BELKIN®

ADSL2+ Modem with Wireless G+ MIMO Router

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BELKIN®

ADSL2+ Modem with Wireless G+ MIMO Router

Network your computers and share your ADSL Internet access

Connect Wider

802.11g G+ MIMO

User Manual

F5D9630-4A

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Introduction

Thank you for purchasing the Belkin ADSL Modem with High-Speed Mode Wireless G Router (the Router). In minutes you will be able to share your Internet connection and network your computers with your new Router. The following is a list of features that make your Router an ideal solution for your home or small office network. Please be sure to read through this User Manual completely, and pay special attention to Appendix B entitled “Important Factors for Placement and Setup”.

Benefits of a Home Network

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 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

Make Sure You Have the Following

Package Contents

- ADSL2+ Modem with Wireless G+ MIMO Router
- RJ11 Telephone Cord - Gray
- RJ45 Ethernet Networking Cable - Yellow
- ADSL Microfilter*
- Power Adapter
- User Manual 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 Router
- At least one computer with a Network Interface Card (NIC) and Internet browser installed and correctly configured
- TCP/IP networking protocol installed on each computer connected to the Router
- No other DHCP server on your local network assigning IP addresses to computers and devices

Internet Connection Settings

Please collect the following information from your Internet Service Provider (ISP) before setting up the ADSL Modem Wireless G Router.

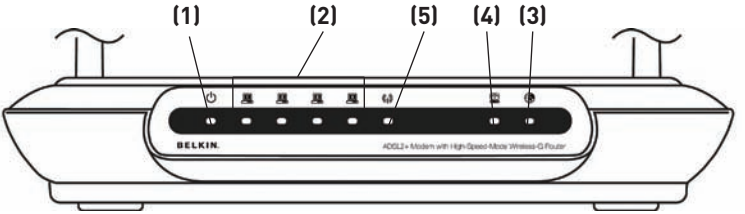
- Internet connection protocol: _____ (PPPoE, PPPoA, Dynamic IP, Static IP)
- Multiplexing method or Encapsulation: _____ (LLC or VC MUX)
- Virtual circuit: VPI (Virtual Path Identifier) _____
  (a number between 0 and 255)
- VCI (Virtual Channel Identifier) _____
  (a number between 1 and 65535)
- For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

Note: See Appendix C in this User Manual for some common DSL Internet setting parameters. If you are not sure, please contact your ISP.

Knowing your Router

The Router is designed to be placed on a desktop. All of the cables exit from the rear of the Router for better organization and utility. The LED indicators are easily visible on the front of the Router to provide you with information about network activity and status.

Front Panel



1. Power LED

When you apply power to the Router or restart it, a short period of time elapses while the Router boots up. When the Router has completely booted up, the Power LED becomes a GREEN light, indicating the Router is ready for use.

	OFF	Router is OFF
	Green	Router is ON
	Red	Router failed to start

2. LAN Status LEDs

These LAN Status LEDs are labeled 1–4 and correspond to the numbered ports on the rear of the Router. When a computer is properly connected to one of the LAN ports on the rear of the Router, the LED will light. Solid GREEN means a computer or a network-enabled device is connected. When information is being sent over the port, the LED blinks rapidly. ORANGE indicates a 10Base-T connection.

	OFF	No device is connected
	Orange	Ethernet link is up and 10Base-T device connected
	Orange - blinking	When 10Base-T device transmitting or receiving data
	Green	Ethernet link is up and 100Base-T connected
	Green - blinking	When 100Base-T device transmitting or receiving data

3. WLAN Status LED

The WLAN Status LED is solid GREEN when you enable the wireless LAN function. It flashes when the Router is transmitting or receiving data wirelessly.

	OFF	WLAN is off
	Green	WLAN is up and connected
	Green - blinking	When transmitting or receiving data

4. ADSL LED

The ADSL LED flashes GREEN during negotiation with your ISP. It stays GREEN when the Router is connected properly to your ADSL service.

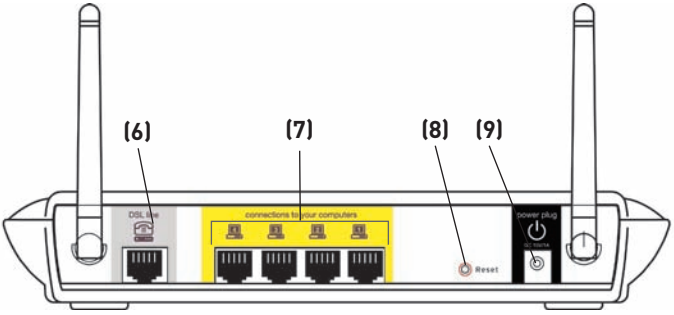
	OFF	No ADSL connection
	Green	ADSL link is up and connected
	Green - blinking	negotiating connection

5. Internet LED

The Internet LED shows you when the Router is connected to the Internet. When the LED is OFF, the Router is NOT connected to the Internet. When the LED is solid GREEN, the Router is connected to the Internet. When the LED is blinking, the Router is transmitting or receiving data from the Internet.

	OFF	No Internet connection
	Green	Connected to the Internet
	Green - blinking	When transmitting or receiving data
	Red	Failed to get IP

Back Panel



6. DSL Line
This port is for connection to your ADSL line. Connect your ADSL line to this port.

7. Ethernet Ports
The Ethernet ports are RJ45, 10/100 auto-negotiation. The ports are labeled 1 through 4. These ports correspond to the numbered LEDs on the front of the Router. Connect your network-enabled computers or any networking devices to one of these ports.

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

a. Resetting the Router
Push and hold the Reset button for one second then release it. When the Power/Ready light becomes solid again, the reset is complete.

b. Restoring the Factory Defaults
Press and hold the Reset button for five seconds then release it. When the Power/Ready light becomes solid again, the restore is complete.

9. Power Plug
Connect the included 15V DC power supply to this inlet. Using the wrong type of power adapter may cause damage to your Router.

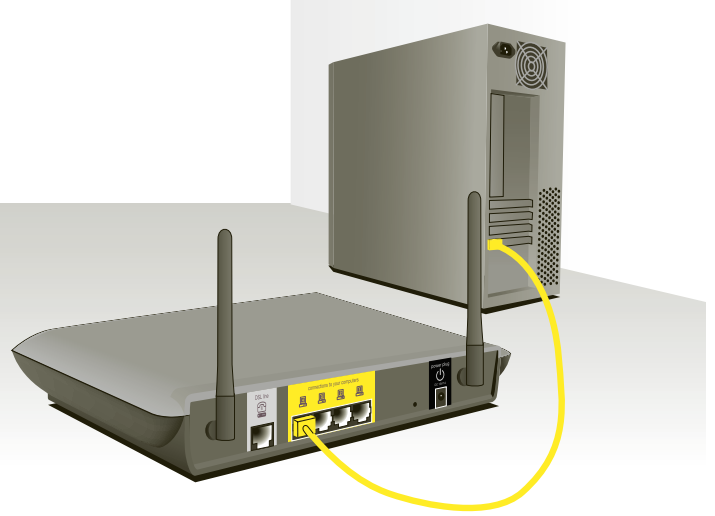
Positioning your Router

Your wireless connection will be stronger the closer your computer is to your Router. Typical indoor operating range for your wireless devices is between 100 and 200 feet. In the same way, your wireless connection and performance will degrade somewhat as the distance between your Router connected devices increases. This may or may not be noticeable to you. As you move farther from your Router, connection speed may decrease. Factors that can weaken signals simply by getting in the way of your network's radio waves are metal appliances, or obstructions, and walls. Please see "Appendix B: Important Factors for Placement and Setup" in this User Manual for more guidelines.

