

(Changes from P74471-D)

Belkin

Wireless G Plus USB Network Adapter

Connect your desktop or notebook computer to a wireless network

User Manual

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Introduction (header for section 1)

Thank you for purchasing the Belkin Wireless G Plus USB Network Adapter (the Adapter). Now you can take advantage of this great new technology and gain the freedom to network your home and office computers wirelessly. This Adapter allows you to connect a desktop or notebook computer to your network. 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 page 2.

Benefits of a Home Network

Your Belkin Home Network will allow you to:

- Share one high-speed Internet connection with all the computers in your home
- Share resources, such as files, and hard drives among all the connected computers in your home
- Share a single printer with the entire family
- Share documents, music, video, and digital pictures
- Store, retrieve, and copy files from one computer to another
- Simultaneously play games online, check Internet email, and chat

Advantages of a Wireless Network

Here are some of the advantages of setting up a Belkin wireless network:

- **Mobility** –you'll no longer need a dedicated "computer room"— now you can work on a networked laptop or desktop computer anywhere within your wireless range
- **Easy installation** – Belkin Easy Installation Wizards make 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 300 and 400 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 away 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. Placement of your Wireless Router (or Access Point)

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 Cards, Wireless Desktop Cards, and Wireless USB Adapters):

- Ensure that your wireless router's (or access point's) 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. Other objects that can inhibit wireless communication can 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 Phone Placement

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

- Try moving cordless phones away from the wireless router (or access point) and your wireless-enabled computers.
- Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check manufacturer's information). If this fixes the problem, your phone may be interfering.
- If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network as possible. For example, change the phone to channel 1 and move your wireless router (or access point) to channel 11. (Your channel selection will vary depending on your region.) 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 of your Wireless Setup Utility to locate any other wireless networks, 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 more Belkin wireless networking products, use the detailed Site Survey and wireless channel information included in your User Manual.

5. Secure Connections, VPNs, and AOL

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

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

Secure connections can be interrupted by a computer’s power management setting, which causes it to “go to sleep.” The simplest solution to avoid this is to simply reconnect by 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 in Windows, see the “Power Options” item in the Control Panel.

If you continue to have difficulty with Secure Connections, VPNs, and AOL, please review steps 1–4 above to be sure you have addressed these issues.

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

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

Overview (header for section 2)

Product Features

The Wireless G Plus USB Network Adapter complies with the IEEE 802.11g standard in order to communicate with other 802.11g-compliant wireless devices at 54Mbps or the faster G Plus.

- 2.4GHz ISM (Industrial, Science, and Medical) band operation
- Integrated, easy-to-use profile manager for storing multiple wireless network settings for work, school, home, or any other setup
- USB 2.0 interface, for Plug-and-Play installation and convenience in virtually any desktop or notebook computer

- WPA security (Windows XP only), 64-bit WEP or 128-bit encryption
- Wireless access to networked resources
- Support for both infrastructure and ad-hoc (peer-to-peer) networking modes
- Packet transfer rate of up to 54Mbps
- Easy installation and use
- LED link/activity indicator
- Desktop stand allows you to position your Adapter for optimal wireless performance

Applications and Advantages

- **Wireless roaming with a laptop around the home or office**

Offers the freedom of networking—without cables

- **Connection rates of up to 54Mbps**

Provides immediate wireless connectivity at home, work, and hotspot locations without compromising the use of existing 802.11b and 802.11g products

- **Compatibility with 802.11b products**

802.11g wireless LAN solutions are backward-compatible with existing Wi-Fi (IEEE 802.11b) products and with other products that display the 54g™ logo

- **Difficult-to-wire environments**

Enables networking in buildings with solid or finished walls, or open areas where wiring is difficult to install

- **Frequently changing environments**

Adapts easily in offices or environments that frequently rearrange or change locations

- **Temporary LANs for special projects or peak time**

Sets up temporary networks such as at trade shows, exhibitions, and construction sites, which need networks on a short-term basis; also companies who need additional workstations for a peak activity period

- **SOHO (Small Office/Home Office) networking needs**

Provides the easy and quick, small network installation SOHO users need

Product Specifications

Host Interface: USB 2.0

This product is compatible with the USB 1.1 and USB 2.0 specification. To achieve maximum networking speeds (54Mbps), this device must be connected

to a USB 2.0 host port on a PC. Connection of this device to a USB 1.1 host port will yield a maximum of 11Mbps networking speed.

