

BELKIN®

Wireless G Gaming Adapter

BELKIN®

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BELKIN®

Wireless G Gaming Adapter



User Manual

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Table of Contents

1. Introduction	1
Advantages of a Wireless Network	1
Placement of your Wireless Networking Hardware for Optimal Performance	2
2. Overview	6
Package Contents	8
System Requirements	8
Specifications	8
3. Connecting and Configuring the Adapter	9
Connecting to a non-secure network	9
Connecting to a hidden or secured network	10
4. Using the Web-Based Advanced User Interface	13
Understanding the Web-Based Advanced User Interface	16
Settings > Adapter Settings	18
Securing your Wi-Fi® Network	20
WEP Setup	24
WPA Setup	27
5. Utilities: Changing System Settings	26
Setting or Changing the Administrator Password	29
Restoring Factory Default Settings	29
Saving a Current Setting	30
Restoring a Previous Setting	32
Updating Firmware	33
6. Troubleshooting	38
7. Information	44

Introduction

Thank you for purchasing the Belkin Wireless G Gaming Adapter and welcome to the world of wireless gaming. Now you can take advantage of this new high-speed wireless technology and gain the freedom to connect to your home or office network without using cables. This product acts as a wireless range extender and access point. The easy installation and setup will have you networking wirelessly in minutes. 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

- **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

Placement of your Wireless Networking Hardware for Optimal Performance

Your wireless connection will be stronger the closer your computer is to your wireless router (or access point). 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 wireless router (or access point) and connected devices increases. This may or may not be noticeable to you. As you move farther from your wireless router (or access point), 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 wireless router (or access point) 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. Wireless Router (or Access Point) Placement

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

2. Avoid Obstacles and Interference

Avoid placing your wireless router (or access point) 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 wireless router or access point).

3. Cordless Phones

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

- Try moving cordless phones away from wireless routers (or access points) and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check the 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 wireless router (or access point) 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 LAN Utility of your wireless adapter to locate any other wireless networks that are available (see your wireless adapter’s manual), and move your wireless router (or access point) and computers to a channel as far away from other networks as possible.

- Experiment with more than one of the available channels in order to find the clearest connection and avoid interference from neighboring cordless phones or other wireless devices.
- For Belkin wireless networking products, use the detailed Site Survey and wireless channel information included in your User Manual. These guidelines should allow you to cover the maximum possible area with your wireless router (or 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 the computer to “go to sleep.”

The simplest solution to avoid this is to simply reconnect by re-running 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

For more information regarding our networking products, visit our website at www.belkin.com/networking or call Belkin Technical Support at:

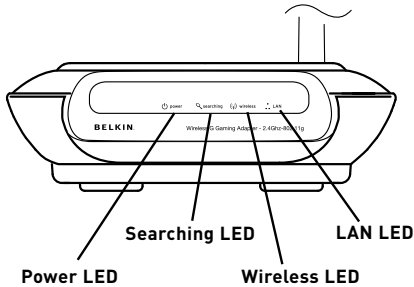
US:	877-736-5771 310-898-1100 ext. 2263
Europe:	00 800 223 55 460
Australia:	1800 235 546
New Zealand:	0800 235 546
Singapore:	800 616 1790

1	section
2	
3	
4	
5	
6	
7	


Overview


The Adapter is designed to be positioned horizontally on a desktop, or wall-mounted. All of the cables exit from the rear of the Adapter for better organization and utility. The LED indicators are easily visible on the front of the Adapter to provide you with information about network activity and status.


Front Panel

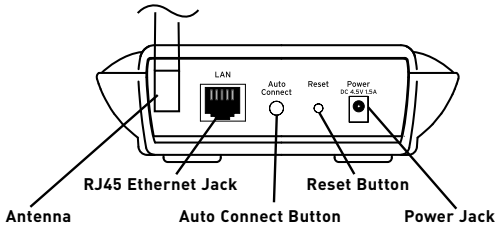


Power LED 	
Off	Power off
Solid Green	Power on

Wireless LED 	
Off	No wireless connection available
Blinking Green	Receiving/transmitting data
Solid Green	Ready to transfer data

Searching LED 	
Solid RED	Error
Blinking RED	Searching for networks
Off	Not searching

LAN LED 	
Off	No console is linked to the Adapter's Ethernet port
Blinking Green	Receiving/transmitting data
Solid Green	Linked to console



Back Panel

Power Jack

Connect the included 4.5V DC power supply or the included (optional) USB power cable to this jack.

RJ45 Ethernet Jack

Connect one end of the included Ethernet cable to this port and the other end to your gaming console (e.g., Xbox® and PlayStation®).

Auto Connect Button

The “Auto Connect” button will automatically connect and set up your Adapter to a wireless network with the simple push of the button.

Reset Button

The “Reset” button is to be used in the unlikely event that your Adapter malfunctions. Resetting the Adapter restores its normal operation while maintaining the programmed settings. You can also restore the factory default settings by using the “Reset” button. Use the restore option if, for example, you have forgotten your password.

a. Resetting the Adapter

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

b. Restoring the Factory Defaults

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

Rotatable Dipole Antenna

An omnidirectional dipole antenna is located on the back of the Adapter. The antenna can rotate 180 degrees. The antenna should be oriented in the vertical position for best performance.