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

Connecting your Computers

1. Power off your computers and networking equipment.
2. Connect your computer to one of the **YELLOW** RJ45 ports on the rear of the Router labeled “connections to your computers” by using an Ethernet networking cable (one Ethernet network cable is supplied).



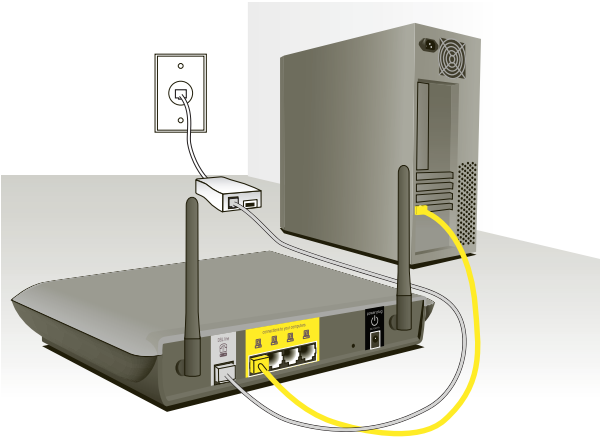
Connecting your ADSL Line

Connection for the Router to the ADSL line varies by country and region. Typically it involves a microfilter or a microfilter with built-in splitter to allow simultaneous use of ADSL service and telephone service on the same telephone line. Please read the following steps carefully and select appropriate method.

1. If your telephone service and ADSL service are on the same telephone line, ADSL microfilters are needed for each telephone and device, such as answering machine, fax machine, and caller ID display. Additional splitters may be used to separate telephone lines for telephone and the Router.

   Note: Do not connect the ADSL microfilter between the wall jack and the Router—this will prevent ADSL service from reaching the modem.

2. If your telephone service and ADSL service are on the same telephone line and you are using an ADSL microfilter with built-in splitter, connect the splitter to the telephone wall jack providing ADSL service. Then, connect the telephone cord from the ADSL microfilter RJ11 port generally labeled “DSL” to the gray RJ11 port labeled “DSL line” on the back of your Router. Connect telephony device to the other port on the ADSL splitter commonly labeled “Phone”. An additional ADSL microfilter is needed for another telephone and device on the same line.



Note: One RJ11 telephone cord is supplied. When inserting an RJ11 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

3. If you have a dedicated ADSL service telephone line with an RJ11 wall jack, simply connect a telephone cord from the wall jack to the gray RJ11 port labeled “DSL line” on the back of your Router.

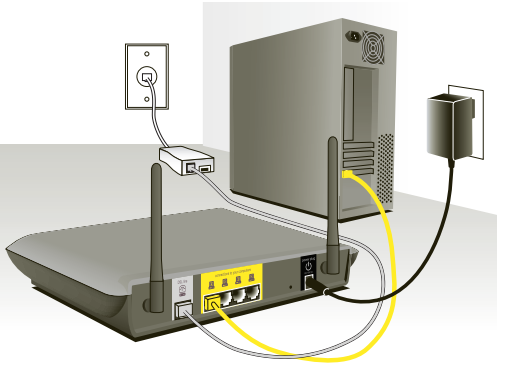
4. If you have an RJ45 wall jack for your ADSL service, connect an RJ45-to-RJ11 converter to the wall jack. Then connect one end of a telephone cord to the converter and the other end to the gray RJ11 port labeled “DSL line” on the back of your Router.

Note: ADSL microfilter may or may not be provided depending on your country.

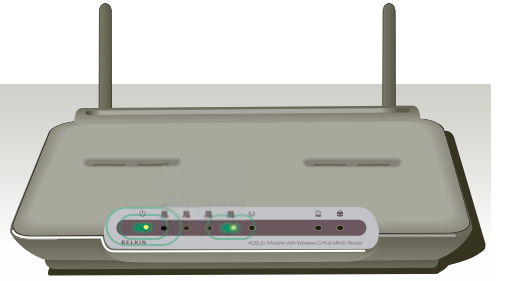
Powering Up your Router

1. Connect the supplied power adapter to the Router power-input plug labeled “Power”.

   Note: For safety and performance reasons, only use the supplied power adapter to prevent damage to the Router.



2. After connecting the power adapter and the power source is turned on, the Router’s power icon..... ⏻ on the front panel should be on. It might take a few minutes for the Router to fully start up.



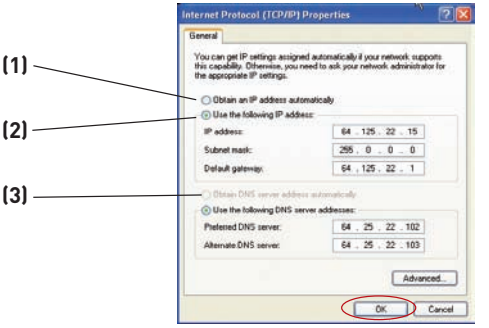
3. Turn on your computers. After your computers boot up, the LAN status LED..... 💻 on the front of the Router will be on for each port to which a wired computer is connected. These lights show you the connection and activity status. Now you are ready to configure the Router for ADSL connection.

In order for your computer to properly communicate with your Router, you will need to change your computer's "TCP/IP Ethernet" settings to "Obtain an IP address automatically/Using DHCP". This is normally the default setting in most home computers.

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

Manually Configuring Network Adapters in Windows XP, 2000, or NT

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 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 Router.

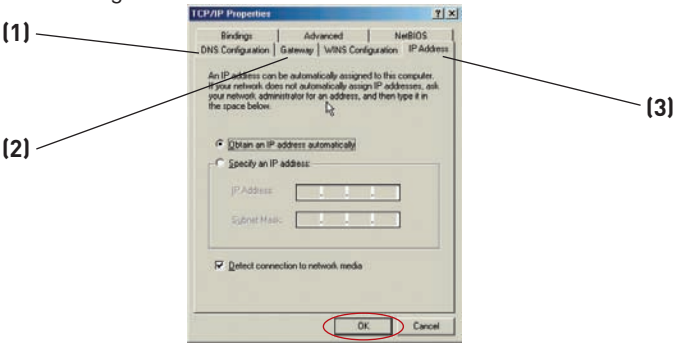
IP address:	
Subnet Mask:	
Default gateway:	
Preferred DNS server:	
Alternate DNS server:	

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

Your network adapter(s) are now configured for use with the Router.

Manually Configuring Network Adapters in Windows 98SE 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 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 Router.

