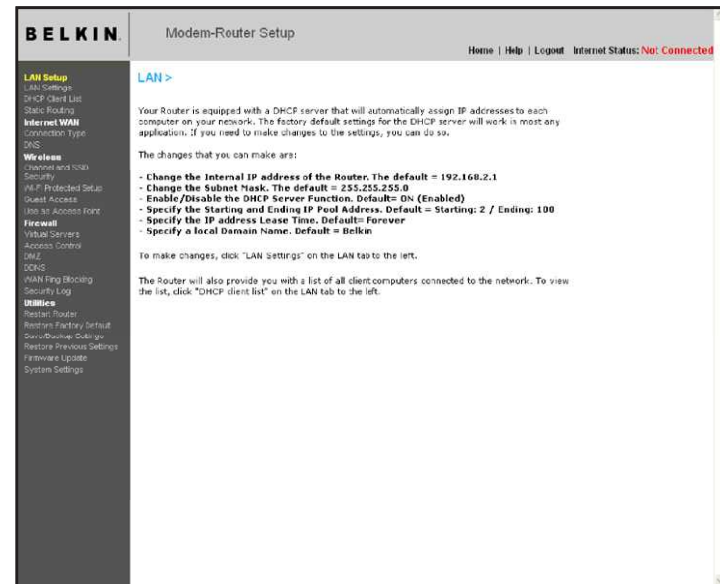
Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

Using your Internet browser, you can access the Router’s Web-Based Advanced User Interface. In your browser, type “192.168.2.1” (do not type in anything else such as “http://” or “www”) then press the “Enter” key.

You will see the Router’s home page in your browser window.

## Viewing the LAN Settings

Clicking on the header of the LAN tab **(1)** will take you to the LAN tab’s header page. A quick description of the functions can be found here. To view the settings or make changes to any of the LAN settings, click on “LAN Settings” **(2)** or to view the list of connected computers, click on “DHCP client list” **(3)**.



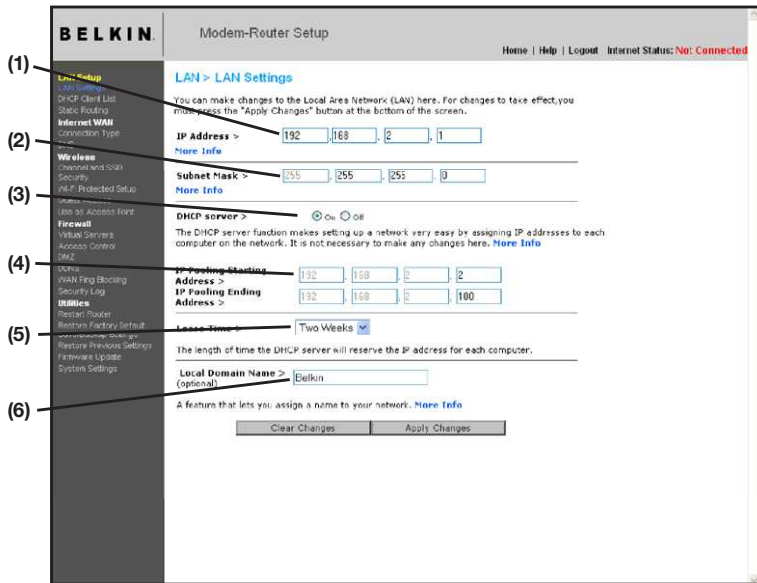


# USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Changing LAN Settings

All settings for the internal LAN setup of the Router can be viewed and changed here.



### 1. IP Address

The “IP address” is the internal IP address of the Router. The default IP address is “192.168.2.1”. To access the advanced setup interface, type this IP address into the address bar of your browser. This address can be changed if needed. To change the IP address, type in the new IP address and click “Apply Changes”. The IP address you choose should be a non-routable IP. Examples of a non-routable IP are:

192.168.x.x (where x is anything between 0 and 255)

10.x.x.x (where x is anything between 0 and 255)

### 2. Subnet Mask

There is no need to change the subnet mask. This is a unique, advanced feature of your Belkin Router. It is possible to change the subnet mask if necessary; however, do NOT make changes to the subnet mask unless you have a specific reason to do so. The default setting is “255.255.255.0”.

