

NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 User Manual

NETGEAR®

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Maximum Wireless Signal Rate Derived from IEEE Standard 802.11 Specifications

Actual data 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.

Safety and Regulatory Notices

FCC Statement

The WAG511 has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the 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.

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 according to 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 is found 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 or devices

- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

FCC Caution: Any change or modification to the product not expressly approved by NETGEAR could void the user's authority to operate the device.

FCC RF Radiation Exposure and SAR Statements

SAR Statement

The NETGEAR WAG511 has been tested for body-worn Specific Absorption Rate (SAR) compliance. The FCC has established detailed SAR requirements and has established that these requirements have been met while installed in a host notebook computer.

RF Exposure Information

The radio module has been evaluated under FCC Bulletin OET 65C (01-01) and found to be compliant to the requirements as set forth in CFR 47 Sections, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices. This model meets the applicable government requirements for exposure to radio frequency waves. The highest SAR level measured for this device was 0.74 W/kg.

Canadian Department of Communications Industry Canada (IC) Notice

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Cet appareil numérique de la classe B est conforme à la norme NMB-003 et CNR-210 du Canada.

“To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.”

“Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence.”

Europe - EU Declaration of Conformity

A printed copy of the EU Declaration of Conformity certificate for this product is provided in the WAG511 product package.

Ěeský [Czech]	NETGEAR, Inc. tímto prohlašuje, že tento NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede NETGEAR, Inc. erklærer herved, at følgende udstyr NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erkläre NETGEAR, Inc., dass sich das Gerät NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.

Eesti [Estonian]	Käesolevaga kinnitab NETGEAR, Inc. seadme NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, NETGEAR, Inc., declares that this NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente NETGEAR, Inc. declara que el NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ NETGEAR, Inc. ΔΗΛΩΝΕΙ ΟΤΙ NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente NETGEAR, Inc. déclare que l'appareil NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente NETGEAR, Inc. dichiara che questo NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo NETGEAR, Inc. deklarē, ka NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo NETGEAR, Inc. deklaruoja, kad šis NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart NETGEAR, Inc. dat het toestel NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
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Polski [Polish]	Niniejszym NETGEAR, Inc. oświadczam, że NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
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Slovensko [Slovenian]	NETGEAR, Inc. izjavlja, da je ta NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

Slovensky [Slovak]	NETGEAR, Inc. týmto vyhlasuje, že NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 spáda základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	NETGEAR, Inc. vakuuttaa täten että NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar NETGEAR, Inc. att denna [<i>utrustningstyp</i>] står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Product and Publication Details

Model Number:	WAG511
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About This Manual

The *NETGEAR® Dual Band Wireless PC Card 32-bit CardBus WAG511 User Manual* describes how to install, configure, and troubleshoot the NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511. The information in this manual is intended for readers with intermediate computer and Internet skills.


Conventions, Formats and Scope


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

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

<i>Italics</i>	Emphasis, books, CDs, URL names
Bold	User input

- **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.
---	--

- **Scope.** This manual is written for the WAG511 Wireless PC Card according to these specifications:

Product Version	NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511
Manual Publication Date	March 2007






For more information about network, Internet, firewall, and VPN technologies, see the links to the NETGEAR website in [Appendix A, “Related Documents”](#).



Note: Product updates are available on the NETGEAR, Inc. website at <http://kbserver.netgear.com/products/WAG511.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.

How to Print this Manual



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.

To print this manual you can choose one of the following several options, according to your needs.

- **Printing a Page in the HTML View.**

Each page in the HTML version of the manual is dedicated to a major topic. Use the *Print* button on the browser toolbar to print the page contents.

- **Printing a Chapter.**

Use the *PDF of This Chapter* link at the top left of any page.

- Click the *PDF of This Chapter* link at the top left of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
- Your computer must have the free Adobe Acrobat reader installed in order to view and print PDF files. The Acrobat reader is available on the Adobe Web site at <http://www.adobe.com>.
- Click the print icon in the upper left of the window.

- **Printing the Full Manual.**

Use the *Complete PDF Manual* link at the top left of any page.

- Click the Complete PDF Manual link at the top left of any page in the manual. The PDF version of the complete manual opens in a browser window.
- Click the print icon in the upper left of the window.

Chapter 1

Basic Setup

The WAG511 Wireless PC Card lets you connect a PC computer to wireless networks. It is designed for PC computers running Microsoft Windows. For information about product features and compatible NETGEAR products, please see the NETGEAR website at <http://www.netgear.com>.

This chapter describes how to install your NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 and set up basic wireless connectivity on your Wireless Local Area Network (WLAN). Advanced wireless network settings are covered in [Chapter 2, “Network Connections and Wireless Security”](#) in this manual.