IP address:	
Subnet Mask:	
Default gateway:	
Preferred DNS server:	
Alternate DNS server:	

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.
7. If not already selected, select “Obtain an IP address automatically” on the IP address tab. Click “OK”.
8. You will also need to delete the Gateway address from the Gateway tab and DNS Configuration entries in order to properly be configured for connection to the Belkin router.

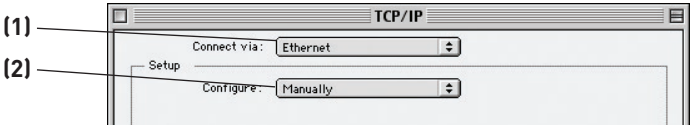
Restart the computer. When the computer restarts, your network adapter(s) are now configured for use with the Router.

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

Manually Configuring Network Adapters in Mac OS up to 9.x

In order for your computer to properly communicate with your Router, you will need to change your Mac computer's TCP/IP settings to DHCP.

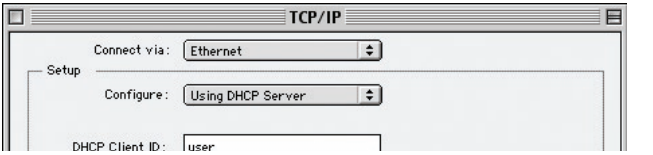
1. Pull down the Apple menu. Select "Control Panels" and select "TCP/IP".
2. You will see the TCP/IP control panel. Select "Ethernet Built-In" or "Ethernet" in the "Connect via:" drop-down menu **(1)**.



3. Next to "Configure" **(2)**, if "Manually" is selected, your 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 Router.

IP address:	
Subnet Mask:	
Router Address:	
Name Server Address:	

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



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

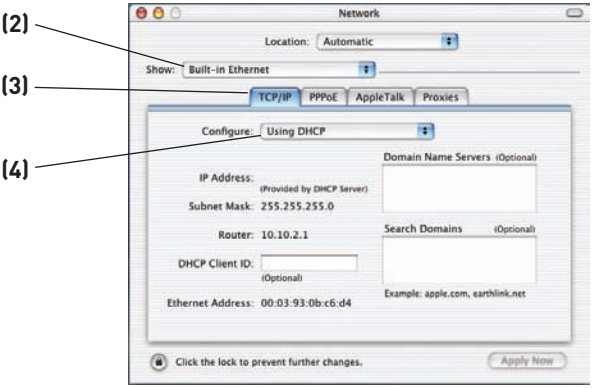
Restart the computer. When the computer restarts, your network settings are now configured for use with the Router.

Manually Configuring Network Adapters 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.



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 Router for a PPPoE connection type using your user name and password.
5. If “Manually” is selected, your 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 Router.

IP address:	
Subnet Mask:	
Router Address:	
Name Server Address:	

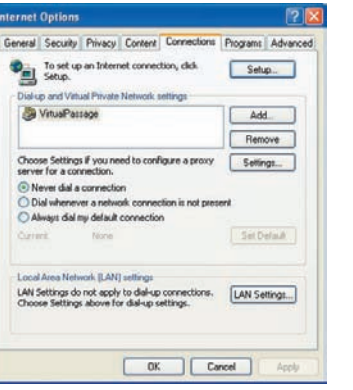
6. If not already selected, select “Using DHCP” next to “Configure” **(4)**, then click “Apply Now”.

Your network adapter(s) are now configured for use with the Router.

Recommended Web Browser Settings

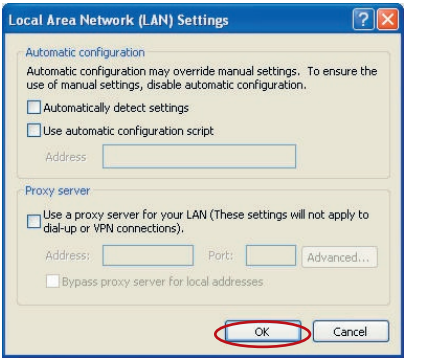
In most cases, you will not need to make any changes to your web browser's settings. If you are having trouble accessing the Internet or the advanced web-based user interface, then change your browser's settings to the recommended settings in this section.

Internet Explorer 4.0 or Higher



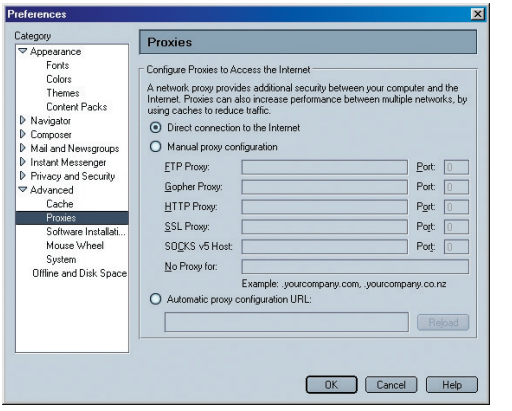
1. Start your web browser. Select "Tools" then "Internet Options".
2. In the "Internet Options" screen, there are three selections: "Never dial a connection", "Dial whenever a network connection is not present", and "Always dial my default connection". If you can make a selection, select "Never dial 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...".

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.



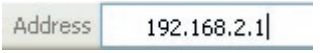
Netscape Navigator 4.0 or Higher

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”.



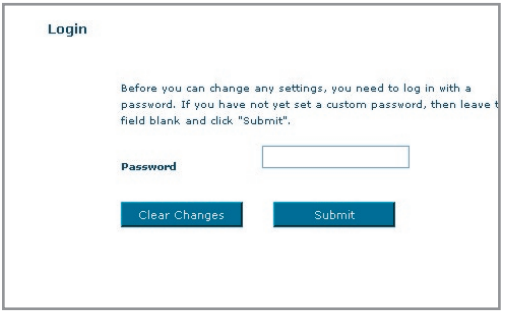
Running the Setup Wizard

1. You can access the web-based management user interface of the Router using the Internet browser on a computer connected to the Router. Type “192.168.2.1” (do not type in anything else such as “http://” or “www”) in your browser’s address bar. Then press the “Enter” key.



Note: It is strongly recommended that you use a computer physically connected to the Router with an RJ45 cable for initial setup. Using a wirelessly connected computer for initial setup is not recommended.

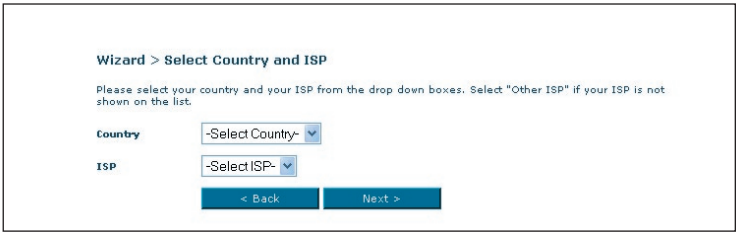
2. The following screen will appear in your browser to prompt you to login. The Router ships with no password entered. In the login screen, leave the password blank and click the “Submit” button to log in.