Overview

Package Contents

- Belkin Wireless G Gaming Adapter
- Detachable Antenna
- Power Supply
- USB Power Cable (Optional)
- User Manual on CD
- Quick Installation Guide
- Ethernet Cable
- Easy Configuration Wizard Software CD-ROM

Easy Configuration Wizard System Requirements

- At least one computer with an Ethernet port
- Microsoft® Internet Explorer 4.0 or later, or Netscape® 4.0 or later

Specifications

Wireless:

Radio Technology Direct Sequence Spread Spectrum (DSSS)

- IEEE 802.3, IEEE 802.3u 10/100Base-Tx, auto-negotiation, auto-MDIX

802.11g:

- Network Standard IEEE 802.11b (Wi-Fi) and IEEE 802.11g compliance
- OFDM; 802.11b: CCK (11Mbps, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
- Operating Frequencies: 2.412–2.497GHz
- Operating Channels 802.11g: 13 for North America, 13 for Europe (ETSI), 14 for Japan

802.11b:

11 for North America, 14 for Japan, 13 for Europe (ETSI)

Security:

- WEP (64- and 128-bit keys) Open, Shared Authentication
- WPA-PSK (TKIP, AES)
- WPA2-PSK (AES)

Management: Browser-based

Maximum Users: 32 (WLAN)

Ports: 1 10/100Base-Tx RJ45 port (LAN)
1 power jack
1 reset button
1 Auto Connect button

LEDs: Power, Searching, LAN, Wireless

Connecting and Configuring the Adapter

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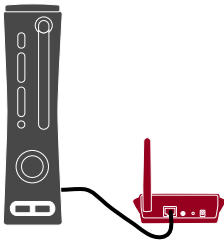
7

Configuring the Adapter

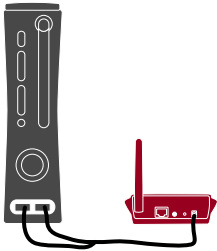
Step 1 | Connect

A. Connecting to a non-secured network

If you are connecting to a hidden or secured network, please see section B.



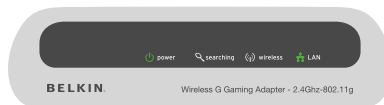
1. Connect one end of the Ethernet cable (included) into the Ethernet port on the Adapter. Then, connect the other end to your gaming console.
2. There are two ways to power your Adapter: using the traditional power supply or the optional USB power cable.



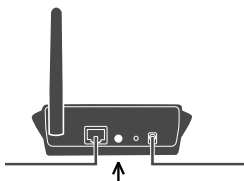
USB power cable: Plug one end of the USB power cable (included) into the power port on the Adapter. Then, plug the other end with the two USB connectors into two of the USB ports on the back of the gaming console.

Power supply: Plug the power supply (included) into the Adapter, then into an AC wall outlet.

The “Power” and “LAN” lights on the front of the Adapter should now be lit solid GREEN.



Connecting and Configuring the Adapter



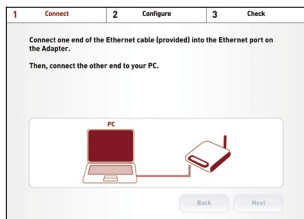
3. Push and hold the “Auto Connect” button found on the back of the Adapter for 10 seconds to connect to the network with the strongest wireless signal within the area. When the Adapter has connected to the router or access point, the “Searching” light (red) will not be lit.

Note: If the Adapter does not connect to your desired network, you will need to position the Adapter closer to your router and push the “Auto Connect” button. The Adapter will then save your network’s information (even after powering off) and can then be repositioned next to your gaming console.

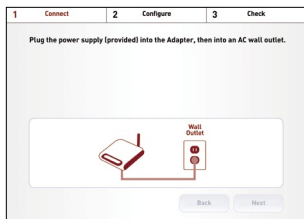
Installation is now complete.

B. Connecting to a hidden or secured network

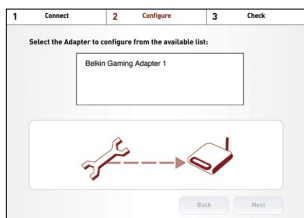
1. Insert the Installation Software CD into your computer.
2. Connect one end of the Ethernet cable (included) into the Ethernet port on the Adapter. Then, connect the other end to your PC.



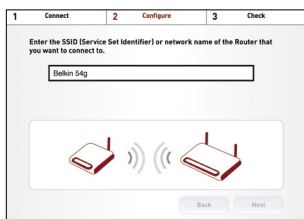
Connecting and Configuring the Adapter



3. Plug the power supply (included) into the Adapter, then into an AC wall outlet.



4. Select the Adapter from the available list.

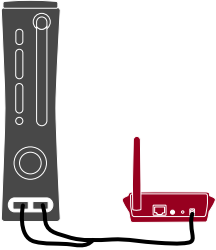


5. Enter the SSID (Service Set Identifier) or network name of the router to which you want to connect.



6. Enter the security type and security key of the network.
7. Unplug the Ethernet cable from the PC and unplug the Adapter's power cord.

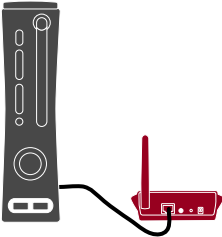
Connecting and Configuring the Adapter



8. Connect one end of the Ethernet cable (included) into the Ethernet port on the Adapter. Then, connect the other end to your gaming console.

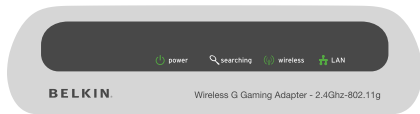
9. There are two ways to power your Adapter: using the traditional power supply or the optional USB power cable.

