

# BELKIN®

## N1 Wireless Modem Router



## User Manual

F5D8631-4

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# Introduction

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Thank you for purchasing the Belkin N1 Wireless Modem Router (the Modem 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 Wireless Networking Hardware for Optimal Performance” on the next page. 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 resources, such as files and hard drives among all the connected computers in your home
- Share a single printer with the entire family
- 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

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## Revolutionary N1 Wireless Technology with MIMO (N1 MIMO)

Your Belkin N1 Wireless Modem Router uses a new smart-antenna technology called Multiple Input Multiple Output (MIMO). N1 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 N1 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 N1 MIMO, on the other hand, uses three antennas. This design helps combat distortion and interference. Belkin's N1 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 N1 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 N1 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 N1 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.

## Placement of your N1 Wireless Modem Router

### Important Factors for Placement and Setup

Your wireless connection will be stronger the closer your computer is to your Modem 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 Modem Router and connected devices increases. This may or may not be noticeable to you. As you move further from your Modem 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 Modem 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. Modem Router Placement

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

## 2. Avoid Obstacles and Interference

Avoid placing your Modem 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 Modem Router).

## 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 Modem 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 Modem 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 Modem Router and computers to a channel as far away from other networks as possible.

# Introduction

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- 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 Modem 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

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.

## Free Tech Support\*

You can find additional support information on our website [www.belkin.com](http://www.belkin.com) through the tech-support area.

If you want to contact technical support by phone, please call the number you need from the list below\*.

\*Local rates apply

Country	Number	Internet address
AUSTRIA	0820 200766	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
BELGIUM	07 07 00 073	<a href="http://www.belkin.com/nl/networking/">http://www.belkin.com/nl/networking/</a>
CZECH REPUBLIC	239 000 406	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
DENMARK	701 22 403	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
FINLAND	00800 - 22 35 54 60	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
FRANCE	08 - 25 54 00 26	<a href="http://www.belkin.com/fr/networking/">http://www.belkin.com/fr/networking/</a>
GERMANY	0180 - 500 57 09	<a href="http://www.belkin.com/de/networking/">http://www.belkin.com/de/networking/</a>
GREECE	00800 - 44 14 23 90	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
HUNGARY	06 - 17 77 49 06	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
ICELAND	800 8534	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
IRELAND	0818 55 50 06	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
ITALY	02 - 69 43 02 51	<a href="http://www.belkin.com/it/support/tech/issues_more.asp">http://www.belkin.com/it/support/tech/issues_more.asp</a>
LUXEMBOURG	34 20 80 85 60	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
NETHERLANDS	0900 - 040 07 90 €0.10 per minute	<a href="http://www.belkin.com/nl/networking/">http://www.belkin.com/nl/networking/</a>
NORWAY	81 50 0287	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
POLAND	00800 - 441 17 37	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
PORTUGAL	707 200 676	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
RUSSIA	495 580 9541	<a href="http://www.belkin.com/networking/">http://www.belkin.com/networking/</a>
SOUTH AFRICA	0800 - 99 15 21	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
SPAIN	902 - 02 43 66	<a href="http://www.belkin.com/es/support/tech/networkingsupport.asp">http://www.belkin.com/es/support/tech/networkingsupport.asp</a>
SWEDEN	07 - 71 40 04 53	<a href="http://www.belkin.com/se/support/tech/networkingsupport.asp">http://www.belkin.com/se/support/tech/networkingsupport.asp</a>
SWITZERLAND	08 - 48 00 02 19	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
UNITED KINGDOM	0845 - 607 77 87	<a href="http://www.belkin.com/uk/networking/">http://www.belkin.com/uk/networking/</a>
OTHER COUNTRIES	+44 - 1933 35 20 00	



# Product Overview

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## **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 N1 Wireless Modem Router an ideal solution for your home or small office network.

## **Works with Both PCs and Mac® Computers**

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

## **Patent-Pending Network Status Display**

Lighted LEDs on the front of the Modem Router indicate which functions are in operation. You'll know at-a-glance whether your Modem 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 Modem 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 Modem 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 Modem 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.

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## Integrated 10/100 4-Port Switch

The Modem 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 Modem Router will allow your VPN-equipped computer to pass through the Modem Router and to your office network.

## 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 Modem Router. This automatic software determines your network settings for you and sets up the Modem Router for connection to your Internet Service Provider (ISP). In a matter of minutes, your Modem Router will be up and running on the Internet.

**Note:** Setup Assistant software is compatible with Windows 2000, XP, Vista or Mac OS 10.3/10.4. If you are using another operating system, the Modem Router can be set up using the Alternate Setup Method described in this User Manual (see page 23).

# Product Overview

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## **Integrated N1 Wireless Access Point**

N1 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 Modem Modem Router

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## Package Contents

- Belkin N1 Wireless Modem Router
- Quick Installation Guide
- Belkin Setup Assistant Software CD
- RJ11 Telephone Cord
- RJ45 Ethernet Networking Cable
- ADSL Microfilter\*
- Power Supply
- User Manual in CD

\*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 Modem 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

## Setup Assistant Software System Requirements

- A PC running Windows® 2000 or XP, Vista and Mac OS 10.3/10.4
- Minimum 500MHz processor and 128MB RAM
- Internet browser

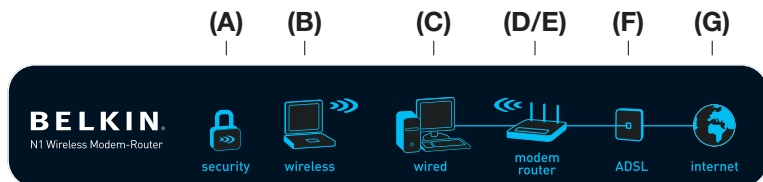
## Internet Connection Settings

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

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



## A. Wireless Security

OFF	Wireless security is off
Solid Blue	Wireless security is on

## B. Wireless-Computer Status

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

## C. Wired-Computer Status

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

# Knowing your Modem Router

## D. Modem Router/Power Status

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

OFF	Modem Router is off
Blinking Blue	Modem Router is booting up
Solid Blue	Modem Router is on and ready

## E. Wireless Status

OFF	Wireless is off
Solid Blue	Wireless is on

## F. ADSL lineStatus

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

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

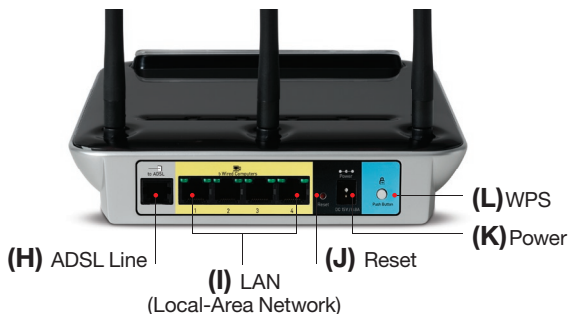
## G. Internet Status

This unique icon shows you when the Modem Router is connected to the Internet. When the light is off, the Modem Router is NOT connected to the Internet. When the light is blinking amber, the Modem Router is attempting to connect to the Internet. When the light is solid blue, the Modem 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 Modem Router’s connection.

OFF	Modem Router is NOT connected to the Internet
Blinking Amber	Modem Router is attempting to connect to the Internet
Solid Blue	Modem Router is connected to the Internet

# Knowing your Modem Router

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## H. Connection to ADSL line - Gray

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

## I. 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.

## J. Reset Button

The “Reset” button is used in rare cases when the Modem Router may function improperly. Resetting the Modem Router will restore the Modem 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 Modem Router

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

## K. Power Jack – Black

Connect the included 15V/1A DC power supply to this jack.

## L. WPS Button

# Connecting and Configuring your Modem Router

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

- Belkin N1 Wireless Modem Router
- RJ11 Telephone Cord
- RJ45 Ethernet Networking Cable
- Power Supply
- Belkin Setup Assistant Software CD
- User Manual

## Setup Assistant

Belkin has provided our Setup Assistant software to make installing your Modem Router a simple and easy task. You can use it to get your Modem Router up and running in minutes. The Setup Assistant requires that your Windows 2000 or XP computer be connected directly to your ADSL line 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 Modem Router. Additionally, if you are using an operating system other than Windows 2000 or XP, you must set up the Modem Router using the “Alternate Setup Method” section of this User Manual.

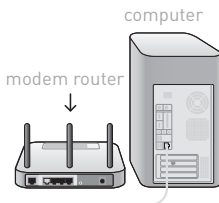
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## Step 1 | Hardware Connections – Follow the Quick Installation Guide (QIG)

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### Brand New Setup

Follow these steps if you are not replacing an existing modem. If you are replacing an existing modem, go to the next section.

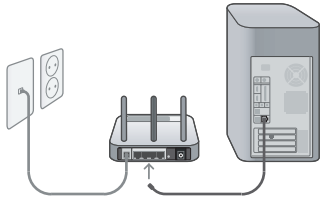


- A.** Unpack your new Modem Router from the box and place it next to your computer. Raise the Modem Router's antennas.

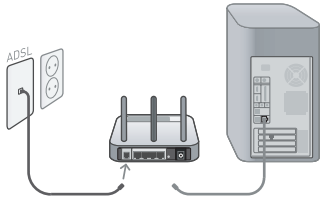


# Connecting and Configuring your Modem Router

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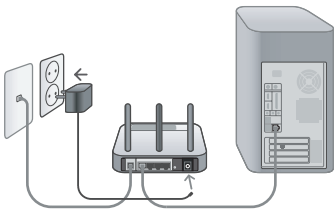


- B.** Retrieve the yellow RJ-45 cable that comes with your Modem Router. First connect it to any yellow port labeled “to Wired Computers” on the back of your Modem Router. Then connect the other end to the networking port on the back of your computer.

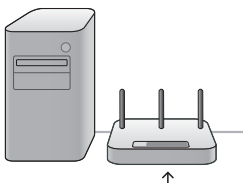


- C.** Retrieve the gray RJ-11 phone cord that comes with your Modem Router. Connect it to the gray port labeled “to ADSL” on the back of your Modem Router. Then connect the other end to the wall jack you will be using for ADSL, or into an ADSL splitter if you are using that.

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



- D.** Plug your Modem Router’s power supply into the black port labeled “Power” on the back of your Modem Router.

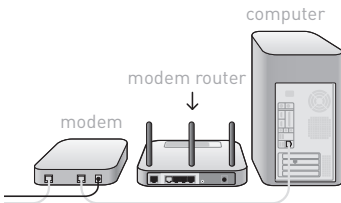


- E.** Wait 20 seconds for the Modem Router to start up. Look at the display on the front of the Modem Router. Make sure the “Wired” and “Modem-Router” icons are lit up in blue. If they are not, recheck your connections

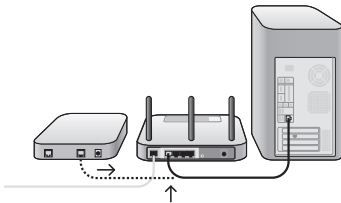
# Connecting and Configuring your Modem Router

## Replacing an Existing Modem or Modem Router

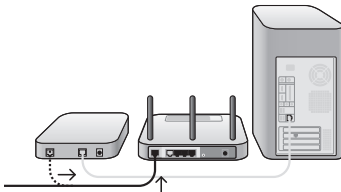
Follow these steps if you currently have a modem or a modem router that you will be replacing with your new Modem Router



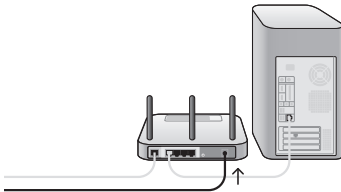
**A.** Unpack your new Modem Router from the box and place it next to your old modem. Raise the Modem Router's antennas. Unplug old modem's power cord.



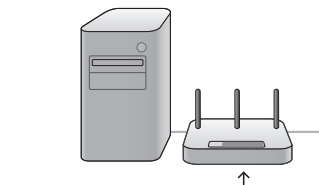
**B.** Locate the cable that connects your old modem to your computer. Unplug that cable from your old modem, and plug it into any yellow port labeled "to Wired Computers" on the back of your new Modem Router.



**C.** 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 Modem Router.



**D.** Plug your Modem Router's power supply into the black port labeled "Power" on the back of your Modem Router.



**E.** Wait 20 seconds for the Modem Router to start up. Look at the display on the front of the Modem Router. Make sure the "Wired" and "Modem-Router" icons are lit up in blue. If they are not, recheck your connections.

# Connecting and Configuring your Modem Router

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

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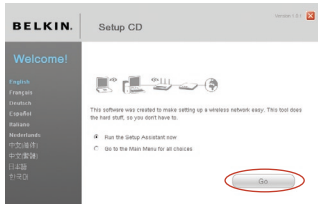
**A.** Shut down any programs that are running on your computer at this time. Turn off any firewall or Internet-connection-sharing software on your computer.

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

**IMPORTANT:** Run the Setup Assistant from the computer that is directly connected to the Modem 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.



# Connecting and Configuring your Modem Router

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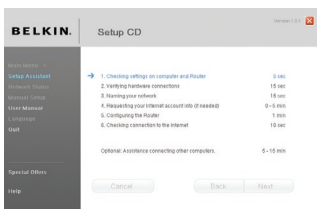
## Select Country

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



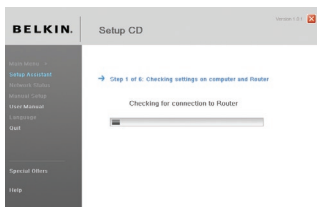
## Confirmation Screen

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



## Progress Screen

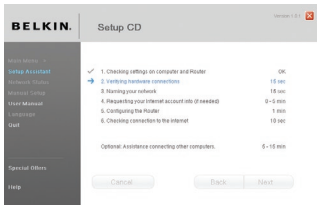
Setup Assistant will show you a progress screen each time a step in the setup has been completed.