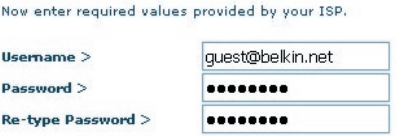
Note: It is strongly recommended that you change the password to your own for increased security. Please read the following section, entitled “Manually Configuring your Router”, for details on how to change your password and to reference other security features.

3. The Setup Wizard will start automatically for express configuration (recommended) Click “Next” to continue.

4. The first step is to select your country and ISP, and click “Next”. If your country and/or ISP is not listed, select “Other Country” or “Other ISP.”



5. Now fill in the username and password you were supplied by your Internet Service Provider (ISP) in to the blank fields. It is important that the correct user name and password are entered otherwise the connection will fail. Your ISP will be able to confirm your user name and password.



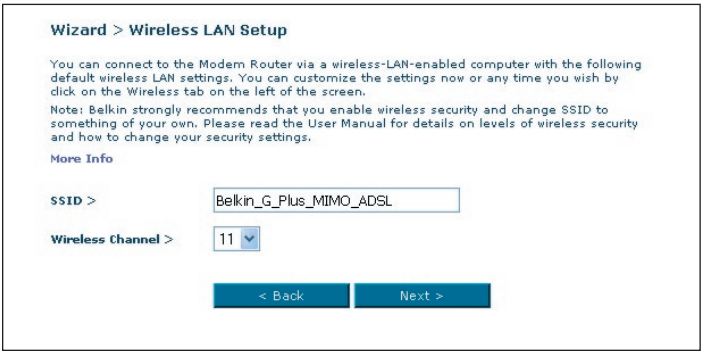
Note: For more detailed instruction on other connection types, please refer to the “Manually Configuring your Router” section of this User Manual.

6. Now the Wireless LAN Setup screen will show. You can connect to the Router via a wireless-LAN-enabled computer with the following default wireless LAN settings:

SSID = Belkin G+ MIMO ADSL

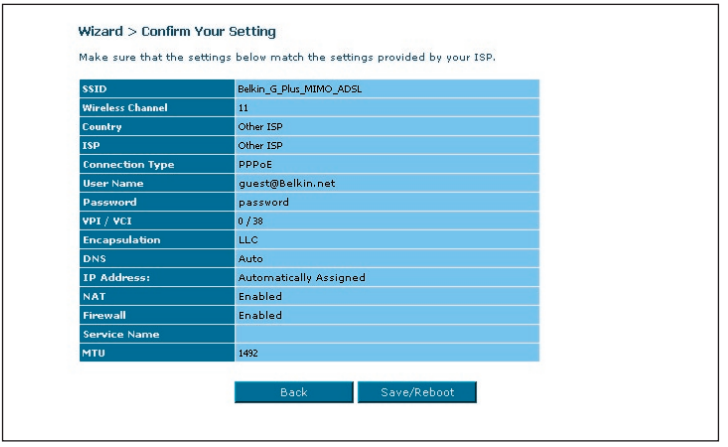
Wireless Channel = Auto

Security = off



Note: Belkin strongly recommends that you enable wireless security to WEP or WPA and change SSID to something of your own. Please read the User Manual for details on levels of wireless security and how to change your security settings

7. Double-check the settings shown on the following screen. You can click “Back” to change the settings or click “Next” to confirm



Wizard > Confirm Your Setting

Make sure that the settings below match the settings provided by your ISP.

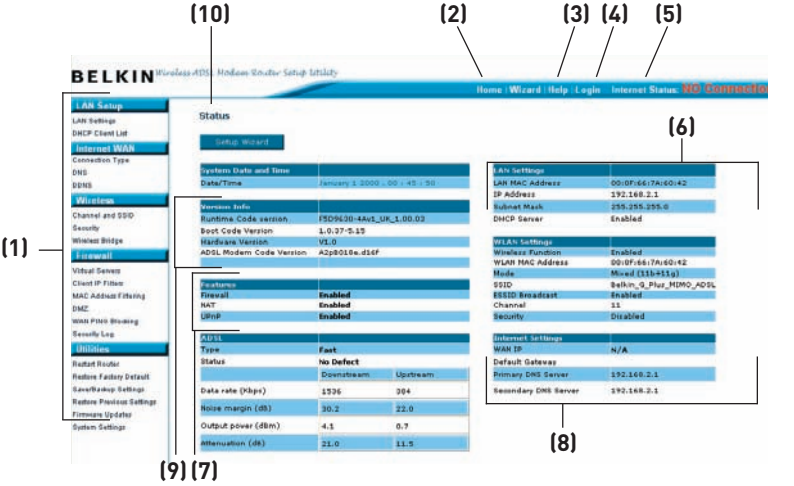
SSID	Belkin_G_Plus_MIMO_ADSL
Wireless Channel	11
Country	Other ISP
ISP	Other ISP
Connection Type	PPPoE
User Name	guest@Belkin.net
Password	password
VPI / VCI	0 / 38
Encapsulation	LLC
DNS	Auto
IP Address:	Automatically Assigned
NAT	Enabled
Firewall	Enabled
Service Name	
MTU	1492

Back Save/Reboot

Note: You can always restart the Setup Wizard or use the Navigation Menu on the left to change your setting.

Understanding the Web-Based User Interface

The home page shows you a quick view of the Router's status and settings. All advanced setup pages can be reached from this page.



1. **Quick-Navigation Links**
   You can go directly to any of the Router's 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 header of each tab will show you a short description of the tab's function.

2. **Home Button**
   The "Home" button is available in every page of the UI. Pressing this button will take you back to the home page.

3. **Help Button**
   The "Help" button gives you access to the Router's help pages. Help is also available on many pages by clicking "more info" next to certain sections of each page.

4. **Login/Logout Button**
   This button enables you to log in and out of the Router with the press of one button. When you are logged into the Router, this button will change to read "Logout". Logging into the Router will

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

5. **Internet Status Indicator**

   This indicator is visible in all pages of the Router, showing the connection status of the Router. When the indicator says “connection OK” in GREEN, the Router is connected to the Internet. When the Router is not connected to the Internet, the indicator will read “no connection” in RED. The indicator is automatically updated when you make changes to the settings of the Router.

6. **LAN Settings**

   Shows you the settings of the Local Area Network (LAN) side of the Router. Changes can be made to the settings by clicking the “LAN” “Quick Navigation” link on the left side of the screen.

7. **Features**

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

8. **Internet Settings**

   Shows the settings of the Internet/WAN side of the Router that connects to the Internet. Changes to any of these settings can be made by clicking on the “Internet/WAN” “Quick Navigation” link on the left side of the screen.

9. **Version Info**

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

10. **Page Name**

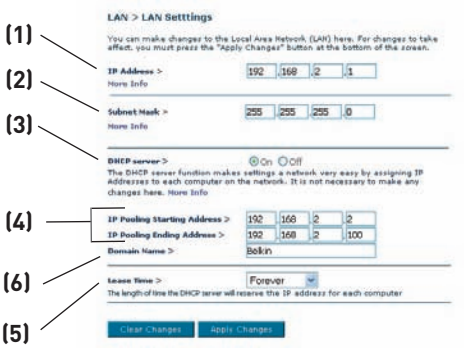
    The page you are on can be identified by this name. This manual will sometimes refer to pages by name. For instance, “LAN > LAN Settings” refers to the “LAN Settings” page.

