

**BELKIN**<sup>®</sup>

**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.

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## Introduction

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### 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.

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## 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.

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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.

## Introduction

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### 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.

## Product Overview

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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).

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## 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

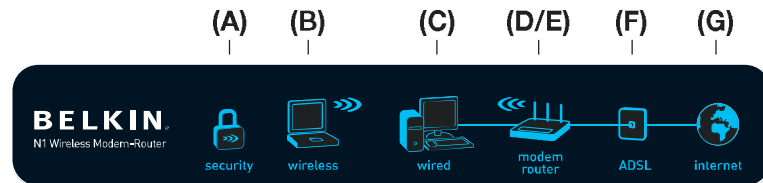
## Internet Connection Settings

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

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### 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

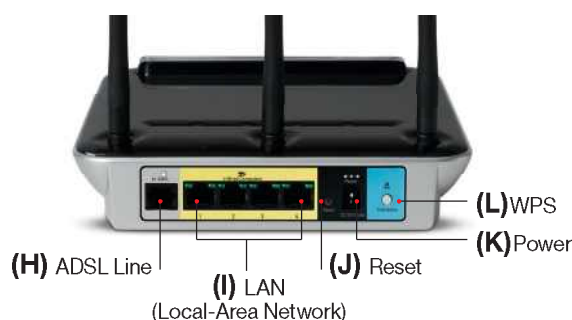
### G. Internet Status

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.

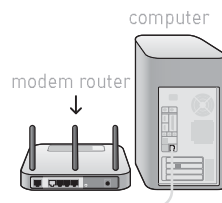
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## Step 1 | Hardware Connections – Follow the Quick Installation Guide (QIG)

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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.

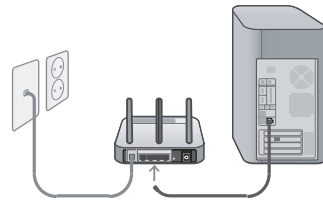


- A.** Unpack your new Modem Router from the box and place it next to your computer. Raise the Modem Router's antennas.

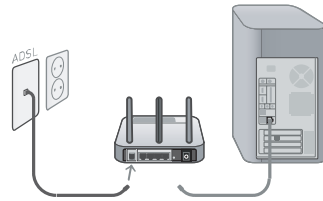


## Connecting and Configuring your Modem Router

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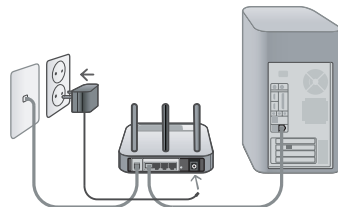


- B.** Retrieve the yellow RJ-45 cable that comes with your Modem Router. First connect it to any yellow port labeled “to Wired Computers” on the back of your Modem Router. Then connect the other end to the networking port on the back of your computer.

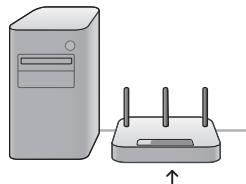


- C.** Retrieve the gray RJ-11 phone core that comes with your Modem Router. Connect it to the gray port labeled “to ADSL” on the back of your Modem Router. Then connect the other end to the wall jack you will be using for ADSL, or into an ADSL splitter if you are using that.

**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.

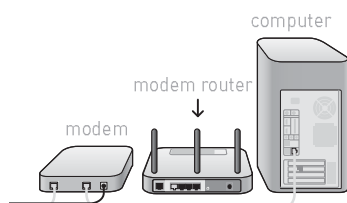


- E.** Wait 20 seconds for the Modem Router to start up. Look at the display on the front of the Modem Router. Make sure the “Wired” and “Modem-Router” icons are lit up in blue. If they are not, recheck your connections

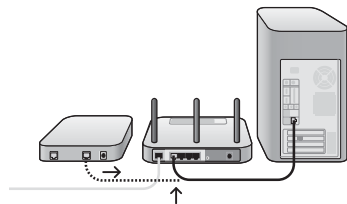
## Connecting and Configuring your Modem Router

### Replacing an Existing Modem or Modem Router

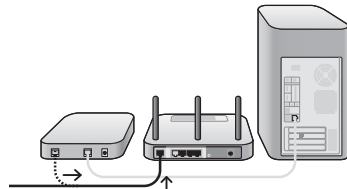
Follow these steps if you currently have a modem or a modem router that you will be replacing with your new Modem Router



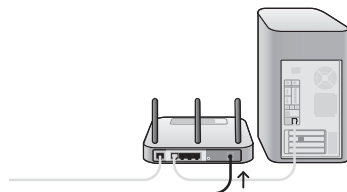
- A.** Unpack your new Modem Router from the box and place it next to your old modem. Raise the Modem Router's antennas. Unplug old modem's power cord.



