

### 3. Password

Type in your password and retype it into the “Retype Password” box to confirm it.

### 4. User Decide Login Server Manually

If your login server IP address is not available in the “Select Your State” drop-down menu **(6)**, you may manually enter the login server IP address by placing a check in the box next to “User decide login server manually” and typing in the address next to “Login Server” **(5)**.

## Setting Custom Domain Name Server (DNS) Settings

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

The screenshot shows the 'WAN > DNS' configuration page in the Belkin router's setup utility. The left sidebar contains a list of menu items: LAN Setup, LAN Settings, DHCP Client List, Internet WAN, Connection Type, DNS, MAC Address, Wireless, Channel and SSID, Security, Use as Access Point, Firewall, Virtual Servers, Client IP Filters, MAC Address Filtering, DMZ, WAN Ping Blocking, Security Log, Utilities, Restart Router, Restore Factory Default, Save/Backup Settings, Restore Previous Settings, Firmware Update, and System Settings. The main content area is titled 'WAN > DNS' and contains the following text: 'If your ISP provided you with a specific DNS address to use, enter the address in this window and click "Apply Changes".' Below this text is a checked checkbox labeled 'Automatic from ISP'. Underneath are two sets of input fields for 'DNS Address' and 'Secondary DNS Address', each consisting of four boxes for IP address entry. A paragraph explains that DNS is a server that translates URLs to IP addresses. At the bottom of the main area are two buttons: 'Clear Changes' and 'Apply Changes'. A circled '1' points to the 'Automatic from ISP' checkbox, and a circled '2' points to the 'Apply Changes' button.

## Alternate Setup Method

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### **Configuring your WAN Media Access Controller (MAC) Address**

All network components including cards, adapters, and routers, have a unique “serial number” called a MAC address. Your Internet Service Provider may record the MAC address of your computer’s adapter and only let that particular computer connect to the Internet service. When you install the Router, its own MAC address will be “seen” by the ISP and may cause the connection not to work. Belkin has provided the ability to clone (copy) the MAC address of the computer into the Router. This MAC address, in turn, will be seen by the ISP’s system as the original MAC address and will allow the connection to work. If you are not sure whether your ISP needs to see the original MAC address, simply clone the MAC address of the computer that was originally connected to the modem. Cloning the address will not cause any problems with your network.

# Alternate Setup Method

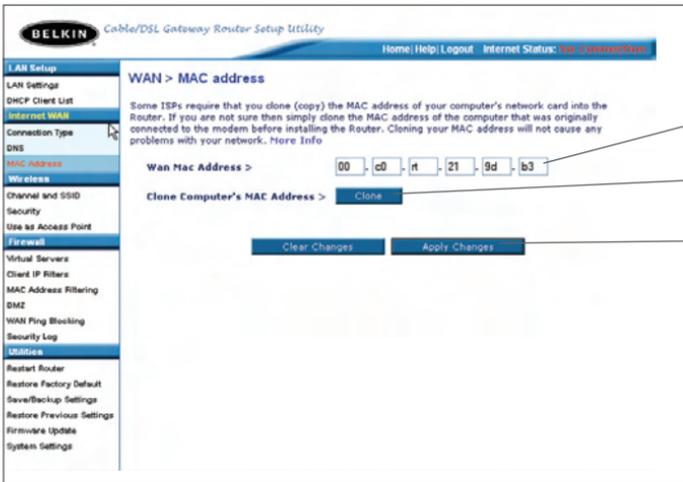
1  
2  
3  
4  
5 section  
6  
7  
8  
9  
10

## Cloning your MAC Address

To clone your MAC address, make sure that you are using the computer that was ORIGINALLY CONNECTED to your modem before the Router was installed. Click the “Clone” button **(1)**. Click “Apply Changes” **(3)**. Your MAC address is now cloned to the Router.

## Entering a Specific MAC Address

In certain circumstances you may need a specific WAN MAC address. You can manually enter one in the “MAC Address” page. Type in a MAC address in the spaces provided **(2)** and click “Apply Changes” **(3)** to save the changes. The Router’s WAN MAC address will now be changed to the MAC address you specified.