What You Need Before You Begin

You must verify that your computer meets the minimum system requirements and identify the wireless network settings of the wireless network where you will connect before you can set up your wireless PC card and connect.

Verify System Requirements

Before installing the WAG511 Wireless PC Card, make sure that these minimum requirements have been met. You must have a computer with:

- A Pentium® 300 MHz or higher compatible processor with an available CardBus slot.
- A CD drive.
- 5 Mbytes of free hard disk space.
- Microsoft Vista, Windows XP Home, XP Professional, or Windows 2000

Some versions of Windows may ask for the original Windows operating system installation files to complete the installation of the WAG511 driver software.

Observe Wireless Location and Range Guidelines

Computers can connect over wireless networks indoors at a range that can vary significantly based on the location of the computer with the WAG511 Wireless PC Card. For best results, avoid potential sources of interference, such as:

- Large metal surfaces
- Microwave ovens
- 2.4 GHz cordless phones

In general, wireless devices can communicate through walls. However, if the walls are constructed with concrete, or have metal, or metal mesh, the effective range will decrease if such materials are between the devices.

What Is in the Box

The product package should contain the following items:

- NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511
- *Installation Guide for the NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511*
- NETGEAR CD, including:
 - Driver and Utility Software
 - *NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 User Manual* (this document)
 - Animated Network Properties Configuration Tutorial
 - PC Networking Tutorial
- Warranty card
- Support information card


If any of the parts are incorrect, missing, or damaged, contact your NETGEAR dealer. Keep the carton, including the original packing materials, in case you need to return the product for repair.

Default Wireless Settings

If this is a new wireless network installation, use the factory default settings to set up the network and verify wireless connectivity. If this is an addition to an existing wireless network, you need the wireless network and wireless security settings that are already defined.

Your WAG511 Wireless PC Card factory default basic settings are:

- Network Name Service Set Identification (SSID): **ANY**

	Note: In order for the WAG511 Wireless PC Card to communicate with a wireless access point or wireless adapter, all devices must be set up to use the same wireless network name (SSID).
---	---

- Network Mode (Infrastructure or Ad-hoc): **Infrastructure**
- Data security WEP, WPA2-PSK, or WPA-PSK encryption: **Disabled**

The section below provides instructions for setting up the WAG511 Wireless PC Card for basic wireless connectivity to an access point.

Installation

This chapter explains how to install the WAG511 to connect to a network with an access point or router. For wireless security and advanced settings, [Chapter 2, “Network Connections and Wireless Security”](#).

To install the WAG511 Wireless PC Card:

1. First, install the WAG511 software.
 - a. Insert the NETGEAR CD. If the CD main page does not appear, double click Autorun.exe on the CD.
 - b. Click Install Driver & Utility.



Figure 1-1

- c. The InstallShield wizard screen opens.



Figure 1-2

- d. Follow the wizard prompts to install the Smart Wizard Wireless Utility. When the Installation Complete message appears, click Finish.
2. Next, install the WAG511 Wireless PC Card.
- a. Hold the PC Card with the NETGEAR logo facing up and insert it into a CardBus slot. After a short delay, the Found New Hardware Wizard displays.




Figure 1-3



Note: If a Windows XP logo testing warning appears, click Continue Anyway to proceed.

- b. Follow the Found New Hardware Wizard prompts, and click Finish when done.
 - c. Windows 2000 users go to Step 3. Windows XP or Vista users can set up the wireless adapter with the NETGEAR Smart Wireless Settings Utility (recommended) or the Windows configuration utilities.
 - **NETGEAR Smart Wireless Settings Utility:** Reveals more information about each network and makes it easier to troubleshoot network connection problems.
 - **Windows configuration utilities:** See the Windows documentation or “Using Windows XP and Vista Wireless Configuration Utilities” at:
<http://documentation.netgear.com/reference/enu/winzerocfg/index.htm>
 - d. Click **Next** to accept the NETGEAR Smart Wireless Settings Utility.
3. Now, configure the WAG511 and save the Profile.

The WAG511 icon  appears in the system tray and on the desktop. The wizard initiates your wireless connection. It could take up to a minute to establish your wireless connection.

The Smart Wireless Utility Settings page opens.




Figure 1-4

4. Use the status bar to verify your wireless connectivity.

For more details about connecting, see “Connecting to Wireless Networks and the Internet” on page 1-6.




Connecting to Wireless Networks and the Internet

The WAG511 has indicators in three locations that show the status of your connection to a wireless network and to the Internet:


-  **Icon:** After you install the software, this icon appears on the desktop and in the lower right of the Windows task bar. It is color coded to show the status of the connection. See [“WAG511 Icon Colors”](#) on page 1-6.
- **Smart Wizard Status Bar:** Clicking on the system tray icon opens the Smart Wizard. The status bar at the bottom of the page shows details about your wireless and Internet connection. See [“Smart Wizard Status Bar”](#) on page 1-7.
- **WAG511 Wireless PC Card LED:** The LED on the wireless PC card shows the network connection. See [“WAG511 LEDs”](#) on page 1-8.

