### 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 keys. For 128-bit WEP, you need to enter 26 hex keys.

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**

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' equipment 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.

# Using the Web-Based Advanced User Interface

**WPA (Wi-Fi Protected Access)**
WPA (Wi-Fi Protected Access) is a new Wi-Fi standard that was designed to improve upon the security features of WEP. To use WPA security, the drivers and software of your wireless equipment must be upgraded to support WPA. These updates will be found on the wireless 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.

For a list of Belkin wireless products that support WPA, please visit our website at **www.belkin.com/networking.**

## Sharing the Same Network Keys

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

**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, make up your key by writing in two characters between A–F and 0–9 in each box. You will use this key to program the encryption settings on your Router and your wireless computers.

Example:  | AF | 1F | 4B | C3 | D4 |

64-bit:  |  |  |  |  |  |

128-bit:  |  |  |  |  |  |  |  |  |  |  |  |  |  |

## 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 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**
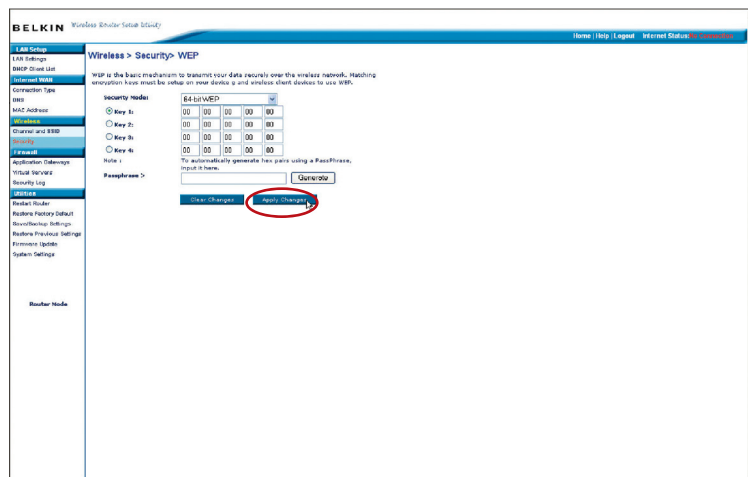


**3.** Click "Apply Changes". Encryption in the Router is now set. Each of the computers on your wireless network will now need to be configured with the same security settings.

**WARNING:** If you are configuring the Wireless G Travel 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, your client will lose its wireless connection.

## 128-Bit WEP Encryption

**1.** After selecting your WEP encryption mode, you can enter your key by typing in the hex key manually, or you can type 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**

**2.** Click "Apply Changes". Encryption in the Router 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 configuring the Wireless G Travel 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, your client will lose its wireless connection.
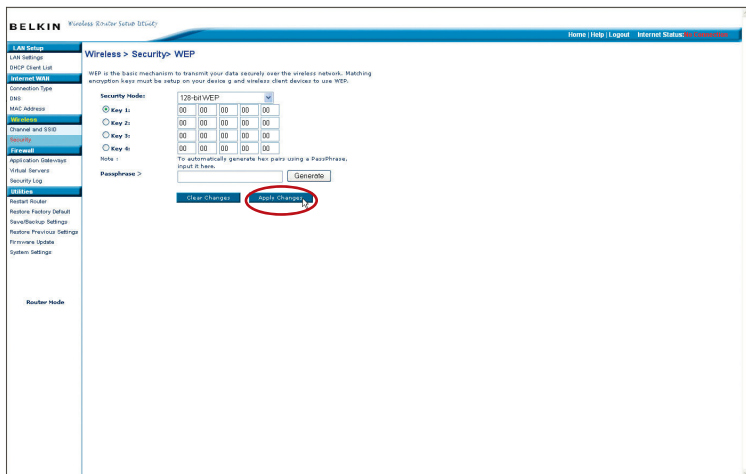
### Changing the Wireless Security Settings