## 1.1 Checking Settings

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

# Connecting and Configuring your Modem Router



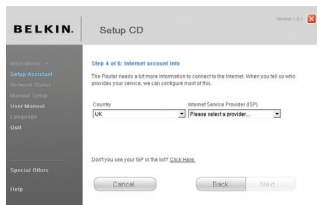
## 1.2 Verifying Hardware Connections

The Setup Assistant will now verify your hardware connection.



## 1.3 Naming your Wireless Network

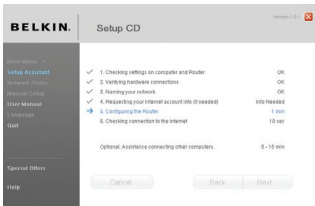
The Setup Assistant will display the default wireless network name or Service Set Identifier (SSID). This is the name of your wireless network to which your computers or devices with wireless network adapters will connect. You can either use the default or change it to something unique. Write down this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



## 1.4 Requesting Internet Account Info (if needed)

If your Internet account requires a login and password, you will be prompted with a screen similar to the illustration below. Select your country or ISP from the drop-down boxes.

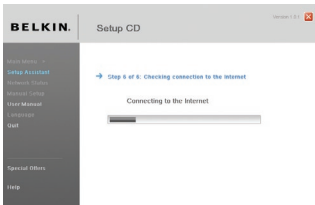
# Connecting and Configuring your Modem Router



## 1.5 Configuring the Modem Router

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

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



## 1.6 Checking Internet Connection

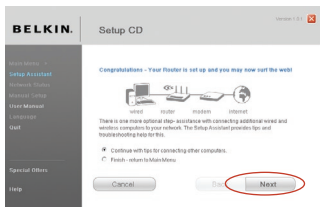
We are almost done. The Setup Assistant will now check your connection to the Internet.

## Congratulations

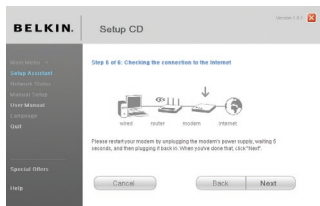
You have finished installing your new Belkin Modem Router. You will see the Congratulations screen when your Modem Router can connect to the Internet. You can begin surfing by opening your browser and going to any website.

# Connecting and Configuring your Modem Router

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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 Modem Router later, select “Exit the Assistant” and then click “Next”.

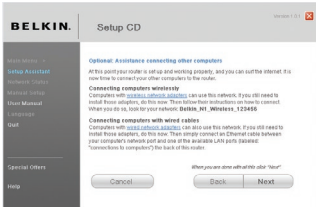


## Troubleshooting

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.

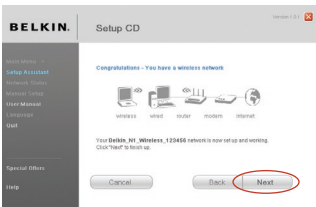
# Connecting and Configuring your Modem Router

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## 1.7 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.



## 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.



# Alternate Setup Method

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## **Step 1 | Hardware Connections – Follow the Quick Installation Guide**

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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**

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

## **Step 3 | Configuring the Modem Router Using the Web-Based Advanced User Interface**

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Using your Internet browser, you can access the Modem 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
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## Logging into the Modem Router

You will see the Modem 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 Modem 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 Modem 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 log in with a password. If you have not yet set a custom password, then leave this field blank and click "Submit".

Password   
Default = leave blank

Clear Submit

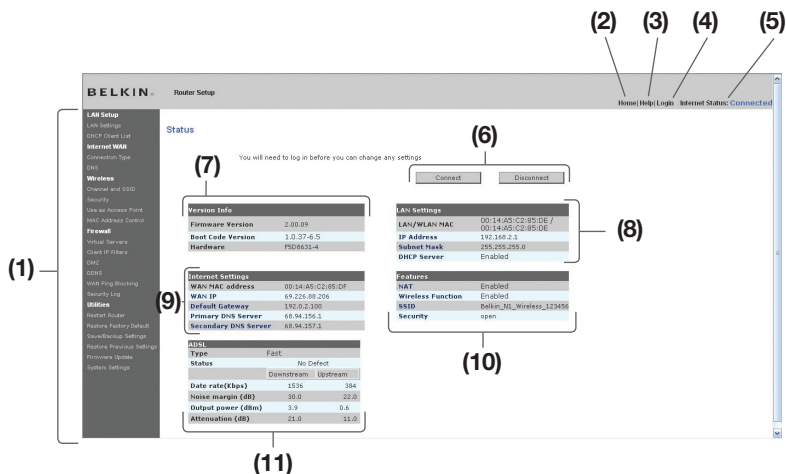
## Logging out of the Modem Router

One computer at a time can log into the Modem Router for the purposes of making changes to the settings of the Modem 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 Modem Router’s status and settings. All advanced setup pages can be reached from this page.

# Alternate Setup Method



## 1. Quick-Navigation Links

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

## 5. Internet-Status Indicator

This indicator is visible in all pages of the Modem Router, indicating the connection status of the Modem Router. When the indicator says “Connected” in blue, the Modem Router is connected to the Internet. When the Modem 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 Modem Router.

## 6. Connect / Disconnect Buttons

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

## 7. Version Info

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

## 8. LAN Settings

Shows you the settings of the Local Area Network (LAN) side of the Modem 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.

## 9. Internet Settings

Shows the settings of the Internet/WAN side of the Modem 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.

## 10. Features

Shows the status of the Modem Router’s NAT, firewall, and wireless 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.

## 11. ADSL Info

Shows the ADSL line status and transmission rates.

## 12. 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.

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# Alternate Setup Method

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

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The “Internet/WAN” tab is where you will set up your Modem Router to connect to your Internet Service Provider (ISP). The Modem Router is capable of connecting to virtually any ISP’s system provided you have correctly configured the Modem Router’s settings for your ISP’s connection type. Your ISP connection settings are provided to you by your ISP. To configure the Modem 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” **(C)** 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 Modem Router is set up properly.

The screenshot shows the Belkin Router Setup web interface. On the left is a navigation menu with the following items: LAN Setup, WAN Setup, Internet WAN, Connection Type, Wireless, Channel and SSID, Security, Web Access Point, MAC Address Control, Firewall, Guest Services, Client IP Filter, DNS, DHCP, WAN Ping Blocking, Security Log, Utilities, Router Router, Restore Factory Default, Restore Factory Settings, Restore Firewall Settings, Restore WAN, and System Settings. The main content area is titled "WAN" and contains the following text: "The Internet/WAN Tab is where you will set up your Router to connect to your Internet Service Provider. The Router is capable of connecting to virtually any Internet Service Provider's system provided that you have correctly configured the Router's settings for your ISP's connection type. To configure the Router to connect to your ISP, click on 'Connection Type' on the Internet/WAN Tab on the left of the screen." Below this text, it lists "Connection types supported:" with the following options: - PPPoE, - PPPoA, - Dynamic IP (1483 Bridge), - Static IP, and - Modem only (Disable Internet sharing). On the left side of the screenshot, three callout boxes labeled (A), (B), and (C) point to the "Connection Type", "DNS", and "MAC Address Control" links in the navigation menu, respectively.

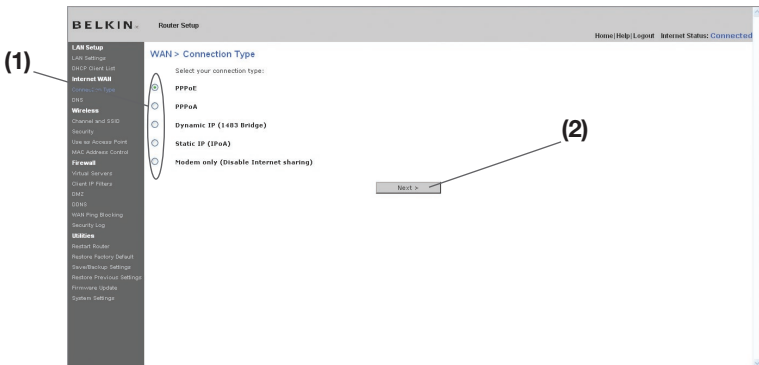
# Alternate Setup Method

## 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 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

## 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 'WAN > Connection Type > PPPoE' configuration page on a Belkin router. The page contains the following fields and options:

- Username >**: A text input field (1).
- Password >**: A text input field (2).
- Re-type Password >**: A text input field (3).
- Service Name >**: A text input field (4).
- VPI / VCI >**: A field with two input boxes, currently showing '0 / 35' (5).
- Encapsulation >**: A dropdown menu currently set to 'LLC' (6).
- MTU > [376-1492]**: A text input field currently showing '1432' (7).
- Apply Changes**: A button at the bottom right (8).

Additional options include 'Disconnect after' (set to 5 minutes) and 'Use Static IP Address' (set to 192.168.255.255).

- 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

# Alternate Setup Method

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- 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.
- 8. Use Static IP Address** - Check this box and enter the static IP address your ISP assigns for your line. Use this option only if instructed by your ISP.

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”.

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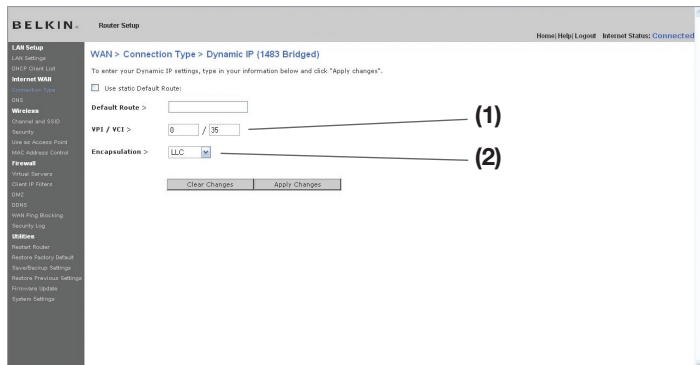
section



# Alternate Setup Method

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

This connection method bridges your network and ISP's network together. The Modem Router will obtain IP address automatically from your ISP's DHCP server.



- 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".

## 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 Modem Router to connect to the Internet.

The screenshot shows the 'WAN > Connection Type > Static IP (IPoA)' configuration page. The left sidebar contains links for LAN Setup, WAN Setup, Internet WAN, Wireless, Firewall, and Utilities. The main content area includes the following fields and options:

- WAN IP Address >**: A text input field with callout (1).
- WAN Subnet Mask >**: A text input field with callout (2).
- Use static Default Route:** A checkbox with callout (3).
- Use IP Address:** A checkbox.
- Use WAN Interface:** A dropdown menu with 'eth\_0\_35' selected and callout (4).
- VPI / VCI >**: A text input field with '0 / 35' and callout (4).
- Encapsulation >**: A dropdown menu with 'LLC' selected and callout (5).

At the bottom of the form are two buttons: 'Clear Changes' and 'Apply Changes'.

1. **WAN IP Address** - Enter an IP address assigned by your ISP for the Modem Router WAN interface.
2. **WAN Subnet Mask** - Enter a subnet mask assigned by your ISP.
3. **Default Route** - Enter a default gateway IP address. If the Modem 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.

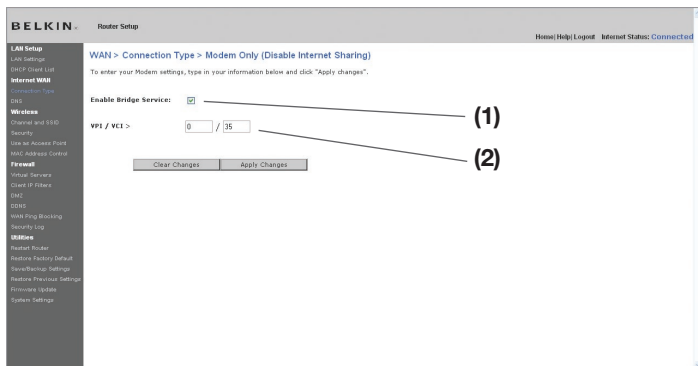
Click “Apply Changes” to save and activate your settings. To go back to the original settings before saving, click “Clear Changes”. Or click any of the Quick-Navigation links for other options. Your new settings will not be saved unless you click “Apply Changes”.

# Alternate Setup Method

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

In this mode, the Modem 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.

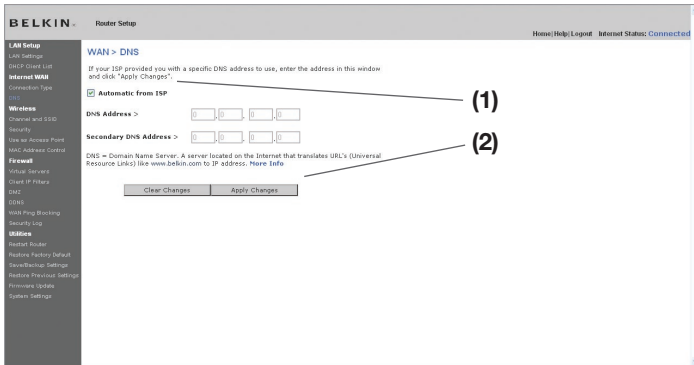


1. **Enable Bridge Service** - Check this box to enable bridge service
2. **VPI/VCI** - Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. (Assigned by your ISP).

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 Locaters (URLs) like “www.belkin.com” to IP addresses. Many Internet Service Providers (ISPs) do not require you to enter this information into the Modem 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

Using your Internet browser, you can access the Modem 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
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You will see the Modem 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)**.