WAG511 Icon Colors

The WAG511 icon is on the desktop and in the Windows System Tray (SysTray). The System Tray is located on one end of the taskbar in the Microsoft Windows desktop.

Color	Condition	Description
Red 	The wireless PC card has no connection to any other wireless node.	The wireless PC card is not able to link to any other wireless node or the link is lost. Check your configuration or try moving to a location where the wireless signal quality is better.
Yellow 	The wireless PC card has a connection with another wireless node.	The wireless link is weak. You may need to move to a better spot, such as closer to the wireless access point. Also, look for possible interference such as a 2.4 GHz cordless phone or large metal surface.
Green 	The wireless PC card has a connection with another wireless node.	The wireless PC card has established good communication with an access point and the signal quality is strong.

Smart Wizard Status Bar

Click the  icon to open the Smart Wizard so you can view the status bar. The Smart Wizard Settings page opens. The status bar is located at the bottom of the Settings page.

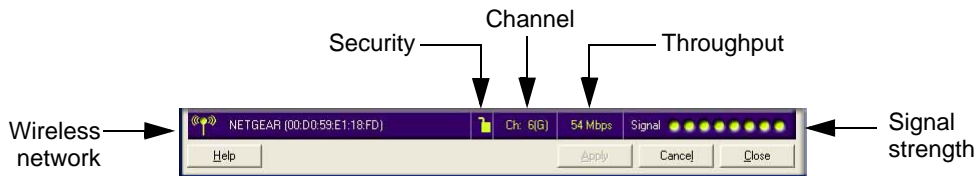


Figure 1-5

The following table describes how to interpret the Smart Wizard status bar.

Understanding the Status Bar	
Wireless network	Identifies which wireless network you have joined.
Security	<ul style="list-style-type: none"> • Locked: security enabled. • Unlocked: security not enabled.
Channel	The wireless channel used by the network. If many wireless networks in your area use the same channel they can interfere with one another.
Throughput	Wireless throughput measured in Mega bits per second.
Signal strength	More dots indicates a stronger signal. Usually, you will experience higher throughput when the signal is strongest.



Note: To optimize throughput, connect to a network with a high-speed router or access point, and a high-speed Internet connection.

WAG511 LEDs

The two LEDs on the NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511 indicate the condition of the wireless link.

LED 1	LED 2	Meaning
Slow blink	OFF	Power save mode (default from power up or reset)
Alternate blink	Alternate blink	Looking for network association
Slow blink	Slow blink	Associated or joined with network; no activity
Fast blink	Fast blink	Associated or joined with network; blink rate increases with activity on the network over the air or locally on the network
Off	Off	No power applied to the card

Removing the WAG511 Software

If necessary, you can remove the wireless adapter software in these two ways:

- Navigate the Windows Start menu to the WAG511 Wireless PC Card program group, select the uninstall option, and follow the screen prompts.
- Navigate the Windows Start menu to the Control Panel Add or Remove Program item, select the WAG511 Wireless PC Card option, and follow the screen prompts.

Upgrading the WAG511 Software

Upgrades may be available at the NETGEAR website.

To install an upgrade:

1. Write down the settings for any profiles that you want to save. They will not be retained.
2. Download the upgrade from the NETGEAR website Support page.
3. Remove the WAG511 software from your computer.
4. Remove the WAG511 adapter from your laptop computer, and if prompted restart your computer.
5. Run the installer that you downloaded (the file ends in .exe).

6. Follow the installer instructions, and if prompted, then restart your computer.

Chapter 2

Network Connections and Wireless Security

This chapter explains how to use your WAG511 Wireless PC Card to connect to your Wireless Local Area Network (WLAN) and how to set up wireless security for the WAG511 Wireless PC Card so that it matches the wireless security settings for your network.

If you chose the Windows XP or Windows Vista Configuration utility during installation, and now you want to use the Smart Wireless Utility, then you need to disable the Windows utility. If you are working with the Vista configuration utility, see the online document:

<http://documentation.netgear.com/reference/enu/winzerocfg/index.htm>

Disabling the Windows Zero Configuration Utility

To disable the Windows Zero Configuration utility:

1. Attach the wireless adapter to a USB port for your computer.
2. Go to Windows Start menu and select Network Connections.
3. On the Network connections page, select the Wireless Network Connection and right-click to choose the Properties option.

