CREATIVE®

Network

BLASTER®
Wireless
Access Point Router

with **4**-port Switch

User's Guide

User's Guide

Network Blaster Wireless Access Point Router CW2202

Contents

Contents

Introduction

About Your Wireless AP Router

Setting Up Your Wireless AP Router

Configuring Basic Settings

Configuring Advanced Settings

Appendixes

A   About Wireless LANs

B   Frequently Asked Questions

C   Technical Specifications

D Safety Precautions

E Glossary

1 Introduction

Introduction

Thank you for choosing the Creative Network Blaster™ Wireless Access Point (AP) Router.

Your Creative wireless device comes equipped with Turbo-G™ technology, which improves your device's performance by 35%, without affecting that of other wireless local area network (WLAN) devices in the neighbourhood. Powerful router functions and a user-friendly web-based configuration make it easy to set up and share a single broadband Internet connection with multiple clients. Other features include backward compatibility with IEEE 802.11b devices, an auto-sensing function that lets you achieve the fastest possible connection speeds, and robust WEP or WPA-PSK encryption.

Note: If you are new to networking, you may initially find the prospect of setting up a networking solution daunting. But with a little patience and the aid of this User's Guide, you will not only be able to establish a working network, but a secure one as well.

Package Contents

The following items are included in your package:
❑ Creative Network Blaster Wireless AP Router CW2202
❑ Power adapter (12 V DC, 1 A)
❑ RJ-45 Ethernet cable
❑ Stand for Wireless AP Router
❑ Quick Start leaflet
❑ Application CD

System Requirements

❑ Installed network interface card with RJ-45 Ethernet port, or a wireless network client (IEEE 802.11b or 802.11g compliant)
❑ Internet Explorer version 6.0

**Model Number,
Serial Number
and MAC Address**

Record the model number, serial number and the MAC addresses on your Wireless AP Router.

You will need to provide the model and serial numbers when contacting Technical Support. You may also need to provide the MAC addresses to a network administrator if you plan to use your device on a large network, such as in a school or office.

More Help

Depending on the type of broadband internet service that you subscribe to, you may need additional information from your Internet Service Provider (ISP) to complete the setup of your Wireless AP Router. Contact your ISP's customer or technical support staff for details.

**Product
Registration**

Enjoy a host of benefits by registering your product during installation, or at www.creative.com/register. Benefits include:
❑ Service and product support from Creative
❑ Exclusive updates on promotions and events

**Customer
Support Services
and Warranty**

You can find Customer Support Services, Warranty and other information in the Installation CD.

Customer Support Services	**d:\support\<language>\support.pdf**
Warranty	**d:\warranty\<region>\<language>\warranty.pdf** Please keep your Proof of Purchase for the duration of the warranty period.
Regulatory	**d:\fcc\<language>\doc.pdf**

(replace **d:** with the drive letter of your CD-ROM/DVD-ROM drive, **<region>** with the region that you are in, and **<language>** with the language that your document is in).

Document Conventions

This User's Guide uses the following icons to highlight useful or urgent information.

Tip. This tells you about short cuts or hints relating to a feature.

Note. This highlights additional or important information about a feature.

Caution! This highlights proper usage of your product. Follow these directions to prevent the loss of data, or damage to your product or system.

Warning! This warns you of possible hazards that may result in bodily harm or life-threatening situations.

CREATIVE

Network BLASTER

2   **About Your Wireless AP Router**

About Your Wireless AP Router

Front Panel

The front panel has light-emitting diodes (LEDs) that show the status of your Wireless AP Router.
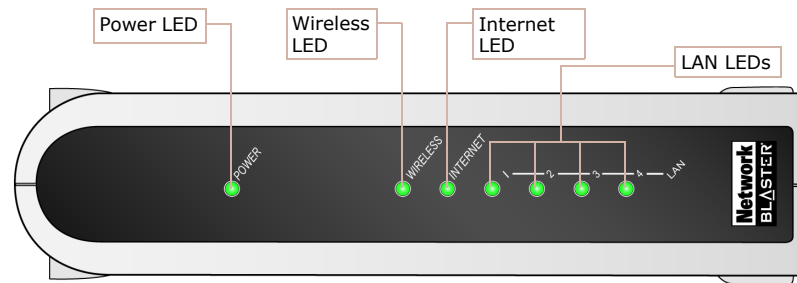
Figure 2-1: Front panel of the Wireless AP Router

LED	Status
POWER	❍ Off: Power off ❍ On: Power on
WIRELESS	❍ Off: Wireless LAN not initialized ❍ On: Wireless LAN initialized and ready ❍ Blinking: Sending/Receiving data via wireless LAN
INTERNET	❍ Off: Network or network device not connected or not ready ❍ On: Network or network device connected and ready ❍ Blinking: Sending/Receiving data via internet connection

LED	Status
LAN 1, 2, 3, 4	❍ Off: Network device not connected or not ready ❍ On: Network device connected and ready ❍ Blinking: Sending/Receiving data via wired LAN

Rear Panel

POWER connector
Connects to the 12 V
DC power adapter

LAN ports
Connect to
the Ethernet
ports of your
computer

INTERNET port
Connects to the
DSL modem or
cable modem

Antenna
Sends data to, and
receives data from,
wireless clients

RESET button
Erases all of
your configured
settings and
replaces them
with the factory
defaults

CW2202
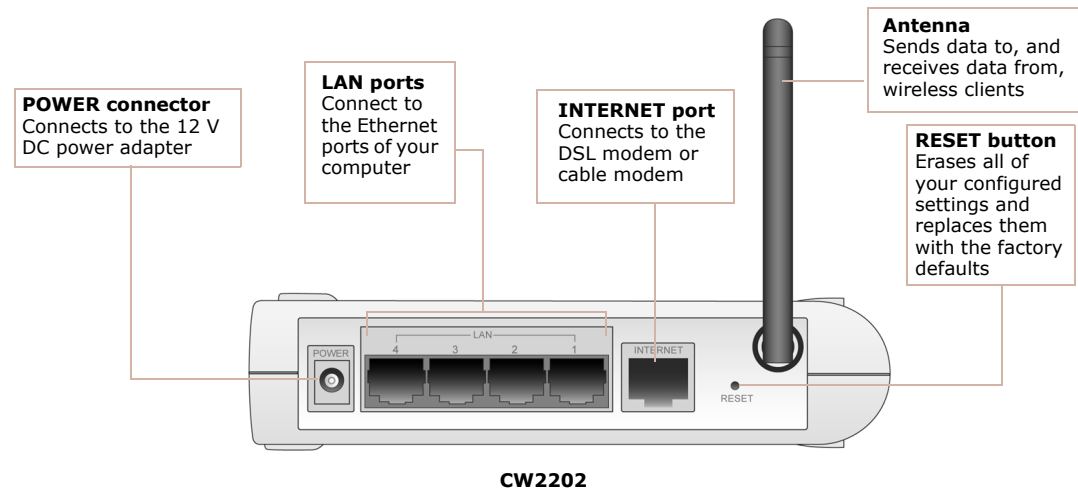
Figure 2-2: Rear panel of the Wireless AP Router

CREATIVE

Network
BLASTER

3   **Setting Up Your Wireless AP Router**

Setting Up Your Wireless AP Router

1. Before you begin, choose the best location for your Wireless AP Router. For optimal reception and performance, place the Wireless AP Router in the center of your wireless LAN, on a flat horizontal surface, and where there is minimum obstruction between wireless clients and the Wireless AP Router.