Changing LAN Settings

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

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)**.

LAN Settings



1. **IP Address**

   The "IP address" is the internal IP address of the Router. The default IP address is "192.168.2.1". To access the 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 as the router will automatically adjust the length based on the IP address type.

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 IP Pool is 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**

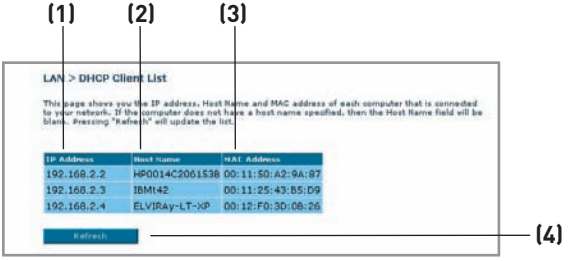
   Lease time is the length of time the DHCP server will reserve the IP address for each computer. We recommend that you leave the lease time set to “Forever”. The default setting is “Forever”, meaning that any time a computer is assigned an IP address by the DHCP server, the IP address will not change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

6. **Local Domain Name**

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

DHCP Client List

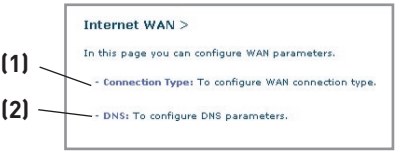
You can view a list of the computers (known as clients), which are connected to your network. You are able to view the IP address **(1)** of the computer, the host name **(2)** (if the computer has been assigned one), and the MAC address **(3)** of the computer's Network Interface Card (NIC). Pressing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



Internet WAN

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 ADSL Service Provider's system provided you have correctly configured the Router's settings for your ISP's connection type. Your connection settings are provided to you by your ISP. To configure the Router with the settings that your ISP gave you, click "Connection Type" **(1)** on the left side of the screen. Select the connection type you use. If your ISP gave you DNS settings, clicking "DNS" **(2)** allows you to enter DNS address entries for ISPs that require specific settings.

When you have finished making settings, the "Internet Status" indicator will read "Connection OK" if your Router is set up properly.



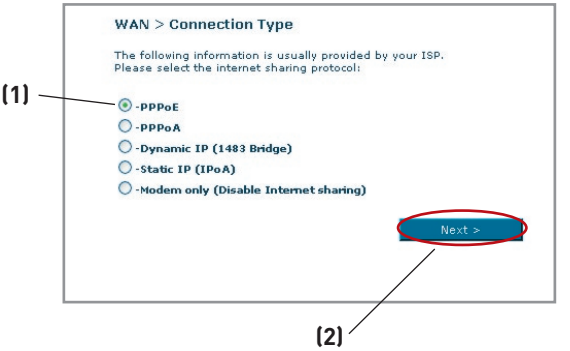
Connection Type

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

- PPPoE
- PPPoA
- Dynamic IP (1483 Bridged)
- Static IP (IPOA)
- Modem Only (Disable Internet Sharing)

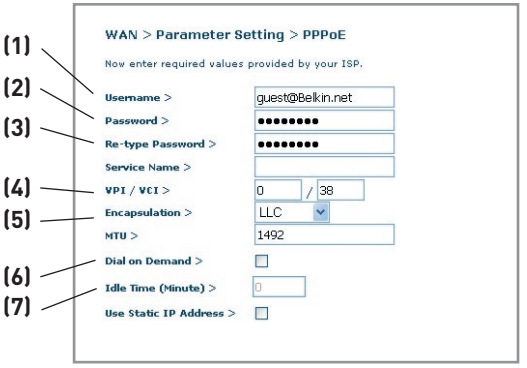
Note: See Appendix C in this User Manual for some common DSL Internet setting parameters. If you are not sure, please contact your ISP.

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



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.



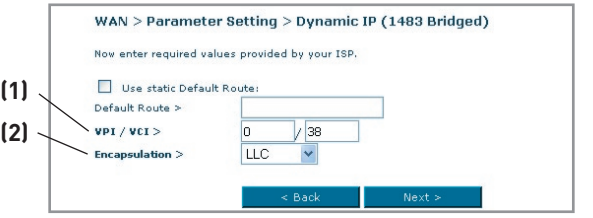
1. **User Name -** Enter the user name. (Assigned by your ISP).
2. **Password -** Enter your password. (Assigned by your ISP).
3. **Retype Password -** Confirm the password. (Assigned by your ISP).
4. **VPI/VCI -** Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter 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. **Dial on Demand -** By selecting “Dial on Demand” your Router will automatically connect to the Internet when a user opens up a web browser.
7. **Idle Time (Minutes) -** Enter the maximum idle time for the Internet connection. After this time has been exceeded, the connection will be terminated.

Setting your Connection Type to Dynamic IP (1483 Bridged)

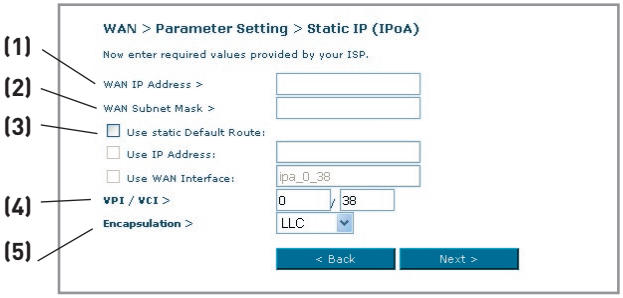
This connection method bridges your network and ISP's network together. The Router will obtain an IP address automatically from your ISP's DHCP server.



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.

Setting your ISP Connection to Static IP (IPoA)

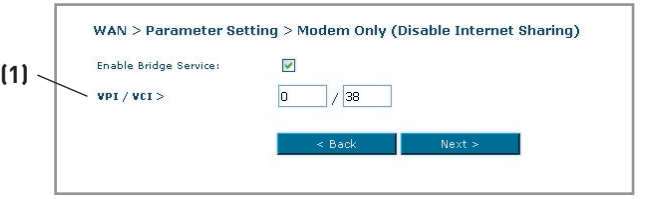
This connection type is also called “Classical IP over ATM” or “CLIP”, which your ISP provides a fixed IP for your Router to connect to the Internet.



1. **WAN IP Address –** Enter an IP address assigned by your ISP for the 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 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.

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

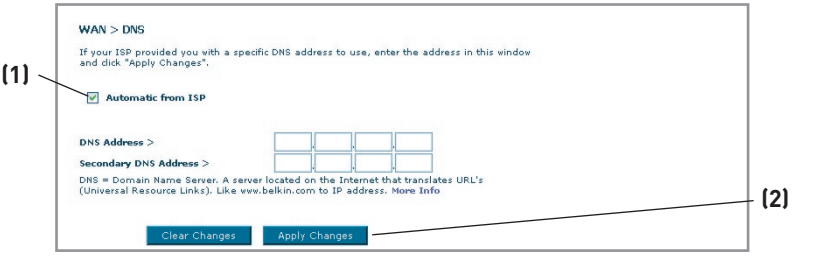
In this mode, the Router simply acts as a bridge passing packets across the DSL port. It requires additional software to be installed on your computers in order to access the Internet.