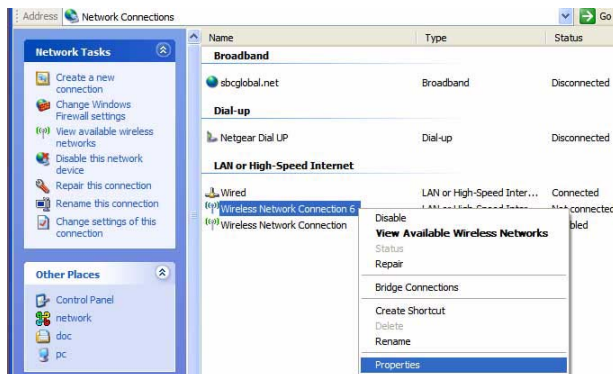



Figure 2-1

4. Click the Wireless Networks tab. Then clear the “Use Windows to configure my wireless settings” check box.

Understanding the Smart Wireless Utility

These instructions explain how to use the NETGEAR WAG511 Smart Wireless Utility to change the WAG511 Wireless PC Card wireless settings.

When you have installed the software from the NETGEAR CD, the  icon appears on your desktop and in the Windows System Tray. The Windows System Tray is located on the Windows taskbar. You can either double-click this icon on the desktop, or click it in the System Tray at any time, to use the Smart Wireless Utility. This software automatically restarts when you reboot your computer.

The Smart Wireless Utility provides a complete and easy to use set of tools to:


- View details about wireless networks in your area.
- Choose the network that you want to use.
- Configure wireless settings for your wireless PC card
- Save your wireless network settings in profiles.
- Remove or reinstall the wireless adapter software.

The following sections in this chapter explain how to use the Smart Wireless Utility.

Viewing Wireless Networks in Your Area

You can use the Networks tab to view all available wireless networks in your area. You can also scan to search for wireless networks and refresh the page.

To view information about wireless networks:

1. Use the  icon to open the Smart Wireless Utility. The Settings tab page opens.
2. Click the Networks tab to view the following page:

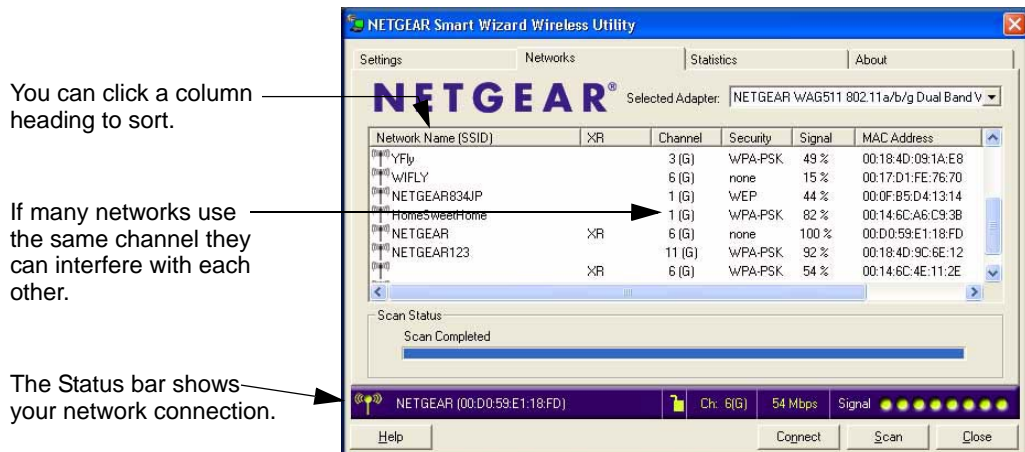


Figure 2-2

The screen shows the following information for each network scanned:

- **Network Name (SSID):** The name assigned to a wireless network. This is the same as the SSID or ESSID configuration parameter. 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.
- **XR**
- **Channel:** The channel determines which operating frequency will be used.
- **Security:** Identifies whether the wireless network uses security settings such as WEP, WPA2-PSK, or WPA-PSK.
- **Signal:** Identifies the signal strength of the communications.
- **MAC Address:** Identifies the hardware address (MAC Address) of the wireless device broadcasting this information.

The buttons located at the bottom of the Networks tab are:

- **Help:** Display online help.
- **Connect:** Connect to the network that you selected.
- **Scan:** Check for wireless networks. Clicking Scan refreshes the page.
- **Close:** Close the window of the Wizard.

Profiles

The WAG511 Smart Wireless Utility uses profiles to store all the settings for a particular wireless network. There are two special profile names: Default and Profile.

Default: The Profile named Default automatically scans for any available network. You cannot change this profile name.

Profile: If you do not enter a name in the Profile Name box, then the name Profile is used to save your settings. If you do this more than once then you will be asked if you want to replace the previous settings stored in Profile.

Adding Profiles

You can store multiple profiles and recall the one which matches the network you want to join.

If you use your computer to connect to different wireless networks, you can create a profile for each wireless network. Then, you can easily load the profile that has all the settings that you need to join the network you are using at the time.