Power Consumption: 500mA (max)
Certification: FCC Class B, CE Mark, C-Tick
Operating Temperature: 32–131° F (0–55° C)
Storage Temperature: -13–158° F (-25–70° C)
Typical Operating Range: Up to 200 ft.*

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

System Requirements

- PC with one available USB port
- Windows® 2000, XP, or Vista

Package Contents

- Belkin Wireless G Plus USB Network Adapter with Desktop Stand (and attached USB cable)
- Quick Installation Guide
- Installation Software CD
- User Manual

Knowing your Wireless G Plus USB Network Adapter (header of section 3)

(Designer please use image found on P74845uk page 8)

Protective Cap

Activity LED

Indicates wireless activity when blinking

Blinking Green: Scanning

Off: No Activity

On: Connected to Network

USB Adapter

Desktop Stand

(Optional Use)

The cap snaps over the USB connector for protection. It can be stored on the opposite end of the USB connector.

Installing and Setting up the USB Network Adapter (header for section 4)

Step 1: Install the Software

WARNING: Install the Software before Inserting the Adapter

1.1 Insert the CD into your CD-ROM drive.

1.2 The Belkin Wireless Setup Utility screen will automatically appear. If it does not appear within 15–20 seconds, then select your CD-ROM drive and double-click on the folder named “Files”. Next double-click on the icon named “Start.exe”.

1.3 In the menu window, click “install” to start the software installation program.

BELKIN. | Wireless G Plus USB Network Adapter



1.4 The installer will start. Click “Next” to continue.

(Designer please use image found on P74845uk page 9)

1.5 When the installer is done installing the software, you will see the following screen. Click “Finish”.

(Designer please use image found on P74845uk page 10)

Step 2: Connect the USB Adapter to your PC

2.1 After the software installation is finished, the message “You can plug in your WLAN adapter now” will appear. Plug the Adapter into an available USB port on your desktop or notebook computer.

(Designer please use images found on P74845uk page 10)

For desktops:

For notebooks:

Product Placement

The best location for your Adapter is on top of your computer’s monitor. Placing the Adapter on your desktop is acceptable; however, avoid placing the Adapter near metal objects such as a computer case or speakers. Any object that is metal has the ability to block the radio signals from the Adapter.

Step 3: Let Windows Finish the Installation

3.1 After you connect your Adapter, Windows will detect that new hardware has been installed. Depending on your version of Windows, a window similar to the one pictured here will appear. Select the option “Install the software automatically (Recommended)” and click “Next”.

(Designer please use image found on P74845uk page 11)

3.2 If you are using Windows 98SE or Me, you will be asked to restart your computer. Select “Restart”. Click “Finish”.

(Designer please use image found on P74471 page 11)

3.3 When the installation is complete, the Belkin Wireless LAN Monitor Utility icon will appear on your taskbar. To open the Utility, double-click on this icon.

(Designer please use image found on P74471-C page 11)

3.4 A small icon in your system tray (bottom right corner of most screens) will appear. This is your shortcut to the Belkin Wireless LAN Monitor Utility. It also indicates the status of your connection:

Red: No connection to a wireless network

(Designer please use image found on P74845uk page 12)

Blue: Connected to a wireless network

(Designer please use image found on P74845uk page 12)

If you already have a wireless router (or an access point) in your home or office, the Adapter will automatically attempt to connect to your wireless network. In most cases, the Adapter will be able to connect to your network automatically. If you are using encryption, you will have to set the encryption settings of your Adapter to match that of your wireless router (or access point), before the Adapter can successfully connect to your wireless network. For information about configuring your Adapter, see the section in this User Manual called “Profile Tab: Creating a Profile” on [page XX](#).

Uninstalling the Software and Drivers (header for section 5)

If you need to remove the software and drivers for any reason, you can easily accomplish this in one of two ways. You can insert the software CD and click on the “Uninstall” option in the menu, or you can go to the Windows Control Panel and select the “Add/Remove Programs” option. The Belkin Wizard will walk you through the removal process.

