NETGEAR 54 Mbps Wireless Access Point WG602v3 Reference Manual

NETGEAR®

NETGEAR, Inc.
4500 Great America Parkway
Santa Clara, CA 95054 USA

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Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

NETGEAR WG602v3 54 Mbps Wireless Access Point

Tested to Comply
with FCC Standards
FOR HOME OR OFFICE USE
FCC: PY3WG602v3

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Placement and Range Guidelines

Indoors, computers can connect over 802.11 wireless networks at a maximum range of 500 feet (152.4 m) for 802.11b devices. However, the operating distance or range of your wireless connection can vary significantly, based on the physical placement of the wireless access point.

For best results, identify a location for your wireless access point according to these guidelines:

- Away from potential sources of interference, such as PCs, large metal surfaces, microwaves, and 2.4 GHz cordless phones.
- In an elevated location such as a high shelf that is near the center of the wireless coverage area for all mobile devices.

Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the wireless access point.

To meet FCC and other national safety guidelines for RF exposure, the antennas for this device must be installed to ensure a minimum separation distance of 20cm (7.9 in.) from persons. Further, the antennas shall not be collocated with other transmitting structures.

FCC Statement

DECLARATION OF CONFORMITY

We Netgear,
4500 Great America Parkway
Santa Clara, CA 95054, USA
Tel: +1 408 907 8000
declare under our sole responsibility that the product(s)
WG602v3 *(Model Designation)*
NETGEAR WG602v3 54 Mbps Wireless Access Point *(Product Name)*
complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices)

FCC Requirements for Operation in the United States

Radio Frequency Interference Warnings & Instructions. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

RF Exposure Warning for North America and Australia

Warning! To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm (8 in) from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this user guide.

Radio Frequency Interference Requirements and Regulatory Compliance Information

This device is restricted to indoor use due to its operation in the 2.4 GHz frequency range. FCC requires this product to be used indoors in 2.4 GHz the frequency range to reduce the potential for harmful interference to co-channel Mobile Satellite and Radar systems.

Industry Canada Compliance Statement

This Class B Digital apparatus (NETGEAR WG602v3 54 Mbps Wireless Access Point) meets all the requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numerique del la classe B respect les exigences du Regalement sur le material broilleur du Canada.

This device comples with Class B limits of Industry of Canada. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The device is certified to the requirements of RSS-139-1 and RSS-210 for 2.4 GHz spread spectrum devices. The use of this device in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact your local Industry Canada office.

Europe – EU Declaration of Conformity

Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:

EN300 328, EN301 489-17, EN60950Europe – Declaration of Conformity in Languages of the European Community

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Please go to *http://www.NETGEAR.com* and use the search feature to find an updated list of wireless accessories approved to be used with the WG602v3 in the European Community.

Bestätigung des Herstellers/Importeurs

Es wird hiermit bestätigt, daß das NETGEAR WG602v3 54 Mbps Wireless Access Point gemäß der im BMPT-AmtsblVfg 243/1991 und Vfg 46/1992 aufgeführten Bestimmungen entstört ist. Das vorschriftsmäßige Betreiben einiger Geräte (z.B. Testsender) kann jedoch gewissen Beschränkungen unterliegen. Lesen Sie dazu bitte die Anmerkungen in der Betriebsanleitung.

Das Bundesamt für Zulassungen in der Telekommunikation wurde davon unterrichtet, daß dieses Gerät auf den Markt gebracht wurde und es ist berechtigt, die Serie auf die Erfüllung der Vorschriften hin zu überprüfen.

Certificate of the Manufacturer/Importer

It is hereby certified that the NETGEAR WG602v3 54 Mbps Wireless Access Point has been suppressed in accordance with the conditions set out in the BMPT-AmtsblVfg 243/1991 and Vfg 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions.

Federal Office for Telecommunications Approvals has been notified of the placing of this equipment on the market and has been granted the right to test the series for compliance with the regulations.

Product and Publication Details

Model Number:	WG602v3
Publication Date:	August 2006
Product Family:	wireless access point
Product Name:	NETGEAR WG602v3 54 Mbps Wireless Access Point
Home or Business Product:	Business
Language:	English
Publication Part Number:	202-10060-03

Contents

About This Manual

The *NETGEAR® 54 Mbps Wireless Access Point WG602v3 Reference Manual* describes how to install, configure and troubleshoot the NETGEAR WG602v3 54 Mbps Wireless Access Point. The information in this manual is intended for readers with intermediate computer and Internet skills.

Audience, Scope, Conventions, and Formats

This reference manual assumes that the reader has basic to intermediate computer and Internet skills. However, basic computer network, Internet, firewall, and VPN technologies tutorial information is provided in the Appendices and on the Netgear website.

The conventions, formats, and scope of this manual are described in the following paragraphs:

- **Typographical Conventions.** This manual uses the following typographical conventions:

Italics	Emphasis, books, CDs, URL names
Bold	User input
`Fixed`	Screen text, file and server names, extensions, commands, IP addresses

- **Formats.** This manual uses the following formats to highlight special messages:

	**Note:** This format is used to highlight information of importance or special interest.

	**Tip:** This format is used to highlight a procedure that will save time or resources.

	**Warning:** Ignoring this type of note may result in a malfunction or damage to the equipment.

Danger: This is a safety warning. Failure to take heed of this notice may result in personal injury or death.

- **Scope.** This manual is written for the Wireless AP according to these specifications:

Product Version	NETGEAR WG602v3 54 Mbps Wireless Access Point
Manual Publication Date	August 2006

For more information about network, Internet, firewall, and VPN technologies, see the links to the NETGEAR website in Appendix B, "Related Documents".

Note: Product updates are available on the NETGEAR, Inc. website at *http://kbserver.netgear.com/products/WG602v3.asp*.

How to Use This Manual

The HTML version of this manual includes the following:

- Buttons, > and <, for browsing forwards or backwards through the manual one page at a time
- A button that displays the table of contents and an button. Double-click on a link in the table of contents or index to navigate directly to where the topic is described in the manual.
- A button to access the full NETGEAR, Inc. online knowledge base for the product model.
- Links to PDF versions of the full manual and individual chapters.

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  - Click the *PDF of This Chapter* link at the top right of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
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  - Click the print icon in the upper left of the window.

Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

- **Printing the Full Manual**. Use the *Complete PDF Manual* link at the top left of any page.
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Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

Chapter 1
Introduction

This chapter introduces the NETGEAR NETGEAR WG602v3 54 Mbps Wireless Access Point. Minimal prerequisites for installation are presented in "System Requirements" on page 2-2.

About the NETGEAR WG602v3 54 Mbps Wireless Access Point

The NETGEAR WG602v3 54 Mbps Wireless Access Point is the basic building block of a wireless LAN infrastructure. It provides connectivity between wired Ethernet networks and radio-equipped wireless notebook systems, desktop systems, print servers, and other devices.

The WG602v3 provides wireless connectivity to multiple wireless network devices within a fixed range or area of coverage, interacting with a wireless network interface card (NIC) via an antenna. Typically, an in-doors access point provides a maximum connectivity area with about a 300 foot radius. The NETGEAR WG602v3 54 Mbps Wireless Access Point can support a small group of users in a range of several hundred feet. Most access points are rated for up to 32 users simultaneously.

The auto-sensing capability of the NETGEAR WG602v3 54 Mbps Wireless Access Point allows packet transmission at up to 54 Mbps, or at reduced speeds to compensate for distance or electromagnetic noise interference.

Support for Standards

The following standards and conventions are supported:

- **Standards Compliant.** The Wireless AP complies with the IEEE 802.11g (DSSS).
- **WEP support.** Support for WEP is included. Both 64-bit and 128-bit keys are supported.
- **Full WPA-PSK and WPA2-PSK support.** WPA and WPA2 enterprise-class strong security with dynamic encryption key generation and pre-shared key authentication.
- **DHCP Client Support.** DHCP provides a dynamic IP address to PCs and other devices upon request. The WG602v3 can act as a client and obtain information from your DHCP server.

- **NetBIOS & WINS Support.** Support for both NetBIOS broadcast and WINS (Windows Internet Naming Service) allows the WG602v3 to easily fit into your existing Windows network.

Key Features

The WG602v3 provides solid functionality, including these features:

- **Multiple Operating Modes**
  - **Wireless Access Point.** Operates as a standard 802.11b/g wireless access point.
  - **Point-to-Point Bridge.** In this mode, the WG602v3 only communicates with another bridge-mode wireless station.
  - **Point-to-Multi-Point Bridge.** In this mode, the WG602v3 acts as the “master” for a group of bridge-mode wireless stations. The other bridge-mode wireless stations send all traffic to this “master”, and do not communicate directly with each other.
  - **Wireless Repeater.** In this mode, the WG602v3 operates as both a wireless access point and a wireless bridge.
  - **Client Mode.** In this mode, the WG602v3 operates as a client bridge only, and sends all traffic to the remote wireless access point or peer device.
- **Upgradeable Firmware.** Firmware is stored in a flash memory and can be upgraded easily, using only your Web browser, and can be upgraded remotely.
- **Access Control.** The Access Control MAC address filtering feature can ensure that only trusted wireless stations can use the WG602v3 to gain access to your LAN.
- **Wireless Multimedia (WMM) Support.** WMM is a subset of the 802.11e standard. WMM allows wireless traffic to have a range of priorities, depending on the kind of data. Time-dependent information, like video or audio, has a higher priority than normal traffic. For WMM to function correctly, Wireless clients must also support WMM. (Not available in Client Mode.)
- **Hidden Mode.** The SSID is not broadcast, assuring only clients configured with the correct SSID can connect.
- **Autosensing Ethernet Connection with Auto Uplink lnterface.** Connects to 10/100 Mbps IEEE 802.3 Ethernet networks.
- **LED Indicators.** Power, wired and wireless activity are easily identified.
- **Simple Configuration.** If the default settings are unsuitable, they are easy to change.

802.11b/g Standards-based Wireless Networking

The NETGEAR WG602v3 54 Mbps Wireless Access Point provides a bridge between Ethernet wired LANs and 802.11b/g compatible wireless LAN networks. It provides connectivity between Ethernet wired networks and radio-equipped wireless notebook systems, desktop systems, print servers, and other devices. Additionally, the WG602v3 supports the following wireless features:

- Distributed coordinated function (CSMA/CA, Back off procedure, ACK procedure, retransmission of unacknowledged frames)
- RTS/CTS handshake
- Beacon generation
- Packet fragmentation and reassembly
- Authentication Algorithms (Open System, Shared Key, WPA-PSK, WPA2-PSK)
- Short or long preamble
- Roaming among access points on the same subnet

Autosensing Ethernet Connections with Auto Uplink

The WG602v3 can connect to a standard Ethernet network. The LAN interface is autosensing and capable of full-duplex or half-duplex operation. The wireless access point incorporates Auto Uplink™ technology. The Ethernet port will automatically sense whether the Ethernet cable plugged into the port should have a “normal” connection such as to a PC or an “uplink” connection such as to a switch or hub. That port will then configure itself to the correct configuration. This feature also eliminates any concerns about crossover cables, as Auto Uplink will accommodate either type of cable to make the right connection.

Wireless Multimedia (WMM) Support

WMM (Wireless Multimedia) is a subset of the 802.11e standard. WMM allows wireless traffic to have a range of priorities, depending on the kind of data. Time-dependent information, like video or audio, will have a higher priority than normal traffic. For WMM to function correctly, Wireless clients must also support WMM.

Compatible and Related NETGEAR Products

For a list of compatible products from other manufacturers, see the Wireless Ethernet Compatibility Alliance Web site (WECA, see *http://www.wi-fi.net*).