2. Position the antenna such that it points up, and attach the optional stand if you want to place your Wireless AP Router upright.

OR
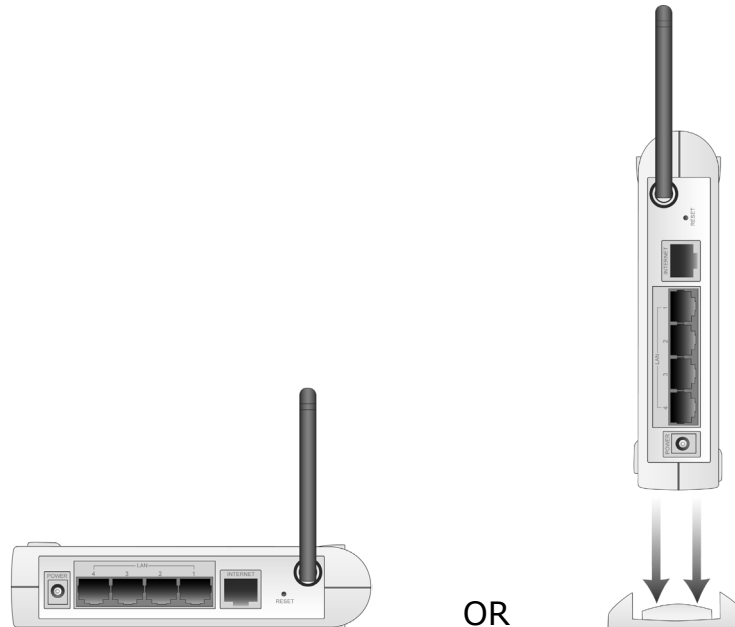
Figure 3-1

3. Set up your Wireless AP Router as shown in Figure 3-2.

Up to four computers can be connected via wire to your Wireless AP Router.
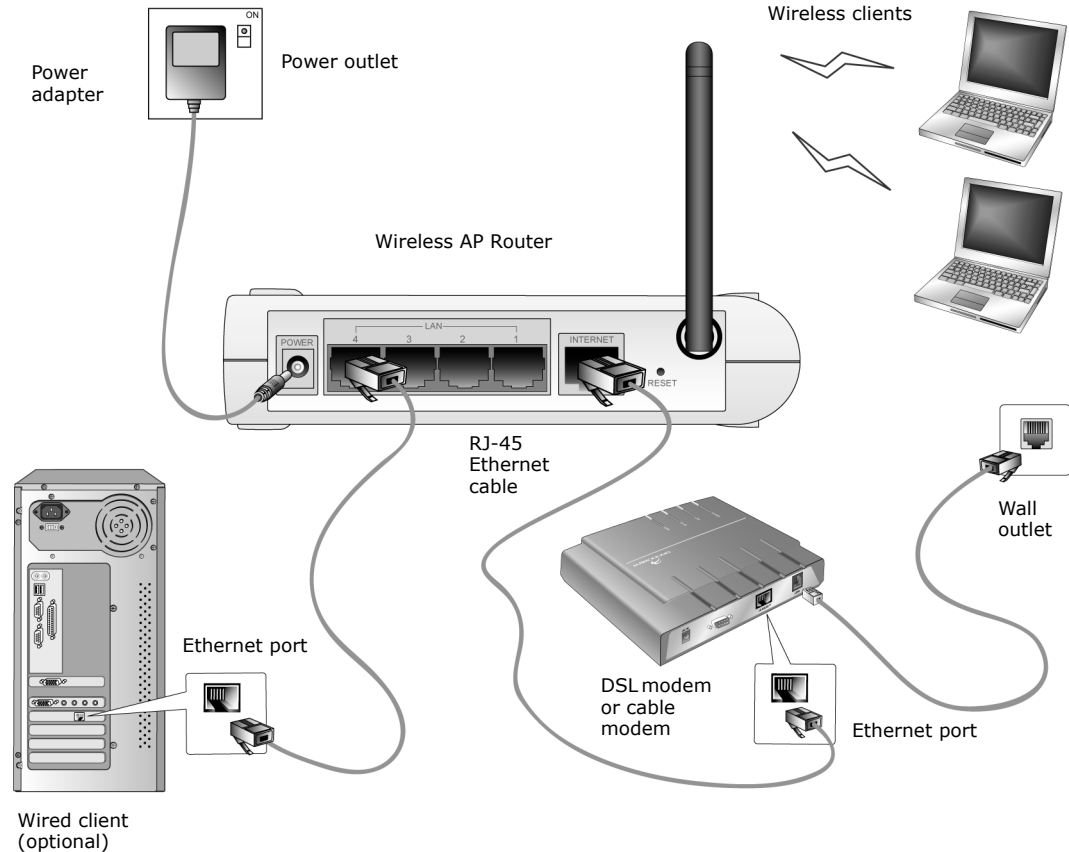
Figure 3-2

4. Congratulations! Depending on your hardware configuration, you should be able to access the Internet from any wired or wireless client connected to your Wireless AP Router right away.

    If not, additional steps may be required to set up your Wireless AP Router properly. The following chapter, "Configuring Basic Settings", leads you through these steps. It also shows you how to enable the powerful security features of your Wireless AP Router, in order to prevent unauthorized users from accessing your network.

Although not essential to operation, configure your security settings after setting up your Wireless AP Router to safeguard the data exchanged within your network.

CREATIVE®

Network Blaster

4 Configuring Basic Settings

Configuring Basic Settings

The arrangement of information in this chapter is designed to benefit users who are new to networking.

If you are an experienced user, proceed directly to "Accessing the configuration page" on page 4-5 and subsequently to "Configuring Internet connection settings" on page 4-8 to learn more about the configuration options available for each protocol.

This chapter guides you through the steps required to access your Wireless AP Router's configuration page, and thereafter, to configure its basic settings.

Please note that manually configuring your Wireless AP Router's settings is not a prerequisite for proper operation in all scenarios. If you connect to the Internet using a cable modem, for example, it is very likely that you will be able to access the Internet from any wired or wireless client connected to your Wireless AP Router, immediately after it has been properly set up (see Chapter 3, "Setting Up Your Wireless AP Router").

You should therefore only attempt to configure your Wireless AP Router's settings if:
• you are unable to access the Internet from a computer connected (via wire or wirelessly) to your Wireless AP Router; or
• you would like to enable your Wireless AP Router's security features.

If you are already able to access the Internet from a client, proceed to "Accessing the configuration page" on page 4-5.

Step 1: Preparing a client

Make sure that the computer you are using has a functioning network interface card (NIC).