Using the Belkin Wireless LAN Monitor Utility (header for section 6)

To launch the Wireless LAN Monitor Utility, double-click the icon in the system tray (right side of taskbar). The window below appears.

(Designer please use image found on P74845uk page 14)

Double-clicking on the icon in the system tray will open the “Wireless Monitor” window.

Status Tab

When you see the Utility icon on your taskbar, you can control your USB Adapter through it. Double-click on the icon to open the Utility. The first tab—“Status”—is visible. From this tab you can see your current connection status on the screen. In the illustration below, the display of numerals 1 and 0 between the computer and the wireless router (or access point) indicates an active connection. This diagram also shows that there is a connection to the Internet by displaying the numerals 1 and 0 between the wireless router (or access point) and the Internet.

(Designer please use image found on P74845uk page 14)

The display of numerals “1” and “0” here indicates a connection.

If there is no connection between the computer and wireless router (or access point), and/or the Internet, an “X” will be displayed.

(a) Current Profile String

This indicates the name of the profile you are currently using, if any. If a question mark appears next to the text in this box, there is no profile set up for the network to which you are currently connected. If this is the case, the name of that network will be displayed in this box.

(b) More Button

Press the “More” button to see details—including the name, signal strength, signal-link quality, IP information—for the network to which you are connected (see image below).

(Designer please use image found on P74845uk page 15)

Access Point (AP) List Tab

To view a list of all available networks in your area, select the “AP List” tab. In this window, you will be presented with a list of the available networks.

(Designer please use image found on P74845uk page 16)

(a) Network Name

This column shows you the name of the wireless network that is available. On the left side of the network name are small icons that advise you of specific details about the network. A blue circle around the network icon (e) indicates that you are currently connected to this network. A small padlock icon (f) next to a network name indicates that this network is secured (either by WEP or WPA encryption). It is not possible to connect to a secured network without the proper network key.

(b) Band

This column indicates on which band the network is operating. “G” indicates that it is an 802.11g-based network. “B” indicates it is an 802.11b-based network.

(c) Signal

This column indicates the signal strength of the wireless network. Typically, the stronger the signal strength, the closer the network is to your physical location. The lower the signal strength, the farther away from the network you are.

(d) Site Information

When you highlight a network name in the AP list by clicking on it once, the detailed information about that network will be available here. You will see what type of network it is (Access Point or Peer-to-Peer), what channel the network is operating on, the status of encryption (security) (On or Off), and (below “Surveyed at:”) the MAC address of that wireless network.

How to connect to a wireless network in the Access Point (AP) list:

There are two ways to connect to a network that appear in the AP list.

1. Highlight the network name by clicking on it once, then click the “Connect” button on the bottom of the window.

or

2. Double-click a network name that is in the AP list. This will connect you to the network automatically.

Note: If the network to which you are attempting to connect is using encryption, you will be prompted to create a profile with the encryption settings.

How to Update the Access Point (AP) List Information

Pressing the “Refresh” (g) button will make the USB Adapter scan the “air” for available wireless networks. The list will be updated.

Profile Tab: Creating a Profile

Using profiles allows you to save configurations for different wireless networks. For instance, if you use your Adapter at your place of work and also at your home, your wireless network settings may be different for each location. Profiles let you store settings for each location and name them for easy identification. You can quickly change from one profile to another profile without having to remember the particular settings of a certain network.

(Designer please use image found on P74845uk page 17)

Creating a New Profile

1. Click “Add” to open the new profile screen. Type in a name for the profile. The name can be anything you want. You should pick something easy to remember like “Work”, for your work network or “Home”, for your home network. Click “Next” to continue.

(Designer please use image found on P74845uk page 18)

2. The next screen you will see allows you to type in the name of the network you will be connecting to and the type of network it is. It gives you the option of setting the data rate for that network.

(Designer please use image found on P74845uk page 18)

(a) In the “Network Name” box, type in the exact name of the network you will be connecting to. The “Network Name” is the same as the network SSID.

(b) In the “Network Type” box, select the type of network to which you will be connecting. Select “Access Point” if it is a network with a wireless router or access point (this is most common). Select “Peer-to-Peer” if this is a direct connection to another computer.

