



Wireless G Router

Routeur sans fil G

Enrutador inalámbrico G

DX-WGRTR

Dynex DX-WGRTR Wireless G Router

Contents

Introduction	2
Product features	3
Setting up your wireless router.....	8
Troubleshooting	46
Legal notices	57
One year limited warranty.....	59
Français	61
Español	127

Introduction

Thank you for purchasing the Dynex DX-WGRTR Wireless G Router. The easy installation and setup will have you networking wirelessly in minutes. Be sure to read through this User Guide completely, and pay special attention to the section entitled “Product features” on page 3.

Benefits of a home network

Your home network will let you:

- 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 e-mail, and chat

Advantages of a wireless network

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

- **Mobility**—you will 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**—Dynex Easy Installation Wizard makes setup simple
- **Flexibility**—set up and access printers, computers, and other networking devices from anywhere in your home
- **Easy expansion**—the wide range of Dynex networking products lets 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

Product features

In minutes you will be able to share your Internet connection and network your computers. The following is a list of features that make your new Dynex Wireless G Router an ideal solution for your home or small office network.

Works with Both PCs and Mac® Computers—The router supports a variety of networking environments including Mac OS®, X v10.x, Linux®, Windows® 2000, XP, Vista™, and others. All that is needed is an Internet browser and a network adapter that supports TCP/IP (the standard language of the Internet).

Front-Panel LED Display—Lighted LEDs on the front of the router indicate which functions are in operation. You'll know at-a-glance whether your router is connected to the Internet. This feature eliminates the need for advanced software and status-monitoring procedures.

Web-Based Advanced User Interface—You can set up the router's advanced functions easily through your web browser, without having to install additional software onto the computer. There are no disks to install or keep track of and you can make changes and perform setup functions from any computer on the network quickly and easily.

NAT IP Address Sharing—Your router employs Network Address Translation (NAT) to share the single IP address assigned to you by your Internet Service Provider while saving the cost of adding IP addresses to your Internet service account.

SPI Firewall—Your router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including IP Spoofing, Land Attack, Ping of Death (PoD), Denial of Service (DoS), IP with zero length, Smurf Attack, TCP Null Scan, SYN flood, UDP flooding, Tear Drop Attack, ICMP defect, RIP defect, and fragment flooding.

Integrated 10/100 4-Port Switch—The router has a built-in, 4-port network switch to allow your wired computers to share printers, data and MP3 files, digital photos, and much more. The switch features automatic detection so it will adjust to the speed of connected devices. The switch will transfer data between computers and the Internet simultaneously without interrupting or consuming resources.

Universal Plug-and-Play (UPnP) Compatibility—UPnP (Universal Plug-and-Play) is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant.

Support for VPN Pass-Through—If you connect to your office network from home using a VPN connection, your router will allow your VPN-equipped computer to pass through the Router and to your office network.

Built-In Dynamic Host Configuration Protocol (DHCP)—Built-In Dynamic Host Configuration Protocol (DHCP) on-board makes for the easiest possible connection of a network. The DHCP server will assign IP addresses to each computer automatically so there is no need for a complicated networking setup.

Easy Install Wizard—The Easy Install Wizard takes the guesswork out of setting up your Router. This automatic software determines your network settings for you and sets up the Router for connection to your Internet Service Provider (ISP). In a matter of minutes, your wireless router will be up and running on the Internet.

***Note:** Easy Install Wizard software is compatible with Windows 2000, XP, Vista, and Mac OS Mac OSx 10.4.x. If you are using another operating system, the Wireless Router can be set up using the Alternate Setup Method described in this User Guide (see Alternate setup method on page 14).*

Integrated 802.11g Wireless Access Point—802.11g is an exciting new wireless technology that achieves data rates up to 54 Mbps, nearly five times faster than 802.11b.

MAC Address Filtering—For added security, you can set up a list of MAC addresses (unique client identifiers) that are allowed access to your network. Every computer has its own MAC address. Simply enter these MAC addresses into a list using the Web-Based Advanced User Interface and you can control access to your network.

Package contents

- Dynex Wireless G Router
- Quick Installation Guide
- Installation software CD
- RJ-45 Ethernet cable
- Power supply
- User Guide

System requirements

- Broadband Internet connection such as a cable or DSL modem with RJ45 (Ethernet) connection
- At least one computer with an installed network interface adapter
- TCP/IP networking protocol installed on each computer
- RJ-45 Ethernet networking cable
- Internet browser

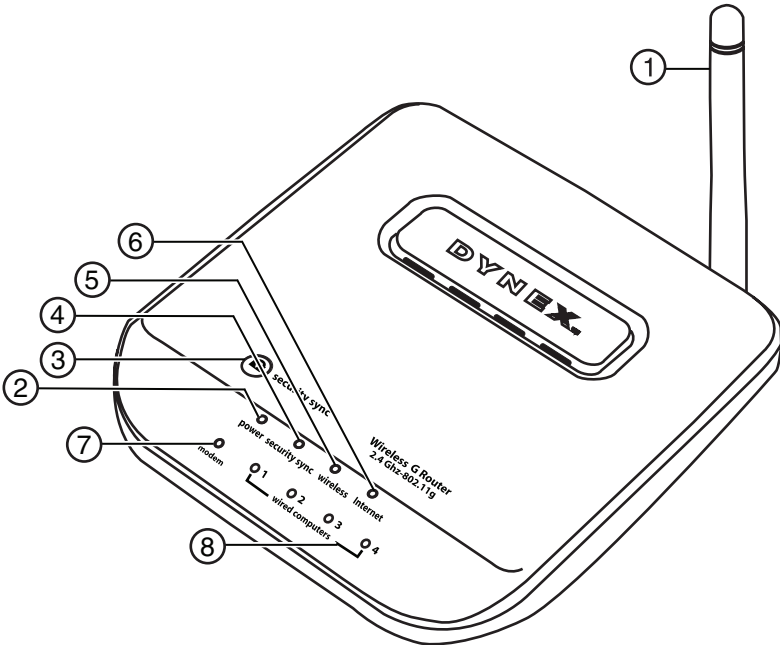
Easy Install Wizard Software System Requirements