The following NETGEAR products work with the Wireless AP:

- MA701 802.11b 11 Mbps Compact Flash Card
- WAG311 ProSafe 108 Mbps Dual Band PCI Card
- WAG511 ProSafe 108 Mbps Dual Band PC Card
- WGE101 802.11g Wireless Bridge
- WG311 802.11g Wireless PCI Adapter
- WG311T 802.11g 108 Mbps Wireless PCI Card
- WG511 802.11g 54 Mbps Wireless CardBus Adapter
- WG511T 802.11g 108 Mbps Wireless CardBus Adapter

What's In the Box?

The product package should contain the following items:

- NETGEAR WG602v3 54 Mbps Wireless Access Point
- Power adapter and cord (7.5Vdc, 1A)
- Straight through Category 5 Ethernet cable; 10 feet (3.04 m)
- *WG602v3 54 Mbps Wireless Access Point Installation Guide*
- *Resource CD*
- Support Information card
- Warranty and Registration card

Contact your reseller or customer support in your area if there are any wrong, missing, or damaged parts. You can refer to the Support Information Card for the telephone number of customer support in your area. You should keep the Support Information card, along with the original packing materials, and use the packing materials to repack the WG602v3 if you need to return it for repair. To qualify for product updates and product warranty registrations, we encourage you to register on the NETGEAR Web site at: *http://www.netgear.com*.

Hardware Description

The NETGEAR WG602v3 54 Mbps Wireless Access Point front and rear hardware functions are described below.

WG602v3 Wireless Access Point Front Panel

The wireless access point provides three status LEDs.

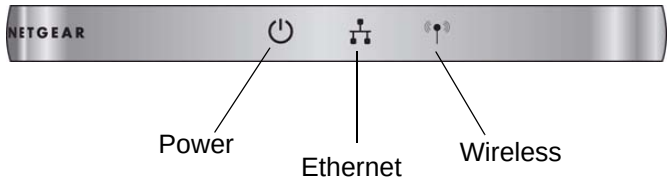


Figure 1-1

The following table explains the LED indicators.

Table 1-1. Front Panel LED Description

LED		DESCRIPTION
Power		
	Off On	Power Indicator No power. If this LED does not come on with the power adapter and cord correctly installed, see Chapter 5, "Troubleshooting." Power is on.
Ethernet		
	Off Green On Green Blink Amber On Amber Blink	Indicates no Ethernet link detected. 100 Mbps Fast Ethernet link detected, no activity. Indicates data traffic on the 100Mbps Ethernet LAN. 10 Mbps Ethernet link detected, no activity. Indicates data traffic on the 10Mbps Ethernet LAN.
Wireless		
	Off Green On Green Blink	Indicates no wireless link detected. Wireless link enabled, no activity. Wireless link activity.

WG602v3 Wireless Access Point Rear Panel

Figure 1-2 illustrates the rear layout of the WG602v3Wireless Access Point.

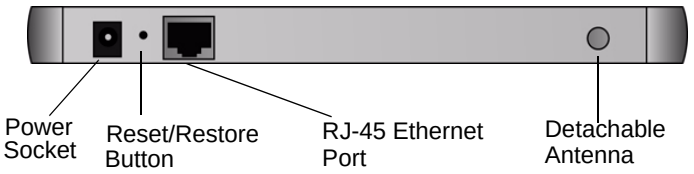


Figure 1-2

- **Power Socket**. Power adapter and cord socket for connecting the WG602v3 to an AC outlet.
- **Reset and Restore Button.** Restores the WG602v3 to the factory default settings when pushed and held for 10 seconds. When pushed once, the WG602v3 is reset to the previous settings.
- **RJ-45 Ethernet Port**. Ethernet cable port for connecting the WG602v3 to an Ethernet LAN device such as a hub, switch, or router.
- **Detachable Antenna.** The WG602v3 includes a detachable antenna. Be sure the antenna is securely fastened.

Chapter 2
Installation and Configuration

This chapter describes how to set up your NETGEAR WG602v3 54 Mbps Wireless Access Point for wireless connectivity to your LAN. The basic configuration will enable computers with 802.11b or 802.11g wireless adapters to connect to the Internet, and to access printers and files on your LAN.

You need to prepare these three things before you can establish a connection through your wireless access point:

- A location for the WG602v3 that conforms to the guidelines below.
- A device such as a hub, switch, router, or Cable/DSL gateway.
- One or more computers with properly configured 802.11b or 802.11g wireless adapters.

Placement and Range Guidelines

Indoors, computers can connect over wireless networks at ranges of several hundred feet or more. This distance can allow for others outside your area to access your network. It is important to take appropriate steps to secure your network from unauthorized access. The Wireless AP provides highly effective security features which are covered in detail in this chapter. Deploy the security features appropriate to your needs

The operating distance or range of your wireless connection can vary significantly based on the physical placement of the wireless access point. The latency, data throughput performance, and notebook power consumption of wireless adapters also vary depending on your configuration choices.

Note: Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the WG602v3.

For best results, place your wireless access point:

- Near the center of the area in which your PCs will operate.

- In an elevated location such as a high shelf where the wirelessly connected PCs have line-of-sight access (even if through walls).
- Away from sources of interference, such as PCs, microwaves, and 2.4 GHz cordless phones.
- Away from large metal surfaces.
- If using multiple access points, it is better if adjacent access points use different radio frequency Channels to reduce interference. The recommended Channel spacing between adjacent access points is 5 Channels (for example, use Channels 1 and 6, or 6 and 11).

The time it takes to establish a wireless connection can vary depending on both your security settings and placement.

System Requirements

Before installing the WG602v3, make sure your network meets these requirements:

- A hub, switch, or Cable/DSL router with an available 10/100 Mbps Ethernet port.
- A Category 5 UTP straight through Ethernet cable with RJ-45 connector included in the package, or one like it.
- A 100-240 V, 50-60 HZ AC power source
- A Web browser for configuration such as Microsoft Internet Explorer 5.0 or above, Netscape Navigator 4.78 or above, or Mozilla Firefox.
- At least one Pentium class computer (or equivalent) with the TCP/IP protocol installed
- Other 802.11b or 802.11g-compliant devices

Basic Setup and Installation

The instructions below will show you have to install, set up and test basic wireless connectivity of your WG602v3. Once you have established basic wireless connectivity, you can enable security settings and configure the advanced wireless functions.

Installing the WG602v3

Before installing the NETGEAR WG602v3 54 Mbps Wireless Access Point, you should make sure that your Ethernet network is up and working. You will be connecting the access point to the Ethernet network so that computers with 802.11b or 802.11g wireless adapters will be able to communicate with computers on the Ethernet network. In order for this to work correctly, verify that you have met all of the system requirements, shown in "System Requirements" on page 2-2.

To set up and install your wireless access point:

1. Prepare a computer with an Ethernet adapter. If this PC is already part of your network, record its TCP/IP configuration settings.
2. Turn on your computer and configure the PC with a static IP address of 192.168.0.210 and 255.255.255.0 for the Subnet Mask.
3. Connect an Ethernet cable from the WG602v3 to your PC.
4. Connect the power adapter to the WG602v3 and plug the power adapter into an AC outlet. Verify that
   - The Power power light goes on.
   - The Ethernet LED of the wireless access point is lit when connected to a powered on computer.
   - The Wireless LED should be blinking.

Note: For detailed installation instructions, see the *WG602v3 54 Mbps Wireless Access Point Installation Guide*.

Selecting Basic IP Settings Options

To configure your basic IP settings:

1. From your PC, open a Web browser such as Internet Explorer, Netscape Navigator or Mozilla Firefox.
2. Enter http://192.168.0.227 into your browser window.

Figure 2-1

3. A login window will display. Enter **admin** for your User Name and **password** for the password, both in lower case letters.

Figure 2-2

4. Click **OK.** The **Information** screen will display showing the current default settings and status of the wireless access point. These settings are read only.

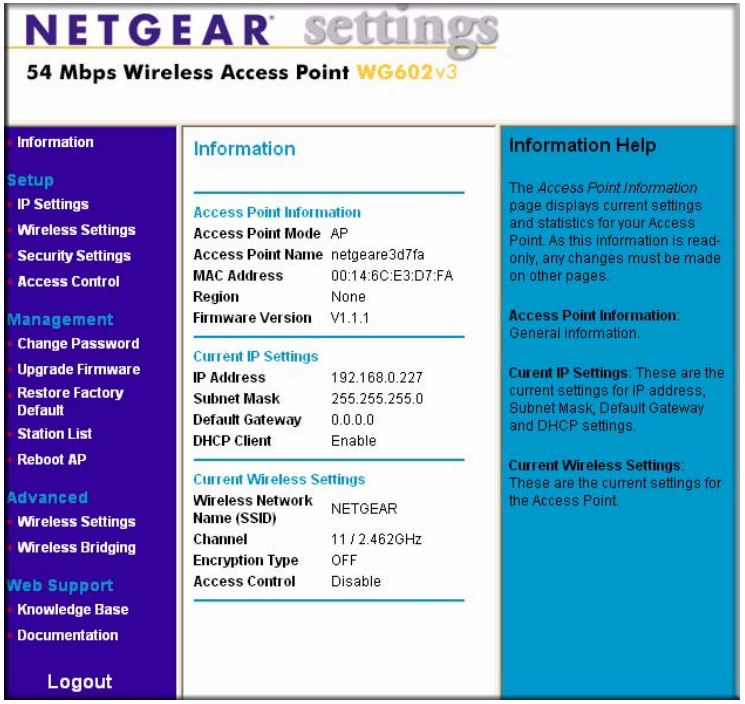


Figure 2-3

When the wireless access point is connected to the Internet, you can click the KnowledgeBase link or the Documentation link under the Web Support menu to view support information or the documentation for the wireless access point.

Note: Unless you click Logout, the wireless access point will log you out after 5 minutes of no activity.

5. From the **Setup** menu on the left panel, select **IP Settings**. The **IP Settings** screen will display.

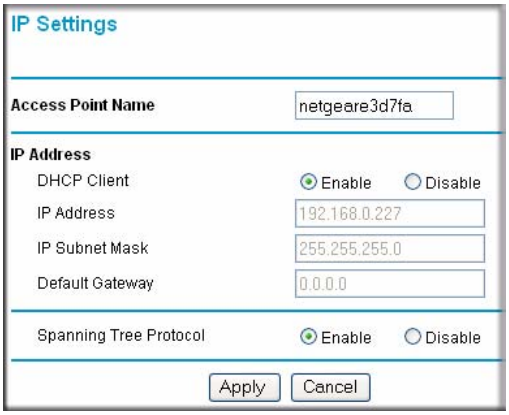


Figure 2-4

The wireless access point is shipped preconfigured to act as a DHCP client. Verify the default settings (suitable for most users):

- **Access Point Name**. This is the name of your wireless access point.You may modify the default name with a unique name up to 15 characters long. The default name is **netgearxxxxxx**, where **xxxxxx** represents the last 6 digits of the WG602 MAC address.
- **DHCP Client**: Enabled so that your wireless access point will get its TCP/IP configuration from the DHCP server on your network.
- **Spanning Tree Protocol.** By default Spanning Tree Protocol is enabled. This provides network traffic optimization in configurations with multiple Wireless APs.

You may manually configure the IP settings for the WG602v3 by checking the Disable radio box for **DHCP Client.** The default IP configuration will display:

- IP Address: 192.168.0.227
- IP Subnet Mask: 255.255.255.0

- Gateway: 0.0.0.0

If your network has a requirement to use a different IP addressing scheme, you can make those changes on this screen.

Click **Apply** to save any changes.

	Note: If you change the default subnet of the LAN IP address, you will be disconnected from the Wireless AP user interface. To reconnect, reconfigure your computer with a static IP address within the new LAN IP subnet.