The screenshot shows the Belkin Router Setup web interface. The browser address bar displays "192.168.2.1". The page title is "BELKIN Router Setup". The navigation menu on the left includes: LAN Setup, WAN Setup, Internet Setup, DHCP Client List, Network Map, DNS, Wireless, Channel and SSID, Security, IPv6 and IPv6v6, IPv6, IPv6 Address Conflict, Firewall, DMZ, Host IP Filter, Host IP Filter, DMZ, Host IP Tracking, Security Log, Wireless, Wireless Router, Restore Factory Default, Firmware Update, Firmware Settings, Firmware Upgrade, Firmware Update, and System Settings. The main content area is titled "LAN >" and contains the following text: "Your Router is equipped with a DHCP server that will automatically assign IP addresses to each computer on your network. The factory default settings for the DHCP server will work in most any application. If you need to make changes to the settings, you can do so." Below this, it lists changes that can be made: "Change the Internal IP address of the Router. The default = 192.168.2.1", "Change the Subnet Mask. The default = 255.255.255.0", "Enable/Disable the DHCP Server Function. Default= On (Enabled)", "Specify the Starting and Ending IP Pool Address. Default = Starting: 2 / Ending: 100", and "Specify the IP address Lease Time. Default= Forever". It also notes "Specify a local Domain Name. Default = Belkin." At the bottom, it states "To make changes, click 'LAN Settings' on the LAN tab to the left." and "The Router will also provide you with a list of all client computers connected to the network. To view the list, click 'DHCP client list' on the LAN tab to the left." Three numbered callouts (1, 2, 3) point to the "LAN >" header, the "LAN Settings" link, and the "DHCP client list" link respectively.

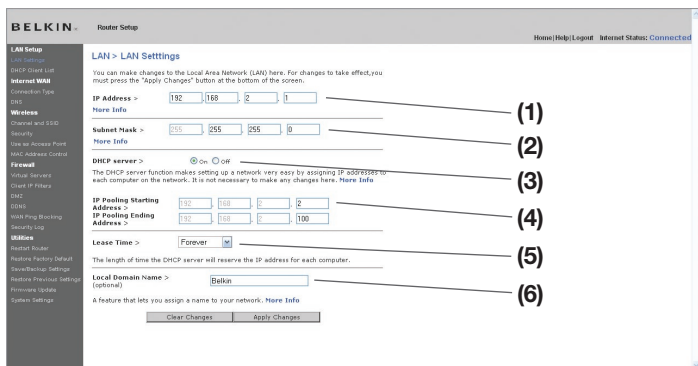
# Using the Web-Based Advanced User Interface

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## Changing LAN Settings

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



### 1. IP Address

The “IP address” is the internal IP address of the Modem 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 Modem 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.

## 5. Lease Time

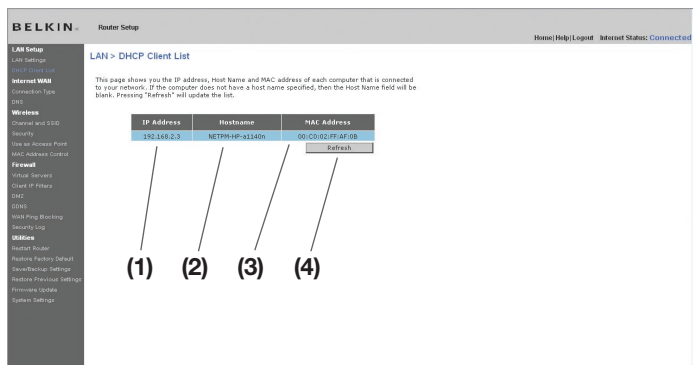
The length of time the DHCP server will reserve the IP address for each computer. We recommend that you leave the lease time set to “Forever”. The default setting is “Forever”, meaning that any time a computer is assigned an IP address by the DHCP server, the IP address will not change for that particular 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 Modem 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.



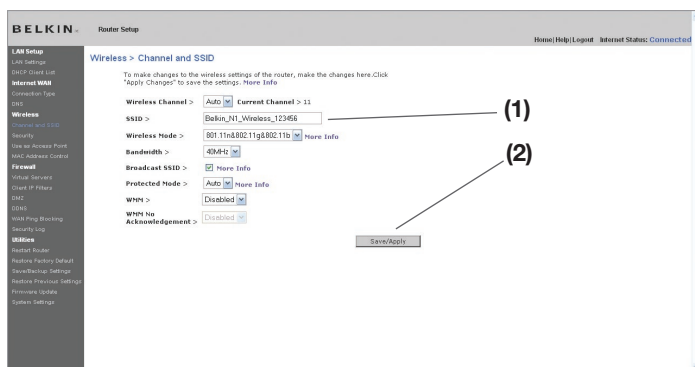
## Configuring the Wireless Network Settings

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 Modem Router to be used as an access point.



## 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 Modem Router is “Belkin N1 Wireless” followed by six digits that are unique to your Modem 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 Modem Router firmware updates from the “Utilities > Firmware update” page. Newer firmware can fix problems, add wireless features, and/or improve wireless performance (see page 63).

## 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 Modem 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.

## Using the Wireless Mode Switch

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

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

### 1. 802.11n & 802.11g & 802.11b

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

### 2. 802.11g only

Setting the Modem Router to this mode will allow only 802.11g-compliant devices to join the network, keeping out any slower 802.11b devices.

### 3. 802.11n only

Setting the Modem 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.

### 4. Off

This mode will turn OFF the Modem Router's access point, so no wireless devices can join the network. Turning off the wireless function of your Modem 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 Modem Router at a certain time.

## Using the Bandwidth Switch

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

### 1. 20MHz

Setting the Modem 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.

### 2. 40MHz

Setting the Modem 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 Modem Router automatically reverts to 20MHz operation to maximize compatibility. We recommend using this as the default mode.

## 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.

## 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.

## WMM (Wi-Fi Multimedia)

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 phone or wireless laptop, to support WMM for best results.

## Changing the Wireless Security Settings

Your 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 WPA2 data encryption and authentication. By default, your Router does not ship with security enabled. You may automatically configure the security settings using WPS. To change the security settings manually, 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

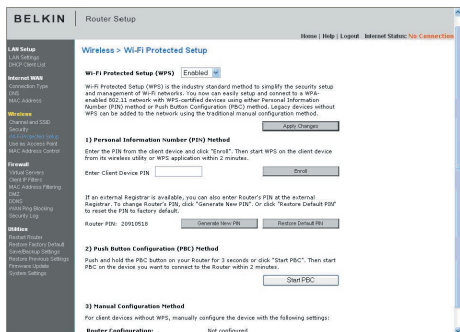
WPS uses WPA2 (described below) for encryption. It does not provide additional security, but rather, standardizes the method for securing your wireless network.

# Using the Web-Based Advanced User Interface

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

**PIN:** The client device has a PIN number (either four or eight digits) that is associated with WPS. Enable WPS through the GUI shown below. Enter the client's PIN into the Router's internal registrar (accessed through this GUI). The client will be automatically enrolled into your wireless network within two minutes.



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 a 4- or 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.
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 three 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 if not using WPS.

The Router features WPA2, which is the second generation of the WPA™ based 802.11i standard. It offers a higher level of wireless security by combining advanced network authentication and stronger Advanced Encryption Standard (AES) encryption methods.

## 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/?kbid=826942>

For Windows XP with Service Pack 2, Microsoft has released a free download to update the wireless client components to support WPA2 (KB893357). The update is available from:  
<http://support.microsoft.com/default.aspx?scid=kb;en-us;893357>

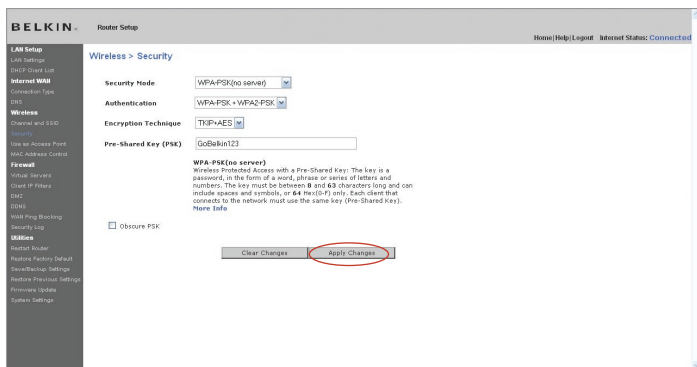
**IMPORTANT:** You also need to ensure that all your wireless client cards/adapters support WPA2, and that you have downloaded and installed the latest driver. Most of the Belkin wireless cards have driver updates available for download from the Belkin support site:  
[www.belkin.com/networking](http://www.belkin.com/networking).

## 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 Modem 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 Modem Router to support clients running either WPA or WPA2 security.

- For “Encryption Technique”, select “TKIP”, “AES”, or “TKIP+AES”. This setting will have to be identical on the wireless clients that you set up.
- 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.



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

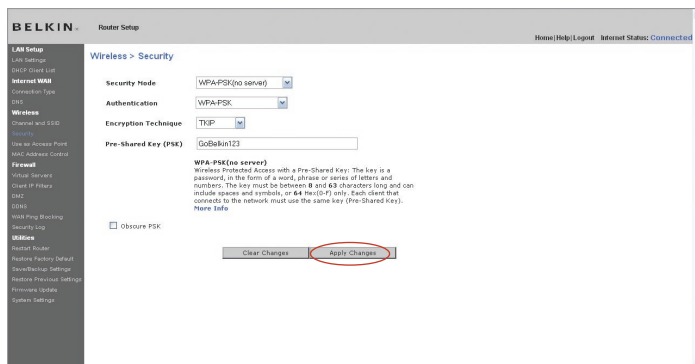
## Setting WPA Security

**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 Modem 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

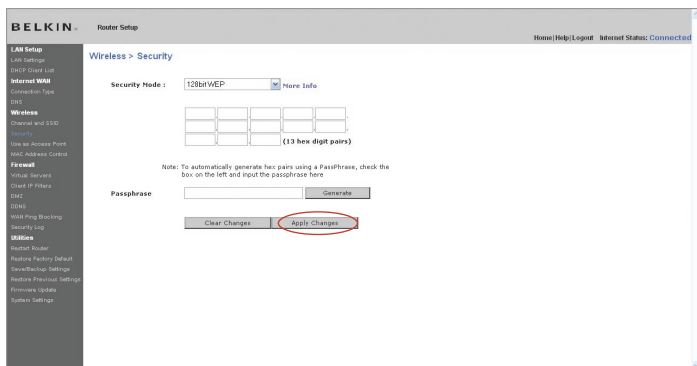
- 1) From the “Security Mode” drop-down menu, select “WPA-PSK (no server)”.
- 2) For “Encryption Technique”, select “TKIP” or “AES”. This setting will have to be identical on the clients that you set up.
- 3) Enter your pre-shared key. This can be from eight to 39 characters and can be letters, numbers, 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.



## 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 your 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 Modem 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 the Web-Based Advanced User Interface

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## 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 Modem Router and your wireless computers.

Example:

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 Access Point Mode

**Note:** This advanced feature should be employed by advanced users only. The Modem Router can be configured to work as a wireless network access point. Using this mode will defeat the NAT IP sharing feature and DHCP server. In AP mode, the Modem Router will need to be configured with an IP address that is in the same subnet as the rest of the network that you will bridge to. The default IP address is 192.168.2.254 and subnet mask is 255.255.255.0. These can be customized for your need.

1. Enable the AP mode by selecting “Enable” in the “Use as Access Point only” page. When you select this option, you will be able to change the IP settings.
2. Set your IP settings to match your network. Click “Apply Changes”.
3. Connect a cable from the WAN port on the Modem Router to your existing network.

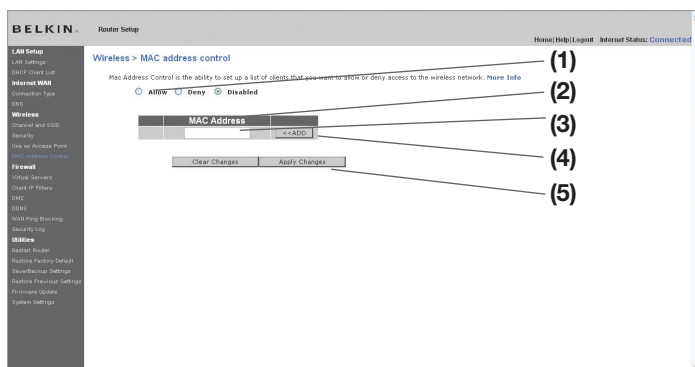
The Modem Router is now acting as an access point. To access the Modem Router advanced user interface again, type the IP address you specified into your browser’s navigation bar. You can set the encryption settings, MAC address filtering, SSID, and channel normally.



## Setting MAC Address Control

The MAC address filter is a powerful security feature that allows you to specify which computers are allowed on the wireless network.

**Note:** This list applies only to wireless computers. This list can be configured so any computer attempting to access the wireless network that is not specified in the filter list will be denied access. When you enable this feature, you must enter the MAC address of each client (computer) to which you want to allow network access. The “Block” feature lets you turn on and off access to the network easily for any computer without having to add and remove the computer’s MAC address from the list.



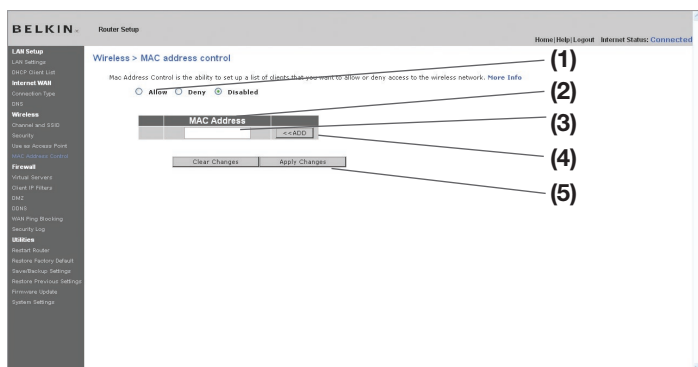
## Setting up an Allow Access List

1. Select the “Allow” radio button **(1)** to begin setting up a list of computers allowed to connect to the wireless network.
2. Next, in the “MAC Address” field that is blank **(3)**, type in the MAC address of the wireless computer you want to be able to access the wireless network, then click “<<Add>>” **(4)**.
3. Continue to do this until all of the computers you want to add have been entered.
4. Click “Apply Changes” **(5)** to finish.