- A PC running Windows 2000, Windows XP, or Windows Vista, or a Mac computer running Mac OSx 10.4x
- A minimum 64 MB RAM
- An Internet browser

Components

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

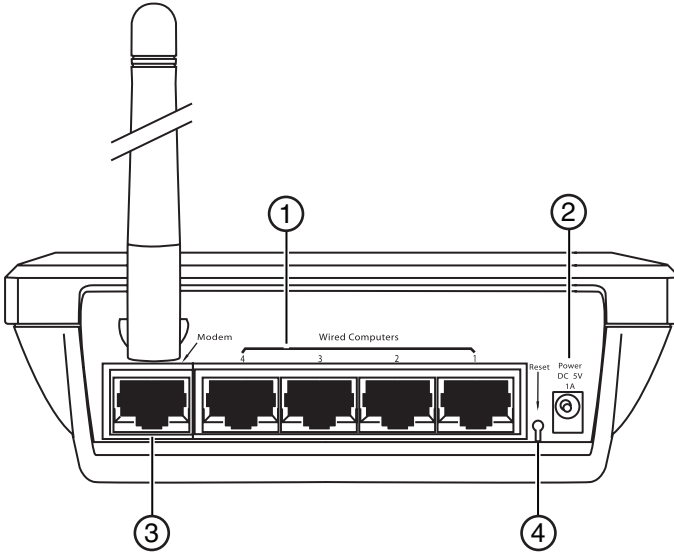
Front panel



#	Component	Description
1	Antenna	Lets the router communicate with a wireless client (card or USB adapter).
2	Power/ready LED	When you apply power to the Router or restart it, a short period of time elapses while the Router boots up. During this time, the Power/Ready LED blinks. When the Router has completely booted up, the Power/Ready LED becomes a SOLID light, indicating the Router is ready for use. Off—Router is off Blinking Green—Router is booting up Solid Green—Router is ready
3	Security Sync button	Push and hold this button for three seconds, then initiate the Security Sync (WPS) procedure on the client device within two minutes. Your client will automatically exchange the security information and be added to your wireless network. Pushing the Security Sync button will automatically enable WPS. See "Using Security Sync (Wi-Fi Protected Setup)" on page 26.

#	Component	Description
4	Security Sync LED	Lights to indicate that WPS has been activated. Blinking Green—The router is searching for a WPS client to connect with. Solid Green—The secure connection has been established with the client.
5	Wireless network LED	Off—The wireless network is off Solid Green—The wireless network is ready Blinking Green—Network activity
6	Internet LED	This unique LED shows you when the router is connected to the Internet. When the light is OFF, the router is not connected to the Internet. When the light is blinking, the router is attempting to connect to the Internet. When the light is solid green, the router is connected to the Internet. When using the “Disconnect after x minutes” feature, this LED becomes extremely useful in monitoring the status of your router's connection. Off—Router is not connected to the Internet Blinking Green—Router is attempting to connect to the Internet Solid Green—Router is connected to the Internet
7	Modem status LED	This LED lights green to indicate that your modem is connected properly to the router. It blinks rapidly when information is being sent over the port between the router and the modem. Off—No WAN link Solid Green—Good WAN link Blinking Green—WAN activity
8	Wired computer status LEDs	These LEDs are labeled 1-4 and correspond to the numbered ports on the rear of the router. When a computer is properly connected to one of the wired computer ports on the rear of the router, the LED will light. green means a 10Base-T device is connected, orange means a 100Base-T device is connected. When information is being sent over the port, the LED blinks rapidly. Off—The wireless network is off Solid Green—A 10base-T device is connected Solid Orange—A 100base-T device is connected Blinking—Port activity

Back panel



#	Component	Description
1	Wired computer ports - Blue	Connect your wired (non-wireless) computers to these ports. These ports are RJ-45, 10/100 auto-negotiation, auto-uplinking ports for standard UTP category 5 or 6 Ethernet cable. The ports are labeled 1 through 4. These ports correspond to the numbered LEDs on the front of the router.
2	Power jack	The 5 V DC power supply plugs into this jack.
3	Modem port - Green	This port is for connection to your cable or DSL modem. Use the cable that was provided with the modem to connect the modem to this port. Use of a cable other than the cable supplied with the cable modem may not work properly.
4	Reset button	<p>The Reset button is used in rare cases when the router may function improperly. Resetting the router restores the router's normal operation while maintaining the programmed settings. You can also restore the factory default settings by using the Reset button. Use the restore option in instances where you may have forgotten your custom password.</p> <p>Resetting the router—Push and release the Reset button. The lights on the router will momentarily flash. The Power/Ready light will begin to blink. When the Power/Ready light becomes solid again, the reset is complete.</p> <p>Restoring the Factory Defaults—Press and hold the Reset button for at least 10 seconds, then release it. The lights on the router will momentarily flash. The Power/Ready light will begin to blink. When the Power/Ready light becomes solid again, the restore is complete.</p>

Setting up your wireless router

Modem requirements

Your cable or DSL modem must be equipped with an RJ-45 Ethernet port. Many modems have both an RJ-45 Ethernet port and a USB connection. If you have a modem with both Ethernet and USB, and are using the USB connection at this time, you will be instructed to use the RJ-45 Ethernet port during the installation procedure. If your modem has only a USB port, you can request a different type of modem from your ISP, or you can, in some cases, purchase a modem that has an RJ-45 Ethernet port on it.

***Important:** Always install your router first! If you are installing numerous network devices for the first time, it is important that your router is connected and running before attempting to install other network components such as notebook cards and desktop cards.*

Setup assistant

Dynex has provided our Setup Assistant software to make installing your router a simple and easy task. You can use it to get your router up and running in minutes. The Setup Assistant requires that your Windows 2000 or XP computer be connected directly to your cable or DSL modem and that the Internet connection is active and working at the time of installation. If it is not, you must use the "Alternate Setup Method" section of this User Guide to configure your router. Additionally, if you are using an operating system other than Windows 2000 or XP, you must set up the router using the "Alternate Setup Method" section of this User Guide.