There are two types of wireless network profiles that you can set up:

- **Access Point (Infrastructure)** – connect to an access point or router with the 802.11 infrastructure mode.
- **Computer-to-Computer (Ad Hoc)** – connect directly to another computer with the 802.11 ad hoc mode.

For more information on 802.11 wireless network modes, see the wireless reference document at: <http://documentation.netgear.com/reference/enu/wireless/index.htm>.

Setting up a Profile to Connect to an Access Point or Router

To set up the WAG511 Wireless PC Card to connect to a wireless access point or router:

1. Use the  icon to open the Smart Wireless Utility. The Settings page opens.



Figure 2-3

2. Enter the profile name, Network Name (SSID) and make sure that Access Point (Infrastructure) is selected.



Note: You will not get a wireless network connection unless the SSID that you enter exactly matches the SSID used by the access point.

3. Click Save Profile to save the settings, and then click **Apply**. Click Close to exit the wizard, or Cancel to return to the previous settings.
4. Verify wireless connectivity to your network.

Use a browser to connect to the Internet, or check for file and printer access on your network. You can check the Status bar in the Smart Wireless Utility for the current connection status.



Note: If you cannot connect, see [Chapter 3, “Troubleshooting”](#). For problems with accessing network resources, the Windows Client and File and Print Sharing software might not be installed and configured properly on your computers. See the link to [“Internet Networking and TCP/IP Addressing”](#) on page B-1.

Setting up a Computer-to-Computer (Ad Hoc) Profile

The Computer-to-Computer setting uses Ad Hoc mode. Ad Hoc mode is an 802.11 networking framework in which devices or computers communicate directly with each other, without an access point. For example, this mode is used when two Windows computers are configured with file and print sharing enabled and you want to exchange files directly between them.



Note: Ad Hoc mode does not work with DHCP. Ad Hoc mode requires static IP addresses (such as 192.168.0.1) or the IPX protocol. For help setting up static IP addresses on a Windows PC, see the PC Networking Tutorial on the NETGEAR CD.

To create an Ad Hoc mode profile:


1. Use the  icon to open the Smart Wireless Utility. The Settings page opens.



Figure 2-4

2. Enter the profile name, Network Name (SSID), select Computer-to-Computer (Ad Hoc), and then click **Apply**.
3. Click the Save Profile button, and then click **Apply**. Click Close to exit the Smart Wireless Utility, or Cancel to return to the previous settings.
4. Configure each computer with either a static IP address or with the IPX protocol, and then restart the computers.



Note: For instructions on configuring static IP addresses, refer to the networking tutorial on your NETGEAR CD.

5. Verify wireless connectivity between your peer devices with the Ping program.
 - a. On the Windows taskbar click the Start button, and then click Run.

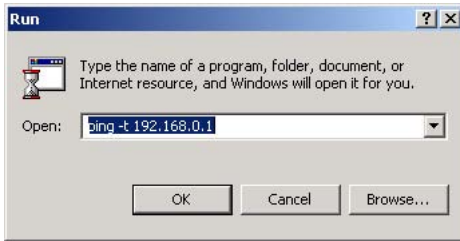


Figure 2-5

- b. Assuming the target PC is configured with 192.168.0.1 as its IP address, type **ping -t 192.168.0.1** and then click OK.
- c. This will cause a continuous ping to be sent to the device with the 192.168.0.1 static IP address. The ping response should change to “reply.”

```
Request timed out.  
Request timed out.  
Reply from 192.168.0.1: bytes=32 time=40ms TTL=127  
Reply from 192.168.0.1: bytes=32 time=41ms TTL=127  
Reply from 192.168.0.1: bytes=32 time=30ms TTL=127
```

Figure 2-6

At this point the connection is established.



Note: If you cannot connect, see [“Connecting to Wireless Networks and the Internet” in Chapter 1](#). Also, for problems with accessing network resources, the Windows Client and File and Print Sharing software might not be installed and configured properly on your computers. See the link to [“Internet Networking and TCP/IP Addressing” on page B-1](#).

Starting a Computer-to-Computer (Ad Hoc) Network Connection

To start a computer-to-computer network connection:

1. On the Settings tab page, enter the Network Name (SSID) and then select Computer-to-Computer (Ad Hoc) as the network type.

2. Click Initiate Ad Hoc. The Ad Hoc Setting dialog box opens:

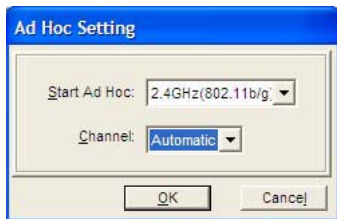


Figure 2-7

3. In the Start Ad Hoc field, choose the wireless standard (802.11a, 802.11b, or 802.11g) for your Ad Hoc computer-to-computer network.
4. For Channel field Automatic should work. If there is interference from another nearby wireless device, select a channel that is not being used by any other wireless networks. Use the Networks tab page to view the channels in use in your area.
5. Click **OK**.