USB power cable: Plug one end of the USB power cable (included) into the power port on the Adapter. Then, plug the other end with the two USB connectors into two of the USB ports on the back of the gaming console.



Power supply: Plug the power supply (included) into the Adapter, then into an AC wall outlet.

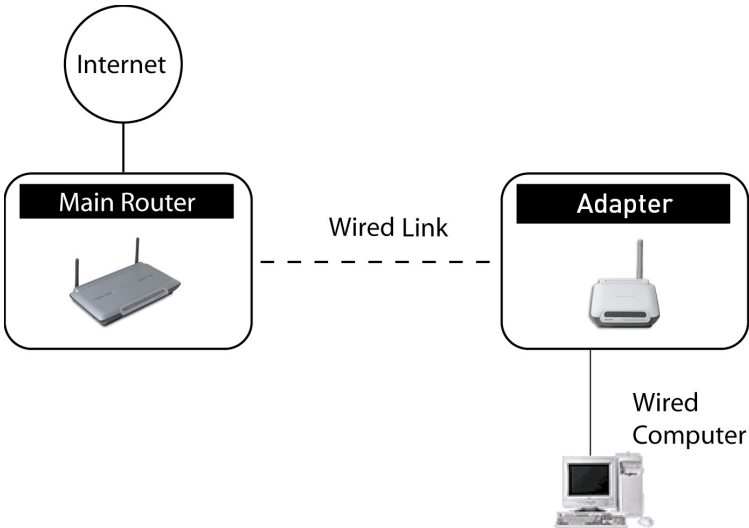
10. The “Power”, “Wireless”, and “LAN” lights on the front of the Adapter should now be lit solid GREEN.



Installation is now complete.

Using the Web-Based Advanced User Interface

The most convenient way to access the Adapter's Web-Based Advanced User Interface is to connect the unit to the wireless router through the included cable. Once you finish configuring the device, you can disconnect the cable.

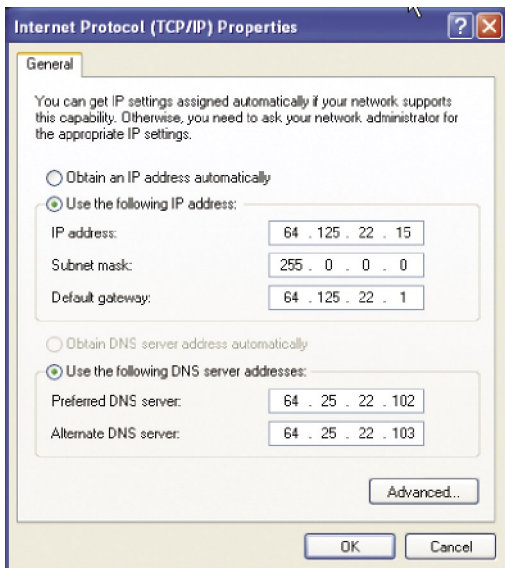


If you wish to connect a computer directly to the Adapter to configure it, you must set your client to match the settings of the Adapter before you can access the Web-Based Advanced User Interface. Perform the following steps from the computer from which you wish to configure your Adapter.

Note: You must undo these steps once you have completed configuring your Adapter.

Windows® 98SE, Me, 2000, and XP

1. Go to the Windows Control Panel and double-click on the “Network” icon or the “Network Connections” icon.
2. Right-click on the “Local Area Connection” for your wireless adapter and select “Properties”.
3. In the “General” tab, select the Internet Protocol TCP/IP settings for your wireless adapter and click on the “Properties” button.
4. Select the “Use the following IP address” radio button.
5. Enter an IP address in the same subnet as the Adapter. For example: 192.168.2.200.
6. Enter the following subnet mask: 255.255.255.0. Then click “OK”.



Note: Once you have completed configuring your Adapter, repeat steps 1 through 3. Then select “Obtain an IP automatically” or set a valid IP for your computer on the same subnet as the network to which you are connecting.

Logging into the Adapter

Using your Internet browser, you can access the Adapter's Web-Based Advanced User Interface. In your browser, type "192.168.2.225" (do not type in anything else such as "http://" or "www"). Then, press the "Enter" key.

You will see the Adapter'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 Adapter'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 Adapter ships with no password entered. In the login screen, leave the password blank and click the "Submit" button to log in.

Note: An IP address conflict can occur if you use a CAT5 cable to try to manage the Adapter while it already has a wireless connection to the same router. To resolve this issue you need to disconnect one of the connections to the Adapter (wired or wireless).

Logging out of the Adapter

One computer at a time can log into the Adapter in order to make changes to its settings. There are two ways to log out: 1, by clicking the "Logout" button; and 2, automatically, by allowing a preset time-out period to elapse. The default time-out is 10 minutes; however, you can set the login period from 1 to 99 minutes.

Login

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

Password

Default = leave blank

Understanding the Web-Based Advanced User Interface

Home Page

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 Adapter's status and settings. All advanced setup pages can be reached from this page.