## Setting up a Deny Access List

The “Deny Access” list lets you specify computers that you DO NOT want to access the network. Any computer in the list will not be allowed access to the wireless network. All others will.

1. Select the “Deny” radio button **(1)** to begin setting up a list of computers to be denied access to the wireless network.
2. Next, in the “MAC Address” field that is blank **(3)**, type in the MAC address of the wireless computer you want to deny access to the wireless network, then click “<<Add” **(4)**.
3. Continue to do this until all of the computers you want to deny access to have been entered.
4. Click “Apply Changes” **(5)** to finish.

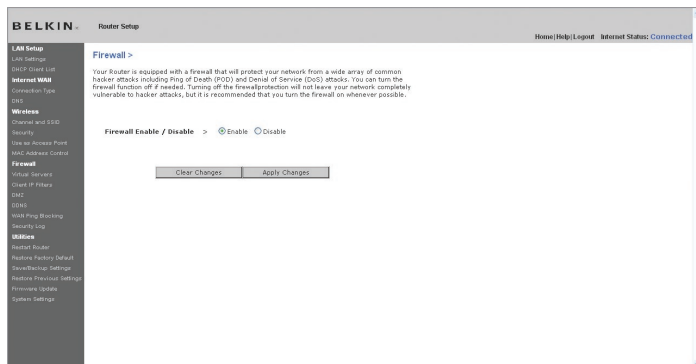


## Configuring the Firewall

Your Modem Router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including:

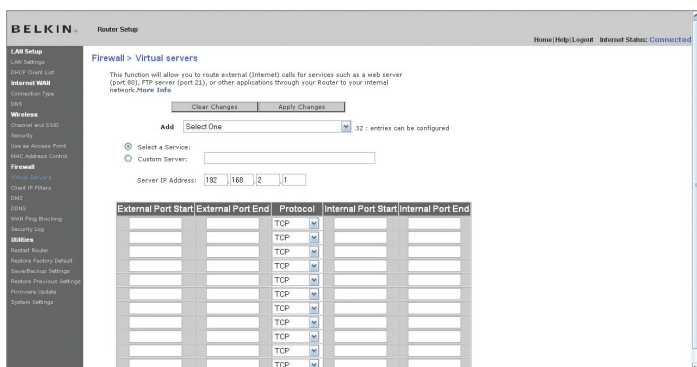
- IP Spoofing
- Land Attack Ping of Death (PoD)
- Denial of Service (DoS)
- IP with zero length
- Smurf Attack
- TCP Null Scan
- SYN flood
- UDP flooding
- Tear Drop Attack
- ICMP defect
- RIP defect
- Fragment flooding

The firewall also masks common ports that are frequently used to attack networks. These ports appear to be “stealth” meaning that for all intents and purposes, they do not exist to a would-be hacker. You can turn the firewall function off if needed; however, it is recommended that you leave the firewall enabled. Disabling the firewall protection will not leave your network completely vulnerable to hacker attacks, but it is recommended that you leave the firewall enabled.



## Configuring Internal Forwarding Settings

The Virtual Servers function will allow you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through your Modem Router to your internal network. Since your internal computers are protected by a firewall, computers outside your network (over the Internet) cannot get to them because they cannot be “seen”. A list of common applications has been provided in case you need to configure the Virtual Server function for a specific application. If your application is not listed, you will need to contact the application vendor to find out which port settings you need.



## Choosing an Application

Select your application from the drop-down list. Click “Add”. The settings will be transferred to the next available space in the screen. Click “Apply Changes” to save the setting for that application. To remove an application, select the number of the row that you want to remove then click “Clear”.

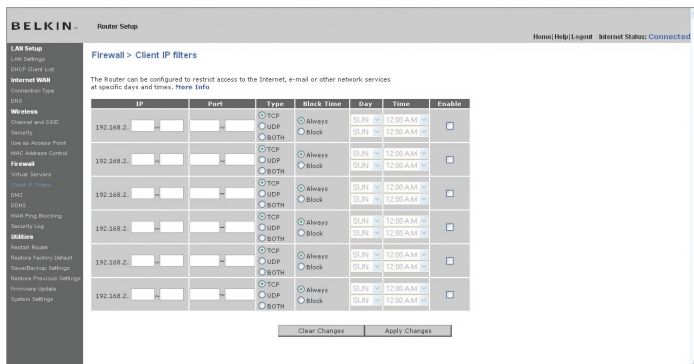
## Manually Entering Settings into the Virtual Server

To manually enter settings, enter the IP address in the space provided for the internal (server) machine, the port(s) required to pass (use a comma between multiple ports), select the port type (TCP or UDP), and click “Apply Changes”. You can only pass one port per internal IP address. Opening ports in your firewall can pose a security risk. You can enable and disable settings very quickly. It is recommended that you disable the settings when you are not using a specific application.

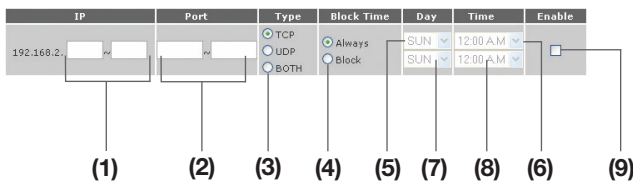
# Using the Web-Based Advanced User Interface

## Setting Client IP Filters

The Modem Router can be configured to restrict access to the Internet, e-mail, or other network services at specific days and times. Restriction can be set for a single computer, a range of computers, or multiple computers.

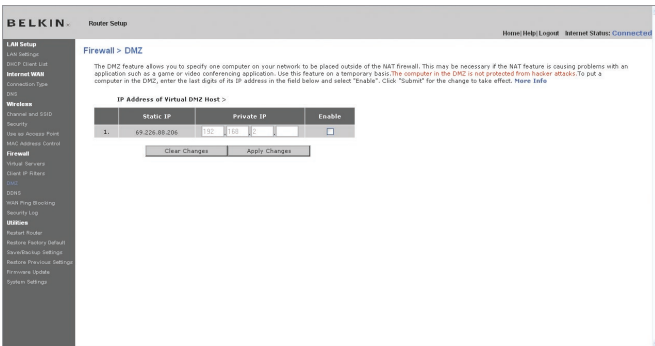


To restrict Internet access to a single computer for example, enter the IP address of the computer you wish to restrict access to in the IP fields **(1)**. Next, enter “80” in both the port fields **(2)**. Select “Both” **(3)**. Select “Block” **(4)**. You can also select “Always” to block access all of the time. Select the day to start on top **(5)**, the time to start on top **(6)**, the day to end on the bottom **(7)**, and the time to stop **(8)** on the bottom. Select “Enable” **(9)**. Click “Apply Changes”. The computer at the IP address you specified will now be blocked from Internet access at the times you specified. Note: Be sure you have selected the correct time zone under “Utilities> System Settings> Time Zone”.



## Enabling the Demilitarized Zone (DMZ)

The DMZ feature allows you to specify one computer on your network to be placed outside of the firewall. This may be necessary if the firewall is causing problems with an application such as a game or video conferencing application. Use this feature on a temporary basis. The computer in the DMZ is **NOT** protected from hacker attacks.



To put a computer in the DMZ, enter the last digits of its IP address in the IP field and select “Enable”. Click “Apply Changes” for the change to take effect. If you are using multiple static WAN IP addresses, it is possible to select which WAN IP address the DMZ host will be directed to. Type in the WAN IP address you wish the DMZ host to direct to, enter the last two digits of the IP address of the DMZ host computer, select “Enable” and click “Apply Changes”.

## Using Dynamic DNS

The Dynamic DNS service allows you to alias a dynamic IP address to a static host name in any of the many domains DynDNS.org offers, allowing your network computers to be more easily accessed from various locations on the Internet. DynDNS.org provides this service, for up to five host names, free to the Internet community.

The Dynamic DNS service is ideal for a home website, file server, or to make it easy to access your home PC and stored files while you’re at work. Using the service can ensure that your host name always points to your IP address, no matter how often your ISP changes it. When your IP address changes, your friends and associates can always locate you by visiting [yourname.dyndns.org](http://yourname.dyndns.org) instead!

To register free for your Dynamic DNS host name, please visit <http://www.dyndns.org>.



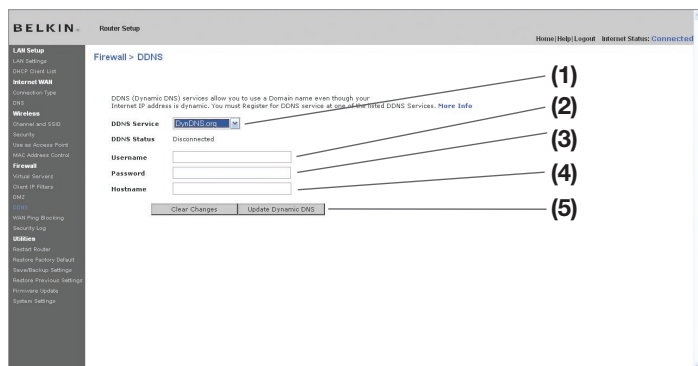
# Using the Web-Based Advanced User Interface

## Setting up the Modem Router's Dynamic DNS Update Client

You must register with DynDNS.org's free update service before using this feature. Once you have your registration, follow the directions below.

1. Select DynDNS.org from the "DNS Service" drop-down box. **(1)**
2. Enter your DynDNS.org user name in the "User Name" field **(2)**.
3. Enter your DynDNS.org password in the "Password" field **(3)**.
4. Enter the DynDNS.org domain name you set up with DynDNS.org in the "Hostname" field **(4)**.
5. Click "Update Dynamic DNS" to update your IP address.

Whenever your IP address assigned by your ISP changes, the Modem Router will automatically update DynDNS.org's servers with your new IP address. You can also do this manually by clicking the "Update Dynamic DNS" button **(5)**.



## Blocking an ICMP Ping

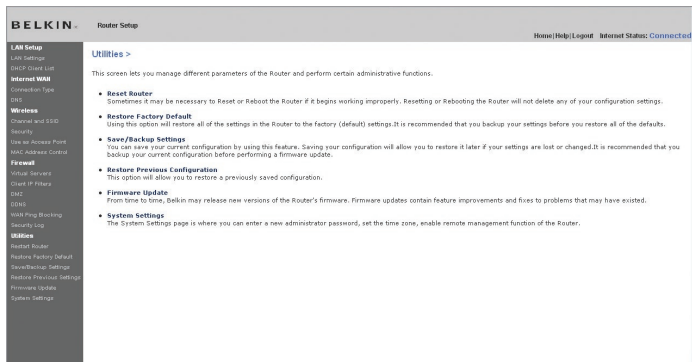
Computer hackers use what is known as “pinging” to find potential victims on the Internet. By pinging a specific IP address and receiving a response from the IP address, a hacker can determine that something of interest might be there. The Modem Router can be set up so it will not respond to an ICMP ping from the outside. This heightens your Modem Router’s security level.



To turn off the ping response, select “Block ICMP Ping” **(1)** and click “Apply Changes”. The Modem Router will not respond to an ICMP ping.

## Utilities

The “Utilities” screen lets you manage different parameters of the Modem Router and perform certain administrative functions.

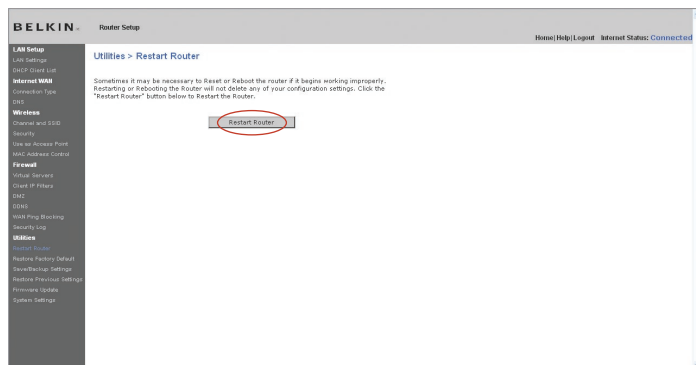


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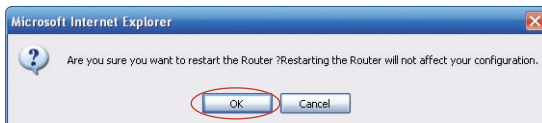
## Restarting the Modem Modem Router

Sometimes it may be necessary to restart or reboot the Modem Router if it begins working improperly. Restarting or rebooting the Modem Router will NOT delete any of your configuration settings.

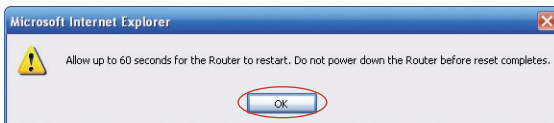


## Restarting the Modem Modem Router to Restore Normal Operation

1. Click the “Restart Modem Router” button.
2. The following message will appear. Click “OK”.



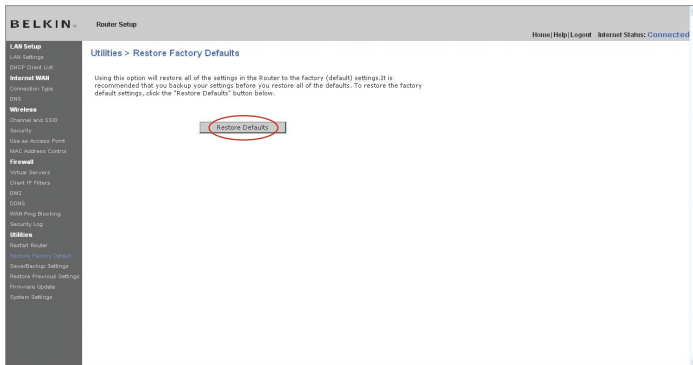
3. The following message will appear. Restarting the Modem Router can take up to 60 seconds. It is important not to turn off the power to the Modem Router during the restart.