Note: The channel number differs depending on the country. The connection speed automatically defaults to the highest speed.

Wireless Security

Many networks use wireless security to encrypt wireless data communications. To connect to a network with wireless security you must set up the WAG511 Wireless PC Card with exactly the same wireless security settings. The WAG511 Wireless PC Card supports the following types of wireless security:

- Wi-Fi Protected Access 2 Pre-Shared Key (WPA2-PSK)
- Wi-Fi Protected Access Pre-Shared Key (WPA-PSK)
- Wired Equivalent Privacy (WEP)

For more information about wireless security, see the online document at:


<http://documentation.netgear.com/reference/enu/wireless/index.htm>

In addition to the wireless security features, networks should use LAN network security features such as requiring a user name and password to access the shared resources in the network.

Wireless Network Name (SSID) and Security Settings

Print this page, fill in the configuration details, and keep it in a safe place for future reference. For an existing wireless network, the person who set up the network will be able to provide this information.

- **Network Name (SSID):** The Service Set Identification (SSID) identifies the wireless local area network. **Any (First available network)** is the default wireless network name (SSID). You may customize it using up to 32 alphanumeric characters. Write your customized wireless network name (SSID) on the line below:

	Note: You must configure your WAG511 Wireless PC Card with the SSID used by the wireless access point. Otherwise the WAG511 Wireless PC Card and the access point will not be able to communicate with each other.
---	---

Wireless network name (SSID): _____

- If WEP Authentication is Used.
 - **WEP Encryption key size.** Select one: 64-bit or 128-bit. The encryption key size must be the wireless network settings.
 - **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 WPA2-PSK or WPA-PSK Authentication is Used.
 - **Passphrase:** _____ These characters *are* case sensitive. Enter a word or group of printable characters. When you use WPA-PSK, the other devices in the network will not connect unless they are set to WPA-PSK as well and are configured with the correct Passphrase.

Setting up WEP Encryption Security

To configure WEP Encryption Security:



1. Make sure that the NETGEAR software is installed and the WAG511 Wireless PC Card is fully inserted in the CardBus slot port in your computer.
2. Use the  icon to open the Smart Wireless Utility. The Settings tab page opens.




Figure 2-8

3. Enter the Profile name and Network Name (SSID).

	Note: You will not get a wireless network connection unless the network SSID matches exactly what is configured in the access point.
--	---

4. In the Security section, select WEP, and then select the WEP encryption strength:
 - 64-bit WEP data encryption
 - 128-bit WEP data encryption

	Note: Larger encryption keys require more processing and may slow the communications response times.
---	---

5. Select Create with Passphrase and enter the passphrase. The configuration utility will automatically generate the WEP keys.



Note: The characters are case sensitive. Be sure to use the same passphrase for all the wireless devices in the network.


If the passphrase method is not available in the other devices, you must manually enter the keys to match exactly what is in the access point and other 802.11b wireless devices.

6. To save your settings in a Profile, click Save Profile.
7. Click **Apply**, and then click Close to exit the utility.

Setting up Advanced Security

Advanced Security includes WPA/WPA2, WPA/WPA2-PSK, 802.1x, and Cisco LEAP.

To configure Advanced security:

1. Make sure the NETGEAR software is installed and the WAG511 Wireless PC Card is fully inserted in the CardBus slot in your computer.
2. Use the  icon to open the Smart Wireless Utility. The Settings tab page opens.
3. Enter the profile and Network Name (SSID).



Note: You will not get a wireless network connection unless the SSID that you enter exactly matches the SSID used by the access point

- In the Security section, click Advanced.

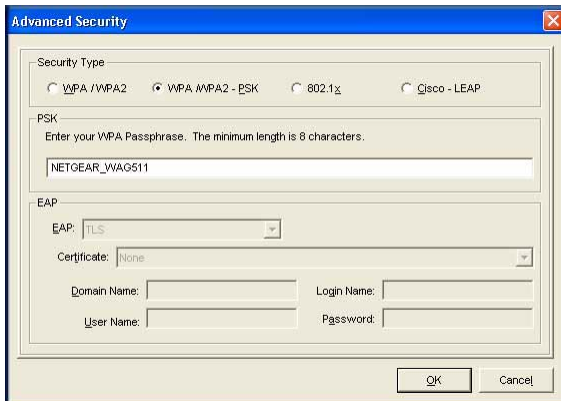


Figure 2-9

- Select the type of wireless security for your network, and enter the security settings:
For more information about wireless security, see the online document:
<http://documentation.netgear.com/reference/enu/wireless/index.htm>.
- Click Save Profile, click **Apply**, and then click Close to exit the Smart Wireless Utility.