# Using the Web-Based Advanced User Interface

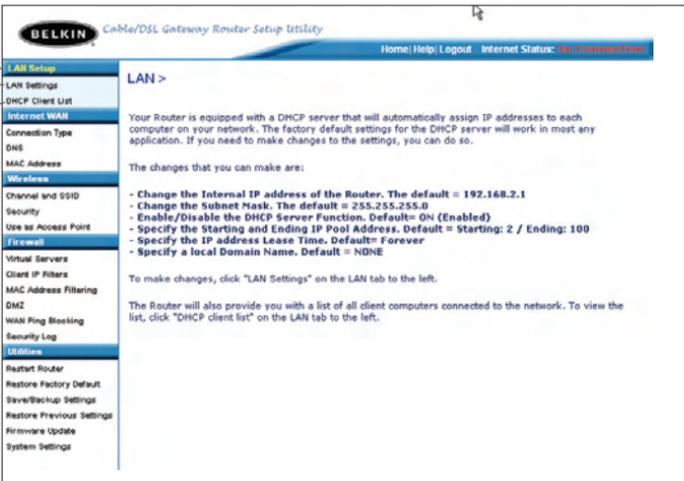
Using your Internet browser, you can access the Router's Web-Based Advanced User Interface. In your browser, type "192.168.2.1" (do not type in anything else such as "http://" or "www") then press the "Enter" key.

You will see the Router's home page in your browser window.



## Viewing the LAN Settings

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



The screenshot shows the Belkin Cable/DSL Gateway Router Setup Utility web interface. The top navigation bar includes "Home", "Help", "Logout", and "Internet Status: No Connected Host". The left sidebar contains a menu with the following items: LAN Setup, LAN Settings, DHCP Client List, Internet WAN, Connection Type, DNS, MAC Address, Wireless, Channel and SSID, Security, Use as Access Point, Firewall, Virtual Servers, Client IP Filters, MAC Address Filtering, DMZ, WAN Ring Blocking, Security Log, Utilities, Restart Router, Restore Factory Default, Save/Backup Settings, Restore Previous Settings, Firmware Update, and System Settings. The main content area is titled "LAN >" and contains the following text: "Your Router is equipped with a DHCP server that will automatically assign IP addresses to each computer on your network. The factory default settings for the DHCP server will work in most any application. If you need to make changes to the settings, you can do so." Below this, it lists changes that can be made: "Change the Internal IP address of the Router. The default = 192.168.2.1", "Change the Subnet Mask. The default = 255.255.255.0", "Enable/Disable the DHCP Server Function. Default= ON (Enabled)", "Specify the Starting and Ending IP Pool Address. Default = Starting: 2 / Ending: 100", and "Specify the IP address Lease Time. Default= Forever". It also notes "Specify a local Domain Name. Default = NONE". At the bottom, it says "To make changes, click 'LAN Settings' on the LAN tab to the left." and "The Router will also provide you with a list of all client computers connected to the network. To view the list, click 'DHCP client list' on the LAN tab to the left." Three numbered callouts (1, 2, 3) point to the "LAN Setup" header, the "LAN Settings" link, and the "DHCP Client List" link in the sidebar, respectively.

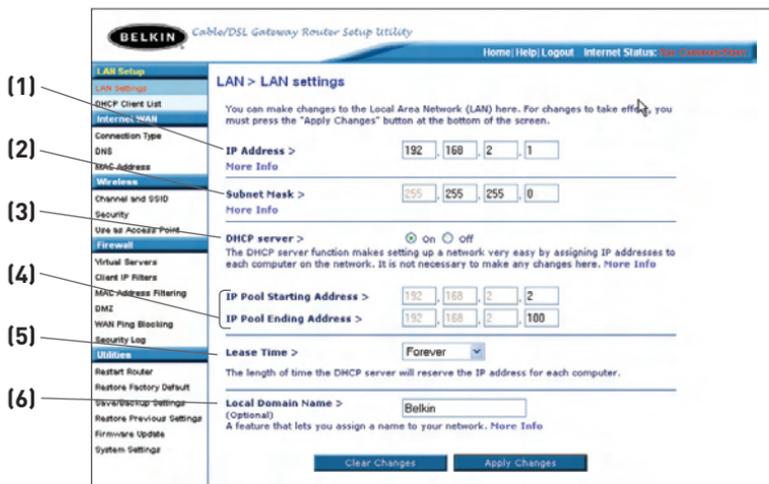
# Using the Web-Based Advanced User Interface

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

section

## Changing LAN Settings

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



### 1. IP Address

The “IP address” is the internal IP address of the Router. The default IP address is “192.168.2.1”. To access the 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) and  
10.x.x.x (where x is anything between 0 and 255).

### 2. Subnet Mask

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

### 3. DHCP Server

The DHCP server function makes setting up a network very easy by assigning IP addresses to each computer on the network automatically. The default setting is “On”. The DHCP server can be turned OFF if necessary; however, in order to do so you must manually set a static IP address for each computer on your network. To turn off the DHCP server, select “Off” and click “Apply Changes”.