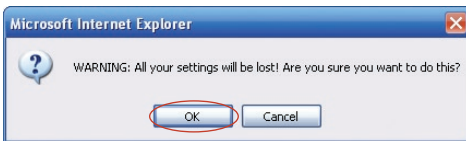
4. A 60-second countdown will appear on the screen. When the countdown reaches zero, the Modem Router will be restarted. The Modem Router home page should appear automatically. If not, type in the Modem Router’s address (default = 192.168.2.1) into the navigation bar of your browser.

## Restoring Factory Default Settings

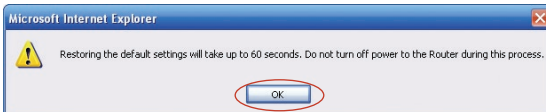
Using this option will restore all of the settings in the Modem Router to the factory (default) settings. It is recommended that you back up your settings before you restore all of the defaults.



1. Click the “Restore Defaults” button.
2. The following message will appear. Click “OK”.



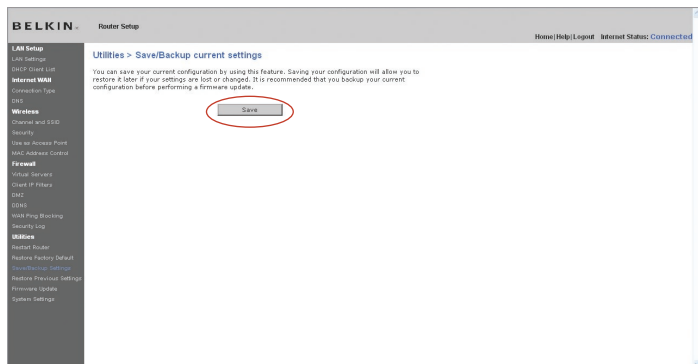
3. The following message will appear. Restoring the defaults includes restarting the Modem Router. It can take up to 60 seconds. It is important not to turn the power to the Modem Router off during the restart.



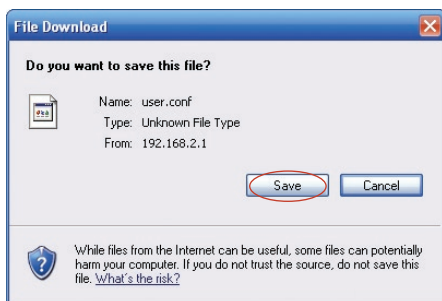
4. A 60-second countdown will appear on the screen. When the countdown reaches zero, the Modem Router’s defaults will be restored. The Modem Router home page should appear automatically. If it does not, type in the Modem Router’s address (default = 192.168.2.1) into the navigation bar of your browser.

## Saving a Current Configuration

You can save your current configuration by using this feature. Saving your configuration will allow you to restore it later if your settings are lost or changed. It is recommended that you back up your current configuration before performing a firmware update.



1. Click “Save”. A window called “File Download” will open. Click “Save”.



# Using the Web-Based Advanced User Interface

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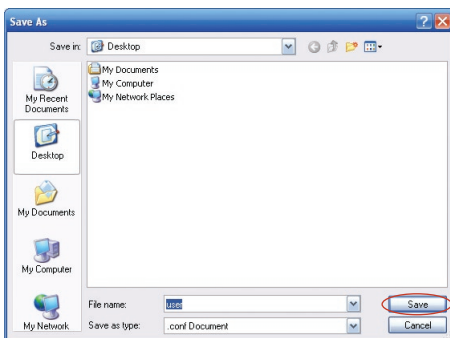
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2. A window will open that allows you to select the location where you want to save the configuration file. Select a location. You can name the file anything you want, or use the default name “Config”. Be sure to name the file so you can locate it yourself later. When you have selected the location and name of the file, click “Save”.



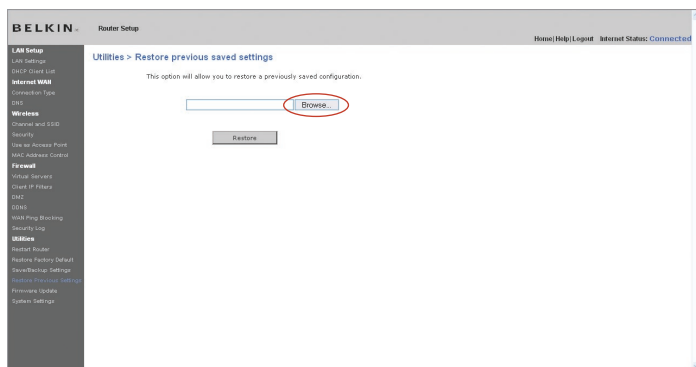
3. When the save is complete, you will see the window below. Click “Close”.



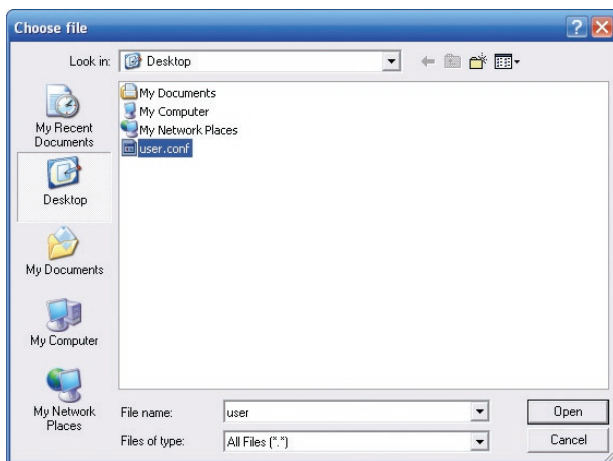
The configuration is now saved.

## Restoring a Previous Configuration

This option will allow you to restore a previously saved configuration.



1. Click “Browse”. A window will open that allows you to select the location of the configuration file. All configuration files end with a “.bin”. Locate the configuration file you want to restore and double-click on it.



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2. You will be asked if you want to continue. Click “OK”.



3. A reminder window will appear. It will take up to 60 seconds for the configuration restoration to complete. Click “OK”.

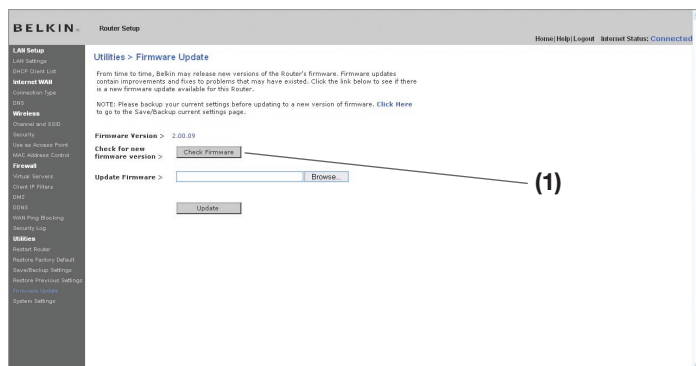


4. A 60-second countdown will appear on the screen. When the countdown reaches zero, the Modem Router’s configuration will be restored. The Modem Router’s home page should appear automatically. If not, type in the Modem Router’s address (default = 192.168.2.1) into the navigation bar of your browser.



## Updating the Firmware

From time to time, Belkin may release new versions of the Modem Router's firmware. Firmware updates contain feature improvements and fixes to problems that may have existed. When Belkin releases new firmware, you can download the firmware from the Belkin update website and update your Modem Router's firmware to the latest version.



## Checking for a New Version of Firmware

The “Check Firmware” (1) button allows you to instantly check for a new version of firmware. When you click the button, a new browser window will appear informing you that either no new firmware is available or that there is a new version available. If a new version is available, you will have the option to download it.

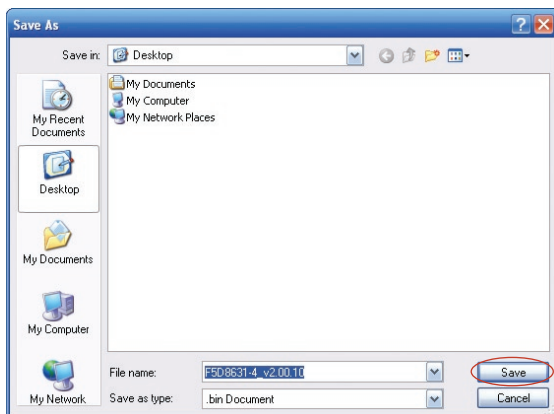
## Downloading a New Version of Firmware

If you click the “Check Firmware” button and a new version of firmware is available, you will see a screen similar to the one below:



1. To download the new version of firmware, click “Download”.

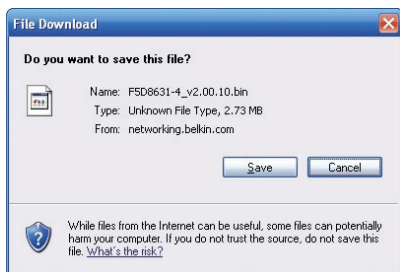
A window will open that allows you to select the location where you want to save the firmware file. Select a location. You can name the file anything you want, or use the default name. Be sure to locate the file in a place where you can locate it yourself later. When you have selected the location, click “Save”.



# Using the Web-Based Advanced User Interface

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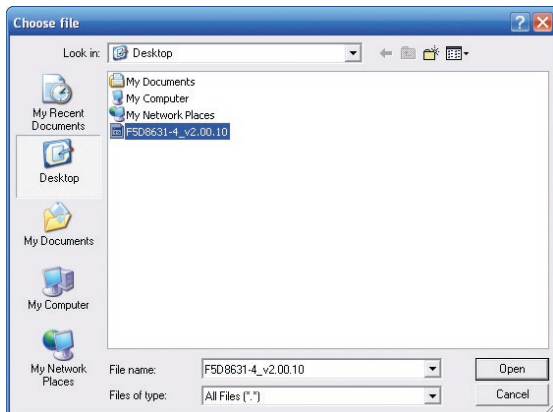
2. When the save is complete, you will see the following window. Click “Close”.



3. The download of the firmware is complete. To update the firmware, follow the next steps in “Updating the Modem Router’s Firmware”.

## Updating the Modem Router’s Firmware

1. In the “Firmware Update” page, click “Browse”. A window will open that allows you to select the location of the firmware update file.

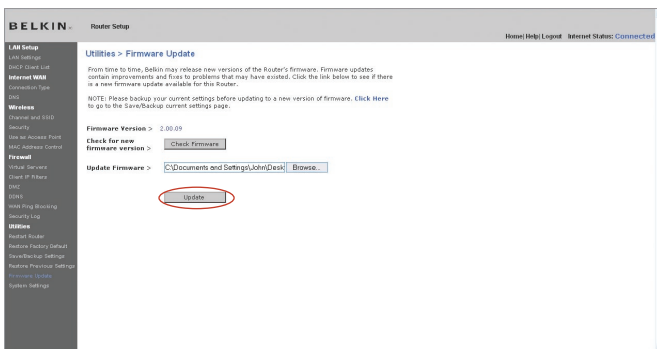


2. Browse to the firmware file you downloaded. Select the file by double-clicking on the file name.

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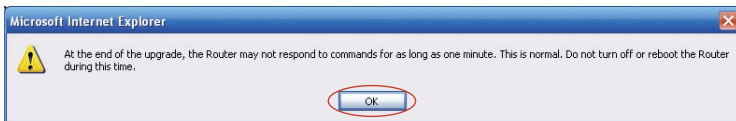
3. The “Update Firmware” box will now display the location and name of the firmware file you just selected. Click “Update”.



4. You will be asked if you are sure you want to continue. Click “OK”.



5. You will see one more message. This message tells you that the Modem Router may not respond for as long as one minute as the firmware is loaded into the Modem Router and the Modem Router is rebooted. Click “OK”.



6. A 60-second countdown will appear on the screen. When the countdown reaches zero, the Modem Router firmware update will be complete. The Modem Router home page should appear automatically. If not, type in the Modem Router’s address (default = 192.168.2.1) into the navigation bar of your browser.

## Changing System Settings

The “System Settings” page is where you can enter a new administrator password, set the time zone, enable remote management, and turn on and off the NAT function of the Modem Router.

### Setting or Changing the Administrator Password

The Modem Router ships with NO password entered. If you wish to add a password for greater security, you can set a password here. Write down your password and keep it in a safe place, as you will need it if you need to log into the Modem Router in the future. It is also recommended that you set a password if you plan to use the remote management feature of your Modem Router.

**Administrator Password:**  
The Router ships with NO password entered. If you wish to add a password for more security, you can set a password here. [More Info](#)

-Type in current Password >

-Type in new Password >

-Confirm new Password >

-Login Timeout  (1-99minutes)

### Changing the Login Time-Out Setting

The login time-out option allows you to set the period of time that you can be logged into the Modem Router’s advanced setup interface. The timer starts when there has been no activity. For example, imagine you have made some changes in the advanced setup interface, then left your computer alone without clicking “Logout”. Assuming the time-out is set to 10 minutes, 10 minutes after you leave, the login session will expire. You will have to log into the Modem Router again to make any more changes. The login time-out option is for security purposes and the default is set to 10 minutes.

**Note:** Only one computer can be logged into the Modem Router’s advanced setup interface at one time.

## Setting the Time and Time Zone

The Modem Router keeps time by connecting to a Simple Network Time Protocol (SNTP) server. This allows the Modem Router to synchronize the system clock to the global Internet. The synchronized clock in the Modem Router is used to record the security log and control client filtering. Select the time zone that you reside in. You have the option to select a primary and a backup NTP server to keep your Modem Router's clock synchronized. Select your desired NTP server from the drop-down box, or simply keep it as is.

If you reside in an area that observes daylight saving, then place a check mark in the box next to "Enable Daylight Saving". The system clock may not update immediately. Allow at least 15 minutes for the Modem Router to contact the time servers on the Internet and get a response. You cannot set the clock yourself.