### 3. DHCP Server

The DHCP server function makes setting up a network very easy by assigning IP addresses to each computer on the network automatically. The default setting is “On”. The DHCP server can be turned OFF if necessary; however, in order to do so you must manually set a static IP address for each computer on your network. To turn off the DHCP server, select “Off” and click “Apply Changes”.

### 4. IP Pool

The range of IP addresses set aside for dynamic assignment to the computers on your network. The default is 2–100 (99 computers). If you want to change this number, you can do so by entering a new starting and ending IP address and clicking on “Apply Changes”. The DHCP server can assign 100 IP addresses automatically. This means that you cannot specify an IP address pool larger than 100 computers. For example, starting at 50 means you have to end at 150 or lower so as not to exceed the 100-client limit. The starting IP address must be lower in number than the ending IP address.

# USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## 5. Lease Time

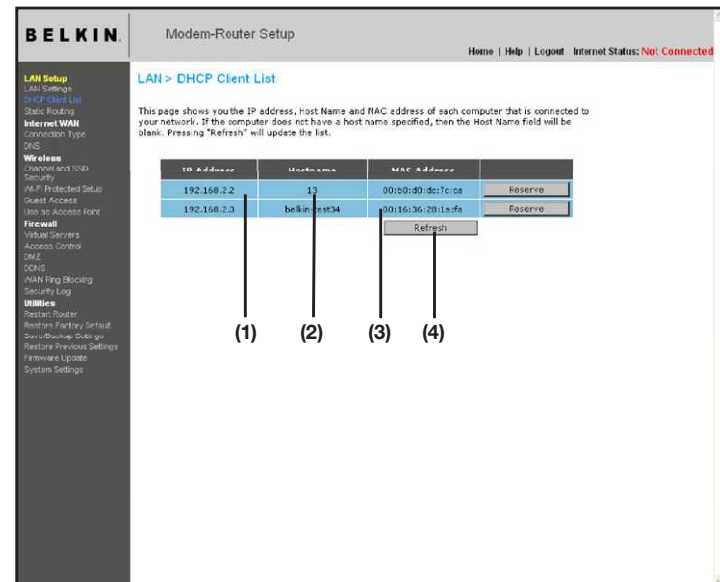
The length of time the DHCP server will reserve the IP address for each computer. We recommend that you leave the lease time set to “Forever”. The default setting is “Forever”, meaning that any time a computer is assigned an IP address by the DHCP server, the IP address will not change for that particular computer. Setting lease times for shorter intervals such as one day or one hour frees IP addresses after the specified period of time. This also means that a particular computer’s IP address may change over time. If you have set any of the other advanced features of the Router such as DMZ or client IP filters, these are dependent on the IP address. For this reason, you will not want the IP address to change.

## 6. Local Domain Name

The default setting is “Belkin”. You can set a local domain name (network name) for your network. There is no need to change this setting unless you have a specific advanced need to do so. You can name the network anything you want such as “MY NETWORK”.

## Viewing the DHCP Client List Page

You can view a list of the computers (known as clients), which are connected to your network. You are able to view the IP address **(1)** of the computer, the host name **(2)** (if the computer has been assigned one), and the MAC address **(3)** of the computer’s network interface card (NIC). Pressing the “Refresh” **(4)** button will update the list. If there have been any changes, the list will be updated.



## Configuring the Wireless Network Settings

The “Wireless” tab lets you make changes to the wireless network settings. From this tab you can make changes to the wireless network name or Service Set Identifier (SSID), operating channel, encryption security settings, and configure the Router to be used as an access point.

## USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents

SECTIONS

1

2

3

4

5

6

7

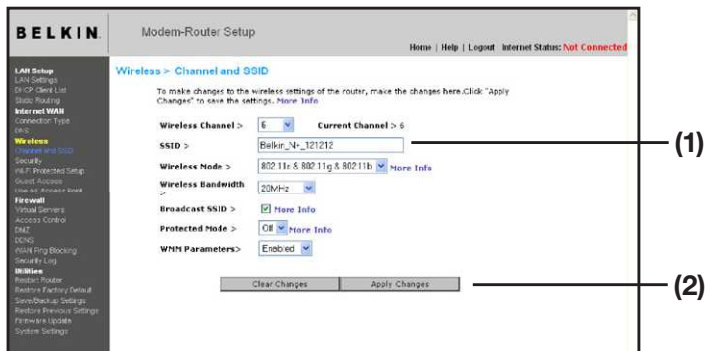
8

9

10

### Changing the Wireless Network Name (SSID)

To identify your wireless network, a name called the SSID is used. The SSID is your network name. The default network name of the Router is “Belkin N1 Wireless” followed by six digits that are unique to your Router. Your network name will look something like “Belkin\_N1\_Wireless\_123456”. You can change this to anything you choose, or you can leave it unchanged. Keep in mind, if you decide to change your wireless network name, and there are other wireless networks operating in your area, your network name needs to be different from other wireless networks that may be operating in your area. To change the SSID, type in the SSID that you want to use in the SSID field (1) and click “Apply Changes” (2). The change is immediate. If you make a change to the SSID, your wireless-equipped computers may also need to be reconfigured to connect to your new network name. Refer to the documentation of your wireless network adapter for information on making this change.



**Note:** Please periodically check for new Router firmware updates from the “Utilities > Firmware update” page. Newer firmware can fix problems, add wireless features, and/or improve wireless performance (see page 61).

### Changing the Wireless Channel

There are a number of operating channels from which you can choose—in the United Kingdom (and most of Europe) and Australia, there are 13. In other countries, there are other channel requirements. Your Router is configured to operate on the proper channels for the country in which you reside. The channel can be changed if needed. If there are other wireless networks operating in your area, your network should be set to operate on a channel that is different than the other wireless networks.

### Extension Channel

The IEEE 802.11n draft specification allows the use of a secondary channel to double the bandwidth (see “Using the Bandwidth Switch” on the next page). An appropriate extension channel will be displayed when operating in 40MHz mode (see “Using the Wireless Mode Switch” below). The channel can be changed if needed.

### Using the Wireless Mode Switch

This switch allows you to set the Router’s wireless modes. There are several modes.

**Note:** Some modes may require firmware updates to be enabled.

#### 1) Off

This mode will turn OFF the Router’s access point, so no wireless devices can join the network. Turning off the wireless function of your Router is a great way to secure your network when you are away from home for a long period of time, or don’t want to use the wireless feature of the Router at a certain time.

## USING THE WEB-BASED ADVANCED USER INTERFACE

### 2) 802.11b

Setting the Router to this mode will allow only 802.11b-compliant devices to join the network. N1/draft 802.11n and 802.11g devices will operate at the 802.11b speed only.

### 3) 802.11g

Setting the Router to this mode will allow only 802.11g- and 802.11b-compliant devices to join the network. N1/draft 802.11n devices will operate at the 802.11g speed only.

### 4) 802.11n

Setting the Router to this mode will allow only N1/draft 802.11n-compliant devices to join the network, keeping out 802.11g and 802.11b devices.

### 5) 802.11b & 802.11g

Setting the Router to this mode will allow 802.11g- and 802.11b-compliant devices to join the network.

### 6) 802.11g & 802.11n

Setting the Router to this mode will allow N1/draft 802.11n- and 802.11g-compliant devices to join the network.

### 7) 802.11b & 802.11g & 802.11n

Setting the Router to this mode will allow N1/draft 802.11n-, 802.11g-, and 802.11b-compliant devices to join the network.

### Using the Bandwidth Switch

This switch allows you to set the Router's wireless bandwidth modes. There are several modes available:

#### 1) 20MHz/40MHz

Setting the Router to this mode allows it to switch automatically between 20MHz and 40MHz operation. This mode enables 40MHz operation, to maximize speed for N1, draft 802.11n-compliant devices when conditions permit. When a legacy 802.11g access point is presented and occupies an adjacent secondary channel, the Router automatically reverts to 20MHz operation to maximize compatibility. Set to this mode for higher performance.