Advanced Settings

To view Advanced Settings, click Advanced Settings on the Settings tab:

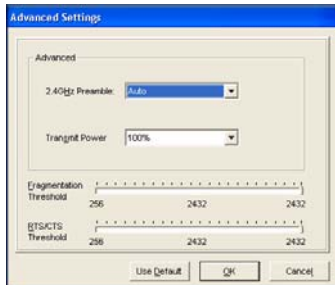


Figure 2-10

These settings normally work in their default settings. Changing them is only recommended for advanced users who have a specific reason to adjust them.

Statistics Page

The Statistics page provides real-time and historical trend information on the data traffic and performance of your wireless adapter.

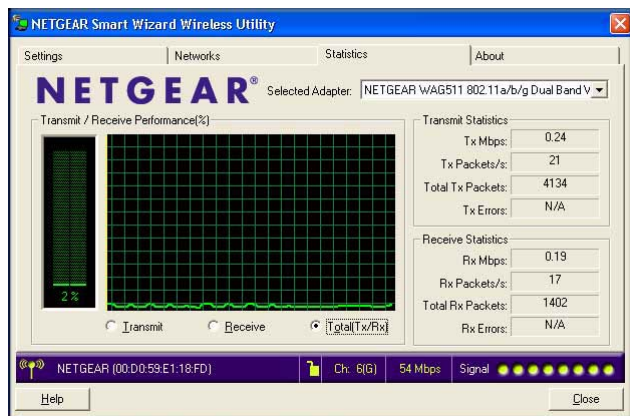


Figure 2-11

- **Transmit/Receive Performance (%):** A real-time graph identifying the total, receive, and transmit utilization as a percentage of the total possible.
- **Transmit, Receive, and Total (TxRx):** Radio buttons let you select whether to display the transmit performance, the receive performance, or both in the same graph.
- **Transmit Statistics:** Identifies transmit megabits per second (Mbps), transmit packets per second (Tx Packets/s), total transmitted packets, and transmit errors.
- **Receive Statistics:** Identifies receive megabits per second (Mbps), receive packets per second (Rx Packets/s), total received packets, and reception errors.

About Page

The About page displays the current software version information.

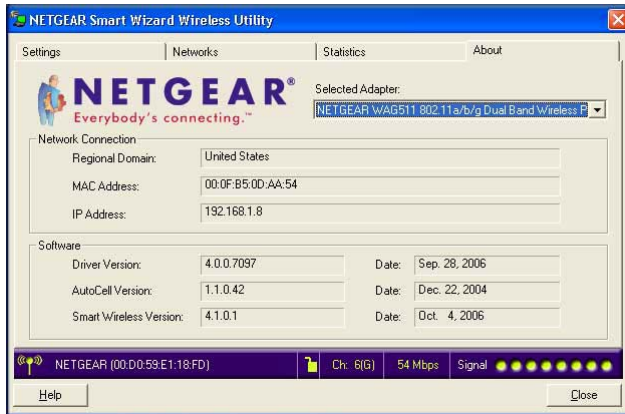


Figure 2-12

The following information is displayed in the About page:

- **Regional Domain:** This is the region setting for the wireless adapter. The approved channels for the region are automatically scanned. Governments regulate the channels used for wireless transmission. Operating the wireless adapter in a different region may violate local laws.
- **MAC Address:** The MAC address of the adapter. The Media Access Control address is a unique 48-bit hardware address assigned to every network interface card. Some wireless networks will restrict access based on a list of known MAC addresses. If you are communicating with such a network, you would have to provide the address shown here to the network administrator before you would be allowed to connect. Restricting access by MAC address adds an obstacle against unwanted access to your network. However, unless you use data encryption security, the data broadcast over the wireless link is fully exposed.
- **IP Address:** The IP address assigned to this adapter.
- **Driver Version:** The wireless adapter driver version.
- **Autocell Version:** The Autocell version.
- **Smart Wireless Utility:** The version and release date of the Smart Wireless Utility.

Chapter 3

Troubleshooting

Use the information below to solve common problems you may encounter. Also, refer to the knowledge base on the NETGEAR website at <http://www.netgear.com/support/main.asp>.