BELKIN. Home | Help | Login

Settings

- Adapter Settings
- Site Survey

Utilities

- Restart Wireless Adapter
- Restore Factory Default
- Save Current Settings
- Restore Previous Settings
- Firmware Update
- Password

Status >

Version Information

Firmware Version	WB31_SDK_3.6(Jul 28 2006 17:07:36)
Boot Code Version	v1.03.12.8k
Hardware Version	F5D7330

LAN Settings

Ethernet MAC	00-c0-02-ff-ae-dc
Adapter Name	WB31ffaedc
IP Configuration	Static
IP Address	192.168.2.225
Subnet Mask	255.255.255.0
Gateway Address	192.168.2.1

WLAN Settings

WLAN MAC	00-c0-02-ff-ae-dc
SSID	DSL Router
Operating Mode	Infrastructure
Encryption	OFF

http://www.belkin.com/ Internet

(1) Quick Navigation Links

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

[5] Version Info

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

[6] LAN Settings

Shows you the settings of the Local Area Network (LAN) side of the Adapter. Changes can be made to the settings by clicking on any one of the links (IP Address, Subnet Mask) or by clicking the “LAN” Quick Navigation link on the left side of the screen.

[7] WLAN Settings

Shows the status of the Adapter’s wireless setting. 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.

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section

Settings > Adapter Settings

The “Settings > Adapter Settings” page lets you make changes to the wireless network settings. From this page you can make changes to the wireless settings.

The screenshot shows the BELKIN web-based advanced user interface. The page title is "Settings > Wireless Gaming Adapter Settings". The left sidebar contains a navigation menu with the following items: Settings, Adapter Settings (highlighted), Site Survey, Utilities, Restart Wireless Adapter, Restore Factory Default, Save Current Settings, Restore Previous Settings, Firmware Update, and Password. The main content area is divided into two sections: LAN Settings and Wireless Settings. In the LAN Settings section, the Adapter Name is "WB31feadc". The IP Configuration is set to "Obtain an IP address from a DHCP server". The IP Address is "192.168.2.225", Subnet Mask is "255.255.255.0", and Gateway IP Address is "192.168.2.1". In the Wireless Settings section, the SSID is "DSL Router", Mode is "Infrastructure", and Channel is "9". The Security Mode is "Disabled". There are "Clear Changes" and "Apply Changes" buttons at the bottom of the form. A note states: "The network you selected does not require the use of Wireless Security/Encryption. To access this network, please click 'Apply Changes'".

[1] Adapter Name

You can name the Adapter by typing a name here.

[2] IP Configuration

Select either to manually enter your IP address or have it automatically set from the DHCP of your network router.

[3] IP Address

The IP address is the internal IP address of the Adapter. The default IP address is “192.168.2.225”. To access the Web-Based Advanced User 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)

[4] Subnet Mask

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

[5] Gateway IP Address

This is the IP address of the network router to which the Adapter is connecting.

[6] SSID (Wireless Network Name)

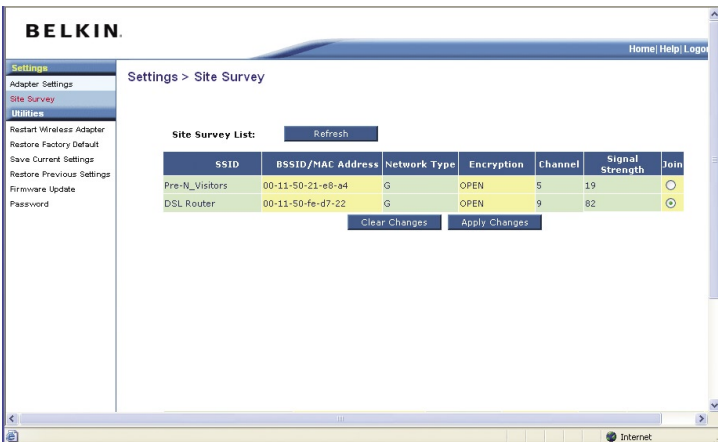
This is the name of the network to which the Adapter is connected. You can choose to enter a network manually by typing the name here, or use the Site Survey to automatically identify the wireless networks within range of the Adapter to which to connect.

[7] Site Survey

The “Site Survey” page will allow you to see a list of available wireless networks in your area. Under the “Select Network” column, you will be able to select the wireless network to which you wish to connect. Once you have selected the desired wireless network, click on the “Connect” button.

[8] Security Mode

If the network to which you are connecting is secure, you will need to enter a security key. The Adapter supports 64-bit WEP, 128-bit WEP, WPA, and WPA2.



Using the Web-Based Advanced User Interface

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 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	With Protected Access
Acronym	64-bit WEP	128-bit WEP	WPA-TKIP	WPA2-AES
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

Wired Equivalent Privacy (WEP)

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, a more secure method of 128-bit encryption was developed. 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 combination 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.

For instance:

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

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

Using the Web-Based Advanced User Interface

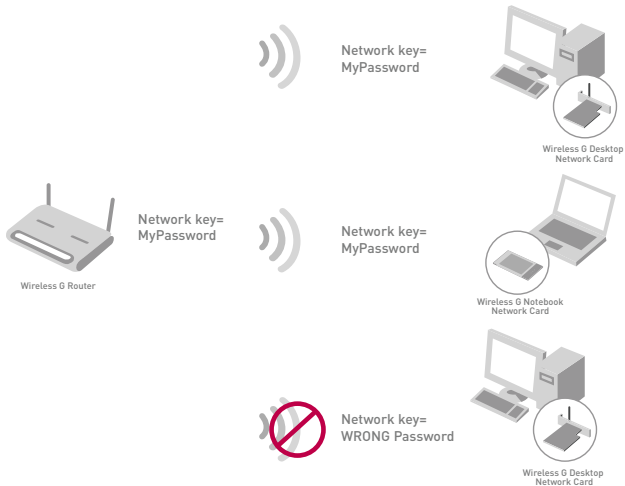
The WEP passphrase is NOT the same as a WEP key. Your router uses this passphrase to generate your WEP keys, but different hardware manufacturers might have different methods on generating the keys. If you have multiple vendors' equipments in your network, the easiest thing to do is to use the hex WEP key from your router (or access point) and enter it manually into the hex WEP key table in your router's configuration screen.