#### 2) 20MHz

Setting the Router to this mode allows only 20MHz operation. This mode is compatible with N1, draft 802.11n-, 802.11g-, and 802.11b-compliant devices, but will limit N1, draft 802.11n-compliant devices' bandwidth by half. Reducing bandwidth to 20MHz-only operation might solve some wireless problems. This is the default mode for the Router.

### Using the Broadcast SSID Feature

**Note:** This advanced feature should be employed by advanced users only. For security, you can choose not to broadcast your network's SSID. Doing so will keep your network name hidden from computers that are scanning for the presence of wireless networks. To turn off the broadcast of the SSID, remove the check mark from the box next to "Broadcast SSID", and then click "Apply Changes". The change is immediate. Each computer now needs to be set to connect to your specific SSID; an SSID of "ANY" will no longer be accepted. Refer to the documentation of your wireless network adapter for information on making this change.

## USING THE WEB-BASED ADVANCED USER INTERFACE

### Protected Mode Switch

Protected mode ensures proper operation of N1, draft 802.11n-compliant devices on your wireless network when 802.11g or 802.11b devices are present or when there is heavy 802.11g or 802.11b traffic in the operating environment. Use protected mode if your network consists of a mix of Belkin N1 Wireless Cards and 802.11g or 802.11b cards on your network. If you are in an environment that includes little to no 802.11g or 802.11b wireless network traffic, you will achieve the best N1 wireless performance with protected mode OFF. Conversely, in an environment with HEAVY 802.11g or 802.11b traffic or interference, you will achieve the best N1 wireless performance with protected mode ON. This will ensure N1 wireless performance is not affected.

### 802.11e/WMM (Wi-Fi® Multimedia) QoS

WMM, based on 802.11e QoS (Quality of Service), prioritizes important data on your network, such as multimedia content and voice-over-IP (VoIP), so it will not be interfered with by other data being sent over the network. This feature requires other wireless devices, such as Wi-Fi phones or wireless laptops, to support WMM for best results.

### Changing the Wireless Security Settings

Your N+ Wireless Modem Router is equipped with the latest security standard called Wi-Fi Protected Access™ 2 (WPA2™) and the legacy security standard called Wired Equivalent Privacy (WEP). Your Router also supports the Wi-Fi Protected Setup (WPS) specification, which simplifies the setup of a wireless network. WPS uses familiar methodologies, such as typing in a Personal Identification Number (PIN) or pushing a button, to enable users to automatically configure network names and strong WPA™/WPA2 data encryption and authentication. By default, wireless security is disabled. To enable security, you will need to determine which standard you want to use. To access the security settings, click “Security” on the “Wireless” tab.

### Using Wi-Fi Protected Setup

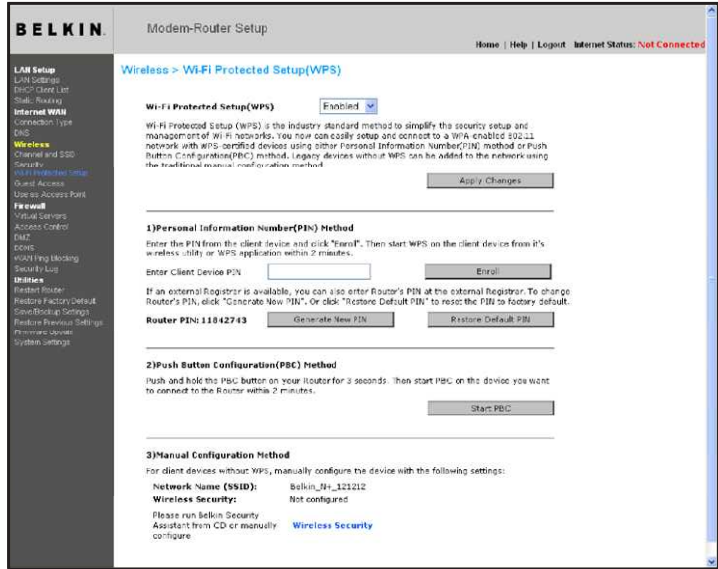
WPS uses WPA2 (described on page 44) for encryption. It does not provide additional security, but rather, standardizes the method for securing your wireless network. You may use either the Push Button Configuration (PBC) method or PIN method to allow a device access to your wireless network. Conceptually, the two methods work as follows:

**PBC:** First, initiate the WPS PBC procedure on the client device. Refer to your client’s documentation on this procedure. Then, within two minutes, push and hold the WPS button located on the front of your Router for two seconds. Pushing the PBC button will automatically enable WPS. The client has now been securely added to your wireless network.

**PIN:** The client device has an 8-digit PIN number that is associated with WPS. Enable WPS through the screen illustrated below. Enter the client’s PIN into the Router’s internal registrar (accessed through this screen). The client will be automatically enrolled into your wireless network within two minutes.

# USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents	<b>SECTIONS</b>	1	2	3	4	5	6	7	8	9	10
-------------------	-----------------	---	---	---	---	---	---	---	---	---	----



4. Push Button Configuration (PBC) Method: PBC is an alternate method to connect to a WPS network. Push the PBC button located on the back of the Router for two seconds, and then initiate the PBC on the client device. Alternatively, push the “Start PBC” soft button to start this process.

5. Manual Configuration Method: This section lists the default security settings to be set up if not using WPS.

- 1. Wi-Fi Protected Setup (WPS): Enabled or Disabled.
- 2. Personal Identification Number (PIN) Method: In this method, a wireless client wishing to access your network must supply an 8-digit PIN to the Router. After clicking “Enroll”, you must start the WPS handshaking procedure from the client within two minutes.
- 3. Router PIN: If an external registrar is available, you may enter in the Router’s PIN to the registrar. Click “Generate New PIN” to change the PIN from the default value. Click “Restore Default PIN” to reset the PIN value.



## USING THE WEB-BASED ADVANCED USER INTERFACE

### WPA2 Requirements

**IMPORTANT:** In order to use WPA2 security, all your computers and wireless client adapters must be upgraded with patches, driver, and client utility software that supported WPA2. At the time of this User Manual's publication, a couple security patches are available, for free download, from Microsoft®. These patches work only with the Windows XP operating system. Other operating systems are not supported at this time.

For Windows XP computers that do not have Service Pack 2 (SP2), a file from Microsoft called "Windows XP Support Patch for Wireless Protected Access (KB 826942)" is available for free download at <http://support.microsoft.com/kb/826942>

For Windows XP with Service Pack 2, Microsoft has released a free download to update the wireless client components to support WPA2 (KB971021). The update is available from:

<http://support.microsoft.com/kb/917021>

**IMPORTANT:** You also need to ensure that all your wireless client cards/adapters support WPA2, and that you have downloaded and installed the latest driver. Most of the Belkin wireless cards have driver updates available for download from the Belkin support site:

[www.belkin.com/networking](http://www.belkin.com/networking).

### Setting WPA/WPA2-Personal (PSK)

Like WPA security, WPA2 is available in both WPA2-Personal (PSK) mode and WPA2-Enterprise (RADIUS) mode. Typically, WPA2-Personal (PSK) is the mode that will be used in a home environment, while WPA2-Enterprise (RADIUS) is implemented in a business environment where an external radius server distributes the network key to the clients automatically. This guide will focus on WPA2-Personal (PSK) usage. Please refer to the User Manual for more information about wireless security and different types of wireless security.