To configure your basic wireless settings:

1. From under the **Setup** menu, select **Wireless Settings.** The **Wireless Settings** screen will display.

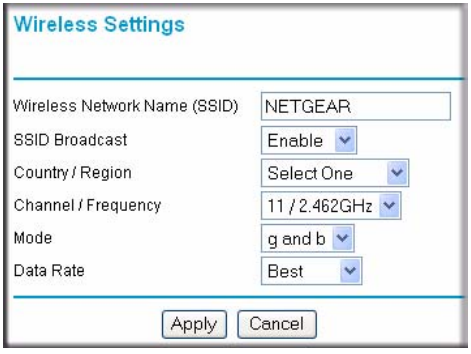


Figure 2-5

2. Enter or modify the wireless settings appropriate to your network:

   - **Wireless Network Name (SSID).** The SSID is the wireless network name. Enter a value of up to 32 alphanumeric characters; the characters are case sensitive. In a setting where more than one wireless network is present, using a different wireless network name allows your to separate the traffic. Any device you want to participate in a particular wireless network needs to use the SSID. The default SSID is: **NETGEAR**.
   - **SSID Broadcast**. If SSID Broadcast is disabled, only devices that have the correct SSID can connect. The default is **Enable**.

- **Country/Region.** Identifies the region where the WG602v3 can be used. It may not be legal to operate the access point in a country/region other than the country/region for your area. If your country or region is not listed, please check with your local government agency or check our website for more information on which channels to use.

Note: You must set the Regulatory Domain. It may not be legal to operate the wireless access point in a region other than one of those identified in this field.

- **Channel/Frequency.** Identifies which operating frequency will be used. It should not be necessary to change the wireless channel unless you notice interference problems or if you are setting up the WG602v3 near another access point. The available wireless channels are between 1 and 11 in the US and Canada, and between 1 and 13 for Europe and Australia.
  - If using multiple access points, it is better if adjacent access points use different channels to reduce interference. The recommended channel spacing between adjacent access points is 5 channels (for example, use channels 1 and 6, or 6 and 11).
  - In “Infrastructure” mode, wireless stations normally scan all channels, looking for an access point. If more than one access point can be used, the one with the strongest signal is used. This only occurs when the various access points are using the same SSID **Mode.** The default is g and b. You can change the mode to g or b only.
- **Data Rate**. Shows the available transmit data rate of the wireless network. The possible data rates supported are: 1 Mbps, 2 Mbps, 5.5 Mbps, 6 Mbps, 9 Mbps, 11 Mbps, 12 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps, and Best.The default is Best.

3. Click **Apply** to save any changes.

Now that you have finished the setup steps, you are ready to deploy the WG602v3 in your network. If needed, you can now reconfigure the PC you used in step 1 back to its original TCP/IP settings.

Tip: Before mounting the WG602v3 in a high location, first set up and test the WG602v3 to verify wireless network connectivity.

Verifying Wireless Connectivity

Using a computer with an 802.11b or 802.11g wireless adapter with the correct wireless settings needed to connect to the WG602v3 (SSID, MAC ACL, WEP, WPA, etc.), verify connectivity by using a browser such as Netscape or Internet Explorer to browse the Internet, or check for file and printer access on your network. If you cannot connect, see "Troubleshooting" on page 5-1.

Deploying the Wireless AP

To deploy your wireless access point:

1. Disconnect the WG602v3 and position it where you will deploy it. The best location is elevated at the center of your wireless coverage area.
2. Lift the antenna side so that it is vertical.
3. Connect an Ethernet cable from your Wireless AP to a LAN port on your router, switch, or hub.
4. Connect the power adapter to the wireless access point and plug the power adapter into a power outlet. The power, LAN, and wireless lights and should light up.

By default, the WG602v3 is set with the DHCP client enabled so that your router will assign it a dynamic IP address. There are two methods to connect to the WG602v3 after the DHCP server on your network assigns it a new IP address.

- If your wireless access point is to be deployed on a local network, you can enter the NetBIOS wireless access point name into your Web browser (see "NetBIOS Name Login" on page 2-10). The default wireless access point name is netgearxxxxxx, where xxxxxx represents the last 6 bytes of the MAC address. The MAC address is printed on the bottom label of the WG602v3. (Using the NetBIOS naming convention to access your wireless access point across several network segments is known to be unreliable.)
- Reserve an IP address (based on the WG602v3's MAC address) on your router or DHCP server. That way, if your wireless access point is deployed across several segments, you can configure it with a static IP address which you can always use to log in to make future configuration changes.

Before installing the NETGEAR WG602v3 54 Mbps Wireless Access Point, you should make sure that your Ethernet network is up and working. You will be connecting the wireless access point to the Ethernet network so that computers with 802.11b or 802.11g wireless adapters will be able to communicate with computers on the Ethernet network.

Logging Into the WG602v3

The NETGEAR WG602v3 54 Mbps Wireless Access Point can be configured remotely from Microsoft Internet Explorer browser version 5.0 or above, or Netscape Navigator Web browser version 4.78 or above, or Mozilla Firefox. You can log in to the WG602v3 in these two ways:

- Using the IP Address of the WG602v3 (if DHCP client is disabled) or with a reserved IP address assigned by your router (if DHCP client is enabled). Either one of these methods is the most reliable.
- Using the NetBIOS name of the WG602v3, which is not as reliable as using an IP Address.

IP Address Login

The default IP address of your wireless access point is 192.168.0.227. However, if you have disabled DHCP client (fixed or static IP address), you can change the IP Address and IP Subnet Mask of your wireless access point.

	**Note:** If you are using the default IP subnet, the computer you are using to connect to the WG602v3 should be configured with an IP address that starts with 192.168.0.x and a Subnet Mask of 255.255.255.0; if you have changed the subnet of the wireless access point, the computer your are using to connect must be within the same subnet.

To connect to the WG602v3 using a fixed, static or reserved IP address:

1. Open a Web browser.
2. Enter the IP Address of WG602v3 into your browser (the default IP address is http://192.168.0.227).

Figure 2-6

3. When prompted enter the default User Name **admin** and default Password **password** into the login window and click **OK.**

Figure 2-7

Once you have entered your User Name and Password, your Web browser should automatically find the Wireless AP and display the home page, as shown in Figure 2-3 on page 2-4.

NetBIOS Name Login

The NETGEAR WG602v3 54 Mbps Wireless Access Point can be configured remotely from Microsoft Internet Explorer browser version 5.0 or above, or Netscape Navigator Web browser version 4.78 or above or Mozilla Firefox. You can connect to the WG602v3 by using its default NetBIOS name or its default IP address.

To connect using the default IP address:

1. Enter the NetBIOS name of your access point. The default NetBIOS name is **NETGEARxxxxxx** where **xxxxxx** is the last 6 digits of the WG602v3's MAC address (for example, NETGEAR123456, with no spaces or delimiters.). To locate the NetBIOS name of your WG602v3, see the bottom label.

	Note: If the computer you are using to connect to the WG602v3 is on a different subnet, you will not be able to connect via its NetBIOS name unless there is a WINS server on your LAN. If the NetBIOS name login fails, use the procedure for "IP Address Login" on page 2-9

2. Open a Web browser.

3. Enter the NetBIOS name of the WG602v3 into the browser window (you do not need to include “www” or “http://”).

Figure 2-8

4. When prompted enter the default User Name **admin** and default Password **password** into the login window and click **OK.**

Figure 2-9

Once you have entered your User Name and Password, your Web browser should automatically find the Wireless AP and display the home page, as shown in Figure 2-3 on page 2-4.

Wireless Security Options

Unlike wired network data, your wireless data transmissions can be received well beyond your walls by anyone with a compatible adapter. For this reason, use the security features of your wireless equipment. The Wireless AP provides highly effective security features which are covered in detail in this chapter. Deploy the security features appropriate to your needs.

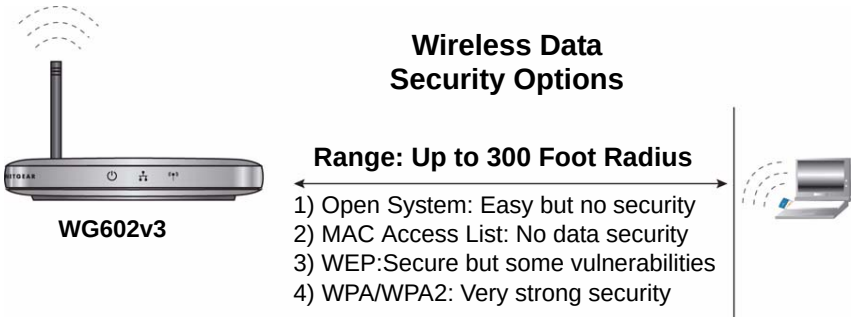


Figure 2-10

There are several ways you can enhance the security of your wireless network:

- **Restrict Access Based on MAC Address.** You can restrict access to only trusted PCs so that unknown PCs cannot wirelessly connect to the WG602v3. MAC address filtering adds an obstacle against unwanted access to your network, but the data broadcast over the wireless link is fully exposed (see “Restricting Wireless Access by MAC Address” on page 2-19).
- **Turn Off the Broadcast of the Wireless Network Name (SSID).** If you disable broadcast of the SSID, only devices that have the correct SSID can connect. This nullifies the wireless network “discovery” feature of some products such as Windows XP, but the data is still fully exposed to a determined snoop using specialized test equipment like wireless sniffers.
- **Use WEP.** Wired Equivalent Privacy (WEP) data encryption provides data security. WEP Shared Key authentication and WEP data encryption will block an eavesdropper but because the keys are static, a determined snoop can learn the keys in less than a day of eavesdropping (see “Configuring WEP Wireless Security” on page 2-16).

- **Use WPA-PSK or WPA2-PSK.** Wi-Fi Protected Access (WPA/WPA2) data encryption provides data security. WPA-PSK will block eavesdropping. Because this is a new standard, wireless device driver and software availability may be limited. However, WPA/WPA2 is not available in bridge mode (see "Configuring WPA-PSK Wireless Security" on page 2-17, "Configuring WPA2-PSK Wireless Security" on page 2-18 or "Configuring WPA-PSK/WPA2-PSK Wireless Security" on page 2-18).

Configuring Wireless Security

To configure the wireless security options of your wireless access point:

1. Click **Security Settings** under **Setup** on the main menu of the browser interface. The **Security Settings** screen will appear.

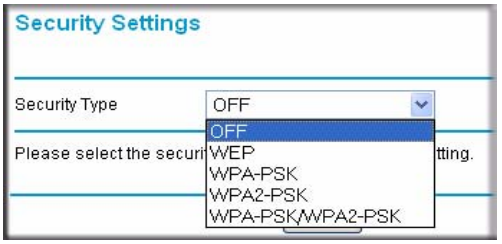


Figure 2-11

2. From the **Security Type** pull-down window, select the security **WEP/WPA** Security Type you want to employ.
   - **WEP** – If selected, choose the appropriate **Authentication Type** from the pull-down menu. The default is **Mix** (see "Configuring WEP Wireless Security" on page 2-16 for complete configuration details).
     - **Mix** – If selected, a client can connect using either "Open" or "Shared" authentication type. (Not available in Client Mode.)
     - **Open System** – If selected, you have the option of using WEP encryption, or no encryption. This is the default.
     - **Shared Key** – If selected, you must use WEP; at least one shared key must be entered.
   - **WPA-PSK** – If selected, you must use **TKIP** encryption and a WPA passphrase (Network key) See "Configuring WPA-PSK Wireless Security" on page 2-17 for complete configuration details.

- **WPA2-PSK** – WPA2 is a later version of WPA. Only select this if all clients support WPA2. If selected, you must use **AES** encryption and a WPA passphrase (Network key). See "Configuring WPA2-PSK Wireless Security" on page 2-18 for complete configuration details.
- **WPA-PSK and WPA2-PSK** – This selection allows clients to use either WPA (with AES) or WPA2 (with TKIP). If selected, encryption must be **TKIP and AES**; a WPA passphrase (Network key) must also be entered. See "Configuring WPA-PSK/WPA2-PSK Wireless Security" on page 2-18 for complete configuration details).