(c) We suggest that you leave the “Transfer Rate” box set on “Automatic” unless there is a specific need to change this setting.

(Designer please use image found on P74845uk page 19)

Click “Next” to continue.

3. The next screen allows you to input security encryption settings for the network. If the network is not encrypted, then leave the mode set to “Off” and click “Complete”.

If the network is encrypted, you will need to have the network key and key type (open or shared). This information is the same as it is for your wireless router or access point. In a larger-office setting, this information is typically available from the network administrator.

TIP: Most networks with WEP use the “Open System” key type. For more detailed information, go to the section titled “Securing your Wireless Network” on page xx in this User Manual.

(a) Select the “Authentication Mode” from the drop-down menu.

(Designer please use image found on P74845uk page 19)

(b) After selecting the “Authentication Mode”, select the encryption type your network uses from the “Encryption” drop-down menu. Please see the section of this User Manual titled “Securing your Wireless Network” on page xx for information on which type of WEP encryption to use. Click “Next”.

(Designer please use image found on P74845uk page 20)

(c) The next screen allows you to select the key input method: either ASCII, Hexadecimal, or Passphrase. The method you choose will be determined by, and should be the same as, the method used by your wireless router or access point.

TIP: Most keys are Hexadecimal (consists of letters and numbers from 0–9 and A–F). (Designer please use image found on P74845uk page 20)

(d) Enter the key in the “Key” box and select the key to use in the “Key Index” drop-down menu. Your network administrator should provide this information.

TIP: Most keys use Key Index 1.

(Designer please use image found on P4845uk page 21)

(e) Click “Complete” to save the profile. To begin using your new profile, highlight the profile name by clicking on the name one time, then click “Connect”.

(Designer please use image found on P74845uk page 21)

How to Find and Connect to a Wireless Network

1. Open the “Wireless Monitor” window by double-clicking the icon in your system tray.

2. Click on the “AP List” tab (a). This will display a list of all of the networks in your area.

(Designer please use image found on P74845uk page 22)

3. Double-click on the network to which you want to connect. A blue circle (b) (Designer please use image found on P74845uk page 22) should appear around the network icon next to the name of the network you selected. This means you are connected to the network. If the network is using encryption security, you will be prompted to make a profile for that network in order to connect. See the section of this User Manual called "Profile Tab: Creating a Profile" on page xx [fill in correct page no.] for information.

Windows XP Users

If you are using Windows XP, please read this section. (Designer please bold text)

Windows XP integrates a wireless management utility referred to as Windows XP Wireless Zero Configuration service (WZC). The WZC can be used to control your Adapter or you can use the Belkin Wireless LAN Monitor Utility. We suggest that you use the Belkin Utility to control your Adapter. If you choose to use the WZC, directions for operation of the WZC are available in the Windows XP help file. When you first install the Adapter, the Belkin Utility will be enabled. If you want to disable the Belkin Utility in order to use the WZC, follow the steps below to disable the Belkin Utility.

Disabling the Windows Zero Configuration (WZC) in Windows XP

1. Right-click on the system tray icon.
(Designer please use image found on P74845uk page23)
2. In the menu, select "Enable Windows Zero Configuration (WZC)".
(Designer please use image found on P74471-C page 23)
3. To enable the Belkin Utility, right-click on the system tray icon.
4. In the menu, select "Disable Windows Zero Configuration (WZC)"
(Designer please use image found on P74471-C page 23)

Setting up Windows XP Wireless Network Utility to use WPA-PSK

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

1. Right-click on "Wireless Network Connection" and select "Properties".
2. Clicking on the "Wireless Networks" tab will display the following screen. Ensure the "Use Windows to configure my wireless network settings" box is checked.

3. Clicking the “Configure” button will allow you to choose your Network Authentication type.

(Designer please use image found on P74845uk page 24)

4. For home or small business users, select “WPA-PSK” under “Network Authentication”.

(Designer please use image found on P74845uk page 25)

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.

5. Select “TKIP” or “AES” under “Data Encryption”. This setting must be identical to the wireless router that you set up.

6. Type your encryption key into the “Network key” box.

Important: Enter your pre-shared key. This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients that you set up.