You can access your Wireless AP Router's configuration page using any computer on your wired or wireless LAN. Whichever you choose, you must first make sure that the computer can communicate with your Wireless AP Router. To do this, you need to configure the computer to obtain an IP address from your Wireless AP Router and to ensure that a valid IP address has been assigned to your network interface card (NIC).

The default settings of your Wireless AP Router are:
❑ IP address: 192.168.2.1
❑ Subnet Mask: 255.255.255.0

For more information, see "Configuring your wired client" below or "Configuring your wireless client" on page 4-4.

Configuring your wired client

The following steps also apply if you are configuring a wireless client, but an additional step is required before proceeding. See "Configuring your wireless client" on page 4-4 for more information.

In Windows 2000/XP

1. Click **Start → Settings → Control Panel** or **Start → Control Panel**.
2. For Windows XP users, double-click the **Network Connections** icon.
    For Windows 2000 users, click the **Network and Dial-Up Connections** icon.
3. Right-click the **Local Area Connection** icon and then click **Properties**.
4. When the **Local Area Connection Properties** dialog box appears, select Internet Protocol (TCP/IP) and then click the **Properties** button.
5. When the **Internet Protocol (TCP/IP) Properties** dialog box appears, click the **Obtain an IP address automatically** option.
6. Click the **OK** button.
7. When the **Local Area Connection Properties** dialog box appears, click the **OK** button.

To check the IP address assigned to your NIC

1. Click **Start → Programs** (or **All Programs**, if you are in Windows XP Start menu mode) **→ Accessories → Command Prompt**.

2. When the **Command Prompt** dialog box appears, type **ipconfig** and press the <ENTER> key. Verify that your IP address is 192.168.2.xxx and your Subnet Mask is 255.255.255.0.
If they are not, go to steps 3 and 4 below.

3. Type **ipconfig/release** and press the <ENTER> key.

4. Type **ipconfig/renew** and press the <ENTER> key.
Your IP address and Subnet Mask change to the above values.

In Windows 98 SE/Me

1. Click **Start → Settings → Control Panel**.

2. Double-click the **Network** icon.

3. When the **Network** dialog box appears, click the **Configuration** tab.

4. Click the name of your Ethernet card, for example, TCP/IP->PRO/100+ Management Adapter (10/100) and then click the **Properties** button.

5. When the **TCP/IP Properties** dialog box appears, click the **IP Address** tab.

6. Click the **Obtain an IP address automatically** option to select it and click the **OK** button.

7. Click the **OK** button.

8. When Windows prompts you to restart your computer, click the **Yes** button. The computer restarts.

To check the IP address assigned to your NIC

1. Click **Start → Run**.

2. When the **Run** dialog box appears, type **winipcfg** in the **Open** box, then click the **OK** button. The next dialog box may take a minute or two to appear, so do not restart your computer or abort this operation prematurely.

3. In the **IP Configuration** dialog box that appears, click the arrow next to the first box and then click the name of your network device to select it. Verify that your IP address is 192.168.2.xxx and your Subnet Mask is 255.255.255.0.
    If they are not, go to steps 4 and 5 below.
4. Click the **Release** button and then click the **Renew** button. Your IP address and Subnet Mask change to the above values.
5. Click the **OK** button to close the **IP Configuration** dialog box.

Configuring your wireless client

Refer to the User's Guide of your computer's wireless adapter if you need instructions on changing its wireless settings.

Your wireless adapter is the wireless equivalent of an NIC. Preparing a computer on a wireless LAN is, therefore, similar to preparing a computer on a wired LAN. Before performing the steps presented in "Configuring your wired client" on page 4-2, however, ensure that the wireless settings of your computer's wireless adapter match the default wireless settings of your Wireless AP Router, namely:

❑ Operation Mode: Infrastructure
❑ SSID: Network Blaster
❑ Authentication: Open
❑ WEP Mode: Disabled

Step 2: Configuring basic settings on your Wireless AP Router

After preparing a computer, you can configure the basic settings of your Wireless AP Router using a web browser.

Disabling the proxy setting in your web browser

To access your Wireless AP Router's configuration page, the HTTP Proxy feature in your web browser has to be disabled.

To disable the HTTP Proxy feature in Internet Explorer:

1. Start Internet Explorer and click the **Stop** button.
2. Click the **Tools** menu option and then click **Internet Options** to select it.
3. In the **Internet Options** dialog box that appears, click the **Connections** tab.
4. Click the **LAN settings** button.
5. Clear all the check boxes.
6. Click the **OK** button in the next two dialog boxes that appear to complete disabling the HTTP Proxy feature.

Accessing the configuration page

1. On the computer that you have prepared, open a web browser such as Internet Explorer or Netscape.
2. Type **http://192.168.2.1** in the **Address** (for Internet Explorer) or **Location** (for Netscape) box and press the <ENTER> key.

3. A dialog box appears prompting you for a username and password.
   Type **admin** in the **User Name** and **Password** boxes (Figure 4-1).
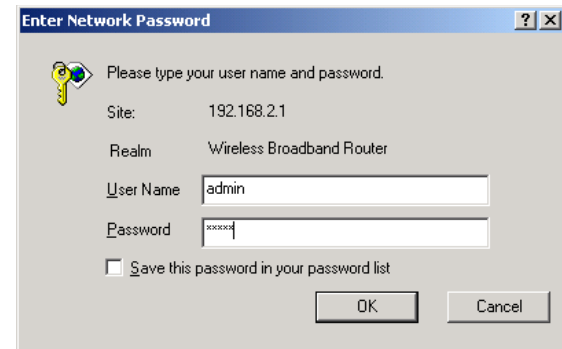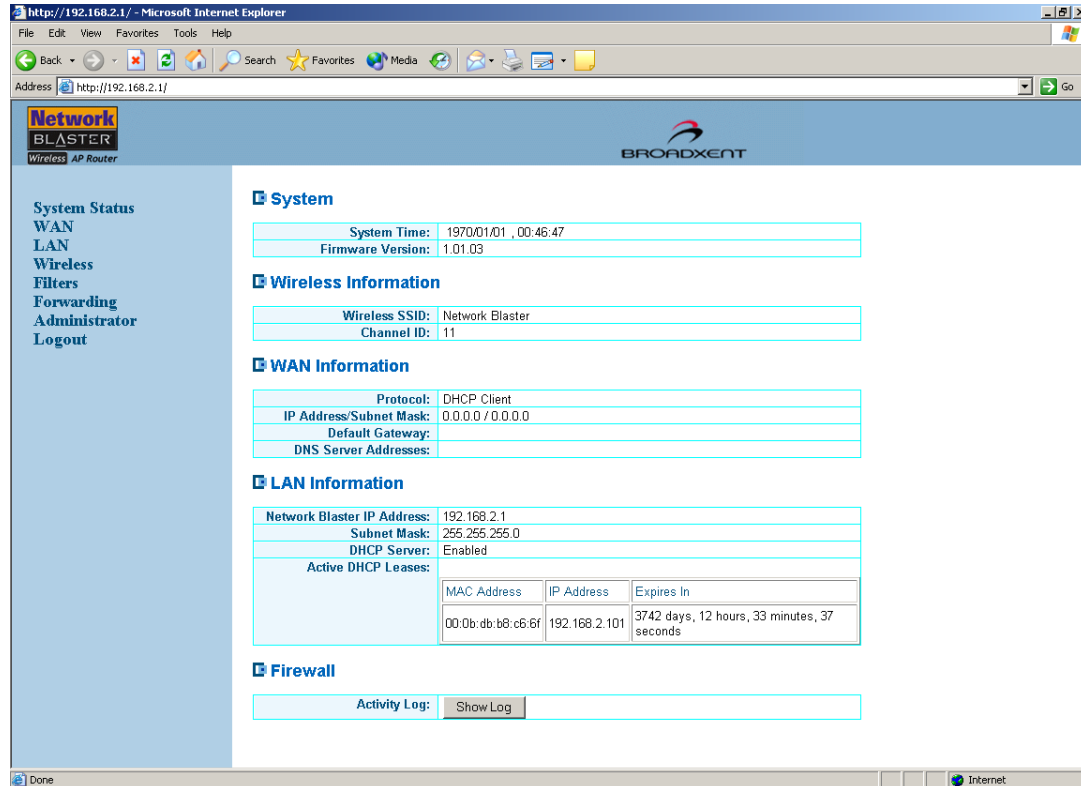
4. Click the **OK** button.