Note: All options are available if using Access Point mode. In other modes (e.g., Repeater, Bridge or Client) some options may be unavailable.

- **Data Encryption**: Select the desired option. The available options depend on the Network Authentication setting above. The default is None. The supported options are:
  - **None** – No encryption is used. This is the default.
  - **64 bits WEP** – Standard WEP encryption, using 40/64 bit encryption.
  - **128 bits WEP** – Standard WEP encryption, using 104/128 bit encryption.
  - **TKIP** – This is the standard encryption method used with WPA.
  - **AES** – This is the standard encryption method for WPA2. Some clients may support AES with WPA, but this is not part of the 802.11 standards and is not supported by this Access Point.
- **WEP Security Encryption Key:**
  - **Passphrase**: To use the "passphrase" to generate the WEP keys, enter a passphrase and click the "Generate Keys" button. You can also enter the keys directly. These keys must match the other wireless stations.
  - **Key 1, Key 2, Key 3, Key 4**: If using WEP, select the key to be used as the default key. Data transmissions are always encrypted using the default key. The other keys can only be used to decrypt received data.
- **WPA Passphrase (Network Key)**: If using WPA-PSK, enter the passphrase here. All wireless stations must use the same passphrase (network key). The network key must be from 8 to 63 characters in length.

Wireless Settings Information Form

Before customizing your wireless settings, print this form and record the following information. (If you are working with an existing wireless network, the person who set up or is responsible for the network will be able to provide this information.) After you record the settings for your wireless network, store this form in a safe place.

- **Wireless Network Name (SSID)*:*** _____ The SSID, identifies the wireless network. You can use up to 32 alphanumeric characters. The SSID is case sensitive. The SSID in the wireless adapter card must match the SSID of the wireless access point. In some configuration utilities (such as in Windows XP), the term "wireless network name" is used instead of SSID.
- **If WEP Authentication is Used.** Circle one: **Open System**, **Shared Key, or Mix**.

  Note: If you select Shared Key, the other devices in the network will not connect unless they are set to Shared Key as well and are configured with the correct key.

  – **WEP Encryption key size**. Choose one: **64-bit** or **128-bit**. Again, the encryption key size must be the same for the wireless adapters and the wireless access point.

  – **Data Encryption (WEP) Keys**. There are two methods for creating WEP data encryption keys. Whichever method you use, record the key values in the spaces below.

    - **Passphrase method**. _____ These characters *are* case sensitive. Enter a word or group of printable characters and click the Generate Keys button. Not all wireless devices support the passphrase method.
    - **Manual method**. These values *are not* case sensitive. For 64-bit WEP, enter 10 hex digits (any combination of 0-9 or a-f). For 128-bit WEP, enter 26 hex digits.

    Key 1: _____

    Key 2: _____

    Key 3: _____

    Key 4: _____

- **If WPA-PSK or WPA2-PSK Authentication is Used.**

  – **WPA Passphrase**: _____

  – **WPA2 Passphrase**: _____

  These characters *are* case sensitive. Enter a word or group of printable characters. When you use WPA-PSK or WPA2-PSK, the other devices in the network will not connect unless they are set to WPA-PSK or WPA2-PSK as well and are configured with the correct Passphrase.

Configuring WEP Wireless Security

If you use a wireless PC to configure WEP settings, you will be disconnected when you click Apply. Reconfigure your wireless adapter to match the new settings or access the wireless access point from a wired PC to make any further changes.

To configure WEP data encryption:

1. From under the **Setup** menu in the left-hand panel, click **Security Settings**.The **Security Settings** screen will display.
2. From the **Security Type** pull-down menu, select WEP.

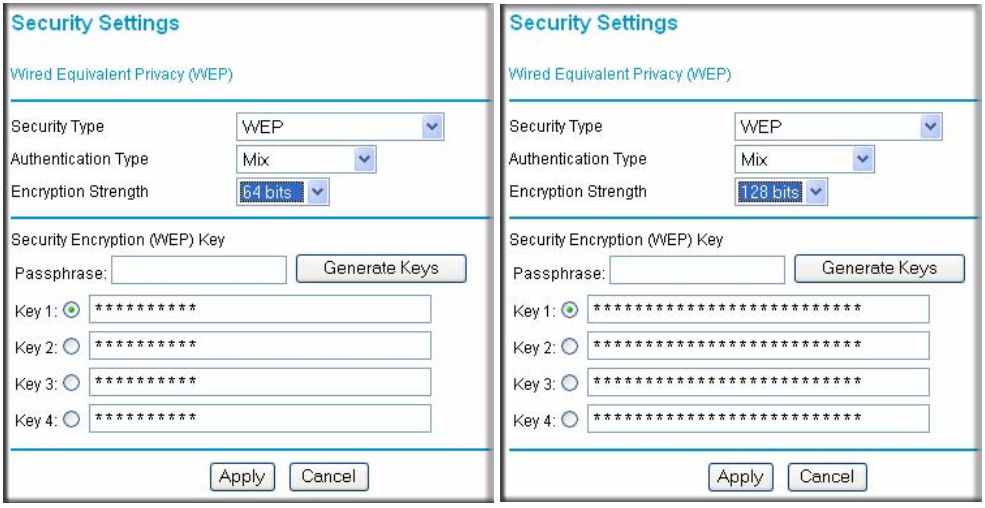


Figure 2-12

3. From the **Authentication Type** pull-down menu, select either Mix or Shared Key to use WEP data encryption.
4. From the **Encryption Strength** pull-down menu, select either 64-bit or 128-bit encryption.
5. Program the four **Security Encryption (WEB) Keys** either manually or automatically. The values must be identical on all PCs and access points in your network.
   - Automatic – Enter a word or group of printable characters in the Passphrase box and click the Generate button. The four key boxes will be automatically populated with key values; Key 1 is the active key by default.
   - Manual – Enter 10 hexadecimal digits (any combination of 0-9, a-f, or A-F) Select which of the four keys will be active.

6. Click **Apply** to save your settings.

Configuring WPA-PSK Wireless Security

Not all wireless adapters support WPA. Furthermore, client software is required on the client. Windows XP and Windows 2000 with Service Pack 3 do include the client software that supports WPA. Nevertheless, the wireless adapter hardware and driver must also support WPA. Consult the product document for your wireless adapter and WPA client software for instructions on configuring WPA settings.

To configure WPA-PSK:

1. From under the **Setup** menu in the left-hand panel, click **Security Settings**.The **Security Settings** screen will display.
2. From the **Security Type** pull-down menu, select **WPA-PSK**. By default, the **Encryption Type** will display **TKIP.**

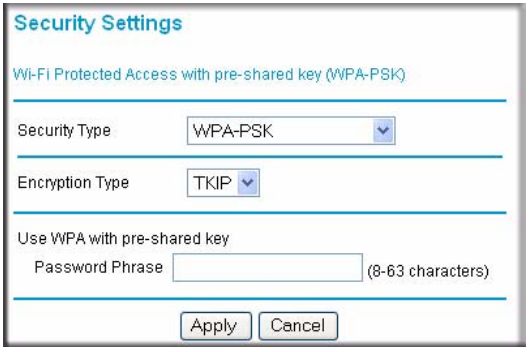


Figure 2-13

3. In the **Password Phrase** field, enter a word or group of 8-63 printable characters.
4. Click **Apply** to save your settings.

	Note: If you use a wireless PC to configure WPA settings, you will be disconnected when you click Apply. Reconfigure your wireless adapter to match the new settings or access the wireless access point from a wired PC to make any further changes.

Configuring WPA2-PSK Wireless Security

Not all wireless adapters support WPA2. Furthermore, client software is required on the client. Make sure your client card supports WPA2. Consult the product document for your wireless adapter and WPA2 client software for instructions on configuring WPA2 settings.

To configure WPA2-PSK:

1. From under the **Setup** menu in the left-hand panel, click **Security Settings**.The **Security Settings** screen will display.
1. From the **Security Type** pull-down menu, select **WPA2-PSK**. By default, the **Encryption Type** will display **AES.**

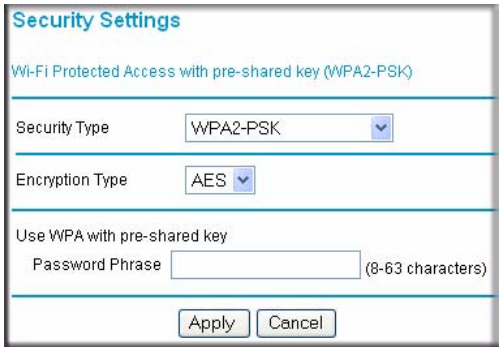


Figure 2-14

2. In the **Password Phrase** field, enter a word or group of 8-63 printable characters.
3. Click **Apply** to save your settings.

	Note: If you use a wireless PC to configure WPA settings, you will be disconnected when you click Apply. Reconfigure your wireless adapter to match the new settings or access the wireless access point from a wired PC to make any further changes.

Configuring WPA-PSK/WPA2-PSK Wireless Security

Not all wireless adapters support WPA/WPA2. Furthermore, client software is required on the client. Make sure your client card supports WPA/WPA2. Consult the product document for your wireless adapter and WPA/WPA2 client software for instructions on configuring WPA/WPA2 settings.

To configure WPA-PSK and WPA2-PSK:

1. From under the **Setup** menu in the left-hand panel, click **Security Settings**.The **Security Settings** screen will display.
2. From the **Security Type** pull-down menu, select **WPA-PSK/WPA2-PSK**. By default, the **Encryption Type** will display **TKIP and AES**.

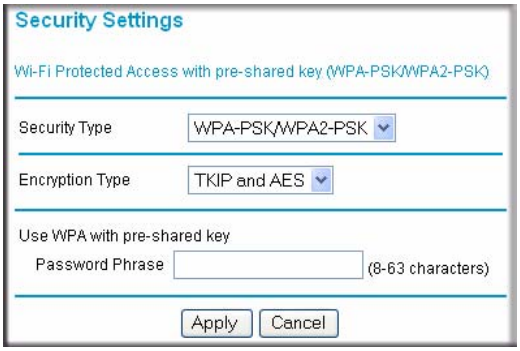


Figure 2-15

3. In the **Password Phrase** field, enter a word or group of 8-63 printable characters.
4. Click **Apply** to save your settings.

	Note: If you use a wireless PC to configure WPA settings, you will be disconnected when you click Apply. Reconfigure your wireless adapter to match the new settings or access the wireless access point from a wired PC to make any further changes.

Restricting Wireless Access by MAC Address

The Access Control screen lets you block or allow network access privileges of specified stations through the NETGEAR WG602v3 54 Mbps Wireless Access Point. This provides an additional layer of security. (This feature not available when in Client Mode.).

	Note: When configuring the WG602v3 from a wireless PC whose MAC address is not in the access control list, if you select Turn Access Control On, your wireless connection will be lost when you click Apply. You must then access the wireless access point from a wired PC or from a wireless PC which is on the access control list to make any further changes.