7. Click “OK” to apply settings.

Setting up Windows XP WZC Utility to use WPA

Note: If you have not done so already, you must download the WPA update from Microsoft Windows Update to enable WPA support. This can be found at the Microsoft website by searching for the term “WPA Wireless”. Locate the update called “KB826942”, download it, and update your operating system.

Securing your Wi-Fi® Network (header for section 7)

Here are a few different ways to maximize the security of your wireless network and protect your data from unwanted intrusions. This section is intended for the home, home office, and small office user. At the time of publication, four encryption methods are available.

Encryption Methods:

| | | | | |
|------|---------------------------------|--------------------|------------------------|------------------------|
| Name | 64-Bit Wired Equivalent Privacy | 128-Bit Encryption | Wi-Fi Protected Access | Wi-Fi Protected Access |
|------|---------------------------------|--------------------|------------------------|------------------------|

| Acronym | 64-bit WEP | 128-bit | WPA-TKIP | WPA-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) | Added security over 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 |

Securing your Wireless Network

Most wireless products ship with security turned off. This means that once you have your network working, you may need to activate WEP or WPA and make sure all your wireless devices are sharing the same network key.

The following diagram shows the effect of not having the correct network key throughout your network.

(Designer please use chart found on P74845uk page 27)

[image – computer]

Network Key=

MyPassword

[image – router]

Network Key=

MyPassword

[image – computer]

Network Key=

MyPassword

[image – computer]

Network Key=

WRONG Password

The Adapter cannot access the network because it uses a different network key than the one configured on the wireless router.

Setting up your Belkin Wireless Router (or Access Point) to use Security

To start using security, you need to first enable WEP or WPA for your wireless router (or access point). For Belkin Wireless Routers and Access Points, these security features can be configured by using the web-based interface. (See your wireless router's (or access point's) manual for directions on how to access the management interface.)

Your Dynex wireless adapter is equipped with the latest security standard called Wi-Fi Protected Access 2 (WPA2™) and the legacy security standard called Wired Equivalent Privacy (WEP). It also supports the Wi-Fi Protected Setup (WPS) specification, which simplifies the setup of a wireless network. WPS uses familiar methodologies, such as typing in a Personal Identification Number (PIN) or pushing a button, to enable users to automatically configure network names and strong WPA/WPA2 data encryption and authentication.

Using Wi-Fi Protected Setup

1. Encryption key if not using WPS
2. Personal Identification Number (PIN) Method: In this method, your wireless adapter will generate a PIN to be entered into your router
3. Push Button Configuration (PBC) Method: Your wireless adapter can also connect by using the software push button.
4. Manual Configuration Method: This section lists the default security settings to be set up if not using WPS.



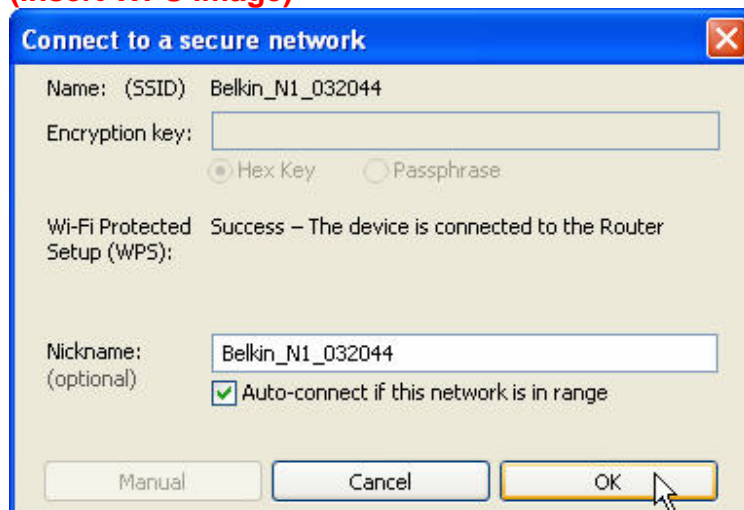
WPS uses WPA2 (described below) for encryption. It does not provide additional security, but rather, standardizes the method for securing your wireless network.