Figure 4-1

5. You should see the Creative Network Blaster Wireless AP Router **System Status** page loaded in your browser (Figure 4-2).

Figure 4-2

Configuring Internet connection settings

These Internet connection settings depend on your subscription with your Internet Service Provider (ISP). If you are not sure of your configuration, check with your ISP.

In order for your Wireless AP Router to access the Internet, its Internet connection settings have to be configured to suit the protocol that your broadband modem uses to connect to the Internet.

If you connect to the Internet using a DSL Modem, and the use of your account requires entering a login name and password, your ISP uses PPPoE. See "PPPoE connection" on page 4-9.

If you connect to the Internet using a cable modem, your ISP probably uses DHCP. See "DHCP connection" on page 4-10.

If you connect to the Internet using a DSL Modem, and the use of your account requires you to manually enter your IP address, subnet mask, default gateway and DNS servers, see "Fixed IP connection (using static IP address)" on page 4-11.

PPPoE connection

If you connect to the Internet using a DSL Modem, and the use of your account requires entering a login name and password, select the **PPPoE** option in the **Protocol** field.

After you have updated the various settings, make sure you click the **Apply** button for changes to take effect.

User Name/Password
Type the Username and Password given by your ISP.

Select NAT Routing or Bridging to configure your computer network.

Always On option
Allows a PPP session to be kept online continously.

Click this link to view this page.

Max Idle Time
Determines the time before automatic disconnection during inactivity.

Connect on Demand option
Allows any client PC requesting for connection to dial the ISP automatically through the AP router. To end the session manually, click the Disconnect button.

Manual Connect option
Allows an instant connection by clicking the **Connect** button. Click the **Disconnect** button to terminate the session.

Figure 4-3

DHCP connection   If you connect to the Internet using a cable modem, select the **DHCP** option in the **Protocol** field.

After you have updated the various settings, make sure you click the **Apply** button for changes to take effect.

Figure 4-4

Fixed IP connection (using static IP address)

If you connect to the Internet using a DSL Modem, and the use of your account requires you to manually enter your IP address, subnet mask, default gateway and DNS servers, select the **Manual Config** option in the **Protocol** field.

After you have updated the various settings, make sure you click the **Apply** button for changes to take effect.

Figure 4-5

Configuring Wireless LAN settings

The Wireless LAN page is where you configure the wireless LAN settings of your Wireless AP Router. Refer to Figure 4-6 to learn more about configuring these settings.

Although not essential to operation, configure your Wireless LAN settings after setting up your Wireless AP Router to avoid conflict with other wireless APs in the vincinity.

Click this link to view this page.

Wireless SSID
A name that identifies a wireless LAN. It is recommended that you change your Wireless AP Router's SSID so that your wireless LAN can easily be distinguished from others in the vincinity. All wireless clients communicating with your Wireless AP Router must have the same SSID as your Wireless AP Router.

Broadcast SSID
If you enable this, your Wireless AP Router will broadcast its SSID to all wireless clients in the vicinity. Disable this if you want your Wireless AP Router's SSID to be invisible to wireless clients.

Channel ID
To avoid interference with other Wireless AP Routers, select a channel ID that is different from other Wireless AP Routers in the vicinity.

Figure 4-6

Configuring Wireless Security settings

Although not essential to operation, configure your Wireless Security settings after setting up your Wireless AP Router to safeguard the data exchanged within your network.

Your Wireless AP Router supports two main wireless security standards: Wired Equivalent Privacy (WEP) and Wi-Fi Protected Access-Pre Shared Key (WPA-PSK). WEP is usually sufficient for simple wireless deployments (such as home or small office environments) where network use is casual and traffic, light. In environments where data security is of paramount importance, however, WPA-PSK is recommended because of its stronger encryption algorithm.

To configure WEP settings, see "Wired Equivalent Privacy (WEP)" on page 4-14.

To configure WPA-PSK settings, see "Wi-Fi Protected Access-Pre Shared Key (WPA-PSK)" on page 4-15.

Note: Your Network Blaster Wireless 802.11g Router is backward compatible with 802.11b. The 802.11b or 802.11g security options available for you to choose from depend on your wireless client's capabilities.

Wired Equivalent Privacy (WEP)

For more information about configuring WEP settings, see "About Network Security" on page B-1.

Wired Equivalent Privacy (WEP) is a data stream encryption technology that allows you to define up to four keys shared between APs and wireless clients. Unauthorized wireless clients that do not have the same keys are locked out. Refer to Figure 4-7 to learn more about configuring these settings.

Figure 4-7

Wi-Fi Protected Access-Pre Shared Key (WPA-PSK)

Conceived to address the vulnerabilities of WEP, Wi-Fi Protected Access-Pre Shared Key (WPA-PSK) affords you a simple yet powerful way of securing your wireless network. Its Temporal Key Integrity Protocol (TKIP), which generates up to five hundred trillion unique data encryption keys derived from a single Pre Shared Key, makes it difficult - if not impossible - for aspiring intruders to gain access to your network by obtaining a common key. Refer to Figure 4-8 to learn more about configuring these settings.

- Some wireless clients may not support WPA encryption because WPA is a relatively new technology. In these cases, use WEP encryption instead.
- Windows XP has a built-in client that supports WPA encryption.

