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NETGEAR 54 Mbps Wireless PCI Adapter WG311v3 User Manual



NETGEAR®

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

202-10091-03
February 2007

Technical Support

Please refer to the support information card that shipped with your product. By registering your product at *http://www.netgear.com/register*, we can provide you with faster expert technical support and timely notices of product and software upgrades.

NETGEAR, INC. Support Information

Phone: 1-888-NETGEAR, for US & Canada only. For other countries, see your Support information card.

E-mail: support@netgear.com

Website: *http://www.netgear.com*

Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, NETGEAR reserves the right to make changes to the products described in this document without notice.

NETGEAR does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

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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 WG311 v3 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 WG311 v3 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 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 WG311 v3 product package.

Èesky [Czech]	NETGEAR, Inc. tímto prohlašuje, že tento NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 je ve shodì se základními požadavky a dalšími pøíslušnými ustanoveními smìrnice 1999/5/ES.
Dansk [Danish]	Undertegnede NETGEAR, Inc. erklærer herved, at følgende udstyr NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt NETGEAR, Inc., dass sich das Gerät NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 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 54 Mbps Wireless PCI Adapter WG311 v3 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, NETGEAR, Inc., declares that this NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 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 54 Mbps Wireless PCI Adapter WG311 v3 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 54 Mbps Wireless PCI Adapter WG311 v3 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 54 Mbps Wireless PCI Adapter WG311 v3 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 54 Mbps Wireless PCI Adapter WG311 v3 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo NETGEAR, Inc. deklarç, ka NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 atbilst Direktîvas 1999/5/EK bûtiskajâm prasîbâm un citiem ar to saistîtajiem noteikumiem.
Lietuviø [Lithuanian]	Šiuo NETGEAR, Inc. deklaruoja, kad šis NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart NETGEAR, Inc. dat het toestel NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, NETGEAR, Inc., jiddikjara li dan NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 jikkonforma mal-tiijiet essenzjali u ma provvedimenti orajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, NETGEAR, Inc. nyilatkozom, hogy a NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish]	Niniejszym NETGEAR, Inc. oœwiadcza, ¿e NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 jest zgodny z zasadniczymi wymogami oraz pozosta³ymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	NETGEAR, Inc. declara que este NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	NETGEAR, Inc. izjavlja, da je ta NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 v skladu z bistvenimi zahtevami in ostalimi relevantnimi doloèili direktive 1999/5/ES.
Slovensky [Slovak]	NETGEAR, Inc. týmto vyhlasuje, že NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 spåòa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Suomi [Finnish]	NETGEAR, Inc. vakuuttaa täten että NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar NETGEAR, Inc. att denna *[utrustningstyp]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Product and Publication Details

Model Number:	WG311 v3
Publication Date:	February 2007
Product Family:	Wireless PCI Adapter
Product Name:	NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3
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About This Manual

The *NETGEAR® NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 User Manual* describes how to install, configure and troubleshoot the NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3. 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:

Italics	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 WG311 v3 Wireless PCI Adapter according to these specifications:

Product Version	NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3
Manual Publication Date	February 2007

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/WG311 v3.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

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 website at *http://www.adobe.com*.

– 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.

  – 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.



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
Basic Setup

The NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 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, see the NETGEAR website at *http://www.netgear.com*.

This chapter describes how to install your WG311 v3 Wireless PCI Adapter 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".



Note: Indoors, computers can connect to wireless networks at distances of several hundred feet. Because walls do not always block wireless signals, others outside your immediate area could access your network. It is important to take steps to secure your network from unauthorized access. The WG311 v3 Wireless PCI Adapter provides highly effective security features, which are covered in "Wireless Security" on page 2-10. Deploy the security features appropriate to your needs.

What You Need Before You Begin

You need to verify that your computer meets the minimum system requirements and get the wireless network configuration settings of the WLAN where you will connect before you can configure your wireless PCI adapter and connect.