To restrict access based on a MAC address:

1. From under the **Setup** menu in the left-hand panel, click **Access Control**. The **Access Control** screen will display.
2. Check the **Access Control** radio button for the type of access control you want to enable. Access Control is disabled by default:
   - Disable
   - Allow
   - Block

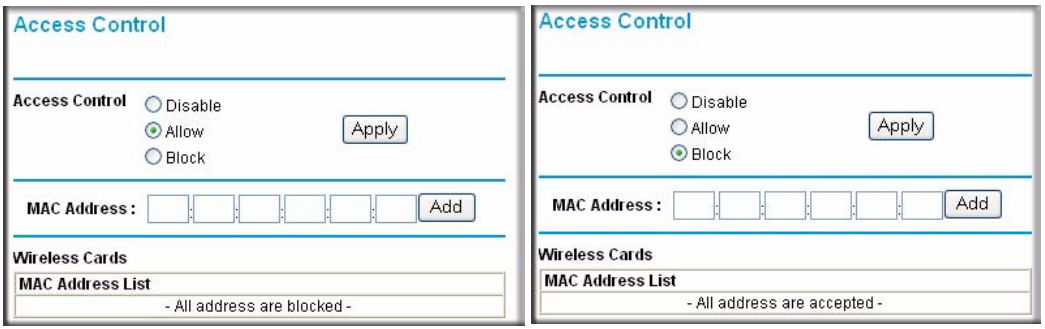


Figure 2-16

If you selected Allow, then all addresses will be blocked except those added to the MAC Address list; conversely, if you selected Block, then all addresses are accepted except those added to the MAC Address List.

3. Enter the **MAC Address** for the device you want to manage in the MAC address field. (You can usually find the MAC address printed on the bottom of the device.)

Tip: You can copy and paste the MAC addresses from the WG602v3's Station List table into the MAC Address box. First, configure each wireless PC to obtain a wireless link to the WG602v3 so that the PC appears in the Station List table.

4. Click **Add** to add each wireless device to the access list. Repeat these steps for each additional device to be added.
5. Click **Apply** to save your wireless access control list settings.

Now, only devices on this list will be allowed if you selected “Block all”; or all addresses will be blocked if you selected “Allow all”

	**Note:** All options are available if using Access Point mode. The feature is not supported when in Client Mode.

Chapter 3
Management

This chapter describes how to use the management features of your NETGEAR WG602v3 54 Mbps Wireless Access Point. The majority of these features can be found under the **Management** menu in the left-hand pane of the browser interface.

Viewing General Information

The **Information** screen summarizes of the current WG602v3 configuration settings based on its mode of operation: AP, Bridge, Repeater or Client. The information is View Only.

To access the Information screen:

1. Click **Information** on the main menu of the browser interface. The **Information** screen for the selected mode will display.

Access Point Mode

Client Mode

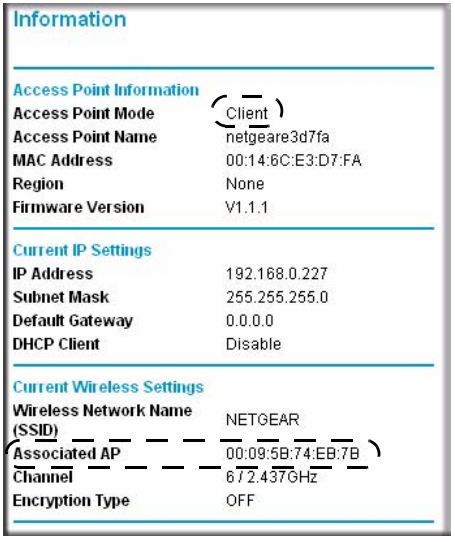


Figure 3-1

This screen displays the following parameters:

Table 3-1. General Information Fields

Field		Description
Access Point Information		
	Access Point Mode	Shows the current operating mode of the device: AP, Bridge, Repeater or Client.
	Access Point Name	The default name can be changed if desired.
	MAC Address	Displays the Media Access Control address (MAC Addresses) of the wireless access point's Ethernet port.
	Region	Displays the country or region for which the wireless access point is licensed for use. It may not be legal to operate this wireless access point in a region other than one of those identified in this field.
	Firmware Version	The version of the firmware currently installed.
Current IP Settings – These parameters apply to the Local WG602v3 wireless access point**.**		
	IP Address	The IP address of the wireless access point.
	Subnet Mask	The subnet mask for the wireless access point.
	Default Gateway	The default gateway for the wireless access point.
	DHCP Client	Enabled by default. Enabled (DHCP client) indicates that the current IP address was obtained from a DHCP server on your network.
Wireless Settings – These parameters apply to the target remote WG602v3, VPN gateway, or VPN client.		
	Wireless Network Name (SSID)	Displays the wireless network name (SSID) being used by the wireless port of the wireless access point. The default is NETGEAR.
	Associated AP (Client mode only)	The MAC address of a remote AP or peer that this wireless access point is connected to.
	Channel	Identifies the channel the wireless port is using.
	Encryption Type	The current encryption setting.
	Access Control	Restricts wireless access by MAC address. Disabled by default.

Viewing a List of Attached Devices

The Station List table contains a list of all devices associated with this wireless access point in the wireless network defined by their Wireless Network Name (SSID). The feature is not available when in Client Mode.

To view the **Station List:**

1. From under **Management** on the main menu of the browser interface, click **Station List**. The **Status List** screen will display.

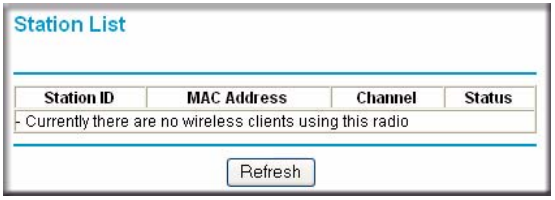


Figure 3-2

For each device, the table shows the MAC address and whether the device is allowed to communicate with the wireless access point or not. Note that if the wireless access point is rebooted, the table data is lost until the wireless access point rediscovers the devices.

2. Click **Refresh** to force the wireless access point to look for associated devices.

Note: A wireless network can include multiple wireless access points, all using the same network name (SSID). This will extend the reach of the wireless network and allow users to roam from one access point to another, providing seamless network connectivity. However, only the stations associated with this wireless access point will be included in the Station List.

Upgrading the Wireless Access Point Software

Upgrade files can be downloaded from the NETGEAR Web site. If the upgrade file is compressed (.ZIP file), you must first extract the image (.TRX) file before uploading it to the wireless access point. The upgrade file can be sent using your browser.

You cannot perform the firmware upgrade from a workstation connected to the WG602v3 via a wireless link. The firmware upgrade must be performed by a workstation connected to the WG602v3 through the Ethernet LAN interface.

Note: The Web browser used to upload new firmware into the WG602v3 must support HTTP uploads, such as Microsoft Internet Explorer 5.0 or above, or Netscape Navigator 4.78 or above.

To upgrade the WG602v3software:

1. Open a web browser and go the NETGEAR Customer Service Downloads site at:
2. Browse and locate the WG602v3 upgrade file. Then download it and save it to your hard disk, If the file is a .ZIP file, you must unzip the file (decompress it).
3. Login to the WG602v3 using the addressing scheme you have set up.
4. Under **Management** on the main menu, click **Upgrade Firmware.** The **Upgrade Firmware** screen will display.

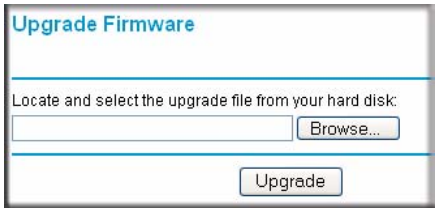


Figure 3-3

5. Click **Browse** and locate the image (.TRX) upgrade file on your hard disk.
6. Click **Upgrade**.

   When the upload completes, your wireless access point will automatically restart. The upgrade process typically takes about one minute.

	**Warning:** When uploading software to the Wireless AP, it is important not to interrupt the Web browser by closing the window, clicking a link, or loading a new page. If the browser is interrupted, the upload may fail, corrupt the software, and render the WG602v3 inoperable.

   In some cases, you may need to reconfigure the wireless access point after upgrading. You can click the Information link to check the Firmware Version and verify that your access point now has the new software installed.

Rebooting and Resetting Factory Defaults

You can reboot the wireless access point or restore its factory default settings using the menu options available on the user interface. You can also reboot and restore factory defaults using the reset button located on the back of the wireless access point.

Rebooting the Wireless AP

The Reboot option restarts the wireless access point using its current settings

To reboot the wireless access point:

1. From under the **Management** menu, select **Reboot AP**. The **Reboot AP** screen will display.
2. Check the **Yes** radio box, and then click **Apply.** The WG602v3 will reboot.

Restoring Factory Default Settings

It is sometimes desirable to restore the wireless access point to the factory default settings. This can be done by using the Restore Factory Default function, which restores all factory settings.

After a restore, all or the WG602v3's settings will revert to the default settings; for example, User Name will be **admin,** the Password will be **password**, the DHCP client will be enabled. and the NetBIOS name is reset to NETGEAR plus the last 6 digits of the MAC address.

To restore the factory default settings:

1. From under **Management** on the main menu, click **Restore Factory Default.** The **Restore Factory Default** screen will display.
2. Check the **Yes** radio box, and then click **Apply.** The WG602v3 factory default settings will be restored.

Using the Reset Button to Reboot or Restore Factory Defaults

If you don't have the login password or the IP address of the wireless access point, you can use the default Reset button on the bottom of the device. The reset button has two functions:

- **Reboot.** When pressed and released quickly, the wireless access point will reboot (restart).
- **Reset to Factory Defaults.** When held down for at least 10 seconds (until the LED blinks rapidly), you can clear all data and restore all settings to the factory default values.

To clear all data and restore the factory default values:

1. Use something with a small point, such as a pen, to press the Reset button in for at least 10 seconds (until the LED blinks rapidly).
2. Release the Reset button.

   The factory default configuration has now been restored, and the WG602v3 is ready for use.

Changing the Administrator Password

The default password is **password**. We suggest that you change this password to a more secure password. However, you cannot change the administrator login name.

To change the password:

1. From under the **Management** menu of the browser interface, click **Change Password.** The **Change Password** screen will display

Figure 3-4

2. Enter a new password in the **Set Password** field; and then reenter the password in the **Repeat New Password** field.
3. Click **Apply** to save your new password.

   Be sure to write down your password in a secure location. However, if you should forget your password, you can check the **Yes** radio box and click **Apply** to restore the default password.

Chapter 4
Advanced Configuration

This chapter describes how to configure the advanced features of your WG602v3 to one of four Access Point Modes or in Client Mode.These features can be found under the Advanced heading in the main menu on the Wireless Settings Wireless Bridging screens.

Configuring Access Point Modes

The NETGEAR WG602v3 54 Mbps Wireless Access Point lets you build large wireless networks. Examples of wireless bridging configurations are:

- **Access Point**. Standard Access Point mode (default mode). Operates as a standard 802.11g or 802.11b Access Point. In this mode, the WG602 will communicate only with wireless clients
- **Point-to-point bridging**. Communicates with single bridge-mode wireless access point.
- **Multi-point bridging**. Communicates with up to four bridge-mode wireless access points.
- **Repeater with Wireless Client Association**. Acts as a “repeater” and forwards all traffic to a remote AP.
- **Client Mode.** Operates as a client bridge only and sends traffic to either a remote AP (Infrastructure) or a peer device (Ad-Hoc).

Warning: If Client Mode is selected, the wireless access point will reboot and all settings will be lost. You must then reconfigure the device.

Configuring a WG602v3 as a Point-to-Point Bridge

In this mode, the WG602 will communicate with a single bridge-mode wireless access point when you enter the MAC address (physical address) of the other Bridge Mode Wireless Station. In addition, if you check the **Enable Wireless Client Association** radio box, wireless clients will also be serviced by this wireless access point. The WG602 must validate that the SSID, channel, and WEP configuration of the remote access point and match the settings of this WG602. WEP can (and should) be used to protect this communication.

For each remote wireless access point MAC address that you add, the WG602 must validate that the SSID, channel, and WEP configuration of the each remote access point match the settings of this WG602. WEP can (and should) be used to protect this traffic.