**Time and Time Zone:** Thursday October 5, 2006. 0:24:28

Please set your time Zone. If you are in an area that observes daylight saving check this box. [More Info](#)

- Time zone > (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▾

- Daylight Savings >  Automatically Adjust Daylight Saving

- First NTP time server> 129.132.2.21 - Europe ▾

- Second NTP time server> 130.149.17.8 - Europe ▾

## Enabling Remote Management

Before you enable this advanced feature of your Belkin Modem Router, **MAKE SURE YOU HAVE SET THE ADMINISTRATOR PASSWORD.** Remote management allows you to make changes to your Modem Router's settings from anywhere on the Internet. There are two methods of remotely managing the Modem Router. The first is to allow access to the Modem Router from anywhere on the Internet by selecting "Any IP address can remotely manage the Modem Router". By typing in your WAN IP address from any computer on the Internet, you will be presented with a login screen where you need to type in the password of your Modem Router.

# Using the Web-Based Advanced User Interface

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The second method is to allow a specific IP address only to remotely manage the Modem Router. This is more secure, but less convenient. To use this method, enter the IP address you know you will be accessing the Modem Router from in the space provided and select “Only this IP address can remotely manage the Modem Router”. Before you enable this function, it is **STRONGLY RECOMMENDED** that you set your administrator password. Leaving the password empty will potentially open your Modem Router to intrusion.

**Advanced Feature:** The “Remote Access Port” option allows you to configure the desired “Remote Access Port for Remote Management” feature. The default access port is set to port 80.

**Remote Management :**

**ADVANCED FEATURE !** Remote management allows you to make changes to your Router settings anywhere on the Internet. Before you enable this function, **MAKE SURE YOU HAVE SET THE ADMINISTRATOR PASSWORD.** [More Info](#)

Any IP address can remotely manage the router

- Only this IP address can remotely manage the router >  .  .  .

- Remote Access Port >

## Enabling/Disabling NAT (Network Address Translation)

**Note:** This advanced feature should be employed by advanced users only. Before enabling this function, **MAKE SURE YOU HAVE SET THE ADMINISTRATOR PASSWORD.** Network Address Translation (NAT) is the method by which the Modem Router shares the single IP address assigned by your ISP with the other computers on your network. This function should only be used if your ISP assigns you multiple IP addresses or you need NAT disabled for an advanced system configuration. If you have a single IP address and you turn NAT off, the computers on your network will not be able to access the Internet. Other problems may also occur. Turning off NAT will not affect your firewall functions.

**NAT Enabling :**

**ADVANCED FEATURE !** Allows you to turn the Network Address Translation feature off. In almost every case you would NOT want to turn this feature off. [More Info](#)

- NAT Enable / Disable >  Enable  Disable

## Enabling/Disabling UPnP

UPnP (Universal Plug-and-Play) is yet another advanced feature offered by your Belkin Modem Router. It is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant. Some applications require the Modem Router's firewall to be configured in a specific way to operate properly. This usually requires opening TCP and UDP ports, and in some instances, setting trigger ports. An application that is UPnP-compliant has the ability to communicate with the Modem Router, basically "telling" the Modem Router which way it needs the firewall configured. The Modem Router ships with the UPnP feature disabled. If you are using any applications that are UPnP-compliant, and wish to take advantage of the UPnP features, you can enable the UPnP feature. Simply select "Enable" in the "UPnP Enabling" section of the "Utilities" page. Click "Apply Changes" to save the change.

**UPnP:**  
**ADVANCED FEATURE!** Allows you to turn UPnP on or off.  
[More Info](#)

Enable UPnP  On  Off

## Enabling/Disabling Auto Firmware Update

This innovation provides the Modem Router with the built-in capability to automatically check for a new version of firmware and alert you that the new firmware is available. When you log into the Modem Router's advanced interface, the Modem Router will perform a check to see if new firmware is available. If so, you will be notified. You can choose to download the new version or ignore it.

**Auto Update Firmware Enabling :**  
**ADVANCED FEATURE!** Allows you to automatically check the availability of firmware updates for your router. [More Info](#)

- Auto Update Firmware  
Enable / Disable >  Enable  Disable



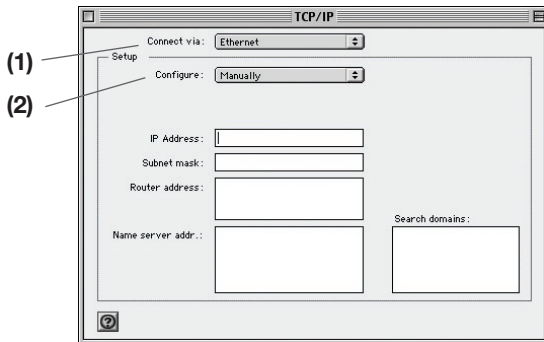
# Manually Configuring Network Settings

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Set up the computer that is connected to the cable or DSL modem FIRST using these steps. You can also use these steps to add computers to your Modem Router after the Modem Router has been set up to connect to the Internet.

## Manually Configuring Network Settings in Mac OS up to 9.x

1. Pull down the Apple menu. Select “Control Panels” and select “TCP/IP”.
2. You will see the TCP/IP control panel. Select “Ethernet Built-In” or “Ethernet” in the “Connect via:” drop-down menu **(1)**.



# Manually Configuring Network Settings

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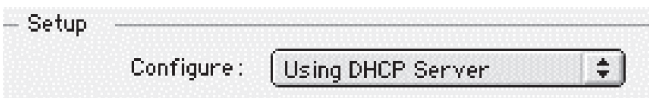
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3. Next to “Configure” (2), if “Manually” is selected, your Modem Router will need to be set up for a static IP connection type. Write the address information in the table below. You will need to enter this information into the Modem Router.

IP address:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Router Address:	<input type="text"/>
Name Server Address:	<input type="text"/>

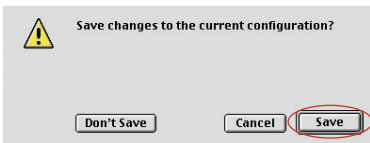
4. If not already set, at “Configure:”, choose “Using DHCP Server”. This will tell the computer to obtain an IP address from the Modem Router.



Setup

Configure:

5. Close the window. If you made any changes, the following window will appear. Click “Save”.



Save changes to the current configuration?

**Restart the computer. When the computer restarts, your network settings are now configured for use with the Modem Router.**

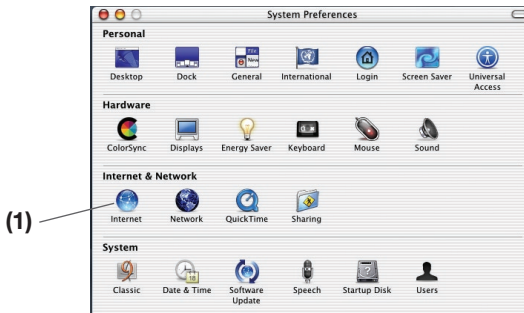
# Manually Configuring Network Settings

## Manually Configuring Network Settings in Mac OS X

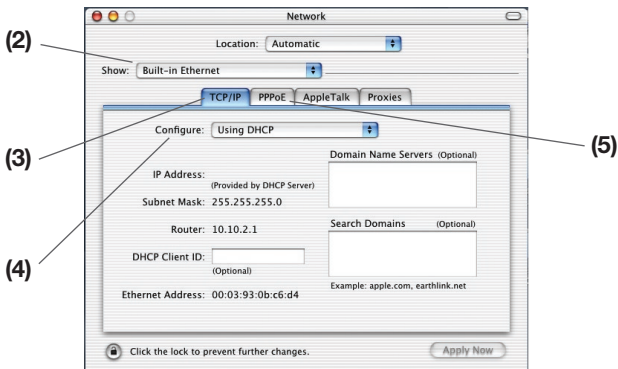
1. Click on the “System Preferences” icon.



2. Select “Network” (1) from the “System Preferences” menu.



3. Select “Built-in Ethernet” (2) next to “Show” in the Network menu.



# Manually Configuring Network Settings

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4. Select the “TCP/IP” tab (3). Next to “Configure” (4), you should see “Manually” or “Using DHCP”. If you do not, check the PPPoE tab (5) to make sure that “Connect using PPPoE” is **NOT** selected. If it is, you will need to configure your Modem Router for a PPPoE connection type using your user name and password.
5. If “Manually” is selected, your Modem Router will need to be set up for a static IP connection type. Write the address information in the table below. You will need to enter this information into the Modem Router.

IP address:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Router Address:	<input type="text"/>
Name Server Address:	<input type="text"/>

6. If not already selected, select “Using DHCP” next to “Configure” (4), then click “Apply Now”.

**Your network settings are now configured for use with the Modem Router.**

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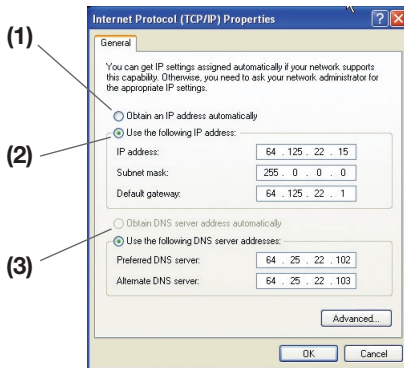
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# Manually Configuring Network Settings

## Manually Configuring Network Settings in Windows 2000, NT, or XP

1. Click “Start”, “Settings”, then “Control Panel”.
2. Double-click on the “Network and dial-up connections” icon (Windows 2000) or the “Network” icon (Windows XP).
3. Right-click on the “Local Area Connection” associated with your network adapter and select “Properties” from the drop-down menu.



4. In the “Local Area Connection Properties” window, click “Internet Protocol (TCP/IP)” and click the “Properties” button. The following screen will appear:
5. If “Use the following IP address” (2) is selected, your Modem Router will need to be set up for a static IP connection type. Write the address information the table below. You will need to enter this information into the Modem Router.

IP address:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Default gateway:	<input type="text"/>
Preferred DNS server:	<input type="text"/>
Alternate DNS server:	<input type="text"/>

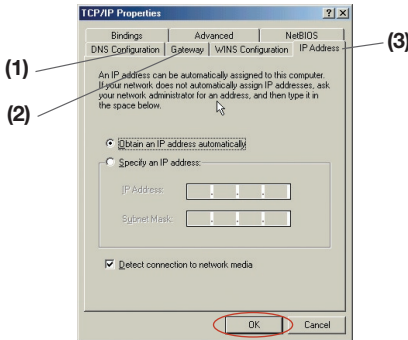
6. If not already selected, select “Obtain an IP address automatically” (1) and “Obtain DNS server address automatically” (3). Click “OK”.

**Your network settings are now configured for use with the Modem Router.**

# Manually Configuring Network Settings

## Manually Configuring Network Settings in Windows 98 or Me

1. Right-click on “My Network Neighborhood” and select “Properties” from the drop-down menu.
2. Select “TCP/IP Settings” for your installed network adapter. You will see the following window.



3. If “Specify an IP address” is selected, your Modem Router will need to be set up for a static IP connection type. Write the address information in the table below. You will need to enter this information into the Modem Router.
4. Write the IP address and subnet mask from the “IP Address” tab (3).
5. Click the “Gateway” tab (2). Write the gateway address down in the chart.
6. Click the “DNS Configuration” tab (1). Write the DNS address(es) in the chart.

IP address:	<input type="text"/>
Subnet Mask:	<input type="text"/>
Default gateway:	<input type="text"/>
Preferred DNS server:	<input type="text"/>
Alternate DNS server:	<input type="text"/>

7. If not already selected, select “Obtain IP address automatically” on the IP address tab. Click “OK”.

**Restart the computer. When the computer restarts, your network adapter(s) are now configured for use with the Modem Router.**

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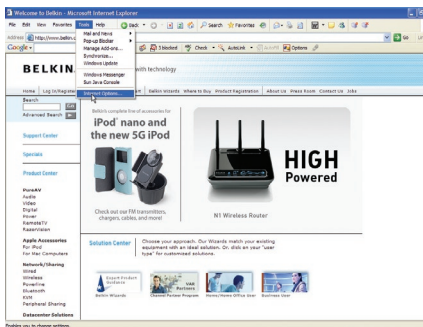
# Recommended Web Browser Settings

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In most cases, you will not need to make any changes to your web browser's settings. If you are having trouble accessing the Internet or the advanced web-based user interface, then change your browser's settings to the recommended settings in this section.

## Microsoft® Internet Explorer 4.0 or Higher

1. Start your web browser. Select “Tools” then “Internet Options”.



2. In the “Internet Options” screen, there are three selections: “Never dial a connection”, “Dial whenever a network connection is not present”, and “Always dial my default connection”. If you can make a selection, select “Never dial a connection”. If you cannot make a selection, go to the next step.



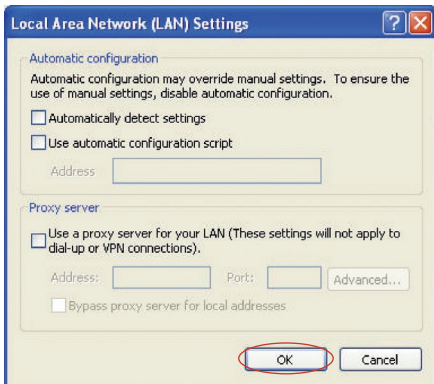
3. Under the “Internet Options” screen, click on “Connections” and select “LAN Settings...”.

# Recommended Web Browser Settings

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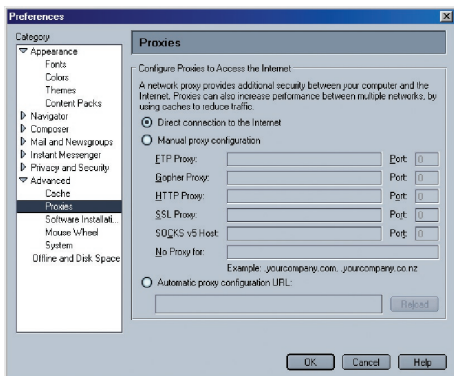
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4. Make sure there are no check marks next to any of the displayed options: “Automatically detect settings”, “Use automatic configuration script”, and “Use a proxy server”. Click “OK”. Then click “OK” again in the “Internet Options” page.