Verify System Requirements

Before installing the WG311 v3 Wireless PCI Adapter, please make sure that these minimum requirements have been met:

- Pentium® III class computer with an available PCI slot
- CD drive
- 20 Mbytes of free hard disk space
- Some versions of Windows may ask for the original Windows operating system installation files to complete the installation of the WG311 v3 driver software

Observe Wireless Location and Range Guidelines

Computers can connect over wireless networks indoors at a range which vary significantly based on the physical location of the computer with the NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3. For best results, avoid potential sources of interference, such as:

- Large metal surfaces
- Microwaves
- 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 54 Mbps Wireless PCI Adapter WG311 v3
- Installation Guide for the NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3
- *NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 Resource CD*, including:
  - Wireless Assistant
  - Configuration Utility Software
  - This Reference Manual
- 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.

WG311 v3 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 will need to identify the wireless network and wireless security settings that are already defined.

Your WG311 v3 Wireless PCI Adapter factory default basic settings are:

- Network Name Service Set Identification (SSID): **Any** (First available network)

> **Note:** In order for the WG311 v3 Wireless PCI Adapter 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**

Installation

The instructions in this chapter explain how to install the WG311 v3 Wireless PCI Adapter to connect to a network with an access point or router. Wireless security, advanced settings, and Computer-to-Computer (Ad Hoc) instructions are covered in Chapter 2, “Network Connections and Wireless Security”.

To install the WG311 v3 Wireless PCI Adapter:

1. First, install the NETGEAR software:

Insert the NETGEAR CD. If the CD main page does not appear, double click Autorun.exe on the CD.

a. Click Install the Software. The Check for Updates window opens.

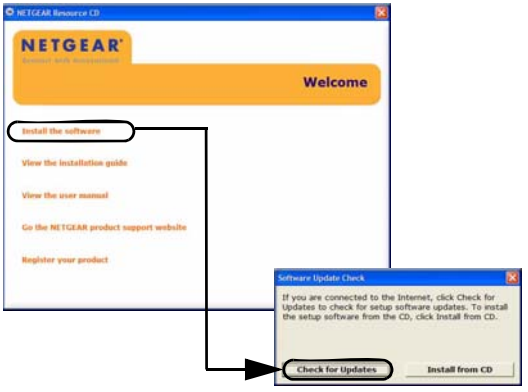


Figure 1-1

b. If you are connected to the Internet, click Check for Updates. If not, you can choose to install from the CD.

c. Follow the Wizard steps and click Next to continue, and to install the software.

d. When the software has been installed the Connection Wizard prompts you to shut down the computer.

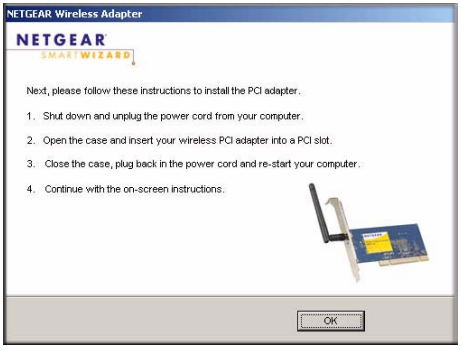


Figure 1-2

2. Now, install the wireless PCI adapter.

e. Shut down your computer and unplug the power cord.

f. Open the case and insert your WG311 v3 into a PCI slot.

g. Connect the antenna to the adapter and position the antenna to the up position.

h. Close the case, plug the power cord back in, and restart your computer.

3. Use the Smart Wizard to set up your wireless PCI adapter.

a. Windows 2000, 98SE/ME users go to Step b. Windows XP or Vista users can set up the wireless adapter either with the NETGEAR Smart Wizard (recommended) or the Windows configuration utilities.