Figure 4-8

CREATIVE

Network Blaster

5 **Configuring Advanced Settings**

Configuring Advanced Settings

Configuring LAN settings

The Local Area Network (LAN) page is where you configure the LAN settings of your Wireless AP Router. Refer to Figure 5-1 to learn more about configuring these settings.
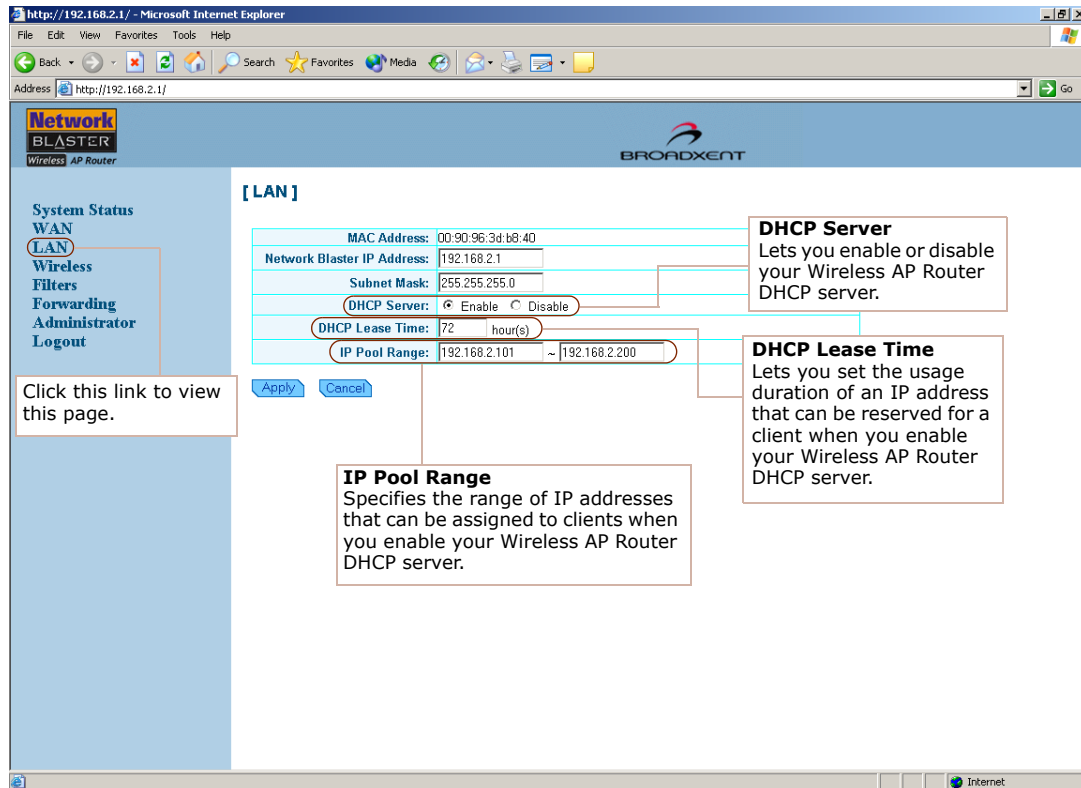
Figure 5-1

Configuring Wireless MAC Address Access Control

Network devices, such as USB adapters, PCMCIA cards, DSL modems and PCI ethernet cards, have labels displaying a MAC address.

If you want to customize security settings, go to the Access Control section shown in Figure 5-2. By controlling MAC address access, you can determine which wireless clients have access to your wireless LAN. Refer to Figure 5-2 to learn more about configuring these settings.

Figure 5-2

Configuring Forwarding settings

If you want Internet users to access your LAN, you can use either De-Militarized Zone (DMZ) or Port Forwarding.

For DMZ, enter your PC server IP address.

For Port Forwarding, select the applications for predefined ports. Alternatively, you can also specify your own port.

Figure 5-3

Configuring Wireless Advanced settings

If you want to customize settings to fine-tune your wireless LAN performance on certain networks, go to the Advanced section shown in Figure 5-4.

Do not change these settings if you are unsure about how to configure advanced settings.

Figure 5-4

Changing router web page access password

If you want to change the username and password needed to gain access to administrator settings, go to the System Setup section. Calendar settings can also be customized here. Refer to Figure 5-5 to learn more about configuring these settings.

Figure 5-5

Upgrading Firmware

Do not turn off your Wireless AP Router when upgrading the firmware.

If you want to upgrade the firmware settings of your Wireless AP Router, go to the Firmware Upgrade section. Current firmware and bootcode versions are also shown here. Refer to Figure 5-6 to learn more about configuring these settings.

Click the **Administrator** link and then the **Firmware Upgrade** link to view this page.

Locate New Firmware
Lets you locate and upgrade to new firmware. Click the **Browse** button to locate and select your firmware, and click the **Upgrade** button.

Figure 5-6

Restoring or saving a profile

Resetting your Wireless AP Router will erase all of your configured settings (LAN, wireless LAN, WEP, etc.) and replace them with the factory defaults. Do not reset your Wireless AP Router if you want to retain your settings.

You can also reset your Wireless AP Router by pressing the RESET button on your Wireless AP Router. Refer to "Resetting the Wireless AP Router" on page 5-8 for details.

If you want to save settings or recall saved group settings quickly, go to the User Configuration section. Default settings can also be restored here. Refer to Figure 5-7 to learn more about configuring these settings.

Save Current Configurations
Saves current configuration settings for future use or backup purposes.

Restore Saved Configurations
Lets you load previously saved configuration settings. Click the **Browse** button to select a configuration file, and then click the **Retrieve** button.

Restore Factory Defaults
Click the **Restore** button to reset your Wireless AP Router to its factory defaults.

Click the **Administrator** link and then the **User Configuration** link to view this page.

Figure 5-7

Resetting the Wireless AP Router

Resetting your Wireless AP Router will erase all of your configured settings (LAN, wireless LAN, WEP, etc.) and replace them with the factory defaults. Do not reset your Wireless AP Router if you want to retain your settings.

You can also reset your Wireless AP Router with your web browser. Refer to "Restoring or saving a profile" on page 5-7 for details.

To reset your Wireless AP Router to its factory defaults, use a straightened paperclip to press the **RESET** button while turning your Wireless AP Router off and then on again. Keep the **RESET** button depressed throughout. Continue pressing the **RESET** button for another 10 or more seconds before releasing it.
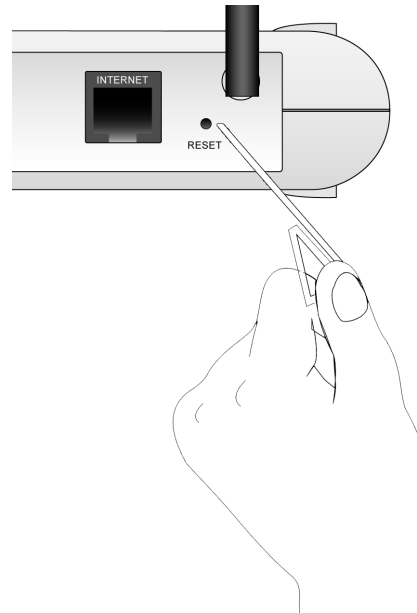
Figure 5-8

CREATIVE

Network Blaster

A   **About Wireless LANs**

About Wireless LANs

Wireless LANs are a revolutionary way of connecting devices to each other. In a wireless LAN, information is transmitted using radio waves. This means that you can establish a network of wireless devices in a room or across different rooms without linking the devices with wires and cables.

Depending on your needs, a wireless LAN can be the sole network solution, or an extension of a wired LAN.

Features and Benefits of Wireless LANs

Using wireless LANs has many advantages:

❑ **Convenience, cost effectiveness and flexibility**
Setting up a wireless LAN is easy, fast and cost effective as you do not need to install additional wiring.