To configure a point-to-point bridge:

1. Open a web browser and log into the WG602v3 using the addressing scheme you have set up.

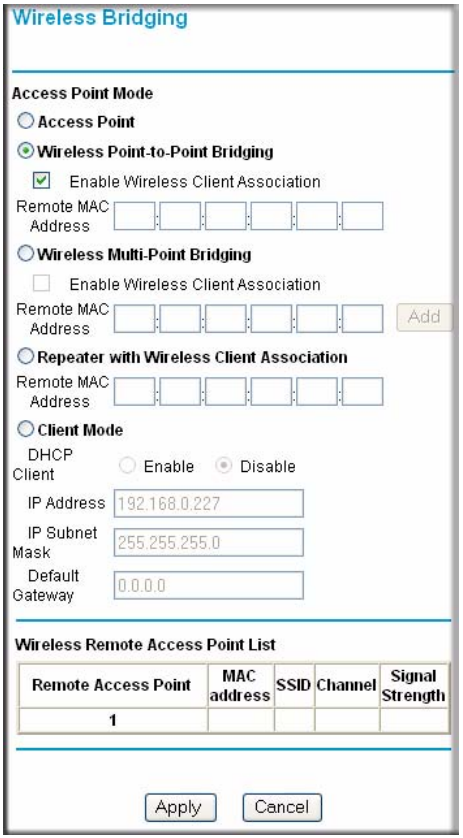


Figure 4-1

2. Under **Advanced** on the main menu, click **Wireless Bridging.** The **Wireless Bridging** screen will display showing the default settings for the wireless access point.
3. Select the **Wireless Point-to-Point Bridging** radio button to enable point-to-point bridging and enter the MAC address of the Remote Access Point.
4. Check the **Enable Wireless Client Association** to allow wireless clients access to the wireless access point.

5. Click **Apply** to save your changes.

   The Remote Access Point MAC address will display in the **Wireless Remote Access Point List**.

The following figure shows a point-to-point bridge between two wireless access points on two LAN segments.

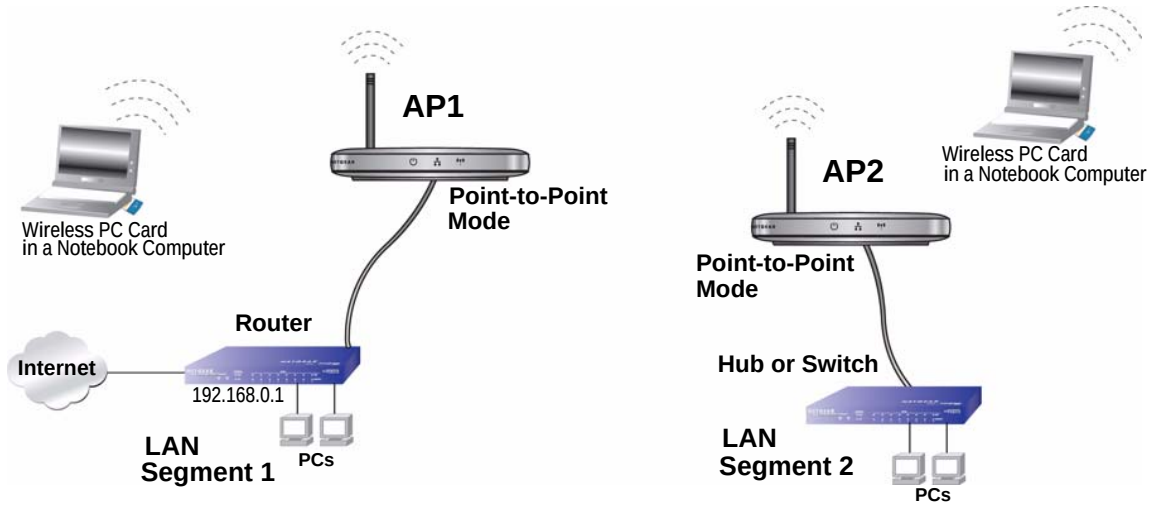


Figure 4-2

To set up this type of point-to-point configuration:

1. Configure AP1 in Point-to-Point mode with the MAC address of AP2 and deploy it on LAN Segment 1. If you check the Enable Wireless Client Association checkbox, wireless clients will also be able to use AP1. If the Enable Wireless Client Association checkbox is not selected, only computers on Ethernet LAN segment 1 will be able to use AP1 to communicate with AP2.
2. Configure AP2 in Point-to-Point mode with the MAC address of AP1 and deploy it on LAN Segment 2. Use the same security and channel settings as AP1. If you check the Enable Wireless Client Association checkbox, wireless clients will also be able to use AP2. If the Enable Wireless Client Association checkbox is not selected, only computers on Ethernet LAN segment 2 will be able to use AP2 to communicate with AP1.
3. Verify connectivity across the network.

   If you enabled wireless client association on both APs, a computer on either AP should be able to connect to the Internet or share files and printers of any other PCs or servers connected to the network.

Configuring Wireless Multi-Point Bridging

In this mode, the WG602 will communicate with up to four bridge-mode wireless access points by entering the MAC address (physical address) of each of the bridge-mode APs in the fields provided. In addition, if you check the Enable Wireless Client Association checkbox, wireless clients will also be serviced by this access point. Each wireless access point you enter will be listed in the Wireless Remote Access Point List.

To configure wireless Multi-point Bridging:

1. Open a web browser and log into the WG602v3 using the addressing scheme you have set up.

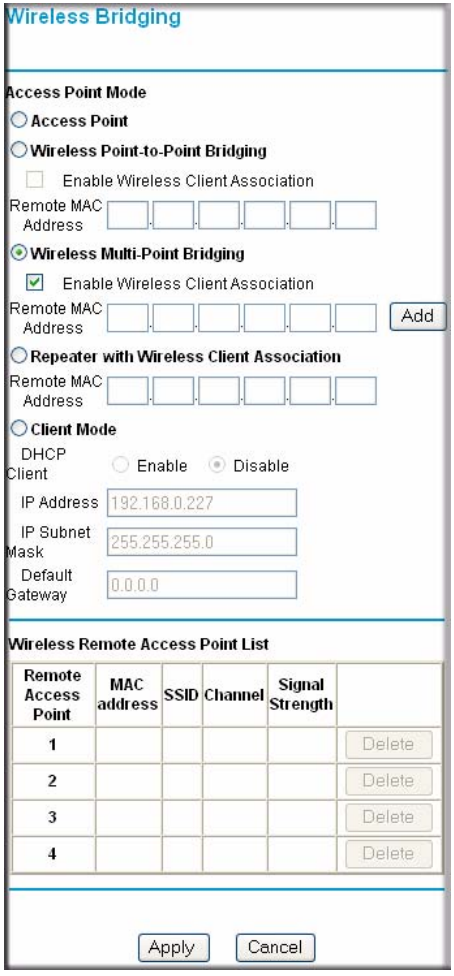


Figure 4-3

2. Under **Advanced** on the main menu, click **Wireless Bridging.** The **Wireless Bridging** screen will display showing the default settings for the wireless access point.
3. Select the **Wireless Multi-Point Bridging** radio button to enable multi-point bridging.
4. Enter the MAC address of the first wireless access point and click **Add.** The AP's MAC address and connection information will appear in the **Wireless Accept Point List.**

   You can add wireless access points to the list for a total of four. (These wireless access points must be configured for Multi-Point Bridging.)
5. Check the **Enable Wireless Client Association** radio box to allow wireless clients access to this wireless access point.
6. Click **Apply** to save your changes.

To delete a remote AP from the list, click **Delete** adjacent to the AP's MAC address in the Wireless Remote Access Point List.

The following figure illustrates a multi-point bridge setup over three LAN segments.

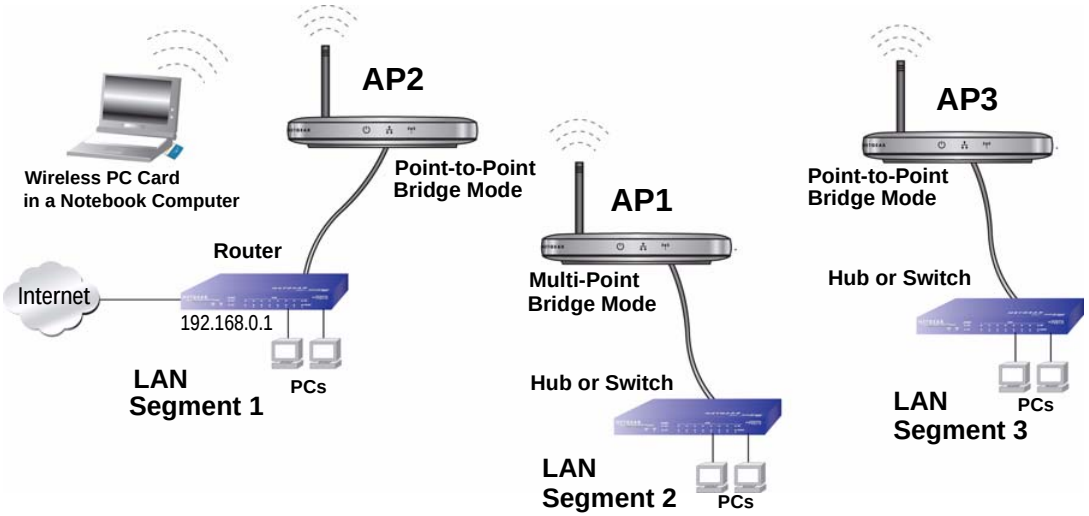


Figure 4-4

To configure wireless access points in a multi-point configuration:

1. Set the Operating Mode of the three Wireless APs as follows:
   - Configure AP2 on LAN Segment 1 in Point-to-Point Bridge Mode. Enable Wireless Client Association and add the Remote MAC Address of AP1 on LAN Segment 2.

- Because it is in the central location, configure AP1 on LAN Segment 2 in Multi-Point Bridging mode. Enable Wireless Client Association and add the MAC addresses of the adjacent Point-to-Point APs (AP2 and AP3).
- Configure AP3 on LAN 3 in Point-to-Point Bridge mode. Enable Wireless Client Association and add the Remote MAC Address of AP1 on LAN Segment 2.

2. Verify the following parameters for all three wireless access points:

- That the LAN network configuration of each of the Wireless APs is configured to operate in the same LAN network address range as the other LAN devices (routers, hubs and switches).
- That only one wireless access point is configured in Multi-Point Bridging mode, and that all the others are in Point-to-Point Bridge mode.
- That all APs are be on the same LAN. That is, all the wireless access point LAN IP addresses are in the same network.
- If using DHCP, all wireless access points should be set to “Obtain an IP address automatically (DHCP Client)” in the IP Address Source portion of the Basic IP Settings menu.
- That all wireless access points are using the same SSID, Channel, WEP authentication mode, if any, and encryption (WPA is not available in bridge modes).
- That each Point-to-Point AP has the Multi-Point AP MAC address in its Remote AP MAC address table.
- If Access Control has been enabled on the APs, verify that the Wireless Cards table (MAC Address List) for each AP is complete and accurate.

3. Verify connectivity across the LANs.

- If you checked the Enable Wireless Client Association radio box on each AP, wireless clients will be able to use the AP.
- A computer on any LAN segment should then be able to connect to the Internet or share files and printers with any other PCs or servers connected to any of the three LAN segments.
- If Access Control Lists are enabled on the APs, only computers in the access control list will be able to use the AP.

Note: You can extend multi-point bridging by adding a total of four WG602v3 APs configured in Point-to-Point mode to connect additional wireless LAN segments.

Configuring Repeater with Wireless Client Association

In this mode, the WG602v3 will operate as a Repeater only, and send all traffic to the remote wireless access point. You must enter the MAC address (physical address) of the remote wireless access point.