Wi-Fi Protected Access (WPA)

WPA 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 vendor's website. There are two types of WPA security: WPA-PSK (no server) and WPA (with radius server).

WPA-PSK (no server) 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 (with radius server) is a system where 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.)



Using a Hexadecimal Key

A hexadecimal key is a combination 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 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, create 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.

Example:

64-bit:

128-bit:

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

WEP Setup

64-Bit WEP Encryption

The screenshot shows a web-based configuration interface for WEP encryption. At the top, it says "Wireless > Security". Below that, there is a "Security Mode" dropdown menu set to "64bitWEP". There are four radio buttons labeled "Key 1", "Key 2", "Key 3", and "Key 4". Each key has five input boxes for hex digit pairs. Below the keys, it says "(hex digit pairs)". There is a "NOTE" that says "To automatically generate hex pairs using a PassPhrase, input it here". Below the note is a "PassPhrase" input field and a "generate" button. At the bottom, there are two buttons: "Clear Changes" and "Apply Changes".

1. Select “64-bit WEP” from the drop-down menu.
2. Select either “Open System”, “Shared Key”, or “Auto” from the “Authentication Mode” drop-down box.
3. After selecting your WEP encryption mode, 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 combination 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

4. 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 need to ensure that security is turned ON for this wireless client. If this is not done, you will lose your wireless connection.

128-Bit WEP Encryption

The screenshot shows a web-based configuration interface for wireless security. At the top, it says "Wireless > Security". Below that, there is a "Security Mode" dropdown menu currently set to "128bitWEP". Underneath the dropdown is a grid of 13 input boxes for entering a hex key, with the text "(13 hex digit pairs)" to its right. Below the hex key grid is a "NOTE: To automatically generate hex pairs using a PassPhrase, input it here". Under the note is a "PassPhrase" input field and a "generate" button. At the bottom of the form are two buttons: "Clear Changes" and "Apply Changes".

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” from the drop-down menu.
2. Select either “Open System”, “Shared Key”, or “Auto” from the “Authentication Mode” drop-down box.
3. After selecting your WEP encryption mode, you can enter your key manually 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 combination 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

4. 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 need to ensure that security is turned ON for this wireless client. If this is not done, you will lose your wireless connection.

Changing System Settings

Changing the Wireless Security Settings

Your router is equipped with WPA (Wireless 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

Note: To use WPA security, all your clients must be upgraded to drivers and software that support it. At the time of this manual’s publication, a security patch download is available, for 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-PSK (no server) and WPA (with radius server). WPA-PSK (no server) 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 (with radius server) is a configuration in which a radius server distributes the keys to the clients automatically. This is typically used in a business environment.

Changing System Settings

1

Setting WPA-Personal (PSK)

1. From the “Security Mode” drop-down menu, select “WPA-Personal (PSK)”.
2. For “Encryption Technique”, select “TKIP” or “AES”. This setting will have to be identical on the clients that you set up.
3. Enter your pre-shared key. This can be from eight to 63 characters and can be letters, numbers, 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”.
4. Click “Apply Changes” to finish. You must now set all clients to match these settings.

2

3

4

5

section

6

7

Wireless > Security

Security Mode > WPA-Personal (PSK) ▾

Encryption Technique > TKIP ▾ Default is TKIP

Pre-shared Key (PSK) >

Obscure PSK >

WPA-PSK (no server)
Wireless Protected Access with a Pre-Shared Key: The key is a password, in the form of a word, phrase or series of letters and numbers. The key must be between **8** and **63** characters long and can include spaces and symbols. Each client that connects to the network must use the same key (Pre-Shared Key) [More Info](#)

Clear Changes Apply Changes

Changing System Settings

Setting WPA2-Personal (AES)

1. From the “Security Mode” drop-down menu, select “WPA2-Personal (AES)”.
2. For “Encryption Technique”, select “AES”. This setting will have to be identical on the clients that you set up.
3. Enter your pre-shared key. This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients that you set up. For example, your AES might be something like: “Smith family network key”.
4. Click “Apply Changes” to finish. You must now set all clients to match these settings.

Wireless > Security

Security Mode > WPA2-Personal (AES) ▾

Encryption Technique > AES ▾

WPA2 Passphrase (PSK) >

Obscure PSK >

WPA2 Passphrase (PSK)
Wireless Protected Access with a Pre-Shared Key: The key is a password, in the form of a word, phrase or series of letters and numbers. The key must be between **8** and **63** characters long and can include spaces and symbols. Each client that connects to the network must use the same key (Pre-Shared Key) [More Info](#)

Clear Changes **Apply Changes**

Changing System Settings

1
2
3
4
5 section
6
7

Utilities

Password

The Adapter ships with NO password entered. If you wish to add a password for greater security, you can set a password here. Write down your password and keep it in a safe place, as you will need it in order to log into the Adapter in the future.