### 4. IP Pool

The range of IP addresses set aside for dynamic assignment to the computers on your network. The default is 2–100 (99 computers). If you want to change this number, you can do so by entering a new starting and ending IP address and clicking on “Apply Changes”. The DHCP server can assign 100 IP addresses automatically. This means that you cannot specify an IP address pool larger than 100 computers. For example, starting at 50 means you have to end at 150 or lower so as not to exceed the 100-client limit. The starting IP address must be lower in number than the ending IP address.

### 5. Lease Time

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

### 6. Local Domain Name

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

# Using the Web-Based Advanced User Interface

1

2

3

4

5

6 section

7

8

9

10

## Viewing the DHCP Client List Page

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

LAN > DHCP Client List

This page shows you the IP address, Host Name and MAC address of each computer that is connected to your network. If the computer does not have a host name specified, then the Host Name field will be blank. Pressing "Refresh" will update the list.

IP Address	Host Name	MAC Address
192.168.6.2	CorIM	00:01:03:31:ed:23

Refresh

## Configuring the Wireless Network Settings

The "Wireless" tab lets you make changes to the wireless network settings. From this tab you can make changes to the wireless network name (SSID), operating channel, encryption security settings, and configure the Router to be used as an access point.

## Using the Web-Based Advanced User Interface

### Changing the Wireless Network Name (SSID)

To identify your wireless network, a name called the SSID (Service Set Identifier) is used. The default SSID of the Router is "belkin54g". You can change this to anything you want to or you can leave it unchanged. If there are other wireless networks operating in your area, you will want to make sure that your SSID is unique (does not match that of another wireless network in the area). To change the SSID, type in the SSID that you want to use in the "SSID(1) field and click "Apply Changes(2)". The change is immediate. If you make a change to the SSID, your wireless-equipped computers may also need to be reconfigured to connect to your new network name. Refer to the documentation of your wireless network adapter for information on making this change.



Note: This equipment marketed in USA is restricted by firmware to only operate on 2.4G channel 1-11

### Using the Wireless Mode Switch

Your Router can operate in three different wireless modes: "g and b", "g only", and "b only". The different modes are explained below.

# Using the Web-Based Advanced User Interface

---

1

2

3

4

5

6

section

7

8

9

10

## **g and b Mode**

In this mode, the Router is compatible with 802.11b and 802.11g wireless clients simultaneously. This is the factory default mode and ensures successful operation with all Wi-Fi-compatible devices. If you have a mix of 802.11b and 802.11g clients in your network, we recommend setting the Router to g and b mode. This setting should only be changed if you have a specific reason to do so.

## **g only Mode**

g only mode works with 802.11g clients only. This mode is recommended only if you want to prevent 802.11b clients from accessing your network. To switch modes, select the desired mode from the “Wireless Mode” drop-down box. Then, click “Apply Changes”.

## **b only Mode**

We recommend you DO NOT use this mode unless you have a very specific reason to do so. This mode exists only to solve unique problems that may occur with some 802.11b client adapters and is NOT necessary for interoperability of 802.11g and 802.11b standards.

## **When to use b only Mode**

In some cases, older 802.11b clients may not be compatible with 802.11g wireless. These adapters tend to be of inferior design and may use older drivers or technology. Switching to this mode can solve problems that sometimes occur with these clients. If you suspect that you are using a client adapter that falls into this category of adapters, first check with the adapter vendor to see if there is a driver update. If there is no driver update available, switching to b only mode may fix your problem. **Please note that switching to b only mode will decrease 802.11g performance.**

# Using the Web-Based Advanced User Interface

## G Plus Mode\*

The Router supports two high-speed modes, 125 G Plus mode and Frame-Bursting mode.

Selecting “125 G Plus mode” will result in all devices running in 125 G Plus mode if all devices are capable of 125Mbps speeds. If any non-125 G Plus devices connect or associates with the network, the Router will automatically shift the entire network back to Frame-Bursting mode.

Selecting “Frame Bursting” will result in all devices capable of Frame-Bursting to function in Frame-Bursting mode, and all clients not capable, to operate in normal 802.11g modes. Frame-Bursting mode supports both Frame-Bursting-enabled devices and non-Frame-Bursting-enabled devices simultaneously. Frame-Bursting mode is based on the unreleased 802.11e specification.

Selecting “Off” will disable Turbo mode.

\*When operating in 125 G Plus Mode, this Wi-Fi device achieves an actual throughput of up to 34.1Mbps, which is the equivalent throughput of a system following 802.11g protocol and operating at a signaling rate of 125Mbps. Actual throughput will vary depending on environmental, operational, and other factors.