Hardware connections

To connect the hardware:

- 1 Unplug your modem's power cord. Put the router next to the modem and raise the router's antenna.
- 2 Locate the networking cable that connects your modem and computer. Unplug that cable from your modem, and plug it into any blue port on the back of the router.
- 3 Find your new networking cable (included in the box with your router) and connect it to the green port on the back of the router. Connect the other end to your modem, in the port that is now free.
- 4 Plug in your modem's power cord. Wait 60 seconds for the modem to start up. Plug the router's power supply into the black port on the back of the router. Plug the other end into the wall outlet.
- 5 Wait 20 seconds for the router to start up. Look at the display on the front of the router and make sure the **Modem** and one of the **Wired Computers** icons are lit up in green. If they are not, recheck your connections.

Running the Setup Assistant software

To run the Setup Assistant software:

- 1 Shut down any programs that are running on your computer at this time.
- 2 Turn off any firewall or Internet-connection-sharing software on your computer.

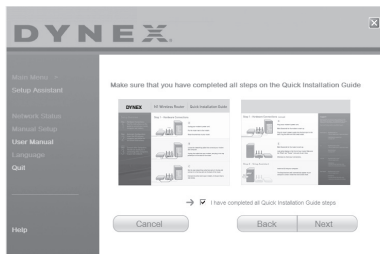
- 3 Insert the Installation CD into your computer. The Setup Assistant will automatically appear on your computer's screen within 15 seconds. Double-click the Setup Assistant to run it, then follow the on-screen instructions.



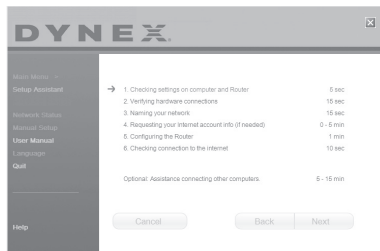
Important: Run the Setup Assistant from the computer that is directly connected to the router.

Note: For Windows users: If the Setup Assistant does not start up automatically, select your CD/DVD drive from **My Computer** and double-click the file named **Setup Assistant** to start the Setup Assistant.

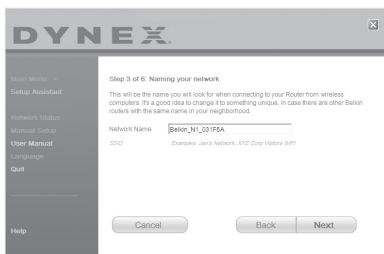
- 4 When the Confirmation screen opens, verify that you have completed all QIG steps by checking the box to the right of the arrow, then click **Next** to continue.



The Setup Assistant will indicate each time a step in the setup has been completed.

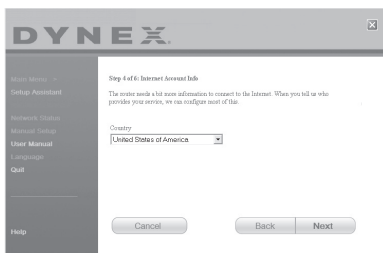


When it is time to name your network, the Setup Assistant will open the *Naming your network* screen.



The default wireless network name or Service Set Identifier (SSID). This is the name of your wireless network to which your computers or devices with wireless network adapters will connect.

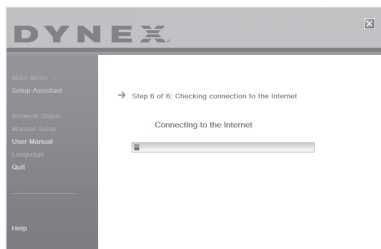
- 5 You can either accept the default name or change it to something unique. If you change it, write down the name for future reference. Click **Next** to continue. The *Internet Account Info* screen opens.



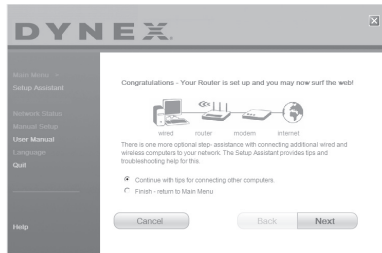
- 6 If your Internet account requires a login and password, you will be prompted with a screen similar to the illustration above. Select your country or ISP from the lists. The Setup Assistant will now configure your router by sending data to the router and restarting it. Wait for the on-screen instructions.

Note: Do not disconnect any cable or power off the router while the router is rebooting. Doing so will render your router inoperable.

After configuring the router, the Setup Assistant checks your connection to the Internet.



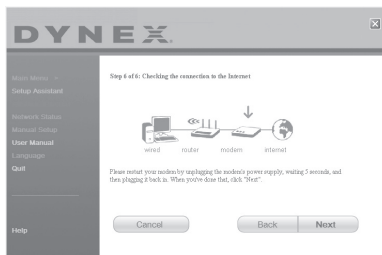
This completes the router installation. You will see the *Congratulations* screen when your router can connect to the Internet. You can begin surfing by opening your browser and going to any Web site.



- 7 You can use the Setup Assistant to set up your other wired and wireless computers to connect to the Internet by clicking **Next**. If you decide to add computers to your router later, select **Exit the Assistant**, then click **Next**.

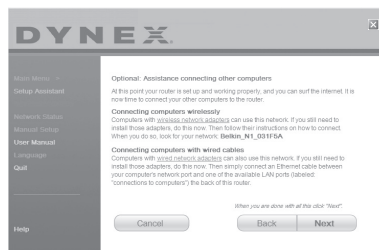
To troubleshoot the setup:

- 1 If the Setup Assistant is not able to connect to the Internet, you will see the following screen. Follow the on-screen instructions to go through the troubleshooting steps.



To use the optional assistance to connect to other computers:

- 1 This optional step will help you to connect additional wired and wireless computers to your network. Follow the on-screen instructions.



At this point, your router is set up and working properly. It is now time to connect your other computers.