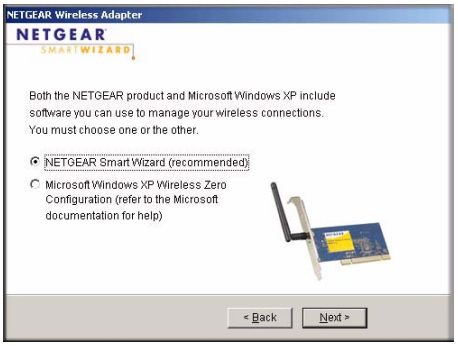


Figure 1-3

- **NETGEAR Smart Wizard:** 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*

b. Click Next to accept the NETGEAR Smart Wizard.

You will be prompted to let the wizard help you connect to a network (recommended).



Figure 1-4

c. Click Next to accept.

4. Connect to a wireless network.

a. Select the wireless network from the drop-down list, and the wizard records your choice.

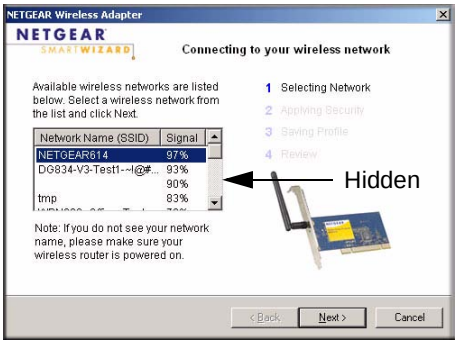


Figure 1-5

	Note: Hidden networks do not broadcast the Network Name (SSID). These networks are in the drop-down list, but the Network Name (SSID) is blank.

If the network uses security, then the Smart Wizard detects it.

b. Follow the Wizard steps for Security (if used) and for saving a Profile.

c. After you have reviewed the settings, click Finish.

The WG311 v3 icon appears in the system tray and on the desktop. The wizard initiates your wireless connection. It could take up to a minute for your wireless connection to be established.

The Smart Wizard Settings page opens.

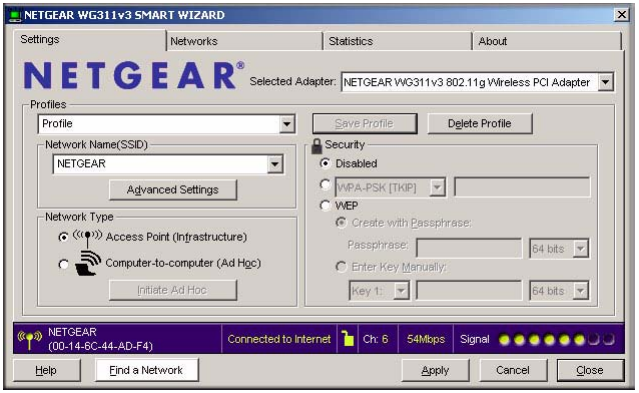


Figure 1-6

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

For more details about connecting, see "Connecting to Wireless Networks and the Internet" on page 1-7.

Connecting to Wireless Networks and the Internet

The WG311 v3 has indicators in three locations that show the status of your connection to a wireless network and to the Internet:

- **WG311 v3 Icon:** After you install the WG311 v3 software, the  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.
- **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 "The Smart Wizard Status Bar" on page 1-8.
- **WG311 v3 Wireless PCI Adapter LED:** The LED on the wireless PCI adapter shows the network connection. Solid indicates a connection. The LED blinks when the wireless PCI adapter is looking for a network association.

WG311 v3 Icon Colors

The WG311 v3 icon is on the desktop and in the Windows System Tray. The System Tray is located on one end of the taskbar in the Microsoft Windows desktop.

Color	Condition	Description
Red 	The wireless PCI adapter has no connection to any other wireless node.	The wireless PCI adapter 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 PCI adapter 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 PCI adapter has a connection with another wireless node.	The wireless PCI adapter has established good communication with an access point and the signal quality is strong.

The Smart Wizard Status Bar

Click the WG311 v3 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.