On your client utility, WPS-enabled networks are denoted with the key icon. You may use either the Push Button Configuration (PBC) method or PIN method to allow a device access to your wireless network. Conceptually, the two methods work as follows:

PBC: Push and hold the WPS button located on the back of your router for three seconds. Then, initiate the WPS procedure on the client utility within two minutes. Select the network name in the utility and click “Connect”. Your client will automatically exchange the security information and be added to your wireless network. The Push Button Configuration method can also be initiated from the client side.

PIN: Your client device has an eight digit PIN number that is associated with WPS. Select the WPS-enabled network and click “Connect” to start the WPS process. Choose the PIN method option and complete the WPS procedure on your router. The client will be automatically enrolled into your wireless network within two minutes.

(insert WPS image)



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, 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 keys.

For instance:

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

(Designer please use chart found on P74845uk page 28)

3. Click “Apply Changes” to finish. Encryption in the Wireless Router (or Access Point) 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 using a wireless client to turn on the security settings in your Wireless Router (or Access Point), you will temporarily lose your wireless connection until you activate security on your wireless client.

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 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 keys.

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 Wireless Router (or Access Point) is now set. Each of the computers on your wireless network will now need to be configured with the same security settings.

WARNING: If you are using a wireless client to turn on the security settings in your Wireless Router (or Access Point), you will temporarily lose your wireless connection until you activate security on your wireless client.

WPA-PSK (no server)

Choose this setting if your network does not use a radius server. WPA-PSK (no server) is typically used in home and small office networking.

1. From the “Security Mode” drop-down menu, select “WPA-PSK (no server)”.
2. Enter your network 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 (network cards) that you want to include in your network.
3. Click “Apply Changes” to finish. You must now set all clients (network cards and adapters) to match these settings.

WPA (with server) Settings

Choose this setting if your network uses a radius server to distribute keys to the clients (network cards and adapters). This is typically used in business networks.

1. From the “Security Mode” drop-down menu, select “WPA (with server)”.
2. Enter the IP address of the radius server into the “Radius Server” fields.
3. Enter the radius key into the “Radius Key” field.
4. Enter the key interval. The key interval is how often the keys are distributed (in packets).
5. Click “Apply Changes” to finish.

Connecting your Computer to a Wireless Router (or Access Point) 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 Adapter.
2. Under the “Wireless Network” tab, select a network name from the AP list and click “Configure”.
3. Under “Data Encryption” select “WEP”.
4. Ensure that 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” and “Confirm key” boxes.

Important: A WEP key is a combination of numbers and letters from A–F and 0–9. For 128-bit WEP, you need to enter 26 keys. For 64-bit WEP, you need to enter 10 keys. This network key needs to match the key you assign to your wireless router (or access point).

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

Connecting your Computer to a Wireless Router (or Access Point) that uses WPA-PSK (no server)

1. Double-click the Signal Indicator icon to bring up the “Wireless Network Properties” screen. The “Advanced” button will allow you to view and configure more options of your Adapter.

2. Under the “Wireless Networks” tab, select a network name from the AP list and click “Configure”.
3. Under “Network Authentication” select “WPA-PSK”.
4. Type your WPA key in the “Network key” box.

Important: WPA-PSK is a combination of numbers and letters from A–Z and 0–9. For WPA-PSK, you can enter eight to 63 keys. This network key needs to match the key you assign to your wireless router (or access point).

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

Connecting your Computer to a Wireless Router (or Access Point) that uses WPA

1. Double-click the Signal Indicator icon to bring up the “Wireless Network Properties” screen. The “Advanced” button will allow you to view and configure more options of your Adapter.
2. Under the “Wireless Networks” tab, select a network name from the AP 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”, and then “Apply” to save the settings.

Setting up WPA for Wireless Adapters that are not Manufactured by Belkin

For WPA wireless desktop and wireless notebook cards and adapters that are NOT manufactured by Belkin, which are not equipped with WPA-enabled software, a free download from Microsoft called “Windows XP Support Patch for Wireless Protected Access” is available.

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

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

Supported Operating Systems:

- Windows XP Professional
- Windows XP Home Edition

Setting up Windows XP Wireless Network Utility to use WPA-PSK

In order to use WPA-PSK, ensure that you are using the “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” box is checked.
4. Clicking the “Configure” button will allow you to choose your network authentication type.
5. For home or small business users, select “WPA-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.