Connecting computers wirelessly

Computers with wireless network adapters can use this network. If you still need to install those adapters, do this now. Then follow their instructions on how to connect. When you do so, look for your network: John's Home Wi-Fi.

Connecting computers with wired cables

Computers with wired network adapters can use this network. If you still need to install those adapters, do this now. Then simply connect an Ethernet cable between your computer's network port and one of the available LAN ports (labeled **connections to computers**) on the back of this router.]

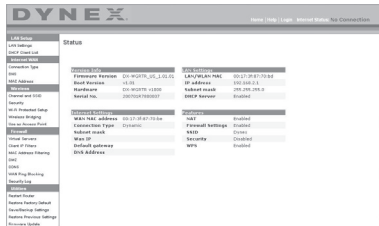
Once you have verified that your other wired and wireless computers are properly connected, your network is set up and working. You can now surf the Internet. Click **Next** to take you back to the main menu.

Wireless Security Setup

Be sure to complete the basic setup of your router before setting up security. Make sure that all of your computers (wired and wireless) can successfully connect to the Internet through your router.

To set up security:

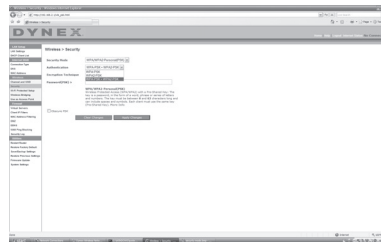
- 1 On a computer that has a wired (cable) connection to the Router, open up a web browser. In the address field, type 192.168.2.1 (or the IP address you customized), then click **Enter**.



- 2 In the menu at left, go to the wireless section and click **Security**. If asked to log in, enter your password or, if you have not yet set a custom password, leave this field blank. Then click, **Submit**.



- 3 You will be asked to pick a security type. We recommend WPA2-PSK as the security mode and then WPA-PSK+WPA2-PSK as the Authentication, as it is the most secure and easiest to use. Once you have made your choice, click **Apply Changes**.

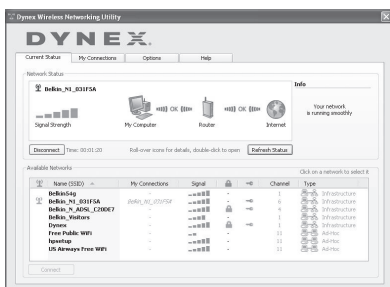


- 4 In the Pre-shared key field, type a security key that is easy for you to remember. Using some punctuation will increase your network's security (for example, "My favorite team is the Tigers!"). Click **Apply Changes**.

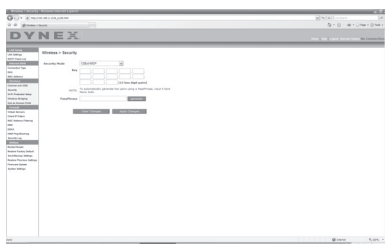


- 5 Now go to each of your wireless computers. Use the wireless utility software on each to do the following (see your wireless adapter's user manual for more detailed instructions):
 - a. Find your wireless network and connect to it.
 - b. When prompted, enter the phrase you created above.

Note: If a computer does not accept the phrase, it likely does not yet support WPA/WPA2. Go to your wireless adapter manufacturer's Web site and check for a driver update.



- 6 If you do not want to update your computer's wireless adapter to work with WPA/WPA2, return to Step 4 and choose WEP. See the Dynex Wireless G Router Users Guide for instructions on setting up WEP.



Alternate setup method

The Web-Based Advanced User Interface is a web-based tool that you can use to set up the router if you do not want to use the Easy Install Wizard. You can also use it to manage advanced functions of the router. From the Web-Based Advanced User Interface, you can perform the following tasks:

- View the router's current settings and status
- Configure the router to connect to your ISP with the settings that they provided you
- Change the current network settings such as the Internal IP address, the IP address pool, DHCP settings, and more
- Set the router's firewall to work with specific applications (port forwarding)
- Set up security features such as client restrictions, MAC address filtering, WEP, and WPA
- Enable the DMZ feature for a single computer on your network
- Change the router's internal password
- Enable/Disable UPnP (Universal Plug-and-Play)
- Reset the router
- Back up your configuration settings
- Reset the router's default settings
- Update the router's firmware

To connect your router (step 1):

- 1 Turn off the power to your modem by unplugging the power supply from the modem.
- 2 Locate the network cable that is connected between your modem and your computer and unplug it from your computer, leaving the other end connected to your modem.
- 3 Plug the loose end of the cable you just unplugged into the port on the back of the router labeled **Modem**.
- 4 Connect a new network cable (not included) from the back of the computer to one of the wired computer ports labeled **1-4**. Note: It does not matter which numbered port you choose.
- 5 Turn your cable or DSL modem on by reconnecting the power supply to the modem.
- 6 Plug the power cord into the wall, then plug the cord into the router's power jack.
- 7 Make sure that your modem is connected to the router by checking the lights on the front of the router. The green light labeled **Modem** should be on if your modem is connected correctly to the router. If it is not, recheck your connections.
- 8 Make sure that your computer is connected properly to the router by checking the lights labeled **1-4**. The light that corresponds to the numbered port connected to your computer should be on if your computer is connected properly. If it is not, recheck your connections.

To set up your computer's network settings to work with a DHCP server:

- See "Manually configuring network settings" on page 43 for directions.

Configuring the router using the Web-Based Advanced User Interface:

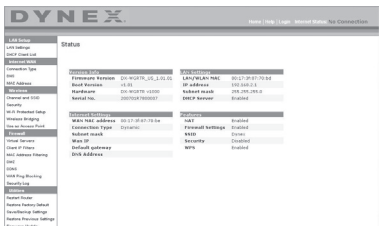
- 1 Open your Internet browser, then access the router's Web-Based Advanced User Interface by typing "192.168.2.1" in the address line (you do not need to type in anything else such as "http://" or "www"), then press **Enter**. The router's home page opens.