Restore Factory Defaults

This option restores all of the settings in the Adapter to the factory (default) settings. We recommend that you back up your settings before you restore all of the defaults.

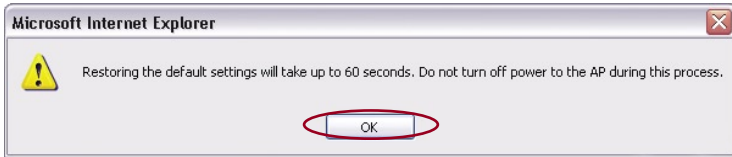


1. Click the "Restore Defaults" button.
2. The following message will appear. Click "OK".



Changing System Settings

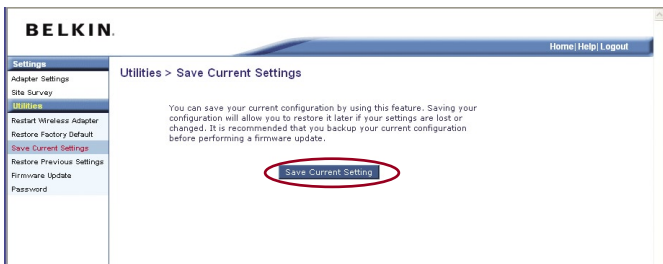
- The following message will appear. Restoring the defaults includes restarting the Adapter. It can take up to 60 seconds. It is important not to turn the power off on the Adapter during the restart.



- A 60-second countdown will appear on the screen. When the countdown reaches zero, the Adapter's defaults will be restored. The Adapter home page should appear automatically. If it does not, type in the Adapter's address (default =192.168.2.254) into the navigation bar of your browser.

Save Current Settings

You can save your current configuration by using this feature. Saving your configuration allows you to restore it later if your settings are lost or changed. We recommend that you back up your current configuration before performing a firmware update.



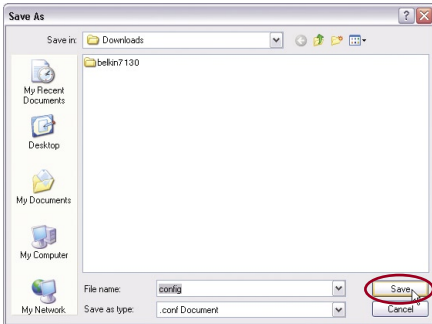
- Click "Save". A window called "File Download" will open. Click "Save".



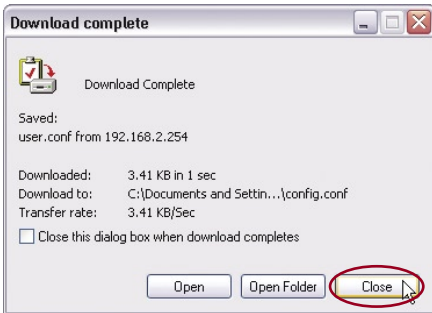
Changing System Settings

1
2
3
4
5 section
6
7

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



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

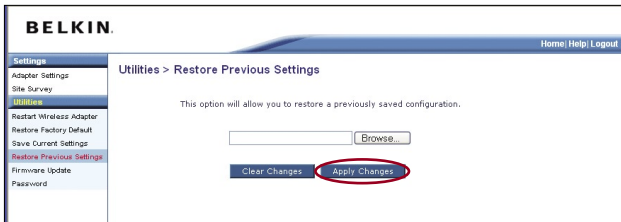


The configuration is now saved!

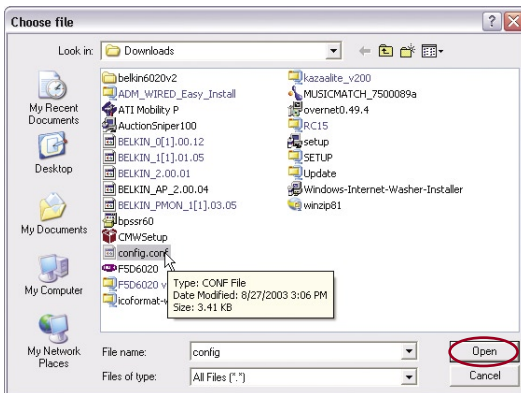
Changing System Settings

Restore Previous Settings

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



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



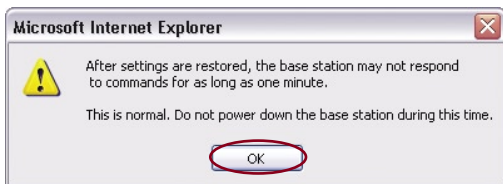
2. You will be asked if you want to continue. Click "OK".



Changing System Settings

1
2
3
4
5 section
6
7

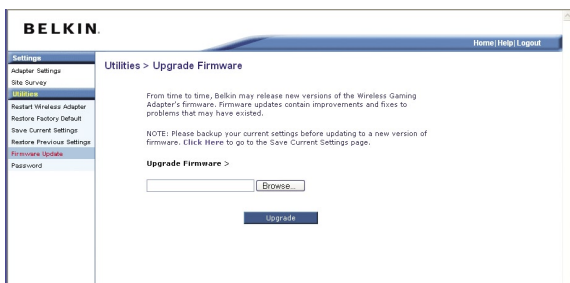
3. A reminder window will appear. It will take up to 30 seconds for the configuration restoration to complete. Click “OK”.