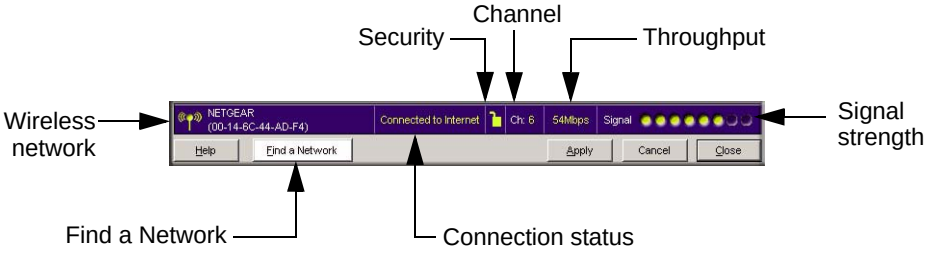


Figure 1-7

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	• 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.
Find a Network	Click **Find a Network** to open the Connection Wizard.
Connection status	Identifies the status of your network connection. • **Connected to Internet:** Wireless Internet connection is OK. • **Connected to Router:** Wireless connection to the router is OK but the router is not connected to the Internet. • **169.254.x.x or ___.___.___.___ :** The wireless connection to the router is OK but there is a problem with the router. See Chapter 3, “Troubleshooting”.

The connection status is useful in isolating a problem. For example, if you are connected to a router, but not to the Internet, then check the router’s Internet connection.

If you right-click in the system tray icon, you can disable the Internet notification feature by clearing check mark on this line. If you do so, then only the IP address is shown.

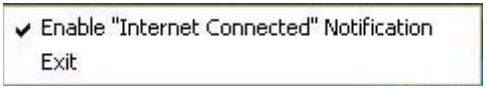


Figure 1-8

WG311 v3 LED

The LED on the WG311 v3 Wireless PCI Adapter indicates whether there is a network connection.

- Solid green indicates that the WG311 v3 has established a connection.
- The LED blinks when the WG311 v3 is trying to establish a connection but is unable to do so.

Removing the WG311 v3 Software

You can remove the wireless adapter software in these two ways:

- Navigate the Windows Start menu to the WG311 v3 Wireless PCI Adapter 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 WG311 v3 Wireless PCI Adapter option, and follow the screen prompts.

Upgrading the WG311 v3 Software

Upgrades may be available at the NETGEAR website. To install an upgrade, follow these steps.

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 WG311 v3 software from your computer.
4. Remove the WG311 v3 adapter from your computer, and 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 Wireless PCI Adapter to connect to your Wireless Local Area Network (WLAN) and how to set up wireless security for the Wireless PCI Adapter so that it matches the wireless security settings for your network.

If you chose the Windows XP or Windows Vista Zero Configuration utility during installation, and now you want to use the Smart Wizard, 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.

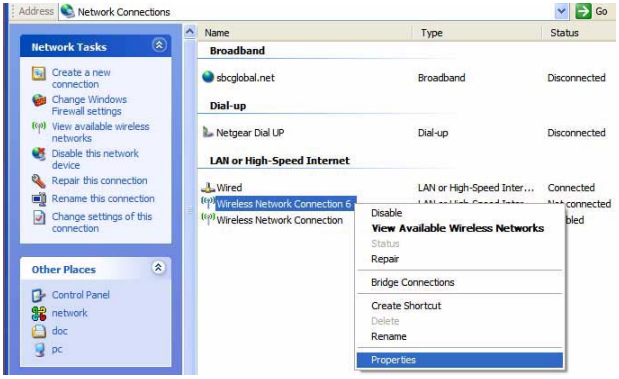


Figure 2-1

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

Understanding the Smart Wizard

These instructions explain how to use the NETGEAR WG311 v3 Smart Wizard to change the WG311 v3 Wireless PCI Adapter wireless settings.

When you have installed the software from the *NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 Resource 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 Wizard. This software automatically restarts when you reboot your computer.

The Smart Wizard 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 PCI adapter
- 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 Wizard.