***Note:** If you have difficulty accessing the Router's Web-Based Advanced User Interface, go to the section entitled "Manually Configuring Network Settings".*

- 2 To make any changes to the router's settings, you have to log in. Click **Login**, or click on any one of the links on the home page to go to the login screen.
- 3 In the login screen, leave the password blank (the router ships with no password entered) and click **Submit** to log in.
One computer at a time can log into the router for the purposes of making changes to the settings of the router.
- 4 After you have logged in to make changes, there are two ways that the computer can be logged out. Clicking **Logout** will log the computer out.
- OR -
- 5 The login will time out after a specified period of time. The default login time-out is 10 minutes. This can be changed from 1 to 99 minutes. For more information, see "Changing the Login Time-Out Setting" on page 41.

Using the Web-Based Advanced User Interface

The home page is the first page you will see when you access the Web-Based Advanced User Interface (UI). The home page shows you a quick view of the Router's status and settings. All advanced setup pages can be reached from this page.



Quick-Navigation Links—You can go directly to any of the router's UI pages by clicking directly on these links. The links are divided into logical categories and grouped by tabs to make finding a particular setting easier to find. Clicking on the purple header of each tab will show you a short description of the tab's function.

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

Internet Status Indicator—This indicator is visible in all pages of the UI, indicating the connection status of the router. When the indicator says **connection OK** in green, the router is connected to the Internet. When the router is not connected to the Internet, the indicator will read **no connection** in red. The indicator is automatically updated when you make changes to the settings of the router.

Login/Logout Button—This button enables you to log in and out of the router with the press of one button. When you are logged into the router, this button will change to read **Logout**. Logging into the router will take you to a separate login page where you will need to enter a password. When you are logged into the router, you can make changes to the settings. When you are finished making changes, you can log out of the router by clicking the **Logout** button.

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

LAN Settings—Shows you the settings of the Local Area Network (LAN) side of the router. Changes can be made to the settings by clicking on any one of the links (IP Address, Subnet Mask, DHCP Server) or by clicking the **LAN - Quick Navigation** link on the left side of the screen.

Features—Shows the status of the router's NAT, firewall, and wireless features. Changes can be made to the settings by clicking on any one of the links or by clicking the **Quick Navigation** links on the left side of the screen.

Internet Settings—Shows the settings of the Internet/WAN side of the router that connects to the Internet. Changes to any of these settings can be made by clicking on the links or by clicking on the **Internet/WAN - Quick Navigation** link on the left side of the screen.

Version Info—Shows the firmware version, boot-code version, hardware version, and serial number of the router.

Page Name—The page you are on can be identified by this name. This User Guide will sometimes refer to pages by name. For instance **LAN > LAN Settings** refers to the LAN Settings page.

Configure your router for connection to your Internet Service Provider (ISP)

The **Internet/WAN** tab is where you will set up your router to connect to your Internet Service Provider (ISP). The router is capable of connecting to virtually any ISP's system provided you have correctly configured the router's settings for your ISP's connection type. Your ISP connection settings are provided to you by your ISP.

To configure the router with the settings that your ISP gave you:

- 1 Click **Connection Type** on the left side of the screen, then select the connection type you use.
- 2 If your ISP gave you DNS settings, clicking **DNS** lets you enter DNS address entries for ISPs that require specific settings.
- 3 Click **MAC address** to clone your computer's MAC address or type in a specific WAN MAC address, if required by your ISP.
- 4 When you have finished making settings, the **Internet Status** indicator will read **connection OK** if your router is set up properly.

To set your Connection Type:

- 1 Click **Connection Type** from the menu on the left side of the screen. The *Connection Type* page opens. From this page you can select the type of connection you use by clicking the button next to your connection type and then clicking **Next**.

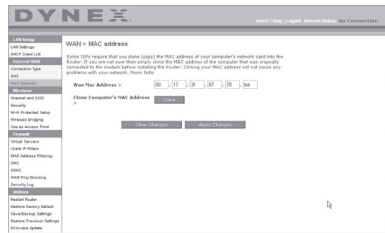


Setting your Internet Service Provider (ISP) Connection Type to Dynamic IP

A dynamic connection type is the most common connection type used with cable modems. Setting the connection type to **dynamic** in many cases is enough to complete the connection to your ISP. Some dynamic connection types may require a host name. You can enter your host name in the space provided if you were assigned one. Your host name is assigned by your ISP. Some dynamic connections may require that you clone the MAC address of the PC that was originally connected to the modem.

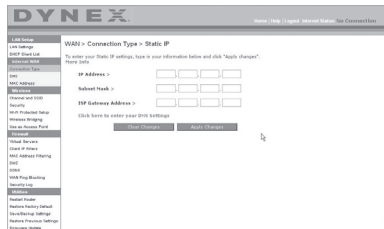
Change WAN MAC Address

If your ISP requires a specific MAC address to connect to the service, you can enter a specific MAC address or clone the current computer's MAC address through this link.



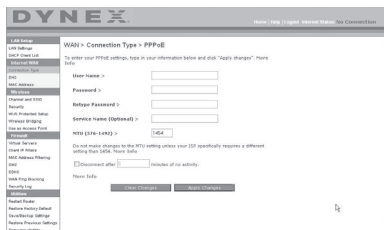
Setting your Internet Service Provider (ISP) Connection Type to Static IP

A static IP address connection type is less common than other connection types. If your ISP uses static IP addressing, you will need your IP address, subnet mask, and ISP gateway address. This information is available from your ISP or on the paperwork that your ISP left with you. Type in your information, then click **Apply Changes**. After you apply the changes, the **Internet Status** indicator will read **connection OK** if your router is set up correctly.



Setting your ISP Connection Type to PPPoE

Most DSL providers use PPPoE as the connection type. If you use a DSL modem to connect to the Internet, your ISP may use PPPoE to log you into the service. If you have an Internet connection in your home or small office that doesn't require a modem, you may also use PPPoE.