1. VPI/VCI - Enter your Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI) parameter here. (Assigned by your ISP).

DNS (Domain Name Server) Settings

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



Using 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.

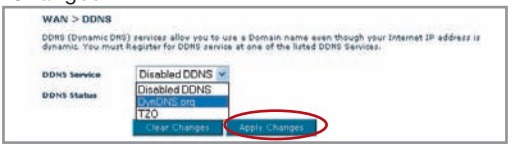
The Dynamic DNSSM service is ideal for a home website, file server, or to make it easy to access your home PC and stored files while you're at work. Using the service can ensure that your host name always points to your IP address, no matter how often your ISP changes it. When your IP address changes,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

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

Setting up the 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 dropdown box. Click "Apply Changes"



2. Enter your DynDNS.org user name in the "User Name" field **(1)**.
3. Enter your DynDNS.org password in the "Password" field **(2)**.
4. Enter the DynDNS.org domain name you set up with DynDNS.org in the "Domain Name" field **(3)**.
5. Click "Apply Changes" to update your IP address.

Whenever your IP address assigned by your ISP changes, the Router will automatically update DynDNS.org's servers with your new IP address. You can also do this manually by clicking the "Apply Changes" button **(4)**.

Wireless

The “Wireless” tab lets you make changes to the wireless network settings. From this tab, you can make changes to the wireless network name (SSID), operating channel, and encryption security settings.

Channel and SSID

1. Changing the Wireless Channel

There are a number of operating channels you can choose from. In the United States, there are 11 channels. In the United Kingdom and most of Europe, there are 13 channels. In a small number of other countries, there are other channel requirements. Your Router is configured to operate on the proper channels for the country you reside in. The default channel is 11 (unless you are in a country that does not allow channel 11). 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. For best performance, use a channel that is at least five channels away from the other wireless networks. For instance, if another network is operating on channel 11, then set your network to channel 6 or below. To change the channel, select the channel from the drop-down list. Click “Apply Changes”. The change is immediate.

2. Changing the Wireless Network Name (SSID)

To identify your wireless network, a name called the SSID (Service Set Identifier) is used. The default SSID of the Router is “belkin54g”. You can change this to anything you want to or you can leave it unchanged. If there are other wireless networks operating in your area, you will want to make sure that your SSID is unique (does not match that of another wireless network in the 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.

3. Using the ESSID Broadcast Feature

For security purposes, 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 tick from the tick box next to the option, Broadcast SSID. 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.

Note: This advanced feature should be employed by advanced users only.

4. Using the Wireless Mode Switch

Your router can operate in either two different wireless modes:

- **802.11b & 802.11g-** Choose this option if you plan to have wireless clients of both 802.11b and 802.11g connect to your network.
- **802.11g -** Use this mode if there are no 802.11b clients in the network. This option gives the best performance but will not allow 802.11b clients to connect.

5. Protected Mode Switch

As part of the 802.11g specification, Protected mode ensures proper operation of 802.11g clients and access points when there is heavy 802.11b traffic in the operating environment. When Protected mode is ON, 802.11g scans for other wireless network traffic before it transmits data. Therefore, using this mode in environments with HEAVY 802.11b traffic or interference achieves best performance results. If you are in an environment with very little—or no—wireless network traffic, your best performance will be achieved with Protected mode OFF.

Encryption/Security

Securing your Wi-Fi Network

Here are a few different ways you can maximize the security of your wireless network and protect your data from prying eyes and ears. This section is intended for the home, home office, and small office user. At the time of this User Manual's publication, there are four encryption methods available.

Name	64-Bit Wired Equivalent Privacy	128-Bit Wired Equivalent Privacy	Wi-Fi Protected Access-TKIP	Wi-Fi Protected Access 2
Acronym	64-bit WEP	128-bit WEP	WPA-TKIP/AES (or just WPA)	WPA2-AES (or just WPA2)
Security	Good	Better	Best	Best
Features	Static keys	Static keys	Dynamic key encryption and mutual authentication	Dynamic key encryption and mutual authentication
	Encryption keys based on RC4 algorithm (typically 40-bit keys)	More secure than 64-bit WEP using a key length of 104 bits plus 24 additional bits of system-generated data	TKIP (Temporal Key Integrity Protocol) added so that keys are rotated and encryption is strengthened	AES (Advanced Encryption Standard) does not cause any throughput loss

WEP (Wired Equivalent Privacy)

WEP is a common protocol that adds security to all Wi-Fi-compliant wireless products. WEP was designed to give wireless networks the equivalent level of privacy protection as a comparable wired network.

64-Bit WEP

64-bit WEP was first introduced with 64-bit encryption, which includes a key length of 40 bits plus 24 additional bits of system-generated data (64 bits total). Some hardware manufacturers refer to 64-bit as 40-bit encryption. Shortly after the technology was introduced, researchers found that 64-bit encryption was too easy to decode.

128-Bit WEP

As a result of 64-bit WEP's potential security weaknesses, 128Bit WEP was developed as a more secure method of encryption. 128-bit encryption includes a key length of 104 bits plus 24 additional bits of system-generated data (128 bits total). Some hardware manufacturers refer to 128-bit as 104-bit encryption.

Most of the new wireless equipment in the market today supports both 64-bit and 128-bit WEP encryption, but you might have older equipment that only supports 64-bit WEP. All Belkin wireless products will support both 64-bit and 128-bit WEP.

Encryption Keys

After selecting either the "64-bit" or "128-bit WEP" encryption mode, it is critical that you generate an encryption key. If the encryption key is not consistent throughout the entire wireless network, your wireless networking devices will be unable to communicate with one another on your network and you will not be able to successfully communicate within your network.

You can enter your key by typing in the hex key manually, or you can type in a passphrase in the "Passphrase" field and click "Generate" to create a key. A hex (hexadecimal) key is a mixture of numbers and letters from A–F and 0–9. For 64-bit WEP, you need to enter 10 hex characters. For 128-bit WEP, you need to enter 26 hex characters.

The WEP passphrase is NOT the same as a WEP key. Your wireless card uses this passphrase to generate your WEP keys, but different hardware manufacturers might have different methods for generating the keys. If you have equipment from multiple vendors in your network, you can use the hex WEP key from your Router or access point and enter it manually into the hex WEP key table in your wireless card's configuration screen.

Using a Hexadecimal Key

A hexadecimal key is a mixture of numbers and letters from A–F and 0–9. 64-bit keys are five two-digit numbers. 128-bit keys are 13 two-digit Characters.

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 in each box. You will use this key to program the encryption settings on your Router and your wireless computers.

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.

WPA (Wi-Fi Protected Access)

WPA (Wi-Fi Protected Access) is a new Wi-Fi standard that was designed to improve upon the security features of WEP. To use WPA security, the drivers and software of your wireless equipment must be upgraded to support WPA. These updates will be found on the wireless vendors' websites. There are two types of WPA security: WPA-Personal (PSK) and WPA-Enterprise (RADIUS).