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 Wizard. The Settings tab page opens.
2. Click the Networks tab to view the following page:

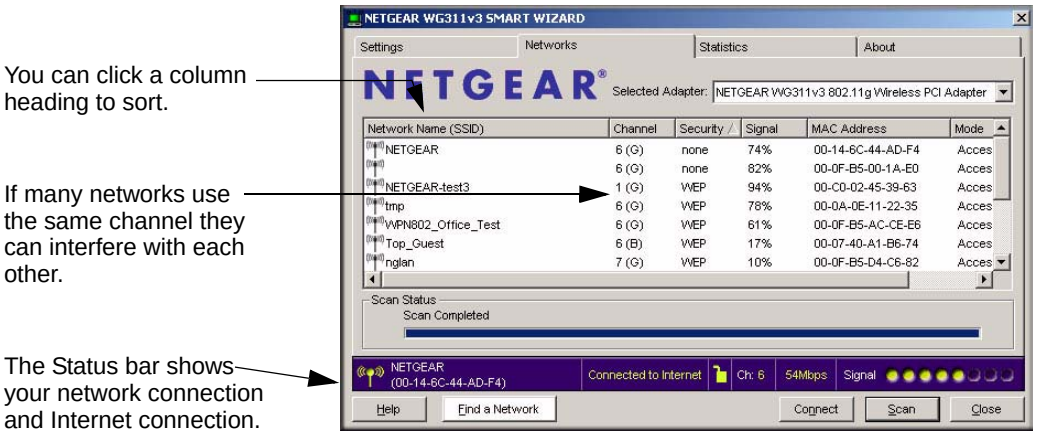


Figure 2-2

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.
- **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.
- **Mode:** Identifies the type of wireless network — Access Point (Infrastructure) or Computer-to-Computer (Ad Hoc)

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

- **Help:** Display online help.
- **Find a Network:** Find and connect to a network. See “Finding a Network” on page 2-4.
- **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.

Finding a Network

During the WG311 v3 software installation, the Smart Wizard lists the available networks. After installation you can use the Find a Network button on the Network tab at any time to view the available networks and select the one that you want to use.

Note: Make sure that you know the security settings for the network that you want to use. For example, if WEP is used then you need to know the WEP key. If you use secure networks frequently, set up profiles for each network with the wireless network and security settings.

To find a network:

1. Click the icon to open the Smart Wizard to the Settings tab.
2. On the Networks tab page, click Find a Network.

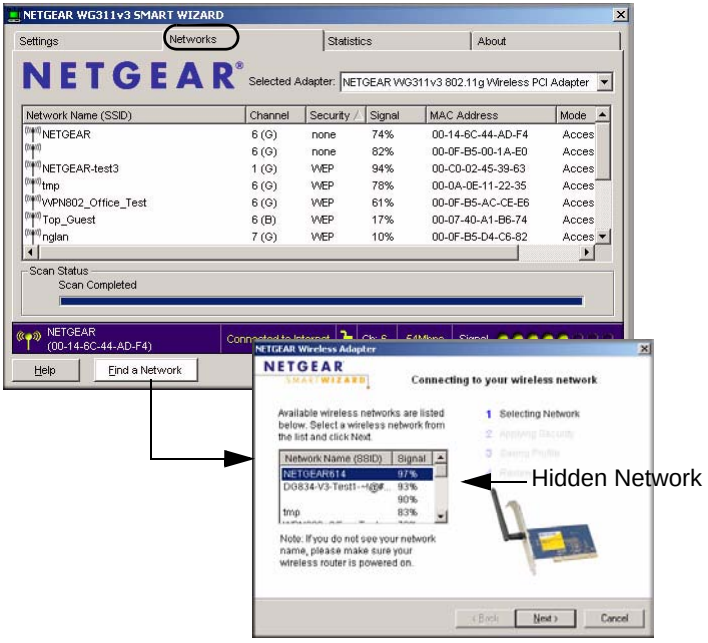


Figure 2-3

3. Select a network from the drop-down list. If you select a hidden network then you must enter the SSID. Click Next.

4. Follow the steps of the wizard to specify the wireless security if used, and to create a profile.
5. Review you settings, and click Finish.