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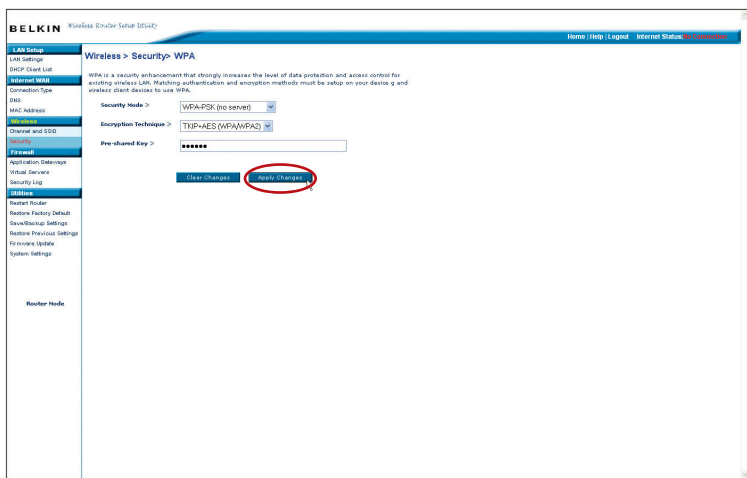
## WPA Setup

**Note:** To use WPA security, all your clients must be upgraded to drivers and software that support it. At the time of this User Manual's publication, a security patch download is available, 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.

WPA 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.

WPA2 is the second generation of WPA, offering a more advanced encryption technique over WPA.

## WPA/WPA2 Setup

1. Select "WPA/WPA2" or "WPA2 only" from the "Allowed Client Type".

2. Select "Pre-shared key" as the authentication type.

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. This pre-shared key will allow users full access to your network including shared files and printers.

4. Click "Apply Changes" to finish. You must now set all clients to match these settings.

5. Enter your pre-shared key for guest access. This can be from eight to 63 characters and can be letters, numbers, or symbols. This guest pre-shared key allows users only Internet access.

6. Click "Apply Changes" to finish. You must now set all clients to match these settings depending on the type of access you want them to have.

### Setting WPA-PSK (no server)

1. From the "Security Mode" drop-down menu, select "WPA-PSK (no server)".

2. For "Encryption Technique", select "TKIP" or "AES". This setting will have to be identical on the clients that you set up.

3. Enter your pre-shared key. This can contain eight to 63 characters (letters, numbers, and/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". You must now configure all clients to match these settings.
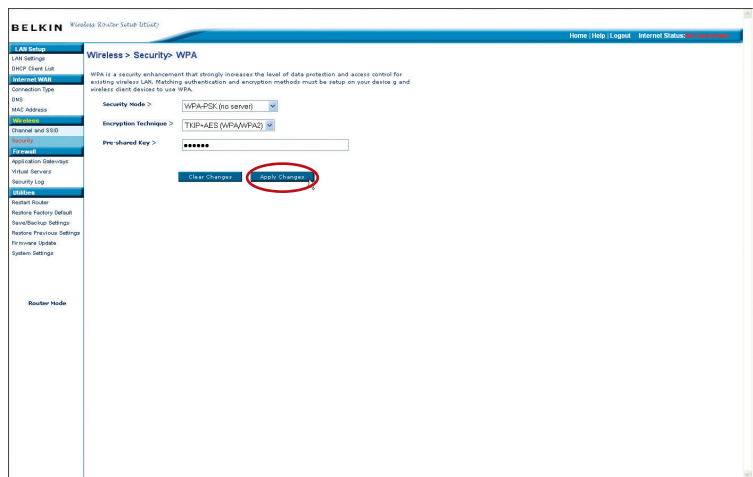


### Configuring your Belkin Wireless G Cards to Use Security Features

**Please Note:** This section will provide you with information on how to configure your Belkin Wireless G Cards to use security features.

At this point, you should already have your Router or access point set up to use WPA or WEP. To establish a wireless connection, you will need to set up your Wireless Notebook Card and Wireless Desktop Card to use the same security settings.

**Connecting your computer to a wireless network that requires a 64-bit or 128-bit WEP key:**

1.  Double-click the "Signal Indicator" icon to bring up the "Wireless Network" screen. The "Advanced" button will allow you to view and configure more Router options.

2.  Under the "Wireless Network Properties" tab, select a network name from the "Available Networks" list and click "Configure".