❑ **Mobility**
Unlike wired LANs, a wireless LAN allows you to move around and still remain connected to the network.

❑ **Scalability**
You can choose to configure your wireless LAN in Ad-hoc mode or Infrastructure mode. In Ad-hoc mode, a wireless client can communicate with other wireless clients directly. In Infrastructure mode, one or more wireless clients are connected to an access point (AP) router, and this AP router connects these wireless clients to other wireless and wired clients. See "About Ad-Hoc Mode" on page A-2 and "About Infrastructure Mode" on page A-3 for more information.

About Ad-Hoc Mode

Ad-hoc mode allows for wireless-to-wireless communication. Wireless clients connected in this way can share files, printers, drives and other resources, as well as access the Internet using a shared modem. However, a wireless client can only communicate with other wireless clients that:

❑ are part of the same wireless LAN workgroup
❑ share the same IEEE 802.11 standard
❑ are within a fixed range

Ad-hoc mode is also known as Peer-to-Peer mode.
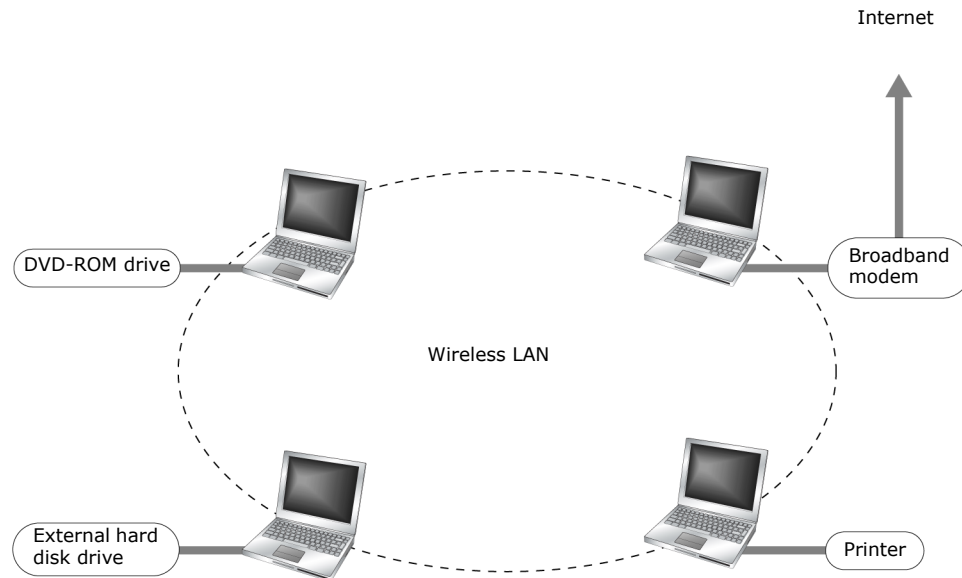
Figure A-1: Ad-hoc Network

About Infrastructure Mode

In Infrastructure mode, a wireless client communicates with other wired and wireless clients through an AP router. A wireless client connected in this way can access resources of Ethernet or wireless LANs connected to the AP router, including access to the Internet using a shared modem.
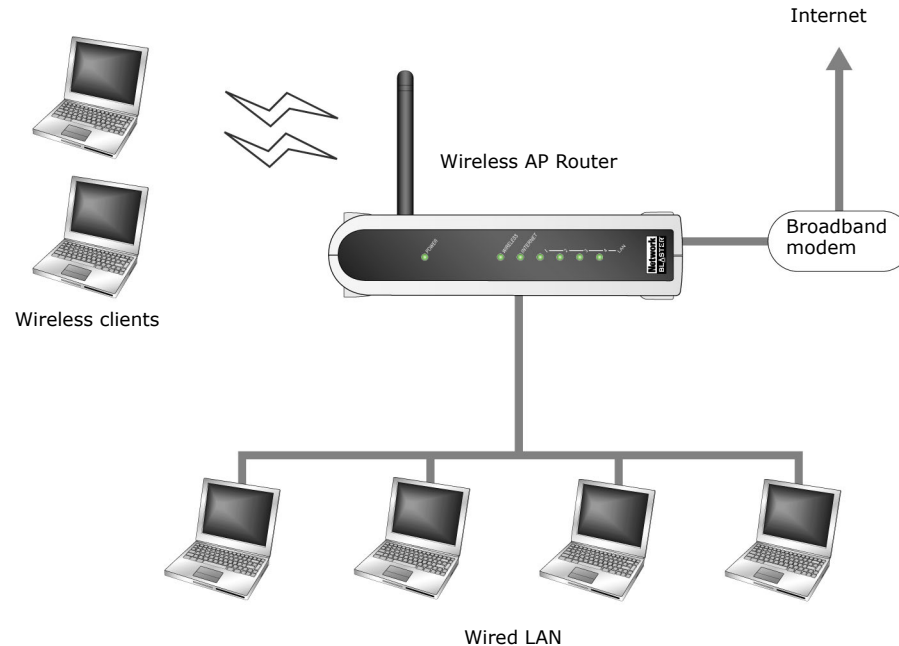
Figure A-2: Infrastructure Network

Setting Up Wireless LANs

When setting up a wireless LAN, take note of the following points:

❑ Start by determining the areas to be networked, the number of users and the type of devices to be used. Then determine if you require AP routers and where they should be placed.

❑ If two AP routers are placed close to each other, you can optimize your bandwidth by setting them to different channels.

❑ Radio waves can pass through walls and glass but not metal. If the signal on the other side of a wall is weak, it may be that the wall has reinforcing metal in its structure. Install another AP router to circumvent this problem or move your AP router to another location.

❑ Floors usually have metal girders and metal reinforcing struts that impede radio waves.

CREATIVE

Network BLASTER

B **Frequently Asked Questions**

Frequently Asked Questions

Turbo-G

Your Creative wireless device comes equipped with Turbo-G™ technology, which improves your device's performance by 35%, without affecting that of other wireless local area network (WLAN) devices in the neighbourhood. By installing a few Turbo-G capable devices in the network, overall networking speed can be dramatically improved. Turbo-G technology is fully compliant with 802.11g and 802.11b standards.

When using a Turbo-G capable device to surf the Internet wirelessly, why is there no speed improvement?
Turbo-G capable devices do not affect your Internet connection speed. Your Internet connection speed depends on your modem and your Internet service plan. It is unrelated to your use of Turbo-G devices.

Will my wireless networking speed slow down when a non-Turbo-G capable device joins the wireless network?
Your wireless networking speed may slow down when a non-Turbo-G capable device joins your wireless network. Your Turbo-G capable device, however, will always continue to maintain a higher performance speed than standard 802.11g or 802.11b devices.

How do I obtain maximum wireless networking performance?
Make sure that your access point and wireless client are Turbo-G capable.

Disable your wireless security options (for example, Wired Equivalent Privacy, Advanced Encryption Standard or WiFi Protected Access) in your web configuration.