The screenshot displays the Belkin Cable/DSL Gateway Router Setup Utility web interface. The page title is "Wireless > Channel and SSID". The left sidebar contains a navigation menu with options such as "All Setup", "LAN Settings", "WAN Settings", "Internet WAN", "Connection Type", "DNS", "MAC Address", "Wireless", "Wireless and WDS", "Security", "Use as Access Point", "Wireless Bridge", "Firewall", "Virtual Servers", "Client IP Filter", "MAC Address Filtering", "QoS", "Web Ping Blocking", "Security Log", "Utilities", "Parental Control", "Restart Router", "Restore Factory Default", "Save/Backup Settings", "Restore Previous Settings", "Firmware Update", and "System Settings". The main content area is titled "Wireless > Channel and SSID" and includes a sub-header: "To make changes to the wireless settings of the router, make the changes here. Click 'Apply Changes' to save the settings. [Here Info](#)". The configuration options are as follows: "Wireless Channel" is set to "Auto" (Current: 11); "SSID" is "belkin54g"; "Wireless Mode" is "54G-Auto"; "Broadcast SSID" is checked with a "Here Info" link; "Protected Mode" is "On" with a "Here Info" link; "Turbo Mode" is set to "125 G PLUS mode" with a note: "Turbo mode incorporates wireless network speed enhancements. [Here Info](#)"; "WME Support" is "Off"; and "No ACK" is "Off". At the bottom of the configuration area are two buttons: "Clear Changes" and "Apply Changes".

## Using the Web-Based Advanced User Interface

### Changing the Wireless Network Name (SSID)

To identify your wireless network, a name called the SSID (Service Set Identifier) is used. The default SSID of the Router is "belkin54g". You can change this to anything you want to or you can leave it unchanged. If there are other wireless networks operating in your area, you will want to make sure that your SSID is unique (does not match that of another wireless network in the area). To change the SSID, type in the SSID that you want to use in the "SSID(1) field and click "Apply Changes(2)". The change is immediate. If you make a change to the SSID, your wireless-equipped computers may also need to be reconfigured to connect to your new network name. Refer to the documentation of your wireless network adapter for information on making this change.



Note: This equipment marketed in USA is restricted by firmware to only operate on 2.4G channel 1-11

### Using the Wireless Mode Switch

Your Router can operate in three different wireless modes: "g and b", "g only", and "b only". The different modes are explained below.

# Using the Web-Based Advanced User Interface

specific SSID; an SSID of “ANY” will no longer be accepted. Refer to the documentation of your wireless network adapter for information on making this change.

## Protected Mode Switch

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

## Securing your Wi-Fi® Network

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

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

## WEP (Wired Equivalent Privacy)

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

### 64-Bit WEP

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

### 128-Bit WEP

As a result of 64-bit WEP's potential security weaknesses, 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**

# Using the Web-Based Advanced User Interface

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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.

## **WPA (Wi-Fi Protected Access)**

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 WPA2.

**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.

**WPA2** requires Advanced Encryption Standard (AES) for encryption of data, which offers much greater security than WPA. WPA uses both Temporal Key Integrity Protocol (TKIP) and AES for encryption.

For a list of Belkin wireless products that support WPA, please visit our website at [www.belkin.com/networking](http://www.belkin.com/networking).

# Using the Web-Based Advanced User Interface

1

2

3

4

5

6

7

8

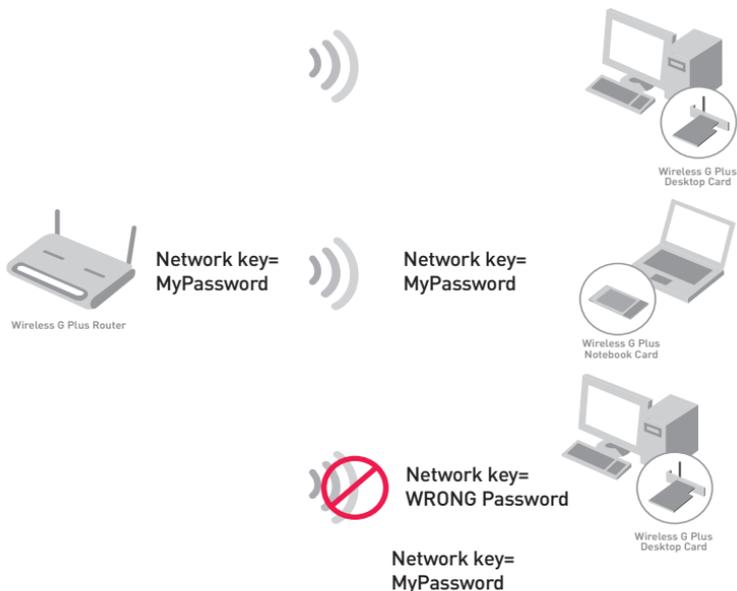
9

10

section

## 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.



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

# Using the Web-Based Advanced User Interface

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## 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:

64-bit:

128-bit:

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