WPA-Personal (PSK)

This method uses what is known as a Pre-Shared key as the Network key. A Network key is basically a password that is between eight and 63 characters long. It can be a combination of letters, numbers, or characters. Each client uses the same Network key to access the network. Typically, this is the mode that will be used in a home environment.

WPA-Enterprise (RADIUS)

With this system, a radius server distributes the Network key to the clients automatically. This is typically found in a business environment. For a list of Belkin wireless products that support WPA, please visit our website at **www.belkin.com/networking**.

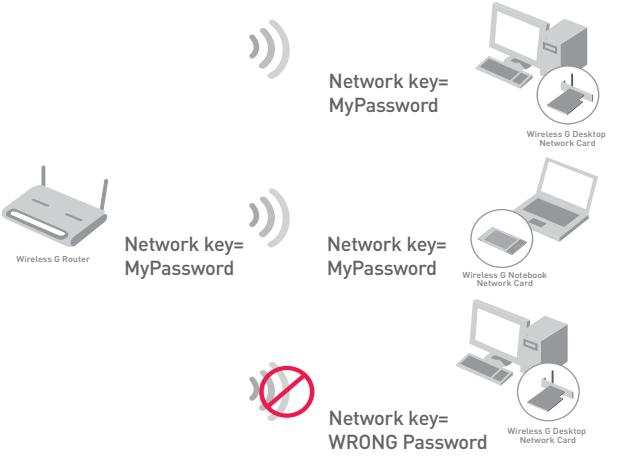
WPA2 (WiFi Protected Access)

WPA2 is the second generation of WPA based 802.11i standard. It offers higher level of wireless security by combining advanced network authentication and stronger AES encryption method. 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 WPA-Enterprise (RADIUS) is implemented in a business environment where an external radius server distributes the network key to the clients automatically.

Sharing the Same Network Keys

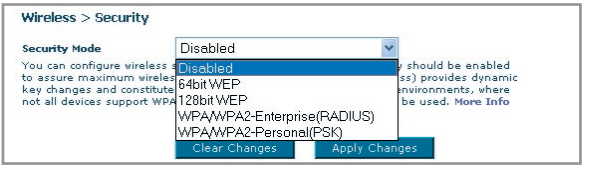
Most Wi-Fi products ship with security turned off. So once you have your network working, you need to activate WEP or WPA or WPA2 and make sure your wireless networking devices are sharing the same Network key.

The Wireless G+ MIMO Desktop Network Card cannot access the network because it is using a different Network key than the Network key that is configured on the Wireless G+ MIMO Router.



Changing the Wireless Security Settings

Your Router is equipped with WPA/WPA2 (Wi-Fi Protected Access), the latest wireless security standard. It also supports the legacy security standard, WEP (Wired Equivalent Privacy). By default, wireless security is disabled. To enable security, you must first determine which standard you want to use. To access the security settings, click **"Security" on the Wireless tab.**



WEP Setup

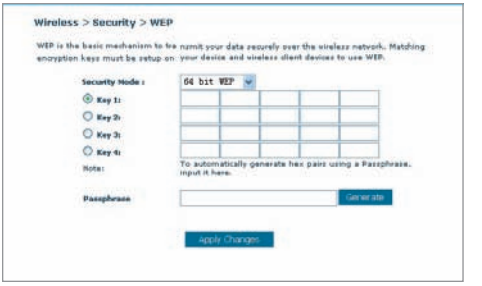
64-Bit WEP Encryption

1. Select “64-bit WEP” from the drop-down menu.
2. After selecting your WEP encryption mode, you can enter your key by typing in the hex key manually.

A hex (hexadecimal) key is a mixture of numbers and letters from A–F and 0–9. For 64-bit WEP, you need to enter 10 hex characters.

For instance:

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



3. Click “Apply Changes” to finish. Encryption in the 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 Wireless Router or access point from a computer with a wireless client, you will lose your connection until you enable security on your wireless client. Please be sure to write down your key before applying changes

128-Bit WEP Encryption

1. Select “128-bit WEP” from the drop-down menu.
2. After selecting your WEP encryption mode, you can enter your key by typing in the hex key manually.

   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 characters.

   For instance:

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

3. Click “Apply Changes” to finish. Encryption in the 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 Wireless Router or access point from a computer with a wireless client, you will lose your connection until you enable security on your wireless client. Please be sure to write down your key before applying changes.

WPA Setup

Note: To use WPA security, all your clients must be upgraded to drivers and software that support it. At the time of this User Manual’s publication, a security patch download is available free from Microsoft. This patch works only with the Windows XP operating system. You also need to download the latest driver for your Belkin Wireless G 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.

There are two types of WPA security: WPA-Personal (PSK) and WPA-Enterprise (RADIUS). WPA-Personal (PSK) uses a so-called Pre-Shared key as the security key. A Pre-Shared key is a password that is between eight and 63 characters long. It can be a combination of letters, numbers, and other characters. Each client uses the same key to access the network. Typically, this mode will be used in a home environment.

WPA-Enterprise (RADIUS) is a configuration wherein a radius server distributes the keys to the clients automatically. This is typically used in a business environment.

Setting WPA-Personal (PSK)

1. From the “Security Mode” drop-down menu, select “WPA/WPA2-PSK.
2. Select “WPA-PSK” for Authentication.
3. For Encryption Technique, select “TKIP”. This setting will have to be identical on the clients that you set up.
4. 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. For example, your PSK might be something like: “Smith family network key”.

5. Click “Apply Changes” to finish. You must now set all clients to match these settings.

Setting WPA-Enterprise (RADIUS) Settings

If your network uses a radius server to distribute keys to the clients, use this setting.

1. From the “Security Mode” drop-down menu, select “WPA/WPA2—Enterprise (RADIUS)

2. Select “WPA-RADIUS” for Authentication
3. For Encryption Technique, select “TKIP”. This setting will have to be identical on the clients that you set up
4. Enter the IP address of the radius server into the “Radius Server” fields.
5. Enter the radius key into the “Radius Key” field.
6. Enter the key interval. Key interval is how often the keys are distributed (in packets).
7. Click “Apply Changes” to finish. You must now set all clients to match these settings.

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.

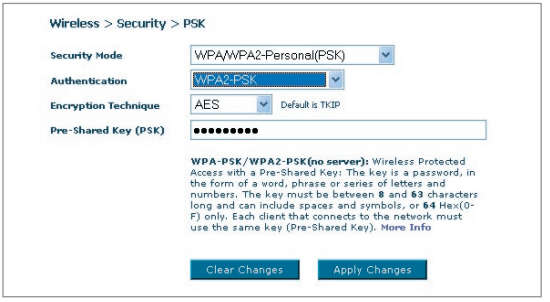
For Windows XP computer that does not have Service Pack 2 (SP2), a file from Microsoft called “Windows XP Support Patch for Wireless Protected Access (KB 826942)” is available for free download at http://support.microsoft.com/?kbid=826942

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 can be download 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 update driver available for download from the Belkin support site: www.belkin.com/networking.