Your connection type is PPPoE if:

- Your ISP gave you a user name and password, which is required to connect to the Internet;
- Your ISP gave you software such as WinPOET or Enternet300 that you use to connect to the Internet; or
- You have to double-click on a desktop icon other than your browser to get on the Internet.

Enter the following:

User Name—This space is provided to type in your user name that was assigned by your ISP.

Password—Type in your password and re-type it into the *Retype Password* box to confirm it.

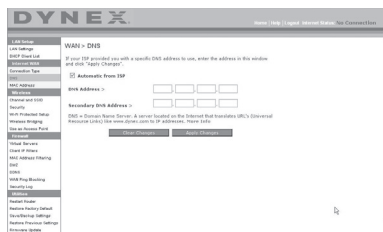
Service Name—A service name is rarely required by an ISP. If you are not sure if your ISP requires a service name, leave this blank.

MTU—The MTU setting should never be changed unless your ISP gives you a specific MTU setting. Making changes to the MTU setting can cause problems with your Internet connection including disconnection from the Internet, slow Internet access, and problems with Internet applications working properly.

Disconnect after X minutes...—This feature is used to automatically disconnect the Router from your ISP when there is no activity for a specified period of time. For instance, placing a check mark next to this option and entering **5** into the minute field will cause the router to disconnect from the Internet after five minutes of no Internet activity. This option should be used if you pay for your Internet service by the minute.

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.dynex.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 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** to save the settings.



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. Dynex 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.



To clone your MAC Address:

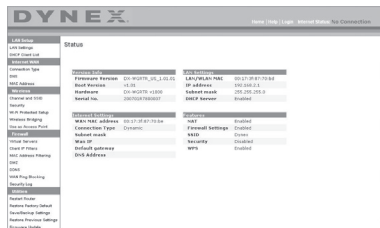
- 1 Make sure that you are using the computer that was **ORIGINALLY CONNECTED** to your modem before the router was installed. Click
- 2 Click **Clone**, then click **Apply Changes**. Your MAC address is now cloned to the router.

To enter a specific MAC Address:

- Type in a MAC address in the spaces provided, then click **Apply Changes** to save the changes. The router's WAN MAC address is changed to the MAC address you specified.

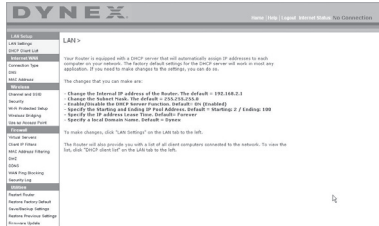
Using the Web-Based Advanced User Interface

Using your Internet browser, you can access the router's Web-Based Advanced User Interface. Open your browser and enter **192.168.2.1** (do not type in anything else such as “http://” or “www”), then press **Enter**. The router's home page opens in your browser window.



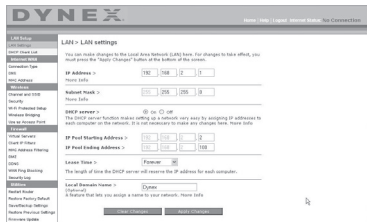
Viewing the LAN Settings

Clicking on the header of the **LAN Setup** tab will take you 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 **LAN Settings**, or to view the list of connected computers, click **DHCP Client List**.



Changing LAN Settings

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



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 anywhere between 0 and 255), and 10.x.x.x (where x is anything between 0 and 255).

Subnet Mask—There is no need to change the subnet mask. This is a unique, advanced feature of your Dynex 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**.

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**, then click **Apply Changes**.

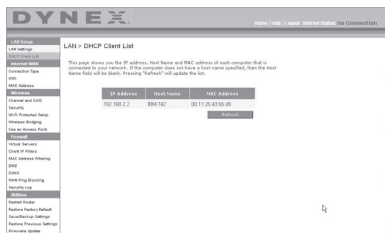
IP Pool—The range of IP addresses set aside for dynamic assignment to the computers on your network. The default is 2-100 (99 computers). If you want to change this number, you can do so by entering a new starting and ending IP address and clicking **Apply Changes**. The DHCP server can assign 100 IP 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.

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.

Local Domain Name—The default setting is **Dynex**. 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".

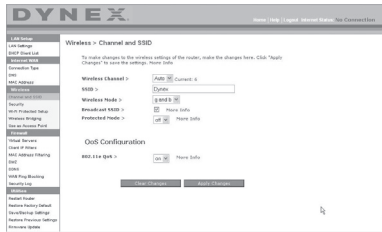
Viewing the DHCP Client List Page

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 of the computer, the host name (if the computer has been assigned one), and the MAC address of the computer's network interface card (NIC). Pressing the **Refresh** button will update the list. If there have been any changes, the list will be updated.



Configuring the Wireless Network Settings

Clicking on the header of the **Wireless** tab will take you to the *Wireless* page. Under the **Wireless** tab, there are links that allow you to make changes to the wireless network settings.



Changing the Wireless Network Name (SSID)

To identify your wireless network, an SSID (Service Set Identifier) is used. The default SSID of the router is “Dynex”. You can change this to anything you want to or you can leave it unchanged. If there are other wireless networks operating in your area, you will want to make sure that your SSID is unique (does not match that of another wireless network in the area). To change the SSID, type in the SSID that you want to use in the **SSID** field and click **Apply Changes**. 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.

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.

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** list, 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.

QoS (Quality of Service) Configuration—QoS prioritizes important data on your network such as multimedia content and Voice over IP (VoIP) so it will not be interfered with by other data being sent over the network. Based on 802.11e, you can turn this feature on or off by selecting it from the drop-down menu (3) and choosing the acknowledgement mode you want to use. If you plan to stream multimedia content or use VoIP on your network, we recommend that you enable the QoS feature.

Changing the Wireless Channel

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

Using the Broadcast SSID Feature

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

For security, you can choose not to broadcast your network's SSID. Doing so will keep your network name hidden from computers that are scanning for the presence of wireless networks. To turn off the broadcast of the SSID, remove the check mark from the box next to **Broadcast SSID**, then click **Apply Changes**. The change is immediate. Each computer now needs to be set to connect to your specific SSID; an SSID of **ANY** will no longer be accepted. Refer to the documentation of your wireless network adapter for information on making this change.