## Netscape® Navigator® 4.0 or Higher

1. Start Netscape. Click on “Edit” then “Preferences”.
2. In the “Preferences” window, click on “Advanced” then select “Proxies”. In the “Proxies” window, select “Direct connection to the Internet”.





# Troubleshooting

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## **Setup Assistant CD does not automatically start.**

If the CD-ROM does not start the Setup Assistant automatically, it could be that the computer is running other applications that are interfering with the CD drive.

1. If the Setup Assistant Welcome screen does not appear within 15-20 seconds, open up your CD-ROM drive by double-clicking on the “My Computer” icon that is located on your desktop.
2. Next, double-click on the CD-ROM drive that the Setup Assistant CD has been placed in to start the installation.
3. The Setup Assistant should start within a few seconds. If, instead, a window appears showing the files on the CD, double-click on the icon labeled “SetupAssistant”.
4. If the Setup Assistant still does not start, reference the section titled “Manually Configuring Network Settings” (page 71 of this User Manual for an alternative setup method).

## **Setup Assistant cannot find my Modem Router.**

If the Setup Assistant is not able to find the Modem Router during the installation process, please check the following items:

1. If the Setup Assistant is not able to find the Modem Router during the installation process, there may be third-party firewall software installed on the computer attempting to access the Internet. Examples of third-party firewall software are ZoneAlarm, BlackICE PC Protection, McAfee Personal Firewall, and Norton Personal Firewall. If you do have firewall software installed on your computer, please make sure that you properly configure it. You can determine if the firewall software is preventing Internet access by temporarily turning it off. If, while the firewall is disabled, Internet access works properly, you will need to change the firewall settings to function properly when it is turned on. Please refer to the instructions provided by the publisher of your firewall software for instructions on configuring the firewall to allow Internet access.

# Troubleshooting

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2. Unplug power to the Modem Router for 10 seconds, and then plug the power back into the Modem Router. Ensure that the Modem Router's "modem router" LED is on; it should be solid BLUE. If not, check to make sure that the AC adapter is connected to the Modem Router and plugged into a wall outlet.
3. Ensure that you have a cable connected between **(1)** the network (Ethernet) port on the back of the computer and **(2)** one of the "to Wired Computers" ports on the back of the Modem Router.  
**Note:** The computer should NOT be connected to the port labeled "to Modem" on the back of the Modem Router.
4. Try shutting down and restarting your computer, then rerunning the Setup Assistant.

If the Setup Assistant is still unable to find the Modem Router, reference the section titled "Manually Configuring Network Settings" for installation steps.

## Setup Assistant cannot connect my Modem Router to the Internet

If the Setup Assistant is not able to connect the Modem Router to the Internet, please check the following items:

1. Use the troubleshooting suggestions within the Setup Assistant.
2. If your ISP requires a user name and password, make sure that you have typed in your user name and password correctly. Some user names require that the ISP's domain may be at the end of the name. Example: "myname@myisp.com". The "@myisp.com" part of the user name may need to be typed as well as your user name.

If you continue to have no Internet connection, reference the section titled "Manually Configuring Network Settings" (page 71 of this User Manual for an alternative setup method).

# Troubleshooting

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- **The Setup Assistant completed installation, but my web browser doesn't work.**
- **I am unable to connect to the Internet. The "modem" LED on my Modem Router is off, and the "internet" LED is blinking.**

If you cannot connect to the Internet, and the "modem" LED is off, and the "internet" LED is blinking, the problem may be that your modem and Modem Router are not connected properly.

1. Make sure the network cable between the modem and the Modem Router is connected. The cable should be connected at one end to the Modem Router's "to Modem" port, and at the other end to the network port on your modem.
2. Unplug the cable or DSL modem from its power source for three minutes. After three minutes, plug the modem back into its power source. This may force the modem to properly recognize the Modem Router.
3. Unplug the power to your Modem Router, wait 10 seconds, and then reconnect the power. This will cause the Modem Router to reattempt communication with the modem. If the "modem" LED on the Modem Router is not lit after completing these steps, please contact Belkin Technical Support.
4. Try shutting down and restarting your computer.

# Troubleshooting

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- **The Setup Assistant completed installation, but my web browser doesn't work.**
- **I am unable to connect to the Internet. The "modem" LED on my Modem Router is on, and the "internet" LED is blinking.**
  1. If you cannot connect to the Internet, the "modem" LED is on, and the "internet" LED is blinking, the problem may be that your connection type may not match the ISP's connection.
  2. If you have a "static IP address" connection, your ISP must assign you the IP address, subnet mask, and gateway address. Please refer to the section entitled "Alternate Setup Method" for details on changing this setting.
  3. If you have a "PPPoE" connection, your ISP will assign you a user name and password and sometimes a service name. Make sure the Modem Router's connection type is configured to PPPoE and the settings are entered properly. Please refer to the section entitled "Alternate Setup Method" for details on changing this setting.
  4. You may need to configure your Modem Router to meet the specific requirements of your ISP. To search our knowledge base for ISP-specific issues, go to: <http://web.belkin.com/support> and type in "ISP".

If you are still unable to access the Internet after verifying these settings, please contact Belkin Technical Support.

# Troubleshooting

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- **The Setup Assistant completed, but my web browser doesn't work.**
  - **I am unable to connect to the Internet. The "modem" LED on my Modem Router is blinking, and the "internet" LED is solid.**
1. If the "modem" LED is blinking, and the "internet" LED is solid, but you are unable to access the Internet, there may be third-party firewall software installed on the computer attempting to access the Internet. Examples of third-party firewall software are ZoneAlarm, BlackICE PC Protection, McAfee Personal Firewall, and Norton Personal Firewall.
  2. If you do have firewall software installed on your computer, please make sure that you properly configure it. You can determine if the firewall software is preventing Internet access by temporarily turning it off. If, while the firewall is disabled, Internet access works properly, you will need to change the firewall settings to function properly when it is turned on.
  3. Please refer to the instructions provided by the publisher of your firewall software for instructions on configuring the firewall to allow Internet access.

If you are still unable to access the Internet after disabling any firewall software, please contact Belkin Technical Support.

## **I can't connect to the Internet wirelessly.**

If you are unable to connect to the Internet from a wireless computer, please check the following items:

1. Look at the lights on your Modem Router. If you're using a Belkin Modem Router, the lights should be as follows:
  - The "modem router" LED should be on.
  - The "radio wave" LED above the "modem router" LED should be on.
  - The "modem" light should be on, and not blinking.
  - The "internet" LED should be on, and not blinking.
  - The "Wireless" light should be on, not blinking.
2. Open your wireless utility software by clicking on the icon in the system tray at the bottom, right-hand corner of the screen.
3. The exact window that opens will vary depending on the model of wireless card you have; however, any of the utilities should have a list of "Available Networks"—those wireless networks it can connect to.

Does the name of your wireless network appear in the results?

Yes, my network name is listed—go to the troubleshooting solution titled "I can't connect to the Internet wirelessly, but my network name is listed".

No, my network name is not listed—go to the troubleshooting solution titled "I can't connect to the Internet wirelessly, and my network name is not listed".

# Troubleshooting

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## **I can't connect to the Internet wirelessly, but my network name is listed.**

If the name of your network is listed in the "Available Networks" list, please follow the steps below to connect wirelessly:

1. Click on the correct network name in the "Available Networks" list.
2. If the network has security (encryption) enabled, you will need to enter the network key. For more information regarding security, see the section entitled "Changing the Wireless Security Settings".
3. Within a few seconds, the tray icon in the lower, left-hand corner of your screen should turn green, indication of a successful connection to the network.

## **I can't connect to the Internet wirelessly, and my network name is not listed.**

If the correct network name is not listed under "Available Networks" in the wireless utility, please attempt the following troubleshooting steps:

1. Temporarily move computer, if possible, five to 10 feet from the Modem Router. Close the wireless utility, and reopen it. If the correct network name now appears under "Available Networks", you may have a range or interference problem. Please see the suggestions discussed in the section titled "Placement of your N1 Wireless Modem Router" of this User Manual.
2. Using a computer that is connected to the Modem Router via a network cable (as opposed to wirelessly), ensure that "Broadcast SSID" is enabled. This setting is found on the Modem Router's wireless "Channel and SSID" configuration page.

If you are still unable to access the Internet after completing these steps, please contact Belkin Technical Support.

- **My wireless network performance is inconsistent.**
- **Data transfer is sometimes slow.**
- **Signal strength is poor.**
- **Difficulty establishing and/or maintaining a Virtual Private Network (VPN) connection.**

Wireless technology is radio-based, which means connectivity and the throughput performance between devices decreases when the distance between devices increases. Other factors that will cause signal degradation (metal is generally the worst culprit) are obstructions such as walls and metal appliances. Note also that connection speed may decrease as you move farther away from the Modem Router.

In order to determine if wireless issues are related to range, we suggest temporarily moving the computer, if possible, five to 10 feet from the Modem Router.

**Changing the wireless channel**—Depending on local wireless traffic and interference, switching the wireless channel of your network can improve performance and reliability. The default channel the Modem Router is shipped with is channel 11; you may choose from several other channels depending on your region. See the section on page 43 entitled “Changing the Wireless Channel” for instructions on how to choose other channels.

**Limiting the wireless transmit rate**—Limiting the wireless transmit rate can help improve the maximum wireless range and connection stability. Most wireless cards have the ability to limit the transmission rate. To change this property, go to the Windows Control Panel, open “Network Connections” and double-click on your wireless card’s connection. In the properties dialog, select the “Configure” button on the “General” tab (Windows 98 users will have to select the wireless card in the list box and then click “Properties”), then choose the “Advanced” tab and select the rate property.

Wireless client cards are usually set to automatically adjust the wireless transmit rate for you, but doing so can cause periodic disconnects when the wireless signal is too weak; as a rule, slower transmission rates are more stable. Experiment with different connection rates until you find the best one for your environment. Note that all available transmission rates should be acceptable for browsing the Internet. For more assistance, see your wireless card’s user manual.



## **I am having difficulty setting up Wired Equivalent Privacy (WEP) security on my Belkin Modem Router.**

1. Log into your Modem Router.

Open your web browser and type in the IP address of the Modem Router. (The Modem Router's default is 192.168.2.1.) Log into your Modem Router by clicking on the "Login" button in the top right-hand corner of the screen. You will be asked to enter your password. If you never set a password, leave the "Password" field blank and click "Submit".

Click the "Wireless" tab on the left of your screen. Select the "Encryption" or "Security" tab to get to the security settings page.

2. Select "128-bit WEP" from the drop-down menu.
3. After selecting your WEP encryption mode, you can type in your hex WEP key manually, or you can type in 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. A hex (hexadecimal) key is a mixture of numbers and letters from A-F and 0-9. For 128-bit WEP, you need to enter 26 hex keys.

For example:

**C3 03 0F AF 4B B2 C3 D4 4B C3 D4 E7 E4** = 128-bit key

4. Click "Apply Changes" to finish. Encryption in the Wireless Modem Router is now set. Each of your computers on your wireless network will now need to be configured with the same security settings.

**WARNING:** If you are configuring the Modem Router from a computer with a wireless client, you will need to ensure that security is turned on for this wireless client. If this is not done, you will lose your wireless connection.

**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 Apple AirPort product to see which version you are using. If you cannot configure your network with 128-bit encryption, try 64-bit encryption.

## I am having difficulty setting up Wired Equivalent Privacy (WEP) security on a Belkin client card.

The client card must use the same key as the Modem Router. For instance, if your Modem Router uses the key 00112233445566778899 AABBBCC, then the client card must be set to the exact same key.

1. Double-click the Signal Indicator icon to bring up the “Wireless Network” screen.
2. The “Advanced” button will allow you to view and configure more options of the card.
3. Once the “Advanced” button is clicked, the Belkin Wireless LAN Utility will appear. This Utility will allow you to manage all the advanced features of the Belkin Wireless Card.
4. Under the “Wireless Network Properties” tab, select a network name from the “Available Networks” list and click the “Properties” button.
5. Under “Data Encryption”, select “WEP”.
6. Ensure the check box “The key is provided for me automatically” at the bottom is unchecked. If you are using this computer to connect to a corporate network, please consult your network administrator if this box needs to be checked.
7. Type your WEP key in the “Network key” box.

**Important:** A WEP key is a mixture of numbers and letters from A-F and 0-9. For 128-bit WEP, you need to enter 26 keys. This network key needs to match the key you assign to your Modem Router.

For example:

**C3 03 0F AF 4B B2 C3 D4 4B C3 D4 E7 E4** = 128-bit key

8. Click “OK”, and then “Apply” to save the settings.

If you are NOT using a Belkin wireless client card, please consult the manufacturer’s user manual for that wireless client card.

## **Do Belkin products support WPA?**

**Note:** To use WPA security, all your clients must be upgraded to drivers and software that support it. At the time of this FAQ publication, a security patch download is available, for free, from Microsoft. This patch works only with the Windows XP operating system.

Download the patch here:

<http://www.microsoft.com/downloads/details>.

You also need to download the latest driver for your Belkin Wireless 802.11g Desktop or Notebook Network Card from the Belkin support site. Other operating systems are not supported at this time. Microsoft's patch only supports devices with WPA-enabled drivers such as Belkin 802.11g products

**Download the latest driver at <http://web.belkin.com/support> for the following products:**

F5D7000, F5D7001, F5D7010, F5D7011, F5D7230-4, F5D7231-4, F5D7130

## **I am having difficulty setting up Wireless Protected Access (WPA) security on my Belkin Modem Router for a home network.**

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 63 characters and can be letters, numbers, symbols, or spaces. This same key must be used on all of the clients that you set up. For example, your PSK might be something like: "Smith family network key".
4. Click "Apply Changes" to finish. You must now set all clients to match these settings.