Setting WPA2-Personal (PSK)

1. From the “Security Mode” drop-down menu, select “WPA/WPA2-PSK (PSK)”.
2. Select “WPA2-Personal (PSK)” for Authentication.
3. For Encryption Technique, select “AES” . This setting will have to be identical on the clients that you set up.
4. 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. For example, your PSK might be something like: “Smith family network key”.



5. Click “Apply Changes” to finish. You must now set all clients to match these settings.

Setting WPA2-Enterprise (RADIUS) Settings

If your network uses a radius server to distribute keys to the clients, use this setting.

1. From the “Security Mode” drop-down menu, select “WPA/WPA2—Enterprise (RADIUS)”.
2. Select “WPA2-RADIUS” for Authentication
3. For Encryption Technique, select “AES”. This setting will have to be identical on the clients that you set up

4. Enter the IP address of the radius server into the “Radius Server” fields.
5. Enter the radius key into the “Radius Key” field.
6. Enter the key interval. Key interval is how often the keys are distributed (in packets).
7. Click “Apply Changes” to finish. You must now set all 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 Router.

Configuring your Computer’s Network Adapter to Use Security

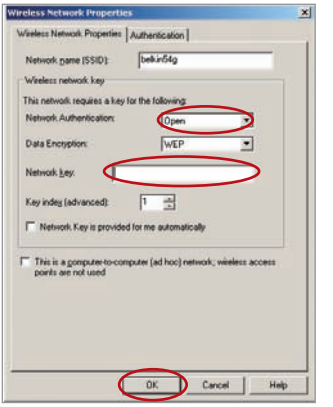
Note: This section provides information on how to configure network adapter in your computers to use security. At this point, you should already have your Wireless Router or access point set to use WPA2 or WPA or WEP. In order for you to gain a wireless connection, you will need to set your wireless notebook card and wireless desktop card to use the same security settings.

Belkin G+ MIMO Network Cards feature easy-to-use Wireless Networking Utility. Simply click on your wireless network name (SSID) from the Available Networks list and enter your Pre-Share Key (PSK). For more information please refer to Belkin Network Card’s user manual.

Most computers can also setup to work with the Router from Wireless Network Properties screen build-in your Microsoft Windows operating system. The following are two of the examples:

Connecting your Computer to a Wireless Network that Requires a 64-Bit or 128-Bit WEP 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 wireless card.
2. Under the “Wireless Network Properties” tab, select a network name from the “Available networks” list and click “Configure”.
3. Under “Data Encryption” select “WEP”.
4. Ensure the check box “Network 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.
5. Type your WEP key in the “Network key” box.

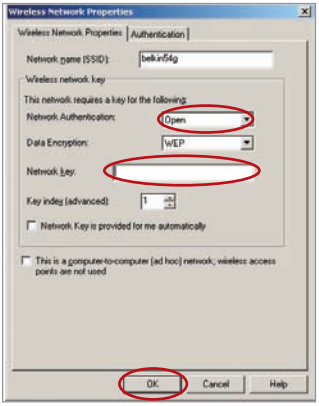


Important: A WEP key is a mixture of numbers and letters from A–F and 0–9. For 128-bit WEP, you need to enter 26 characters. For 64-bit WEP, you need to enter 10 characters. This Network key needs to match the key you assign to your Wireless Router or access point.

6. Click “OK” to save the settings.

Connecting your Computer to a Wireless Network that Requires WPA-PSK (no server)

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 wireless card.
2. Under the “Wireless Networks” tab, select a network name from the “Available networks” list and click “Configure”.
3. Under “Network Authentication” select “WPA-PSK (No Server)”.
4. Type your WPA key in the “Network key” box.

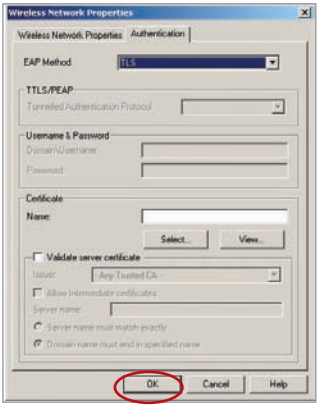


Important: WPA-PSK is a mixture of numbers and letters from A–Z and 0–9. For WPA-PSK you can enter eight to 63 characters. This Network key needs to match the key you assign to your Wireless Router or access point.

5. Click “OK” to save the settings.

Connecting your Computer to a Wireless Network that Requires WPA (with radius server)

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 wireless card.
2. Under the “Wireless Networks” tab, select a network name from the “Available networks” list and click “Configure”.
3. Under “Network Authentication” select WPA.
4. Under the “Authentication” tab, select the settings that are indicated by your network administrator.



5. Click “OK” to save the settings.

Setting Up WPA/WPA2 for a Non-Belkin Wireless Desktop and Wireless Notebook Cards

For non-Belkin WPA Wireless Desktop and Wireless Notebook Cards that are not equipped with WPA/WPA2-enabled software, a file from Microsoft called “Windows XP Support Patch for Wireless Protected Access” is available as a free download.

Please Note: The file that Microsoft has made available works only with Windows XP. Other operating systems are not supported at this time.

Manually Configuring your Router

Important: You also need to ensure that the wireless card manufacturer supports WPA/WPA2 and that you have downloaded and installed the latest driver from their support site.

Supported Operating Systems:

- **Windows XP Professional**
- **Windows XP Home Edition**

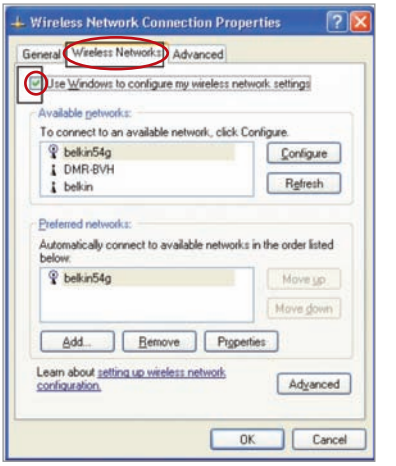
Setting Up Windows XP Wireless Network Utility to Use WPA/WPA2-PSK

In order to use WPA-PSK, ensure you are using Windows Wireless Network Utility by doing the following:

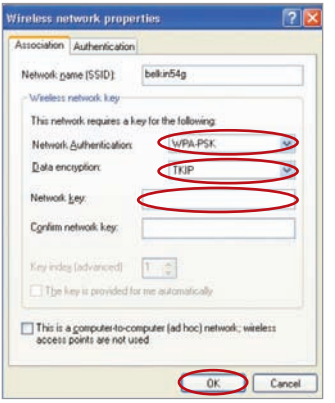
1. Under Windows XP, click “Start > Control Panel > Network Connections”.

2. Right-click on “Wireless Network Connection”, and select “Properties”.

3. 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.



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



5. For a home or small business user, select “WPA-PSK” or WPA2-PSK under “Network Authentication”.

Note: Select “WPA” 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.