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.

	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

Wired Equivalent Privacy (WEP)

WEP is a common protocol that adds security to all Wi-Fi-compliant wireless products. WEP gives 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 Encryption—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 wireless products from Dynex will support both 64-bit and 128-bit WEP.

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

For instance:

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

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

The WEP passphrase is NOT the same as a WEP key. Your card 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 wireless router and enter it manually into the hex WEP key table in your card's configuration screen.

Security Sync (WPS)

Your router is equipped with the latest security standard, called *Wi-Fi Protected Access* (WPA2), and the legacy security standard, called *Wired Equivalent Privacy* (WEP). Your router 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. By default, wireless security is disabled. To enable security, you need to determine which standard you want to use. To access the security settings, click **Security** on the **Wireless** tab.

Using Security Sync (Wi-Fi Protected Setup)

Security Sync (WPS) uses WPA2 for encryption. It does not provide additional security, but rather, standardizes the method for securing your wireless network. You may use either the Push Button Configuration (PBC) method or PIN method to let a device access to your wireless network. Conceptually, the two methods work as follows:

PBC: Push and hold the Security Sync (WPS) button located on the top of your router for three seconds. Then initiate the Security Sync (WPS) procedure on the client device within two minutes. Your client will automatically exchange the security information and be added to your wireless network. The client has now been securely added to your wireless network. Pushing the Security Sync button will automatically enable WPS. The PBC method can also be initiated from the notebook computer.

PIN: The client device has a PIN number (either four or eight digits) that is associated with WPS. Enable WPS through the GUI shown below. Enter the client's PIN into the Router's internal registrar (accessed through this GUI). The client will be automatically enrolled into your wireless network within two minutes.



1. Wi-Fi Protected Setup (WPS): Enabled or Disabled.
2. Personal Identification Number (PIN) Method: In this method, a wireless client wishing to access your network must supply a 4- or 8-digit PIN to the router. After clicking "Enroll", you must start the WPS handshaking procedure from the client within two minutes.
3. Router PIN: If an external registrar is available, you can enter in the router's PIN to the registrar. Click **Generate New PIN** to change the PIN from the default value, or click **Restore Default PIN** to reset the PIN value.
4. Push Button Configuration (PBC) Method: PBC is an alternate method to connect to a WPS network. Push the Security Sync button located on the back of the router for three seconds, and then initiate the PBC on the client device. Alternatively, push the "Start PBC" soft button to start this process.
5. Manual Configuration Method: This section lists the default security settings if not using WPS.

The router features WPA2, which is the second generation of the WPA-based 802.11i standard. It offers a higher level of wireless security by combining advanced network authentication and stronger Advanced Encryption Standard (AES) encryption methods.

Wi-Fi Protected Areas (WPA)

WPA is a new Wi-Fi standard that improves upon the security features of WEP. To use WPA security, the drivers and software of your wireless equipment must be upgraded to support it. These updates will be found on your wireless vendor's Web site. There are three types of WPA security: WPA-PSK (no server), WPA (with radius server), and WPA2.

WPA-PSK (no server) uses what is known as a pre-shared key as the network key. A network key is a password that is between eight and 63 characters long. It can be a combination of letters, numbers, or characters. Each client uses the same network key to access the network. Typically, this is the mode that will be used in a home environment.

WPA (with radius server) is a system where a radius server distributes the network key to the clients automatically. This is typically found in a business environment.

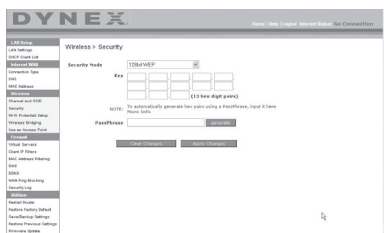
WPA2 requires Advanced Encryption Standard (AES) for encryption of data, which offers much greater security than WPA. WPA uses both Temporal Key Integrity Protocol (TKIP) and AES for encryption.

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 all your wireless devices are sharing the same network key.

IMPORTANT: You must now set all wireless network cards/adapters to match these settings.

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 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 router.

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

***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.*

WEP Setup

To set up 64-Bit WEP encryption:

- 1 Click **Security** under the **Wireless** heading on the left menu. The *Wireless > Security* page opens.
- 2 Select **64-bit WEP** from the **Security Mode** list.
- 3 Enter your key by typing in the hex key manually, or you can put a check mark in **Passphrase**, then type in your passphrase.
- 4 Click **Generate** to generate four different hex keys.

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

- 5 Click **Apply Changes** to save the setting.

Caution: If you are configuring the Wireless G Router or access point from a computer with a wireless client, you will need to make sure that security is turned ON for this wireless client. If this is not done, your client will lose its wireless connection.

To set up 128-Bit WEP encryption:

Note to Mac users: The passphrase option will not operate with Apple AirPort. To configure encryption for your Mac computer, set the encryption using the manual method described in the next section.

- 1 Click **Security** under the **Wireless** heading on the left menu. The *Wireless > Security* page opens.
- 2 Select **128-bit WEP** from the **Security Mode** list.
- 3 Enter your key by typing in the hex key manually, or you can put a check mark in **Passphrase**, then type in your passphrase.
- 4 Click **Generate** to generate four different hex keys.
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 example: C3 03 0F AF 0F 4B B2 C3 D4 4B C3 D4 E7 = 128-bit WEP key
- 5 Click **Apply Changes** to save the setting.

Caution: If you are configuring the Wireless G Router or access point from a computer with a wireless client, you will need to make sure 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** under the **Wireless** heading on the left menu.

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 Dynex Wireless G Desktop or Notebook Network Card from the Dynex support site. Other operating systems are not supported at this time. Microsoft's patch only supports devices with WPA-enabled drivers such as Dynex 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.