6. Select “TKIP” or “AES” under “Data Encryption”. This setting will have to be identical to the wireless router that you set up.
7. Type in your encryption key in the “Network key” box. Important: Enter your pre-shared key. This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients that you set up.
8. Click “OK” to apply settings.

Troubleshooting (header for section 8)

I can't connect to the Internet wirelessly.

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

1. Look at the lights on your wireless router. If you are using a Belkin Wireless 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.

If your Belkin Wireless Router's lights match these descriptions, go to number 2, below.

If this is NOT the case, please contact Belkin technical support.

If you are not using a Belkin Wireless Router, consult that router manufacturer's user guide.

2. Open your Wireless Setup Utility software by clicking on the icon in the system tray at the bottom right-hand corner of the screen. If you are using a Belkin Wireless Adapter, the tray icon should look like this (the icon may be red or green):

(Designer please use chart found on P74845uk page 30)

3. The exact window that opens will vary depending on the model of Wireless Adapter you have; however, any of the utilities should list "Available Networks", that is, networks to which you can connect.

If you are using a Belkin Wireless G or Wireless G Plus Router, "Belkin54g" is the default name.

If you are using a Belkin 802.11b Router, the default name should be "WLAN".

If you are NOT using a Belkin Router, please consult your router manufacturer's user manual for the default name.

The name of your wireless network appears in the AP list.

If the correct network name is listed in the AP list, please follow the steps below to connect wirelessly:

1. Click on the correct network name in the AP list.
2. If the network has security (encryption) enabled, you will need to enter the network key. For more information regarding security, please see "Securing your Wi-Fi Network" on page XX [insert correct pg. no.] of this User Manual.
3. Within a few seconds, the tray icon in the lower right-hand corner of your screen should turn green, indicating a successful connection to the network.

If you are still unable to access the Internet after connecting to the wireless network, please contact Belkin Technical Support.

The name of your wireless network DOES NOT appear in the AP list.

If the correct network name is not listed in the AP list in the Wireless Utility, please attempt the following troubleshooting steps:

1. Temporarily move computer, if possible, to five to 10 feet away from the wireless router (or access point). Close the Wireless Utility, and reopen it. If the correct network name now appears in the AP list, you may have a range or interference problem. Please see the suggestions listed in the "Placement of your Wireless Networking Hardware for Optimal Performance" section on page 2.
2. Using a computer that is connected to the wireless router (or access point) via a network cable (as opposed to wirelessly), ensure that "Broadcast SSID" is enabled. This setting is found on the router's wireless "Channel and SSID" configuration page. For detailed instructions on accessing this page and changing settings, please see your wireless router's (or access point's) user manual.

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

Installation CD-ROM does not start Wireless Setup Utility.

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

If the Wireless Setup Utility screen does not appear within 15-20 seconds, open up your CD-ROM drive by double-clicking on the "My Computer" icon. Next, double-click on the CD-ROM drive that the Installation CD has been placed in to start the installation. Then double-click on the folder named "Files". Next, double-click on the icon named "setup.exe".

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

If the LED indicators are not ON, the problem may be that the Adapter is not connected or installed properly.

Verify that the Adapter's USB cable (attached to desktop stand) is plugged firmly into the USB slot of your computer. Check to see that the drivers for the Adapter have been installed. Right-click on the "My Computer" icon on your desktop. Choose "Properties" and navigate to the "Device Manager" and see if your Adapter is listed without any errors. If an error is indicated, contact Belkin Technical Support.

Link LED is blinking slowly; cannot connect to a wireless network or the Internet.

If your Adapter appears to be functioning properly, but you cannot connect to a network or you have a red wireless icon at the bottom of your screen, the problem may be that there is a mismatch between the network name (SSID) settings in your wireless network properties.

Check the SSID settings to see if they match. The SSID is case-sensitive and the spelling on each computer must be exactly the same in order for the Adapter to connect to the wireless router (or access point).