1. After you've set up your Router, go to the "Security" page under "Wireless" and select "WPA/WPA2-Personal (PSK)" from the "Security Mode" drop-down menu.
2. For "Authentication", select "WPA-PSK", "WPA2-PSK", or "WPA-PSK + WPA2-PSK". This setting will have to be identical on the wireless clients that you set up. "WPA-PSK + WPA2-PSK" mode will allow the Router to support clients running either WPA or WPA2 security.
3. For "Encryption Technique", select "TKIP", "AES", or "TKIP+AES". This setting will have to be identical on the wireless clients that you set up.
4. Enter your pre-shared key (PSK). This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the wireless clients that you set up. For example, your PSK might be something like: "Smith family network key". Click "Apply Changes" to finish. You must now set all wireless clients to match these settings.

## USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents

SECTIONS

1

2

3

4

5

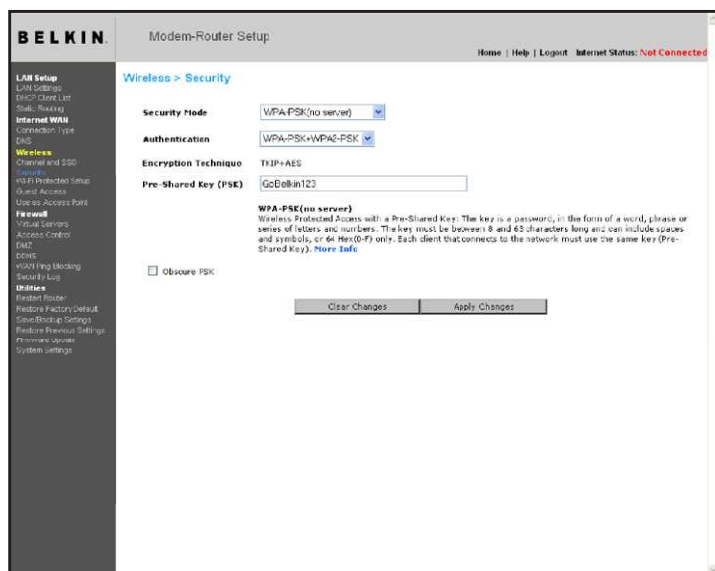
6

7

8

9

10



**IMPORTANT:** Make sure your wireless computers are updated to work with WPA2 and have the correct settings to get proper connection to the Router.

### Setting WPA Security

**Note:** To use WPA security, your wireless network cards must be equipped with software that supports WPA. At the time this User Manual was published, a security patch from Microsoft is available for free download. This patch works only with Windows XP.

Your Router supports WPA-PSK (no server). WPA-PSK uses what is known as a pre-shared key as the security key. A pre-shared key is basically a password that is between eight and 39 characters long. It can be a combination of letters, numbers, or characters. Each client uses the same key to access the network. Typically this is the mode that will be used in a home environment.

### Setting WPA-PSK

1. From the “Security Mode” drop-down menu, select “WPA-PSK (no server)”.
2. For “Encryption Technique”, select “TKIP” or “AES”. This setting will have to be identical on the clients that you set up.
3. Enter your pre-shared key. This can be from eight to 39 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients that you set up.
4. Click “Apply Changes” to finish. You must now set all clients to match these settings.



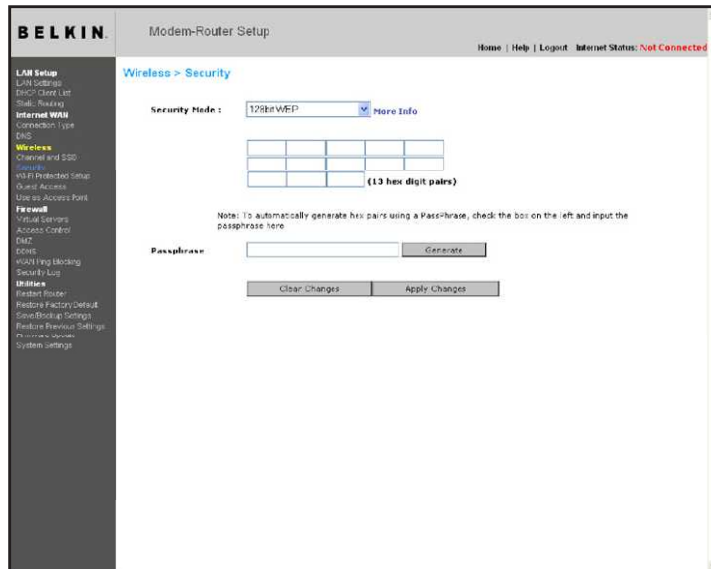
# USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

## Setting WEP Encryption

**Note to Mac users:** The “Passphrase” option will not operate with Apple® AirPort®. To configure encryption for your Mac computer, set the encryption using the manual method described in the next section.