To set up WPA/WPA2:

- 1 Click **Security** under the **Wireless** heading on the left menu. The *Wireless > Security* page opens.
- 2 Select **WPA/WPA2-Personal (PSK)** from the **Security Mode** list.
- 3 Select **WPA-PSK** for just WPA authentication, or **WPA2-PSK** for just WPA2 authentication, or you may select **WPA-PSK + WPA2-PSK** for WPA and WPA2 as the authentication type.
- 4 Enter your pre-shared key. This can be from eight to 63 characters and can be letters, numbers, or symbols. This same key must be used on all of the clients that you set up. This pre-shared key will allow users full access to your network including shared files and printers.
- 5 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.

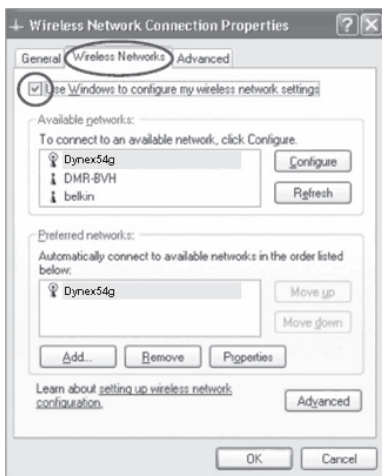
Note: *If your wireless card is not equipped with WPA-enabled software, a file from Microsoft called **Windows XP Support Patch for Wireless Protected Access** is available for free download.*

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 their support site.*

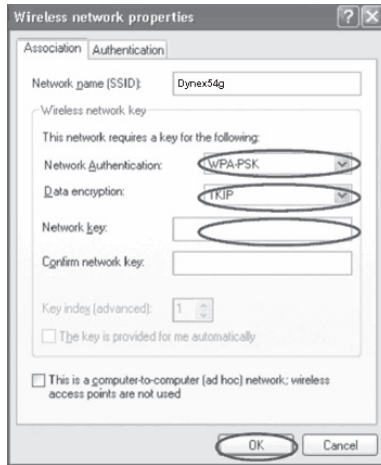
To set up Windows XP Wireless Network Utility to use WPA-PSK:

- 1 Under Windows XP, click **Start, Control Panel, Network Connections**.
- 2 Right-click **Wireless Network Connection Properties**, then click **Properties**.
- 3 Click the **Wireless Networks** tab. The following screen opens.



- 4 Make sure that the **Use Windows to configure my wireless network settings** box is checked.

- 5 Click the **Wireless Networks** tab, then click **Configure**. The following screen opens.



- 6 For a home or small business user, 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. Consult your network administrator for further information.

- 7 Select **TKIP** or **AES** under **Data Encryption**. This setting must be identical to the router that you set up.

- 8 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.

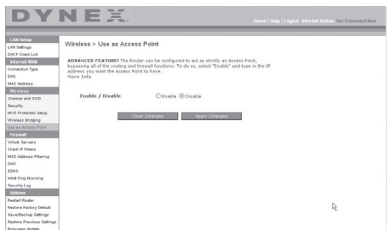
- 9 Click **OK** to apply settings.

Using the Access Point Mode

Note: This advanced feature should be employed by advanced users only. The Router can be configured to work as a wireless network access point. Using this mode will defeat the NAT IP sharing feature and DHCP server. In Access Point (AP) mode, the Router will need to be configured with an IP address that is in the same subnet as the rest of the network that you will bridge to. The default IP address is 192.168.2.254 and subnet mask is 255.255.255.0. These can be customized for your needs.

To use the Access Point mode:

- 1 Click **Use as access point** under the **Wireless** heading on the left menu. The *Wireless > Use as Access Point* page opens.



- 2 Select **Enable**. When you select this option, you will be able to change the IP settings.
- 3 Set your IP settings to match your network, then click **Apply Changes**.
- 4 Connect a cable from the Modem port on the router to your existing network.

The router is now acting as an access point. To access the router's Web-Based Advanced User Interface again, type the IP address you specified into your browser's navigation bar. You can set the encryption settings, MAC address filtering, SSID, and channel normally.

Configuring the Firewall

Your router is equipped with a firewall that will protect your network from a wide array of common hacker attacks including:

- IP Spoofing
- SYN flood
- Land Attack
- UDP flooding
- Ping of Death (PoD)
- Tear Drop Attack
- Denial of Service (DoS)
- ICMP defect
- IP with zero length
- RIP defect
- Smurf Attack
- Fragment flooding
- TCP Null Scan

The firewall also masks common ports that are frequently used to attack networks. These ports appear to be *Stealth*, meaning that for all intents and purposes, they do not exist to a would-be hacker. You can turn the firewall function off if needed, however, it is recommended that you leave the firewall enabled. Disabling the firewall protection will not leave your network completely vulnerable to hacker attacks, but it is recommended that you leave the firewall enabled.



Configuring Internal Forwarding Settings

The *Virtual Servers* function lets you route external (Internet) calls for services such as a Web server (port 80), FTP server (Port 21), or other applications through your router to your internal network. Since your internal computers are protected by a firewall, computers outside your network (over the Internet) cannot get to them because they cannot be *seen*. You will need to contact the application vendor to find out which port settings you need.



To enter settings into the virtual server:

- 1 Open the *Virtual Servers* page, then enter the IP address in the space provided for the internal (server) machine, and the port(s) required to pass.
- 2 Select the port type (TCP or UDP), check the **Enable** box, then click **Apply Changes**.

Each inbound port entry has two fields with five characters maximum per field that allows a start and end port range, e.g. [xxxxx]-[xxxxx]. For each entry, you can enter a single port value by filling in the two fields with the same value (for example, [7500]-[7500]) or a wide range of ports (for example [7500]-[9000]). If you need multiple single port values or a combination of ranges and a single value, you must use multiple entries up to the maximum of 20 entries (for example, 1. [7500]-[7500], 2. [8023]-[8023], 3. [9000]-[9000]). You can only pass one port per internal IP address. Opening ports in your firewall can pose a security risk. You can enable and disable settings very quickly. It is recommended that you disable the settings when you are not using a specific application.