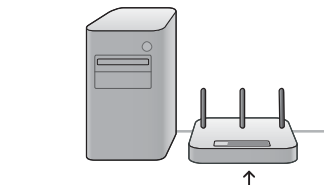
- B.** Locate the cable that connects your old modem to your computer. Unplug that cable from your old modem, and plug it into any yellow port labeled "to Wired Computers" on the back of your new Modem Router.



- 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.

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## Connecting and Configuring your Modem Router

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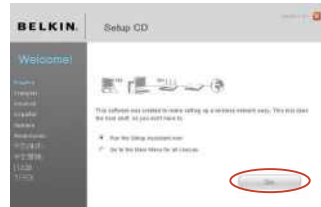
### Step 2 | Set Up the Modem Router – Run the Setup Assistant Software

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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.

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



## 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.

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## 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



**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.

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## 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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## Alternate Setup Method

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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.



### 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.

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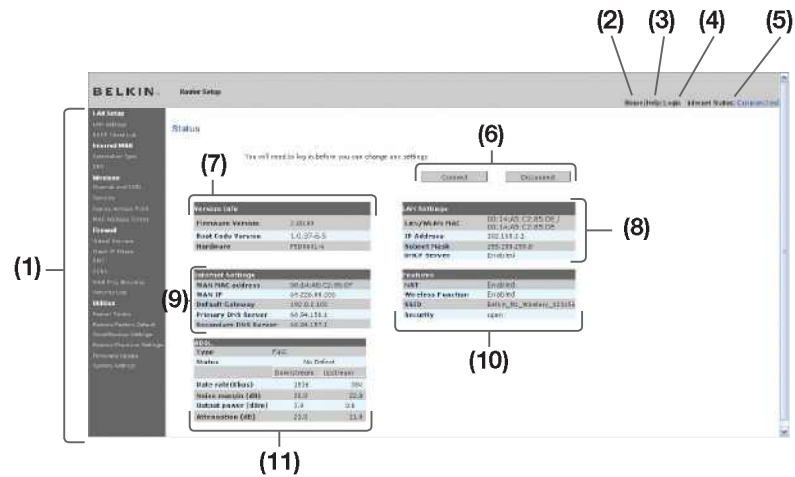
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## Alternate Setup Method

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### 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".

## Alternate Setup Method

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### 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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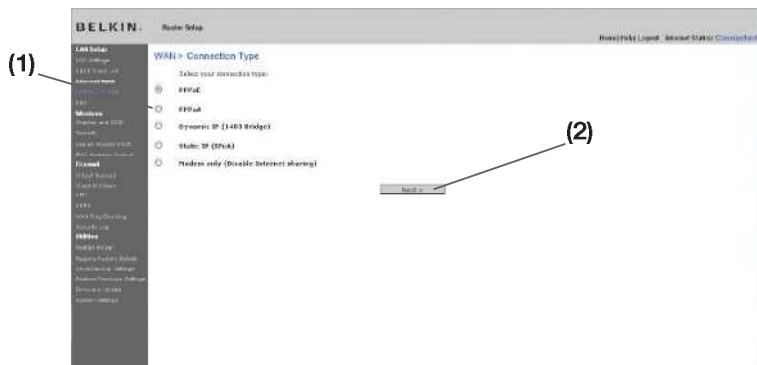
## Alternate Setup Method

### 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)**.



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## 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 BELKIN Router Setup interface for WAN Connection Type - PPPoE. The page includes a sidebar with navigation options like LAN Setup, WAN Setup, and Advanced. The main content area is titled 'WAN > Connection Type - PPPoE' and contains the following fields and options:

- Username >**: A text input field for the ISP username.
- Password >**: A text input field for the ISP password.
- Retype Password >**: A text input field to confirm the password.
- Service Name >**: A text input field for the ISP service name.
- VPI / VCI >**: A dropdown menu with '0 / 35' selected.
- Encapsulation >**: A dropdown menu with 'LLC' selected.
- MTU (0-1492)**: A text input field with '1492' entered.