To configure the WG602v3 in wireless repeater mode:

1. Open a web browser and log into the WG602v3 using the addressing scheme you have set up.

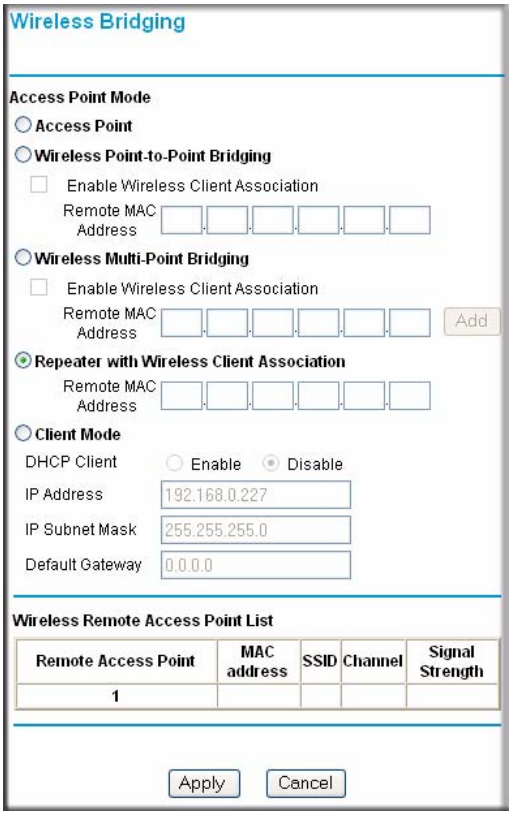


Figure 4-5

2. Under **Advanced** on the main menu, click **Wireless Bridging.** The **Wireless Bridging** screen will display showing the default settings for the wireless access point.
3. Select the **Repeater with Wireless Client Association** radio button to enable Repeater Mode.
4. Enter the MAC address of the remote wireless access point and click **Add.** The AP's MAC address and connection information will appear in the **Wireless Remote Access Point List.**

5. Click **Apply** to save your changes.

The following drawing illustrates two wireless access points daisy-chained together in wireless repeater mode

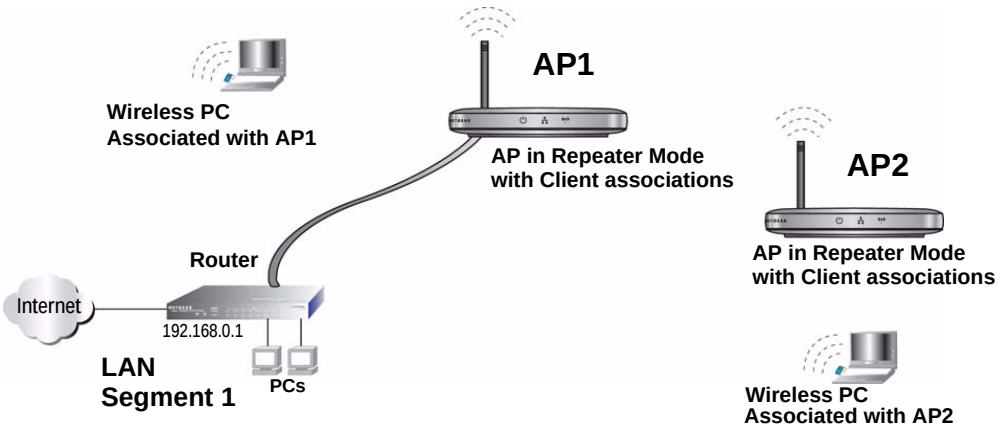


Figure 4-6

To configure a LAN segment utilizing the WG602v3 in Repeater Mode:

1. Configure the Operating Mode of the Wireless APs.

- Configure AP1 on LAN Segment 1 in Repeater mode with the Remote MAC Address of the “downstream” remote AP (AP2).
- Configure AP2 in Repeater mode with the MAC address of the “upstream” AP (AP1).

2. Verify the following parameters for all access points:

- That the Wireless APs are configured to operate in the same LAN network address range as the LAN devices.
- That all APs are on the same LAN. That is, all AP LAN IP addresses must be in the same network.
- If using DHCP, that all Wireless APs should be set to “Obtain an IP address automatically (DHCP Client)” in the IP Address section of the **IP Settings** screen.
- That all Wireless APs use the same SSID, Channel, authentication mode, if any, and encryption in use.

3. Verify connectivity across the LANs.

A computer on any LAN segment should be able to connect to the Internet or share files and printers with any other PCs or servers connected to any of the three WLAN segments.

Client Mode Configuration

In Client Mode, the WG602 will operate as a Client bridge only and send traffic to the remote AP (Infrastructure Mode) or peer device (Ad-Hoc mode):

- **Infrastructures** – In this mode, the WG602v3 operates as a wireless client bridge that can only connect and send traffic to an access point.
- **Ad-Hoc** – In this mode, the WG602v3 communicates on a peer-to-peer basis. There is no structure of fixed points in the network.

The default mode for the WG602v3 is Infrastructure. However, no matter which mode is selected, you must reconfigure the device after reboot. Once Client Mode is enabled, all of the existing wireless access point settings are erased.

To enable and configure Client Mode:

1. Using your Web browser, log in to the WG602v3 using your selected method of login.

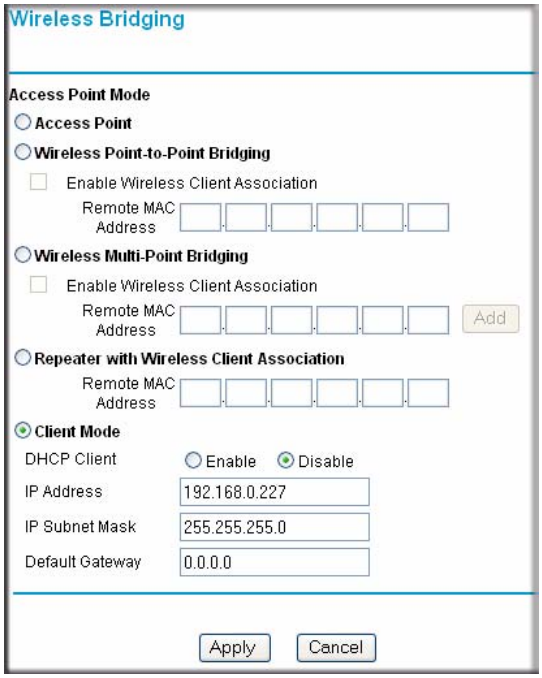


Figure 4-7

2. Under **Advanced** on the main menu, click **Wireless Bridging.** The **Wireless Bridging** screen will display.

3. Check the **Client Mode** radio box.
   - DHCP Client will be disabled.
   - The default IP Address and IP Subnet Mask will be enabled.

   Reconfigure these settings if appropriate.

4. Click **Apply** and click **OK** when the Reboot warning message appears. The system will reboot and display the **Information** screen showing that Client Mode has now been enabled as the **Access Point Mode**.

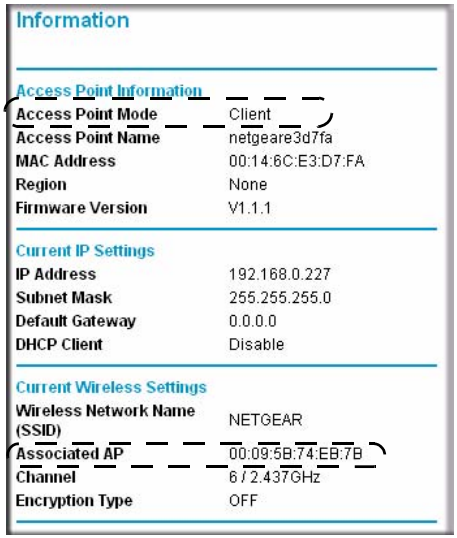


Figure 4-8

The **Associated AP** field indicates whether or not the WG602v3 has connected to a remote AP by displaying the MAC address of the connected access point.

To modify the Client Mode Wireless Settings or to connect to another AP:

1. From under the **Setup** menu, select **Wireless Settings.** The **Wireless Settings** screen will display with a banner noting that the wireless access point is running in Client Mode.

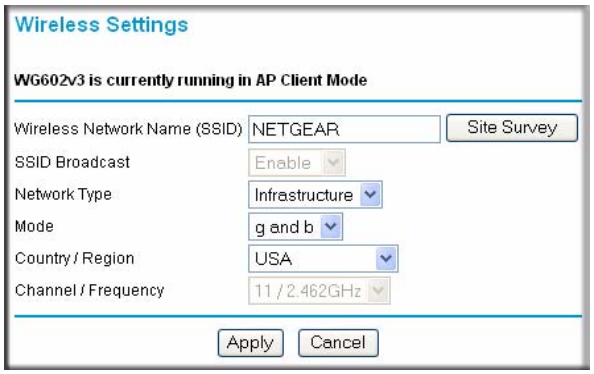


Figure 4-9

To connect to another AP or to a client running in Ad-Hoc Mode:

2. Click **Site Survey**. The **Site Survey** table will display a list of the available wireless networks that you can connect to. Both remote APs and Ad-Hoc devices will display. The parameters of the Site Survey table are described in Table 4-1 on page 4-12.
3. Select a different connection by checking the radio box in the **ID** column next to the **SSID** in the **Site Survey** table.
4. Click **Apply.** The **Wireless Settings** screen will again display showing the **SSID** of the remote AP or AD-Hoc device you selected in the Wireless Network Name Field.
   - If you selected a remote AP, the Network Type will be Infrastructure. The Channel/ Frequency is not selectable and will default to the channel of the remote AP.
   - If you selected an Ad-Hoc device, the Network Type will be Ad-Hoc. From the **Channel/ Frequency** pull down menu, select the shared channel for that peer connection. The default is 11.
5. From the **Country/Region** pull-down menu, select your country or region (if you have not already done so).

   This field displays the region of operation for which the wireless interface is intended. It may not be legal to operate the client bridge in a country/region other than the country/region shown here. If your country or region is not listed, please check with your local government agency or check our website for more information on which channels to use.
6. From the **Mode** pull-down menu, select the desired wireless operating mode. The options are:
   - g and b – Supports both 802.11g and 802.11b.
   - g only – Supports only 802.11g.

- b only – Supports only 802.11b.

The default is g and b.

7. Click **Apply** to save your settings.

   Verify your connection by clicking **Site Survey.** The **ID** radio button of your wireless connection should be enabled. You can also click **Information.** The **Associated AP** should show the MAC address of the remote AP. If no connection has been made, a "no association" message will display.

Table 4-1. Site Survey Fields

Field	Description
ID	Identifies a network that you can connect to or that you are connected to.
SSID	The Service Set Identifier (SSID) of the access point or peer device. Note that, as a security measure, some wireless access points do not broadcast their SSID. In such cases, the SSID field will be blank even though the rest of the information will still be displayed.
Security	Identifies the wireless network security type. In order to connect to this network you must have the same security type enabled.
Mode	Identifies the type of wireless network—Access Point (Infrastructure) or peer-to-peer (Ad Hoc)
Channel	Identifies the direct-sequence channel that the access point or peer is currently using.
Signal	Identifies the signal strength of the communications.

The scenario below illustrates WG602v3 in Client Mode where multiple devices are connected behind the wired Ethernet side (PC1 and Printer). The WG602v3 Client, with a Network Type of Infrastructure, acts like a wireless bridge between two wired LANs. The WG602v3, in AP mode on the other LAN, provides access to the Internet.