1. Select “128-bit WEP” or “64-bit WEP” from the drop-down menu.
2. After selecting your WEP encryption mode, you can enter you WEP key manually by typing in the hex WEP key manually, or you can type a passphrase in the “PassPhrase” field and click “Generate” to create a WEP key from the passphrase. Click “Apply Changes” to finish. You must now set all of your clients to match these settings.



3. Encryption in the Router is now set. Each of your computers on your wireless network will now need to be configured with the same passphrase. Refer to the documentation of your wireless network adapter for information on making this change.

## Using a Hexadecimal Key

A hexadecimal key is a mixture of numbers and letters from A–F and 0–9. 64-bit keys are 10 digits long and can be divided into five two-digit numbers. 128-bit keys are 26 digits long and can be divided into 13 two-digit numbers.

For instance:

**AF 0F 4B C3 D4** = 64-bit key

**C3 03 0F AF 0F 4B B2 C3 D4 4B C3 D4 E7** = 128-bit key

In the boxes below, make up your key by writing in two characters between A–F and 0–9. You will use this key to program the encryption settings on your Router and your wireless computers.

Example: **AF 0F 4B C3 D4**

64-bit:

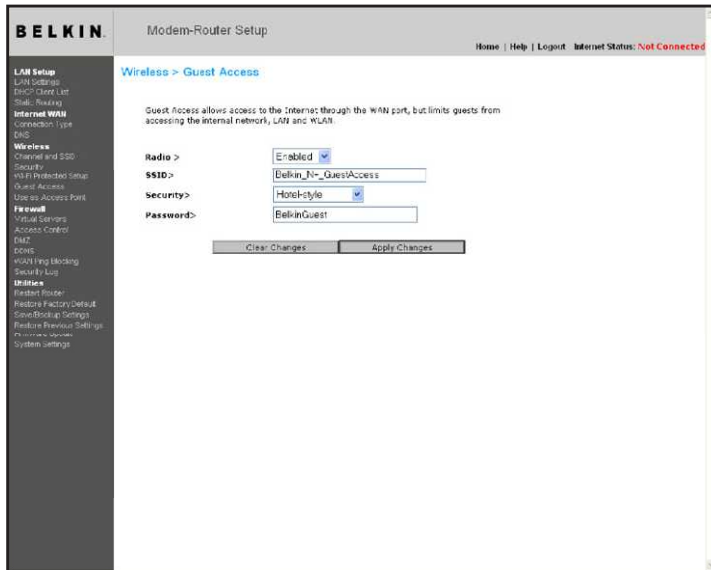
128-bit:

**Note to Mac users:** Original Apple AirPort products support 64-bit encryption only. Apple AirPort 2 products can support 64-bit or 128-bit encryption. Please check your product to see which version you are using. If you cannot configure your network with 128-bit encryption, try 64-bit encryption.

# USING THE WEB-BASED ADVANCED USER INTERFACE

Table of Contents	SECTIONS	1	2	3	4	5	6	7	8	9	10
-------------------	----------	---	---	---	---	---	---	---	---	---	----

**Guest Access:** This option allows guest users access to the Internet while keeping them away from your private network. By default, this option is disabled. Guest users should connect to the Belkin N+ Guest network.



## Security options for Guest Access:

**Hotel Style:** Users will be redirected to a hotel-style landing page when they first try to access the Internet. They must correctly enter in the passphrase to log in.

**WPA/WPA2-PSK:** This option is similar to the security mode for the main router network. Users must correctly enter the PSK in order to join the guest network.