3.  Under "Data Encryption", select "WEP".

4.  Ensure that there is no check in the box next to "Network key is provided for me automatically". If you are using this computer to connect to a corporate network, please ask your network administrator whether this box needs to be checked.

5.  Type your WEP key in the network key box (designated as "Key" in Belkin's wireless configuration utility).
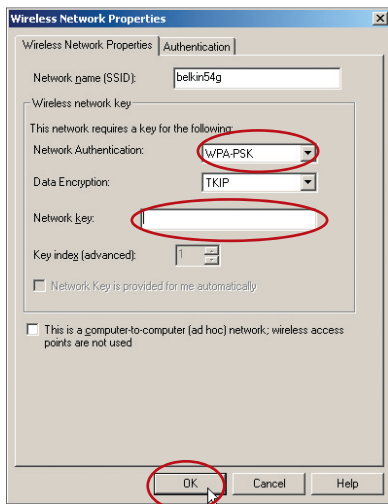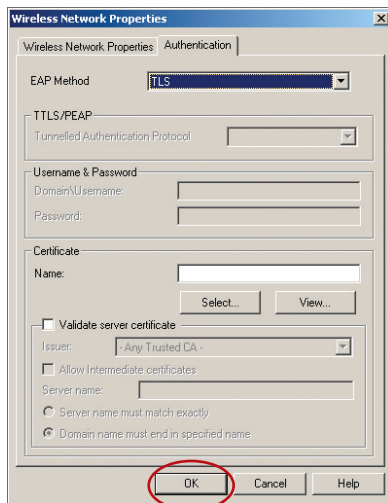


**Important:** A WEP key is a combination of numbers and letters from A–F and 0–9. For 128-bit WEP, you need to enter 26 keys. For 64-bit WEP, you need to enter 10 keys. This network key needs to match the key you assign to your Router or access point.

6.  Click "OK".

**Connecting your computer to a wireless network that requires WPA-PSK (no server):**

1.  Double-click the "Signal Indicator" icon to bring up the "Wireless Network" screen. The "Advanced" button will allow you to view and configure more Router options.

2.  Under the "Wireless Networks" tab, select a network name from the "Available networks" list and click "Configure".

3.  Under "Network Authentication", select "WPA-PSK (No Server)".

4.  Type your WPA key in the network key box, designated as "Key" on Belkin's wireless configuration utility.



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

5.  Click "OK".

**Connecting your computer to a wireless network that requires WPA (with radius server):**

1.  Double-click the "Signal Indicator" icon to bring up the "Wireless Network" screen. The "Advanced" button will allow you to view and configure more Router options.

2.  Under the "Wireless Networks" tab, select a network name from the "Available networks" list and click "Configure".

3.  Under "Network Authentication", select WPA.

4.  Under the "Authentication" tab, select the settings that are indicated by your network administrator.

5.  Click "OK".

## Setting Up WPA for Wireless Desktop and Wireless Notebook Cards that are NOT Manufactured by Belkin

If you do NOT have a Belkin WPA Wireless Desktop or Wireless Notebook Card and your computer is not equipped with WPA-enabled software, download Microsoft's "Windows XP Support Patch for Wireless Protected Access", which is available for free download.

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

**Important:** You also need to ensure that the wireless-card manufacturer supports WPA and that you have downloaded and installed the latest driver from the manufacturer's 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 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 Properties", 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.
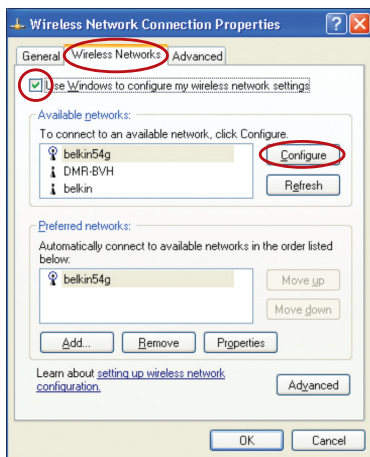
**4.** Under the "Wireless Networks" tab, click the "Configure" button and you will see the following screen.