Troubleshooting Tips

Table 3-1. Troubleshooting Tips

Problem	Action
The WAG511 LEDs are not lit.	<p>The WAG511 is not fully inserted in the CardBus slot, or the WAG511 software is not loaded.</p> <ul style="list-style-type: none">• Remove and reinsert the WAG511.• Check the Windows device manager to see if the WAG511 is recognized and enabled. Reload the WAG511 software, if necessary.• Try to install the WAG511 in a different CardBus slot in your computer if one is available.
I cannot connect to an access point. The access point is available and there is good signal strength.	<ul style="list-style-type: none">• Make sure the access point is powered on.• If the access point is WPA-PSK protected, you need the correct WPA-PSK passphrase. Otherwise, the WAG511 will still be connected to the previous access point and you will not be able to change to the WPA-PSK access point.• If the access point is WEP protected (either 64 or 128 bit encryption), you will be prompted to enter the WEP encryption security information.
Throughput is only 54 Mbps.	<p>The WAG511 Wireless PC Card can operate at faster speeds. You are probably connecting to a standard 802.11g network.</p>
The Smart Wizard keeps asking me to save settings.	<p>If you change the settings the Smart Wizard offers you the chance to save the changes. To avoid this prompt, simply click Apply before you close the Smart Wizard.</p>
Two WAG511 icons are in the system tray.	<p>You have an older software version installed on your system and it needs to be removed. See “Removing the WAG511 Software” in Chapter 1 or “Upgrading the WAG511 Software” in Chapter 1.</p>

Table 3-1. Troubleshooting Tips (continued)

Problem	Action
I can connect to the access point, but not the other computers on the network or to the Internet.	This could be a physical layer problem or a network configuration problem. <ol style="list-style-type: none">1. Check to make sure that the access point is physically connected to the Ethernet network.2. Make sure that the IP addresses and the Windows networking parameters are all configured correctly. See the link to "Internet Networking and TCP/IP Addressing" in Appendix B.3. Restart the cable or DSL modem, router, access point, and computer.
Viewing the IP address.	To view the WAG511 Wireless PC Card IP address, click the WAG511 icon to open the Smart Wizard. Then check the IP address in the About page.
No IP address is assigned to the WAG511 Wireless PC Card.	This may occur if you upgraded your WAG511 Wireless PC Card software and did not reboot your system. <ul style="list-style-type: none">• Either restart your computer, or connect to a different access point.• It does not usually help to shut down the Smart Wizard or disable/enable the card.

Ad Hoc Mode is Not Working Correctly

You need to click the Initiate Ad Hoc button before you click **Apply**. Here is how you start an Ad Hoc network:

1. Fill in the Network Name (SSID).
2. Select the Computer-to-Computer (Ad Hoc) Network Type.
3. Click Initiate Ad Hoc.
4. Accept the default settings or make your changes and click OK.
5. Click **Apply**.



Note: Be sure all computers in your Ad Hoc network are configured with static IP addresses in the same subnet.

XP Professional and XP Home occasional connection problems

Some WG511T XP users will experience inability to connect to the Internet, dropped wireless connections, or both after applying the Windows HotFix #Q815485 from the Windows XP Update Service.

You can delete the Q815485 from the Add or Remove Program utility in the Control Panel. (The Official name is Windows XP Hotfix (SP2) Q815485).

Follow this removal procedure:

1. Click Start, point to Control Panel, and then double-click Add/Remove Programs.
2. Click Windows XP Hotfix (SP2) Q815485, and then click Remove.
 - You may receive an error message that states that some program on the computer may not work correctly if the update is removed.
 - You can ignore this error message, and then click Yes to remove the update.
3. Restart your computer and rerun the Smart Display Setup Wizard.

This should solve your connection issue. You can restore this hotfix by following the link below:

<http://microsoft.com/downloads/details.aspx?FamilyId=009D8425-CE2B-47A4-ABEC-274845DC9E91&displaylang=en>

Appendix A

Factory Default Settings and Technical Specifications

This appendix provides factory default settings and technical specifications for the NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511.

Factory Default Settings

The following table lists the default settings of your firewall.

Feature	Description
Smart Wizard	Enabled
Wireless	
Wireless Communication	Enabled
Wireless Network Name (SSID)	Any (first available network)
Security	Disabled
Network Type	Infrastructure
Transmission Speed	Auto ^a
Country/Region	United States (varies by region)
Operating Mode	a, g, and b
Data Rate	up to 108 Mbps

- a. Maximum wireless signal rate (IEEE Standard 802.11n draft specification). 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 table below describes technical specifications for the NETGEAR Dual Band Wireless PC Card 32-bit CardBus WAG511

Antennas	2 integrated internal diversity antennas
Standards	802.11a, 802.11g, 802.11b
Radio Data Rate	Auto Rate sensing <ul style="list-style-type: none">• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54, and 108Mbps• 802.11b: 1, 2, 5.5, 6, 11• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54, and 108 Mbps
Frequency	2.4-2.5 GHz and 5 GHz (DSS, CCK, and OFDM modulation)
Power	3.3V Bus powered
Emissions	FCC, CE
Bus interface	CardBus
Provided drivers	Microsoft Vista, Windows XP, or Windows 2000
Operating Environment	Operating temperature 0-50 degrees C
Encryption	64-bit and 128-bit WEP data encryption; WPA
Warranty	Limited 1-year warranty

Appendix A

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
Windows XP and Vista Wireless Configuration Utilities	http://documentation.netgear.com/reference/enu/winzerocfg/index.htm
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