## I am having difficulty setting up Wireless Protected Access (WPA) security on a Belkin wireless client card for a home network.

Clients must use the same key that the Modem Router uses. For instance, if the key is “Smith Family Network Key” in the Modem Router, the clients must also use that same key.

1. Double-click the Signal Indicator icon to bring up the “Wireless Network” screen. The “Advanced” button will allow you to view and configure more options of your card.
2. Once the “Advanced” button is clicked, the Belkin Wireless Utility will appear. This Utility will allow you to manage all the advanced features of the Belkin Wireless Card.
3. Under the “Wireless Network Properties” tab, select a network name from the “Available Networks” list and click the “Properties” button.
4. Under “Network Authentication”, select “WPA-PSK (no server).”
5. Type your WPA key in the “Network key” box.  
**Important:** WPA-PSK is a mixture of numbers and letters from A-Z and 0-9. For WPA-PSK you can enter eight to 63 characters. This network key needs to match the key you assign to your Modem Router.
6. Click “OK, then “Apply” to save the settings.

## **I am NOT using a Belkin client card for a home network and am having difficulty setting up Wireless Protected Access (WPA) security.**

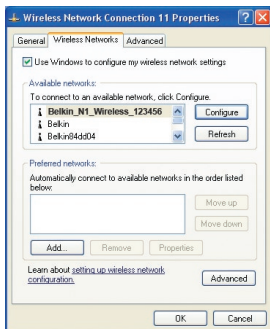
If you are not using a Belkin Wireless Desktop or Wireless Notebook Network Card that is not equipped with WPA-enabled software, a file from Microsoft called “Windows XP Support Patch for Wireless Protected Access” is available for free download. Download the patch from Microsoft by searching the knowledge base for Windows XP WPA.

**Note:** The file that Microsoft has made available works only with Windows XP. Other operating systems are not supported at this time. You also need to ensure that the wireless card’s manufacturer supports WPA and that you have downloaded and installed the latest driver from their support site.

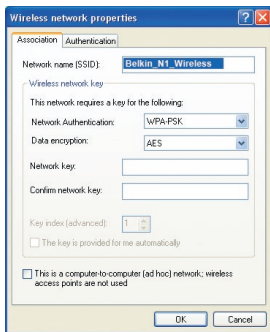
Supported Operating Systems:

- Windows XP Professional
- Windows XP Home Edition

1. Under Windows XP, click “Start > Control Panel > Network Connections”.
2. Right-clicking on the “Wireless Networks” tab will display the following screen. Ensure the “Use Windows to configure my wireless network settings” check box is checked.



- Under the “Wireless Networks” tab, click the “Configure” button and you will see the following screen.



- For a home or small business user, select “WPA-PSK” under “Network Administration”.

**Note:** Select WPA (with radius server) if you are using this computer to connect to a corporate network that supports an authentication server such as a radius server. Please consult your network administrator for further information.

- Select “TKIP” or “AES” under “Date Encryption”. This setting will have to be identical to the Modem Router that you set up.

- Type in your encryption key in the “Network key” box.

**Important:** Enter your pre-shared key. 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 clients that you set up.

- Click “OK” to apply settings.

## What's the difference between 802.11b, 802.11g, 802.11a, and draft 802.11n?

Currently there are four levels of wireless networking standards, which transmit data at very different maximum speeds. Each is based on the designation for certifying network standards. The most common wireless networking standard, 802.11b, transmits information at 11Mbps; 802.11a and 802.11g work at 54Mbps; and draft 802.11n works at 108Mbps. See the chart on the next page for more detailed information.

# Troubleshooting

## Belkin Wireless Comparison Chart

Wireless Technology	G (802.11g)	G Plus MIMO (802.11g with MIMO MRC)	N MIMO (draft 802.11n with MIMO)	N1 MIMO (draft 802.11n with MIMO)
Speed/Data Rate*	Up to 54Mbps*	Up to 54Mbps*	Up to 300Mbps*	Up to 300Mbps*
Frequency	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz
Compatibility	Compatible with 802.11b/g	Compatible with 802.11b/g	Compatible with draft 802.11n** and 802.11b/g	Compatible with draft 802.11n** and 802.11b/g
Coverage*	Up to 400 ft.*	Up to 1,000 ft.*	Up to 1,200 ft.*	Up to 1,400 ft.*
Advantage	Common—widespread use for Internet sharing	Better coverage and consistent speed and range	Enhanced speed and coverage	Leading edge— best coverage and throughput

\*Distance and connection speeds will vary depending on your networking environment.

\*\*This Adapter is compatible with products based on the same version of the draft 802.11n specifications and may require a software upgrade for best results.

# Troubleshooting

**Free Tech Support\*** \*National call rates may apply

**www.belkin.com**

You can find additional support information on our website **www.belkin.com** through the tech-support area. If you want to contact technical support by phone, please call the number you need from the list below\*.

COUNTRY	NUMBER	INTERNET ADDRESS
AUSTRIA	0820 200766	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
BELGIUM	07 07 00 073	<a href="http://www.belkin.com/nl/networking/">www.belkin.com/nl/networking/</a>
CZECH REPUBLIC	239 000 406	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
DENMARK	701 22 403	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
FINLAND	097 25 19 123	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
FRANCE	08 - 25 54 00 26	<a href="http://www.belkin.com/fr/networking/">www.belkin.com/fr/networking/</a>
GERMANY	0180 - 500 57 09	<a href="http://www.belkin.com/de/networking/">www.belkin.com/de/networking/</a>
GREECE	00800 - 44 14 23 90	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
HUNGARY	06 - 17 77 49 06	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
ICELAND	800 8534	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
IRELAND	0818 55 50 06	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
ITALY	02 - 69 43 02 51	<a href="http://www.belkin.com/it/support/tech/issues_more.asp">www.belkin.com/it/support/tech/issues_more.asp</a>
LUXEMBOURG	34 20 80 85 60	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
NETHERLANDS	0900 - 040 07 90 €0.10 per minute	<a href="http://www.belkin.com/nl/networking/">www.belkin.com/nl/networking/</a>
NORWAY	81 50 0287	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
POLAND	00800 - 441 17 37	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
PORTUGAL	707 200 676	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
RUSSIA	495 580 9541	<a href="http://www.belkin.com/networking/">www.belkin.com/networking/</a>
SOUTH AFRICA	0800 - 99 15 21	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
SPAIN	902 - 02 43 66	<a href="http://www.belkin.com/es/support/tech/networkingsupport.asp">www.belkin.com/es/support/tech/networkingsupport.asp</a>
SWEDEN	07 - 71 40 04 53	<a href="http://www.belkin.com/se/support/tech/networkingsupport.asp">www.belkin.com/se/support/tech/networkingsupport.asp</a>
SWITZERLAND	08 - 48 00 02 19	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
UNITED KINGDOM	0845 - 607 77 87	<a href="http://www.belkin.com/uk/networking/">www.belkin.com/uk/networking/</a>
OTHER COUNTRIES	+44 - 1933 35 20 00	

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# Information

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## FCC Statement

### **DECLARATION OF CONFORMITY WITH FCC RULES FOR ELECTROMAGNETIC COMPATIBILITY**

We, Belkin Corporation, of 501 West Walnut Street,  
Compton, CA 90220, declare under our sole responsibility  
that the product,

F5D8631-4

to which this declaration relates, complies with 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.

### **Caution: Exposure to Radio Frequency Radiation.**

The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

### **Federal Communications Commission Notice**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. 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. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **Modifications**

The FCC requires the user to be notified that any changes or modifications to this device that are not expressly approved by Belkin Corporation may void the user's authority to operate the equipment.

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**10** section

## Canada-Industry Canada (IC)

The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B conforme à la norme NMB-003 du Canada.

Europe-European Union Notice Radio products with the CE 0560 or CE alert marking comply with the R&TTE Directive (1995/5/EC) issued by the Commission of the European Community.

Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards).

- EN 60950 (IEC60950) – Product Safety
- EN 300 328 Technical requirement for radio equipment
- ETS 300 826 General EMC requirements for radio equipment.



To determine the type of transmitter, check the identification label on your Belkin product.

Products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (72/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards).

- EN 55022 (CISPR 22) – Electromagnetic Interference
- EN 55024 (IEC61000-4-2,3,4,5,6,8,11) – Electromagnetic Immunity
- EN 61000-3-2 (IEC610000-3-2) – Power Line Harmonics
- EN 61000-3-3 (IEC610000) – Power Line Flicker
- EN 60950 (IEC60950) – Product Safety

Products that contain the radio transmitter are labeled with CE 0560 or CE alert marking and may also carry the CE logo.

For information on product disposal please refer to <http://environmental.belkin.com>



<b>FOR USE IN</b>	AT	BE	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE		
IT	LV	LT	LU	MT	NL	PL	PT	SK	SI	ES	SE	GB	IS	LI
NO	CH	BG	RO	TR	<b>OPERATES ON CHANNELS 1-13</b>									

**Restricted Use in Certain Countries.....Class 2 Equipment**

## **Belkin Corporation Limited Lifetime Product Warranty**

### **What this warranty covers.**

Belkin Corporation warrants to the original purchaser of this Belkin product that the product shall be free of defects in design, assembly, material, or workmanship.

### **What the period of coverage is.**

Belkin Corporation warrants the Belkin product for the lifetime of the product.

### **What will we do to correct problems?**

*Product Warranty.*

Belkin will repair or replace, at its option, any defective product free of charge (except for shipping charges for the product).

### **What is not covered by this warranty?**

All above warranties are null and void if the Belkin product is not provided to Belkin Corporation for inspection upon Belkin's request at the sole expense of the purchaser, or if Belkin Corporation determines that the Belkin product has been improperly installed, altered in any way, or tampered with. The Belkin Product Warranty does not protect against acts of God (other than lightning) such as flood, earthquake, war, vandalism, theft, normal-use wear and tear, erosion, depletion, obsolescence, abuse, damage due to low voltage disturbances (i.e. brownouts or sags), non-authorized program, or system equipment modification or alteration.

### **How to get service.**

To get service for your Belkin product you must take the following steps:

1. Contact Belkin Tech Support at the number listed on page 94, within 15 days of the Occurrence. Be prepared to provide the following information:
  - a. The part number of the Belkin product.
  - b. Where you purchased the product.
  - c. When you purchased the product.
  - d. Copy of original receipt.
2. Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

Belkin Corporation reserves the right to review the damaged Belkin product. All costs of shipping the Belkin product to Belkin Corporation for inspection shall be borne solely by the purchaser. If Belkin determines, in its sole discretion, that it is impractical to ship the damaged equipment to Belkin Corporation, Belkin may designate, in its sole discretion, an equipment repair facility to inspect and estimate the cost to repair such equipment. The cost, if any, of shipping the equipment to and from such repair facility and of such estimate shall be borne solely by the purchaser. Damaged equipment must remain available for inspection until the claim is finalized. Whenever claims are settled, Belkin Corporation reserves the right to be subrogated under any existing insurance policies the purchaser may have.

**How state law relates to the warranty.**

THIS WARRANTY CONTAINS THE SOLE WARRANTY OF BELKIN CORPORATION, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR, EXCEPT AS REQUIRED BY LAW, IMPLIED, INCLUDING THE IMPLIED WARRANTY OR CONDITION OF QUALITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SUCH IMPLIED WARRANTIES, IF ANY, ARE LIMITED IN DURATION TO THE TERM OF THIS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

IN NO EVENT SHALL BELKIN CORPORATION BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR MULTIPLE DAMAGES SUCH AS, BUT NOT LIMITED TO, LOST BUSINESS OR PROFITS ARISING OUT OF THE SALE OR USE OF ANY BELKIN PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This warranty gives you specific legal rights, and you may also have other rights, which may vary from state to state. Some states do not allow the exclusion or limitation of incidental, consequential, or other damages, so the above limitations may not apply to you.

# BELKIN.

## EC Declaration of Conformity to R&TTE Directive 1999/5/EC CE!

**Manufacturer** : BELKIN LTD,  
EXPRESS BUSINESS PARK,  
SHIPTON WAY  
RUSHDEN  
NN10 6GL ENGLAND

**Representative** : Belkin Ltd  
(residing in the EC  
holding the TCF)

**Product / Apparatus** : N1 Wireless Modem Router

**Type Number** : F5D8631

**Variants include** : All Country Variants

### Declaration

I declare that above product conforms to all the applicable requirements of EU Directive 1999/5/EC and is CE-marked accordingly:

Article 3.1a: (Standard(s)) used to show compliance with LVD, 73/23/EEC:  
EN60950-1:2001

Article 3.1b: (Standard(s)) used to show compliance with EMC Directive, 89/336/EEC:  
EN301 489-1 V1.4.1 (2002-08); EN 489-17 V1.2.1 (2002-08)

Article 3.2: Standard(s) used to show compliance:  
EN300 328 V1.6.1 (2004-11)

**Signature** : 

**Name** : K Simpson

**Title** : European Regulatory Compliance Manager

**Date** : \_1 NOV 2006

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# BELKIN®

## N1 Wireless Modem Router

# BELKIN®

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

### **Belkin Tech Support**

UK: 0845 607 77 87

Europe: [www.belkin.com/support](http://www.belkin.com/support)

#### **Belkin Ltd.**

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NN10 6GL, United Kingdom  
+44 (0) 1933 35 2000  
+44 (0) 1933 31 2000 fax

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C/ Anabel Segura, 10 planta baja, Of. 2  
28108, Alcobendas, Madrid  
Spain  
+34 91 791 23 00  
+34 91 490 23 35 fax

#### **Belkin SAS**

130 rue de Silly  
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