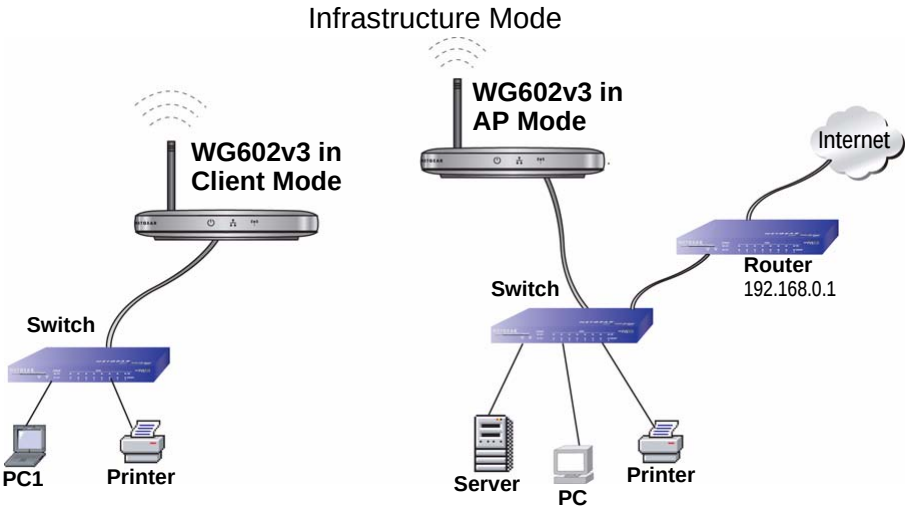


Figure 4-10

Advanced Wireless Settings

The default advanced wireless settings usually work well. These settings should not be changed unless you are sure it is necessary.

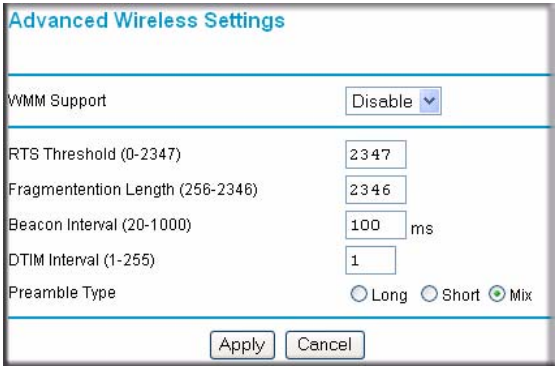
- **WMM support**: WMM (Wireless Multimedia) is a subset of the 802.11e standard. WMM allows wireless traffic to have a range of priorities, depending on the kind of data. Time-dependent information, like video or audio, will have a higher priority than normal traffic. For WMM to function correctly, Wireless clients must also support WMM. The default is Disable. (Not available in Client mode.)
- **RTS Threshold**: Request to Send Threshold. The packet size that is used to determine if it should use the CSMA/CD (Carrier Sense Multiple Access with Collision Detection) mechanism or the CSMA/CA mechanism for packet transmission. With the CSMA/CD transmission mechanism, the transmitting station sends out the actual packet as soon as it has waited for the silence period. With the CSMA/CA transmission mechanism, the transmitting station sends out an RTS packet to the receiving station, and waits for the receiving station to send back a CTS (Clear to Send) packet before sending the actual packet data. The default is 2346.

- **Fragmentation Length**: This is the maximum packet size used for fragmentation. Packets larger than the size programmed in this field will be fragmented. The Fragment Threshold value must be larger than the RTS Threshold value. The default is 2346.
- **Beacon Interval**: The Beacon Interval specifies the interval time (between 20ms and 1000ms) for each beacon transmission. The default is 100.
- **DTIM Interval**: The DTIM (Delivery Traffic Indication Message) specifies the data beacon rate between 1 and 255. The default is 1.
- **Preamble Type**: A long transmit preamble may provide a more reliable connection or slightly longer range. A short transmit preamble gives better performance. Auto will automatically handle both long and short preamble. The default is auto.

To access the advanced wireless settings:

1. From the main menu of the browser interface, under the **Advanced** menu, click **Wireless Settings.** The **Wireless Settings** screen will display.

AP Mode



Client Mode

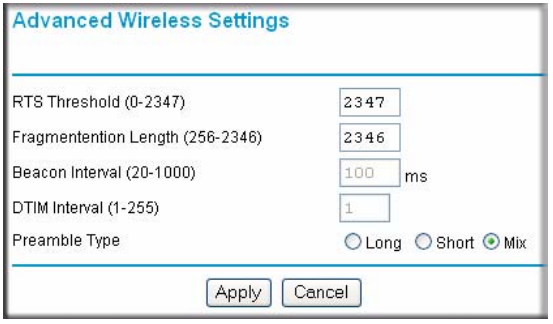


Figure 4-11

2. Make any changes and click **Apply** to save your settings.

Chapter 5
Troubleshooting

This chapter provides information about troubleshooting your NETGEAR WG602v3 54 Mbps Wireless Access Point. After each problem description, instructions are given to help you diagnose and solve the problem. For the common problems listed, go to the section indicated.

- Is the WG602v3 on?
- Have I connected the wireless access point correctly?

  Go to "Basic Setup and Installation" on page 2-2.
- I cannot remember the wireless access point's configuration password.

  Go to "Changing the Administrator Password" on page 3-6.

Note: For up-to-date WG602v3 installation details and troubleshooting guidance visit *http://kbserver.netgear.com/products/WG602v3.asp*.

Troubleshooting

If you have trouble setting up your WG602v3, check the tips below.

No lights are lit on the access point.

The access point has no power.

- Make sure the power cord is connected to the access point and plugged in to a working power outlet or power strip.
- Make sure you are using the correct NETGEAR power adapter supplied with your access point.

The Ethernet LAN light is not lit.

There is a hardware connection problem.

- Make sure the cable connectors are securely plugged in at the access point and the network device (hub, switch, or router).
- Make sure the connected device is turned on.
- Be sure the correct cable is used. Use a standard Category 5 Ethernet patch cable. If the network device has Auto Uplink™ (MDI/MDIX) ports, you may use a cross-over cable. See the Reference Manual for a full explanation of cable types.

The Wireless LAN activity light is not lit.

The wireless access point's antenna is not working.

- If the Wireless LAN activity light stays off, disconnect the adapter from its power source and then plug it in again.
- Make sure the antenna is tightly connected to the WG602v3.
- Contact NETGEAR if the Wireless LAN light remains off.

I cannot configure the wireless access point from a browser.

Check these items:

- The WG602v3 is properly installed, LAN connections are OK, and it is powered on. Check that the LAN port LED is amber or green to verify that the Ethernet connection is OK.
- If you are using the NetBIOS name of the WG602v3 to connect, ensure that your PC and the WG602v3 are on the same network segment or that there is a WINS server on your network.
- If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address in the range of the WG602v3. The WG602v3 default IP Address is 192.168.0.227 and the default Subnet Mask is 255.255.255.0. If you are not sure about these settings, follow the instructions for "Basic Setup and Installation" on page 2-2.

I cannot access the Internet or the LAN with a wireless capable computer.

There is a configuration problem. Check these items:

- You may not have restarted the computer with the wireless adapter to have TCP/IP changes take effect. Restart the computer.

- The computer with the wireless adapter may not have the correct TCP/IP settings to communicate with the network. Restart the computer and check that TCP/IP is set up properly for that network. The usual setting for Windows Network Properties is “Obtain an IP address automatically.”
- The access point’s default values may not work with your network. Check the access point default configuration against the configuration of other devices in your network.
- For full instructions on changing the access point’s default values, see the Reference Manual on the *Resource CD*.

When I enter a URL or IP address I get a timeout error.

A number of things could be causing this. Try the following troubleshooting steps:

- Check whether other PCs work. If they do, ensure that your PCs TCP/IP settings are correct. If using a Fixed (Static) IP Address, check the Subnet Mask, Default Gateway, DNS, and IP Addresses.
- If the PCs are configured correctly, but still not working, ensure that the WG602v3 is connected and turned on. Connect to it and check its settings. If you cannot connect to it, check the LAN and power connections.
- If the WG602v3 is configured correctly, check your Internet connection (DSL/Cable modem etc.) to make sure that it is working correctly.

Using the Reset Button to Restore Factory Default Settings

The Reset button (see “WG602v3 Wireless Access Point Rear Panel” on page 1-6) has two functions:

- **Reboot.** When pressed and released quickly, the WG602v3 will reboot (restart).
- **Reset to Factory Defaults.** This button can also be used to clear ALL data and restore ALL settings to the factory default values.

To clear all data and restore the factory default values:

1. Use something with a small point, such as a pen, to press the Reset button in for at least 10 seconds.
2. Release the Reset button.

The factory default configuration has now been restored, and the WG602v3 is ready for use.

Appendix A
Default Configuration and Technical Specifications

Default Configuration Settings

You can use the reset button located on the front of your device to reset all settings to their factory defaults. This is called a hard reset.

- To perform a hard reset, push and hold the reset button for approximately 5 seconds (until the TEST LED blinks rapidly). Your device will return to the factory configuration settings shown in Table A-1 below.
- Pressing the reset button for a shorter period of time will simply cause your device to reboot.

Table A-1. Access Point Default Configuration Settings

Feature		Description
AP Login		
	User Login URL	192.168.0.227
	User Name (case sensitive)	admin
	Login Password (case sensitive)	password
	Access Point Name	NETGEARxxxxxx where xxxxxx are the last six digits of the WG602v3 MAC address
Ethernet Connection		
	Ethernet MAC Address	See bottom label.
	Port Speed	10/100
Local Network (LAN)		
	Lan IP	192.168.0.227
	Subnet Mask	255.255.255.0
	DHCP Client	Enabled
Wireless		

Table A-1. Access Point Default Configuration Settings

Feature		Description
	Wireless Communication	Enabled
	Wireless Network Name (SSID)	NETGEAR
	Security	Disabled
	Broadcast SSID	Enabled
	Transmission Speed	Auto[a]
	Country/Region	United States (in North America; otherwise, varies by region)
	RF Channel	11 until the region is selected
	Operating Mode	802.11b/802.11g
	Data Rate	Best
	Output Power	Full
	Access Point Mode	Access Point
	Wireless Card Access List	All wireless stations allowed
	MAC Address Filtering	Disabled
	WMM Support	Disabled
	Spanning Tree Protocol	Enabled

a. Maximum Wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

Technical Specifications

The following table lists the specifications for the WG602v3.

Table A-2. Technical Specifications

Parameter	NETGEAR WG602v3 54 Mbps Wireless Access Point
Radio Data Rates	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps Auto Rate Sensing
Frequency	2.4-2.5Ghz
Data Encoding:	Direct Sequence Spread Spectrum (DSSS) for 802.11b and Orthogonal Frequency Division Multiplexing (OFDM) for 802.11g
Wireless Security:	WEP and WPA-PSK

Table A-2. Technical Specifications (continued)

Parameter	NETGEAR WG602v3 54 Mbps Wireless Access Point
Maximum Computers Per Wireless Network:	Limited by the amount of wireless network traffic generated by each node. Typically 32 nodes.
Network Management	Web-based configuration and status monitoring
Status LEDs	Power/Ethernet LAN/Wireless LAN
Dimensions:	28 x 175 x 118 mm (1.1 x 6.89 x 4.65 in.)
Power Adapter	7.5Vdc, 1A
Weight	845 g (29.7 oz)
Electromagnetic Compliance	FCC Part 15 Class B and Class E, CE, C-tic AS/NZS 3548, Telec STD-T66, VCCI
Environmental Specifications	Operating temperature: 0 to 50° C Operating humidity: 5-95%, non-condensing

Appendix B
Related Documents

This appendix provides links to reference documents you can use to gain a more complete understanding of the technologies used in your NETGEAR product.

Document	Link
Internet Networking and TCP/IP Addressing	*http://documentation.netgear.com/reference/enu/tcpip/index.htm*
Wireless Communications	*http://documentation.netgear.com/reference/enu/wireless/index.htm*
Preparing a Computer for Network Access	*http://documentation.netgear.com/reference/enu/wsdhcp/index.htm*
Virtual Private Networking (VPN)	*http://documentation.netgear.com/reference/enu/vpn/index.htm*
Glossary	*http://documentation.netgear.com/reference/enu/glossary/index.htm*

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