At the bottom, there are two buttons: 'Apply Changes' and 'Back (Cancel)'. Numbered callouts (1-8) point to the Username, Password, Retype Password, Service Name, VPI/VCI, Encapsulation, MTU, and the Apply Changes button respectively.

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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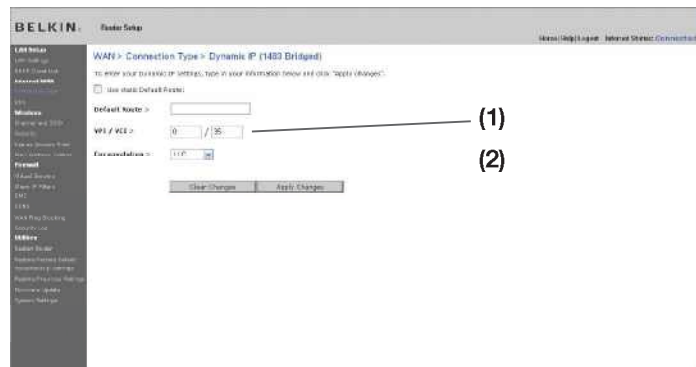


## Alternate Setup Method

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### 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.



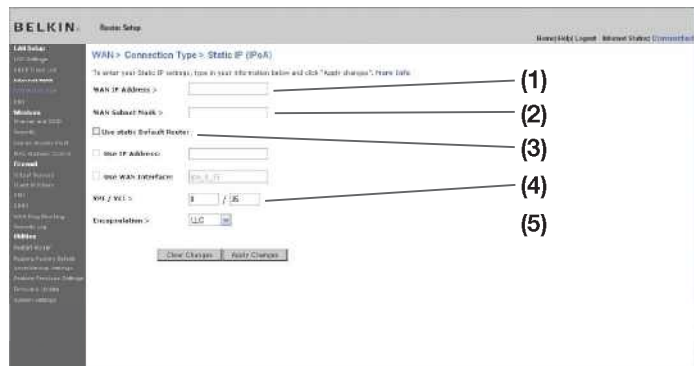
1. **VPI/VCI** - Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. These identifiers are assigned by your ISP.
2. **Encapsulation** - Select LLC or VC MUX your ISP uses.

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".

## Alternate Setup Method

### 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.



- 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”.

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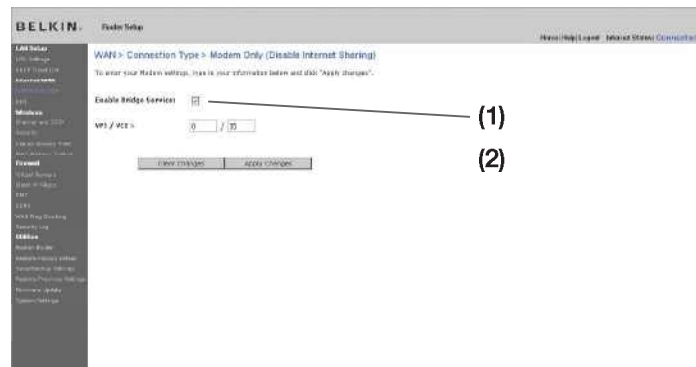
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## Alternate Setup Method

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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.



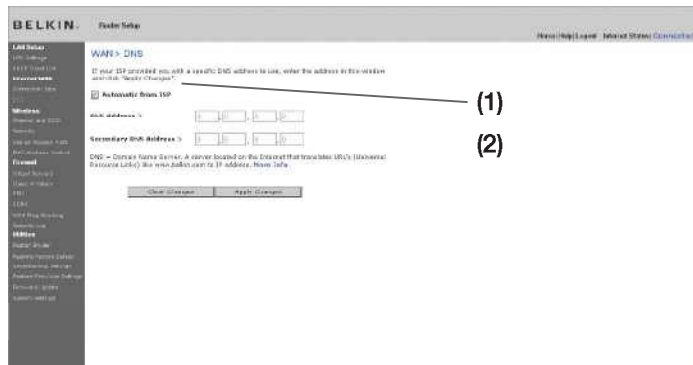
1. **Enable Bridge Service** - Check this box to enable bridge service
2. **VPI/VCI** - Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. (Assigned by your ISP).