C Technical Specifications

Technical Specifications

Standards
- ❑ IEEE 802.11g
- ❑ IEEE 802.11b
- ❑ IEEE 802.3
- ❑ IEEE 802.3u

Interface
- ❑ INTERNET port
  IEEE 802.3u compliant 10/100Base-Tx RJ-45 port for Cable/DSL/Direct Ethernet connection with HP Auto-MDIX support
- ❑ LAN port
  IEEE 802.3u compliant 10/100 Base-Tx RJ-45 Switch port with HP Auto-MDIX

Antenna
- ❑ Internal diversity antenna (2.4 GHz)
- ❑ External diversity antenna (2.4 GHz)

Frequency Band
- ❑ 2.4–2.4835 GHz

Data Rate
- ❑ IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
- ❑ IEEE 802.11b: 11, 5.5, 2, 1 Mbps

Channels
- ❑ 11 Channels (US, Canada), 13 Channels (Europe), 14 Channels (Japan)

Security
- ❑ 64 or 128-bit WEP encryption
- ❑ WPA-PSK

Dimensions
- ❑ Length: 37 mm
- ❑ Width: 134 mm
- ❑ Height: 170 mm

E   Glossary

Glossary

10 Base-T	A wiring standard used for Ethernet networks that can transmit data at up to 10 Mbps transmission using baseband unshielded twisted pair cables. The maximum cable length is 100 meters (330 feet).
Ad-hoc mode	A small peer-to-peer network mode, in which wireless clients are connected to each other directly without using an AP. Some of the wireless clients are part of the network for a limited duration. They are also in close proximity with the rest of the network. According to the IEEE 802.11b specification, Ad-hoc mode is referred to as an independent basic service set.
Antenna	A device that intercepts radio frequency (RF) waves from the atmosphere and converts them to corresponding signal voltages.
AP (Access Point)	A networking device that transparently bridges wireless computers to a wired local network.
ASCII (American Standard Code for Information Interchange)	ASCII is the most common format for text files in computers and on the Internet. In an ASCII file, each alphabetic, numeric, or special character is represented with a 7-bit binary number (a string of seven 0s or 1s). 128 possible characters are defined.
Bandwidth	A measure of the maximum rate of data transfer. A higher bandwidth allows more data transmission in a given period of time. For digital services, the bandwidth is usually expressed in bits or bytes per second.
Binary	A number system that has only two digits, 0 and 1.

Bridge	A hardware device that links two or more physical networks and manages the transfer of data between these networks. The two networks connected can be alike or dissimilar.
Broadband	A transmission media that can handle the transmission of multiple messages at different frequencies, at one time. Broadband signals use analog carriers.
BSS (Basic Service Set)	A group of wireless clients and an AP using the same ID (SSID).
Channel	A channel is a separate path through which signals can flow.
Client	A program or computer that is connected to a wired or wireless network.
dBm (Decibels Per Milliwatt)	A unit of measurement used to express relative difference in power or intensity, relative to 1 mW.
DHCP (Dynamic Host Configuration Protocol)	A method of assigning a temporary IP address to a host, such as a computer, connected on a specific network. With dynamic addressing, a particular host may have a different IP address each time it connects to the network.
Digital	Data expressed as a string of 0s and 1s. Each of these digits is referred to as a bit (and a string of 8 bits that a computer can address individually as a group is a byte).
DNS (Domain Name System)	This allows you to specify a symbolic name, a meaningful and easy-to-remember "handle", instead of an IP address. The DNS is the way that Internet domain names are located and translated into IP addresses.

DNS Server A server that contains both the English and numerical addresses of all computers connected to the Internet. When you specify an e-mail or IP address using the "English" domain name, the DNS server will return the corresponding numeric address.

Domain Name A domain name locates an organization or other entity on the Internet.

Driver A program that a computer uses to control the operation of a peripheral device, such as a keyboard, modem, monitor, card, or cable.

DSSS (Direct Sequence Spread Spectrum) A digital modulation technique that spreads data transmissions across the entire available frequency band in a pre-arranged scheme. Under DSSS, each bit of data to be transmitted is encoded with a redundant pattern called a chip. The chipping code is known only to the sending and receiving clients, making it difficult for an intruder to intercept and decipher the encoded wireless data. DSSS is used in IEEE 802.11b networks.

Dynamic IP address See *DHCP (Dynamic Host Configuration Protocol)*.

Encryption A procedure to convert a file from its original form to one that can be read only by the intended recipient.

ESS (Extended Service Set) A group of wireless clients and multiple APs using the same ID (ESSID) form an ESS.

ESSID (Extended Service Set Identity) An ASCII string that is used by a wireless network. Wireless clients with a different ESSID from your network's ESSID cannot connect to your network. An ESSID can be as long as 32 characters.

Ethernet	A LAN protocol that supports data transfer rates of 10 Mbps. It is a widely implemented LAN standard that operates over the twisted pair or coaxial cable. A version of Ethernet, called 100 Base-T (or FastEthernet), supports data transfer rates of 100 Mbps.
FastEthernet	An Ethernet specification with a speed of 100 Mbps (10 times faster than 10BaseT).
Fragmentation Threshold	The size at which the transmitted data packets are fragmented. The range extends from 256 to 2346 bytes.
Full duplex	Simultaneous and independent data transmission, between two communicating computers, in both directions.
Half duplex	A data transmission system where two computers can send and receive data but in which data transmission can occur in only one direction at a time.
Hexadecimal	A number system with a base of 16. The 16 digits in the hexadecimal system are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a, b, c, d, e, f.
Hub	A device used for connecting nodes in a star topology, that is, all the nodes are connected to a central hub. A passive hub simply organizes the wiring, while an active hub, besides organizing the wiring, regenerates and retransmits the signals.
IEEE 802.11	A family of wireless network standards, which includes 802.11a, 802.11b, 802.11e, and 802.11g (draft). The original 802.11 standard was first approved in 1997 but was not very successful because it was relatively slow at 2 Mbps.
IEEE 802.11b	A high-bit wireless network standard that works on the 2.4 GHz band and utilizes DSSS (direct sequence spread spectrum) technology. It offers data bit rates of up to 11 Mbps and the range is from 200 to 300 feet for maximum speed.

IEEE 802.11g (draft)
: A 802.11 standard for wireless networking hardware. The 802.11g draft standard specifies a maximum data transfer rate of 54 Mbps, an operating frequency of 2.4 GHz, backward compatibility with 802.11b devices and WEP encryption for security.

Infrastructure mode
: A LAN or other small network mode in which wireless clients are part of the network and use one or more APs to connect to a wired network. Each AP is connected to the Ethernet network using a standard Ethernet cable. In IEEE 802.11b specification, the infrastructure mode is referred to as the Basic Service Set.

Interface
: The physical arrangement that supports the attachment of a device to a connector or to another device.

IP (Internet Protocol)
: The standard protocol within TCP/IP that defines the basic unit of information by breaking down data messages into packets, routing and transporting the packets over networks, then reassembling the packets at their destination. IP corresponds to the Network layer (layer 3) in the ISP/OSI model.