4. A 30-second countdown will appear on the screen. When the countdown reaches zero, the Adapter’s configuration will be restored. The Adapter home page should appear automatically. If not, type in the Adapter’s address (default = 192.168.2.254) into the navigation bar of your browser.

Firmware Update

From time to time, Belkin may release new versions of the Adapter’s firmware. Firmware updates contain feature improvements and fixes, if any. When Belkin releases new firmware, you can download it from the Belkin update website and update your Adapter’s firmware to the latest version.



Checking for a New Version of Firmware

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

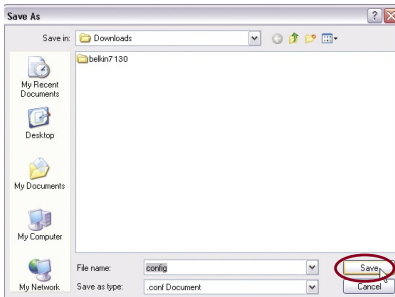
Changing System Settings

Downloading a New Version of Firmware

If you click the “Check Firmware” button and a new version of firmware is available, you will see a screen such as the following.

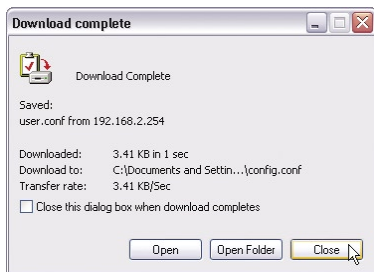


1. To download the new version of firmware, click “Download”.
2. A window will open that allows you to select the location where you want to save the firmware file. Select a location. You can name the file anything you want, or use the default name. Be sure to locate the file in a place where you can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



Changing System Settings

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



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

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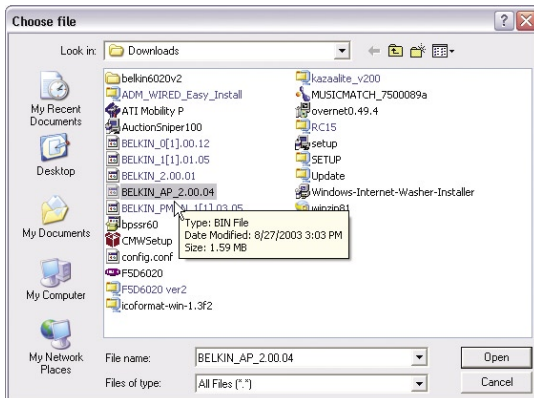
7

section

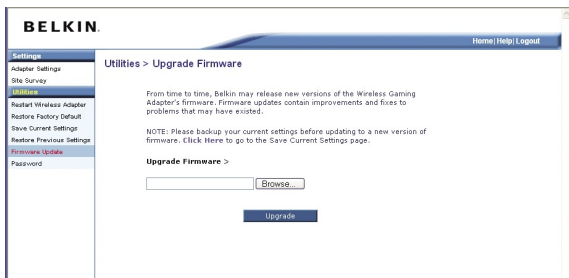
Changing System Settings

Updating the Adapter's Firmware

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



2. Browse to the firmware file you downloaded. Select the file by double-clicking on the file name.
3. The “Firmware Update” box will now display the location and name of the firmware file you just selected. Click “Update”.



Changing System Settings

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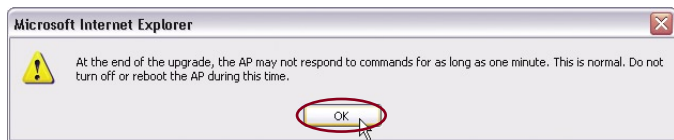
4

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



5

5. You will see one more message. This message tells you that the Adapter may not respond for as long as one minute as the firmware is loaded and the Adapter is rebooted. Click "OK".



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A 30-second countdown will appear on the screen. When the countdown reaches zero, the Adapter firmware update will be complete. The Adapter home page should appear automatically. If not, type in the Adapter's address (default = 192.168.2.254) into the navigation bar of your browser.

section

Troubleshooting

Problem:

Power LED does not come ON; Adapter is not working.

Check your physical connections. If the LED indicators do not light, the Adapter may not be connected properly.

Solution:

Verify that the Adapter is plugged into a power source. Check to see that the cables are connected to the correct ports and that they are secure.

Problem:

I can't connect to the Internet wirelessly.

Solution:

If you are unable to connect to the Internet, please check the following items:

1. Look at the lights on your router. If you're using a Belkin Router, the lights should be as follows:
 - The "Power" light should be on.
 - The "Connected" light should be on, and not blinking.
 - The "WAN" light should be either on or blinking.
2. Once you have verified that your router is connected to the Internet, insert the Adapter's CD on a PC and follow the on-screen instructions to install.

Troubleshooting

1

Problem:

I can't connect to the Internet wirelessly, but the Adapter is connected to my network.

2

Solution:

If the name of your network is listed as the SSID to which the Adapter is connected in the home page, please follow the steps below:

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1. If the network has security (encryption) enabled, you will need to enter the network key.
2. Follow the security-setup instructions in this manual.

6

section

7

Problem:

I can't connect to the Internet wirelessly, and I'm not connected to my network.

Solution:

If the correct network name is not listed under "SSID" in the Adapter's home page and in the "Site Survey" page, please attempt the following troubleshooting steps:

1. Temporarily move the Adapter, if possible, from five to 10 feet away from the router. Push the "Auto Connect" button, and then connect it back to your PC. Reopen the Adapter's home page and check.
 - A. If the correct network name now appears under "SSID", you may have a range or interference problem. Please see the suggestions discussed in the section titled "Placement of your Wireless Networking Hardware for Optimal Performance" in this User Manual.
 - B. If the correct network name does not appear, or if no network name appears, your network could be hidden. Use the Adapter's Wizard (on the included CD) and follow the on-screen instructions.