Note: To check the Adapter settings or look for an available network, double-click the Signal Indicator icon to bring up the “Wireless Monitors” screen. Click the “AP List” if you do not see the network you are trying to connect to. Click the “Refresh” button to scan the “air” for wireless networks.

For more information about setting up an SSID, please refer to your router manufacturer’s user manual.

If issues persist even at close range, please contact Belkin Technical Support.

Link LED is solid but I cannot connect to the Internet.

If you have a signal but can’t get online or obtain an IP address, the problem may be that there is a mismatch between the encryption key settings in your computer and wireless router (or access point).

Check the WEP key settings to see if they match. The key is case-sensitive and the spelling on each computer and wireless router (or access point) must be exactly the same in order for the Adapter to connect to the router. For more information about encryption, please see the “Securing your Wi-Fi Network” section in this User Manual.

If issues persist even at close range, please contact Belkin Technical Support.

Data transfer is sometimes slow.

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 wireless router (or access point).

In order to determine if wireless issues are related to range, we suggest temporarily moving the computer, if possible, to five to 10 feet away from the wireless router (or access point). Please see the section titled "Placement of your Wireless Networking Hardware for Optimal Performance" in this User Manual.

If issues persist even at close range, please contact Belkin Technical Support.

Why are there two wireless utilities in my system tray? Which one should I use?

There are several features and advantages to using the Belkin Wireless Setup Utility over the Windows XP Wireless Zero Configuration utility. We offer a site survey, detailed link information, and adapter diagnosis, to name a few.

It's essential to know which utility is managing your Adapter. We recommend using the Belkin Wireless Setup Utility. To use the Belkin Wireless Setup Utility, follow the steps below:

Step 1 Right-click on the network status icon in the system tray and select "View Available Wireless Networks".

Step 2 Click on the "Advanced" button in the lower left-hand corner of the "Available Wireless Networks" window.

Step 3 From the "Advanced" tab, uncheck "Use Windows to configure my wireless network". Once the box is unchecked, click "OK" to close the window.

You are now using the Belkin Wireless Setup Utility to configure the Adapter.

What's the difference between 802.11b, 802.11g, 802.11a, and Pre-N?

Currently there are four levels of wireless networking standards, which transmit data at very different maximum speeds. Each is based on the designation for certifying network standards. The most common wireless networking standard, 802.11b, transmits information at 11Mbps; 802.11a and 802.11g work at 54Mbps; and Pre-N works at 108Mbps. Pre-N, the precursor to the upcoming 802.11n release, promises speeds that exceed 802.11g, and up to twice the wireless coverage area. See the following chart for more detailed information.

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 300–400 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 or www.belkin.com/networking. If you want to contact technical support

by phone, please call:

US: 877-736-5771

Europe: 00 800 223 55 460

Australia: 1800 235 546

New Zealand: 0800 235 546

Singapore: 800 616 1790

Information (header for section 9)

Wi-Fi® Interoperability Certificate

FCC Statement

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

Belkin declares that F5D7051 (FCC ID: K7SF5D7051D) is limited in CH1-CH11 by specified firmware controlled in U.S.A.

We, Belkin Corporation, of 501 West Walnut Street, Compton, CA 90220, declare under our sole responsibility that the product, F5D7051 to which this declaration relates, complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Exposure to Radio Frequency Radiation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device complies with FCC RF Exposure limits set forth for an uncontrolled environment, under 47 CFR 2.1093 paragraph (d)(2).

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment has been SAR-evaluated for use in laptops (notebooks) with side slot configuration. The average SAR value of CCK is 0.013W/kg; the average SAR value of OFDM is 0.00809W/kg. Operation of this product marketed in the USA is firmware-limited to 2.4GHz channel 1 to 11.

Federal Communications Commission Notice

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

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

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

Modifications

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

Canada-Industry Canada (IC)

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device.

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

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

Europe-European Union Notice

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

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

- EN 60950 (IEC60950) – Product Safety

- EN 300 328 Technical requirement for radio equipment
- ETS 300 826 General EMC requirements for radio equipment

To determine the type of transmitter, check the identification label on your Belkin product. Products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (72/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity

to the following European Norms (in brackets are the equivalent international standards).

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

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

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.

Designer please use chart found on P74845uk page 39)

Belkin Tech Support
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