IP address
: The address for a computer on a TCP/IP network. The IP address identifies a particular machine on a network. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be 0 to 255, for example, 11.160.10.240 is an IP address. Any machine connected to the Internet is assigned an IP address.

ISM (Industrial, Scientific and Medical) band
: There are four unlicensed bands for wireless networks and these bands are commonly known as ISM bands. These bands are found on the 900 MHz, 2.4 GHz and 5 GHz (two) frequency bands.

KB (Kilobytes)
: 1 KB equals 1,024 bytes.

Kbps (Kilobits Per Second)	A measure of data transfer speed.
LAN (Local Area Network)	A computer network that spans a relatively small area. Most LANs are confined to an office, single building, or group of buildings.
LED (Light Emitting Diode)	An electric component that emits light (turns ON) when current flows through it.
MAC (Media Access Control) address	A unique number that is assigned by manufacturers to each Ethernet network device. A MAC address lets a network identify Ethernet network devices at the hardware level.
Mbps (Megabits Per Second)	A measure of data transfer speed.
Megabits/Megabytes	One million bits/bytes.
Modem	A device that allows a computer to transmit data to other computers.
NAT (Network Address Translation)	An Internet standard that enables a LAN to use one set of IP addresses for internal traffic and a second set of IP addresses for external traffic. NAT provides a type of firewall security by hiding internal IP addresses. Since they are used internally, such IP addresses will not be in conflict with those used by other companies and organizations.
Network Mask	See *Subnet Mask*.

NIC (Network Interface Card)	A card that is installed in a computer so that it can be connected to a network. The NIC manages the flow of network information to and from the computer.
PCMCIA (Personal Computer Memory Card International Association)	An industry group organized in 1989 to promote standards for a card-size memory or I/O device that would fit into a personal computer.
PCMCIA Card	A card-size memory or I/O device that connects to a personal computer. The PCMCIA card has a 68-pin connector that connects into a slot in the computer.
PING (Packet Internet Groper)	An Internet program used to determine whether a specific IP address is accessible. It works by sending a packet to the specified address and waiting for a reply. PING is used primarily to troubleshoot network connections.
Preamble	A preamble is a signal, in the form of series of pulses, used in network communication to synchronize the transmission timing between two or more systems. There are two options, Short and Long. The Short option improves throughput performance.
Protocol	A set of agreed-upon rules for transmitting data between two devices. A user's computer must support the right protocols for the computer to communicate with other computers.
Reboot	When a computer is shut down and restarted, it is rebooting.
RJ-11	A connector/socket for two pairs (four wires) of twisted pair cables that are used primarily to connect telephone equipment in the United States.

RJ-45

A connector/socket for four pairs of twisted pair cables that are used commonly to connect computers onto a local-area network, especially to the Ethernet. The only difference between an RJ-45 and RJ-11 connector is that an RJ-45 connector is slightly wider.

Router

A hardware device that connects two separately functional networks using the same or different protocols. Routers look at the destination addresses on the packets passing through them and then decide which route to send them on.

RTS (Request to Send) Threshold

This threshold refers to when your device sends out RTS frames to reserve bandwidth for maximum data transmission. If a transmitted data frame is larger than the threshold value, the RTS frame sent out will request for more bandwidth.

SSID (Service Set Identity)

A group name shared by all members of an IEEE 802.11 standard wireless network. Only wireless devices with the same SSID are allowed to establish connections.

Static IP address

A permanent IP address assigned to a computer (host) connected on a specific network.

Subnet or Subnetwork

Any network that is a part of a larger IP network and is identified by a subnet address.

Subnet Mask

A 32-bit string of a TCP/IP address — a part of which is the network address and another part the host address. A Subnet Mask is usually represented in dotted-decimal notation, for example, 255.255.255.0.

Switch

A device used for connecting nodes in a star topology. In a star topology, all nodes are connected to a central switch. By monitoring packets, a switch learns which devices are connected to its ports and then sends a packet to the appropriate port only.

TCP/IP (Transmission Control Protocol/ Internet Protocol)	A suite of communication protocols that are used by computers or networking devices on the Internet so that they can communicate with each other. TCP/IP uses several protocols, the two main being TCP and IP.
Twisted pair cable	A cable that consists of two wires twisted together. This cable is less expensive but more brittle than a coaxial cable.
USB (Universal Serial Bus)	A plug-and-play interface that allows the user to attach a device without having to add an adapter card and turning off the computer.
WAN (Wide Area Network)	A computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more LANs.
WEP (Wired Equivalent Privacy)	A wired security policy defined by the IEEE 802.11 working group. WEP uses the RC-4 40-bit encryption algorithm to scramble all data before it is transmitted. Vendors add proprietary encryption features to their software, taking the encryption level up to 128 bits.
Wi-Fi	Wi-Fi is promoted by the Wireless Ethernet Compatibility Alliance (WECA). It places a stamp of certification on wireless products that are interoperable with other 802.11b compliant products.
WPA (Wi-Fi Protected Access)	WPA is derived from the IEEE 802.11i standard and is designed to address the vulnerabilities inherent in WEP. WPA offers users a greater level of data protection through the use of its Temporal Key Integrity Protocol (TKIP), which introduces significant data encryption enhancements such as a per-packet key mixing function, a message integrity check (MIC), an extended initialization vector (IV) with sequencing rules, and a re-keying mechanism.

CREATIVE

D **Safety Precautions**

Safety Precautions

General Safety

To avoid the risk of fire, electric shock or personal injury, note the following precautions when using the product:

❑ Do not expose the product to direct sunlight or excessive heat.
❑ Do not place the product in surroundings that exceed 40°C (104°F).
❑ Avoid humid conditions. Do not place the product near a water source or outlet.
❑ Do not clean the product with a damp cloth or liquid cleaner.
❑ Do not put any weight on the product.
❑ Allow only qualified personnel to service or repair the product, if such is necessary.

Exposure to Radio Frequency Caution

❑ The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.
❑ The product and any attached external antenna, if supported, shall be placed in such a manner to minimize the potential for human contact during normal operation.
❑ In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5 cm (1 inch) during normal operation.
❑ The indoor antenna must be totally isolated and does not have a line of sight to an external GPS antenna, to avoid feedback reflected RF signal.

Power Adapter Safety Notice

Power Source

This product is specially designed for operation within the electrical range(s) specified on the provided power adapter. Any usage outside of these ranges is at your own risk.

If you are not sure of the type of power supply to your home, consult your product dealer or local Power Company.

Cleaning   Unplug the product from the power source before cleaning. Do not use liquid or
                        aerosol cleaners. Use a damp cloth for cleaning.

Damage Requiring   Unplug the power adapter from the wall outlet or other power source and refer
Servicing   servicing to qualified service personnel under the following conditions:
- ❑ when the power supply cord or plug is damaged;
- ❑ if liquid has been spilled, or objects have fallen into the product;
- ❑ if the product has been exposed to rain or water;
- ❑ if the product does not perform normally when following the operating instructions or exhibits a distinct change in performance;
- ❑ if the product has been dropped or damaged in any way.

Servicing   Do not attempt to service the product on your own. Refer all servicing to qualified
                        service personnel.