Problem:

My wireless network performance is inconsistent.

Data transfer is sometimes slow.

Signal strength is poor.

Difficulty establishing and/or maintaining a Virtual Private Network (VPN) connection.

Solution:

Wireless technology is radio-based, which means connectivity and the throughput performance between devices decreases when the distance between devices increases. Other factors that will cause signal degradation (metal is generally the worst culprit) are obstructions such as walls and metal appliances. As a result, the typical indoor range of your wireless devices will be between 100 to 200 feet. Note also that connection speed may decrease as you move farther from the router (or access point).

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

Changing the wireless channel - Depending on local wireless traffic and interference, switching the wireless channel of your network can improve performance and reliability. The default channel the router is shipped with is channel 11; you may choose from several other channels depending on your region. See "Changing the Wireless Channel" on page [INSERT REAL PAGE NUMBER HERE] for instructions on how to choose other channels.

Limiting the wireless transmit rate - - Limiting the wireless transmit rate can help improve the maximum wireless range, and connection stability. Most wireless cards have the ability to limit the transmission rate. To change this property, go to the Windows Control Panel, open "Network Connections", and double-click on your wireless card's connection. In the "Properties" dialog, select the "Configure" button on the "General" tab (Windows 98 users will have to select the wireless card in the list box and then click "Properties"), then choose the "Advanced" tab and select the rate property. Wireless client cards are usually set to automatically adjust the wireless transmit rate for you, but doing so can cause periodic disconnects when the wireless signal is too weak; as a rule, slower transmission rates are more stable. Experiment with different connection rates until you find the best one for your environment; note that all available transmission rates should be acceptable for browsing the Internet. For more assistance, see your wireless card's user manual.

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

Currently there are four levels of wireless networking standards, which transmit data at very different maximum speeds. Each is based on the designation 802.11(x), so named by the IEEE, the board that is responsible for certifying networking standards. The most common wireless networking standard, 802.11b, transmits information at 11Mbps; 802.11a and 802.11g work at 54Mbps; and G Plus MIMO and Pre-N work at 108Mbps, which utilizes MIMO (Multiple Input Multiple Output) technology from the 802.11n proposals, to enhance 802.11g networks. See the following chart for more detailed information.

1

2

3

4

5

6

7

section

Wireless Comparison Chart

Wireless Technology	802.11b	802.11g	802.11a	Belkin Pre-N
Speed*	11Mbps	54Mbps	54Mbps	600% faster than standard 802.11g*
Frequency	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz	5GHz— uncrowded band	Common household devices such as cordless phones and microwave ovens may interfere with the unlicensed band 2.4GHz
Compatibility	Compatible with 802.11g	Compatible with 802.11b	Incompatible with 802.11b or 802.11g	Compatible with 802.11g or 802.11b
Coverage*	Depends on interference— typically 100–200 ft. indoors	Depends on interference— typically 100–200 ft. indoors	Interference range is typically 50–100 ft.	Up to 800% wider coverage than standard 802.11g*
Advantage	Mature—legacy technology	Common— widespread use for Internet sharing	Less interference— great for multimedia application	Leading edge— best coverage and throughput

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

Technical Support

You can find technical support information at www.belkin.com/networking or www.belkin.com through the tech support area. If you want to contact technical support by phone, please call:

US: 877-736-5771 or
310-898-1100 ext. 2263

Europe: 00 800 223 55 460

Australia: 1800 235 546

New Zealand: 0800 235 546

Singapore: 800 616 1790

1

2

3

4

5

6

7

section

Information

Caution: Exposure to Radio Frequency Radiation.

The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such manner that the potential for human contact during normal operation is minimized. When connecting an external antenna to the device, the antenna shall be placed in such a manner to minimize the potential for human contact during normal operation. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

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

Information

1

Modifications

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

2

Canada-Industry Canada (IC)

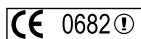
The wireless radio of this device complies with RSS 139 & RSS 210 Industry Canada. This Class B digital apparatus complies with Canadian ICES-003.

3

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

4

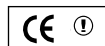
Europe-European Union Notice Radio products with the CE 0682 or CE alert marking comply with the R&TTE Directive (1995/5/EC) issued by the Commission of the European Community.



5

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

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



6

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

7

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

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



Products that contain the radio transmitter are labeled with CE 0682 or CE alert marking and may also carry the CE logo.

section

Belkin Corporation Limited Lifetime Product Warranty

What this warranty covers.

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

What the period of coverage is.

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

What will we do to correct problems?

Product Warranty.

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

What is not covered by this warranty?

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

How to get service.

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

1. Contact Belkin Corporation at 501 W. Walnut St., Compton CA 90220, Attn: Customer Service, or call (800)-223-5546, within 15 days of the Occurrence. Be prepared to provide the following information:
 - a. The part number of the Belkin product.
 - b. Where you purchased the product.
 - c. When you purchased the product.
 - d. Copy of original receipt.
2. Your Belkin Customer Service Representative will then instruct you on how to forward your receipt and Belkin product and how to proceed with your claim.

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

How state law relates to the warranty.

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

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

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

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

1

2

3

4

5

6

7

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