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".

## Alternate Setup Method

### 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.



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## 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

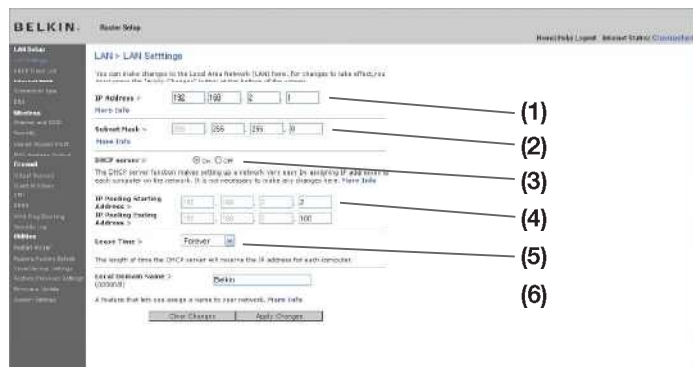
Clicking on the header of the LAN tab **(1)** will take you to the LAN tab's header page. A quick description of the functions can be found here. To view the settings or make changes to any of the LAN settings, click on "LAN Settings" **(2)** or to view the list of connected computers, click on "DHCP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



# Using the Web-Based Advanced User Interface

## Changing LAN Settings

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



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### 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”.

## Using the Web-Based Advanced User Interface

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### **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.

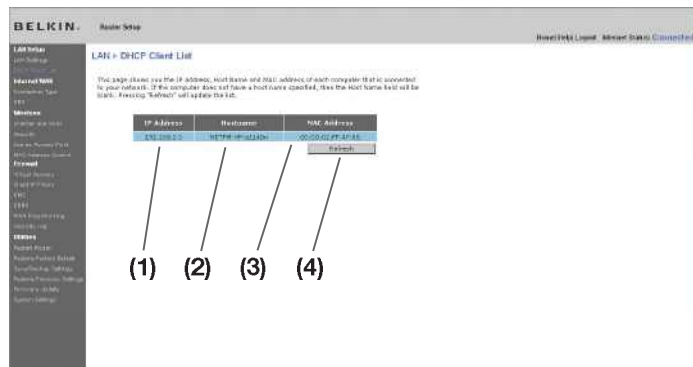
### **6. Local Domain Name**

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”.

## Using the Web-Based Advanced User Interface

### 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.

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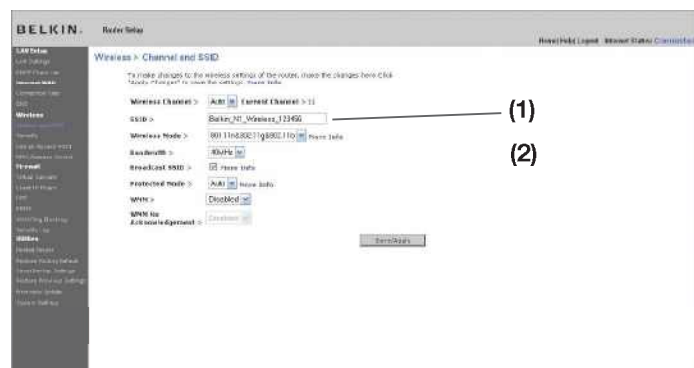
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## Using the Web-Based Advanced User Interface

### 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).

## Using the Web-Based Advanced User Interface

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### 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.

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## Using the Web-Based Advanced User Interface

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### 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.

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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.

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### 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.

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3. For “Encryption Technique”, select “TKIP”, “AES”, or “TKIP+AES”. This setting will have to be identical on the wireless clients that you set up.
4. Enter your pre-shared key (PSK). This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the wireless clients that you set up. For example, your PSK might be something like: “Smith family network key”. Click “Apply Changes” to finish. You must now set all wireless clients to match these settings.



**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.

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### 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.



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### 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.

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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: **AF IF 4B C3 D4**

64-bit:

128-bit:

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

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## 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.