The Smart Wizard initiates your wireless connection. You can use the Status Bar to verify your network connection. For more information, see "The Smart Wizard Status Bar" on page 1-8.

Profiles

The WG311 v3 Smart Wizard 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

Follow these instructions to set up the WG311 v3 Wireless PCI Adapter to connect to a wireless access point or router.

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

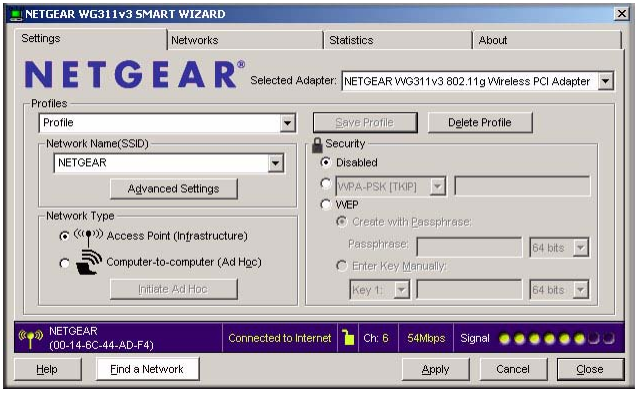


Figure 2-4

2. Enter the network settings.

a. In the Network Type section, be sure that Access Point (Infrastructure) is selected.

b. In the Profile box, type the name of the profile.

c. In the Network Name (SSID) field select a network or enter the SSID.

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

3. Save your settings in a Profile.

a. Click the Save Profile button.

All the configuration settings are saved in this profile.

b. Click **Apply**.

c. 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 Wizard 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:" in Appendix B.

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 the use of 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 will not work using DHCP settings. Ad Hoc mode requires either static IP addresses (such as **192.168.0.1**) or the IPX protocol. For instructions on setting up static IP addresses on a Windows PC, refer to the PC Networking Tutorial included on the *NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 Resource CD*.

Follow the instructions below to create an Ad Hoc mode profile.

1. Use the icon to open the Smart Wizard. The Settings page opens:.

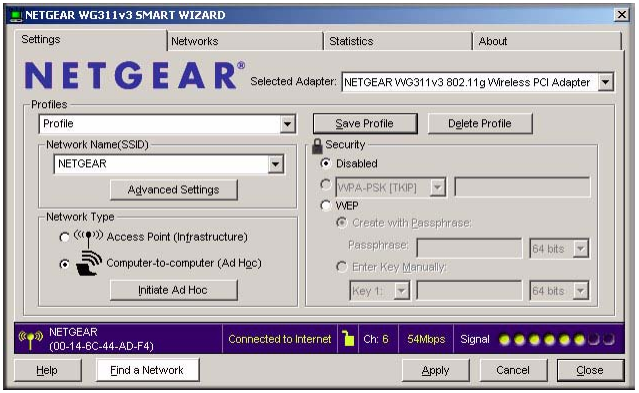


Figure 2-5

2. Save your settings in a Profile.

   a. Click the Save Profile button.

      All the configuration settings are saved in this profile.

   b. Click **Apply**.

   c. Click Close to exit the Smart Wizard, or Cancel to return to the previous settings.

3. Configure the PC network settings.

   a. Configure each PC with either a static IP address or with the IPX protocol.

	Note: For instructions on configuring static IP addresses, refer to the networking tutorial on your *NETGEAR 54 Mbps Wireless PCI Adapter WG311 v3 Resource CD*.

   b. Restart the PCs.

4. Verify wireless connectivity between your peer devices.

   Verify connectivity by using the Ping program:

   a. On the Windows taskbar click the Start button, and then click Run.

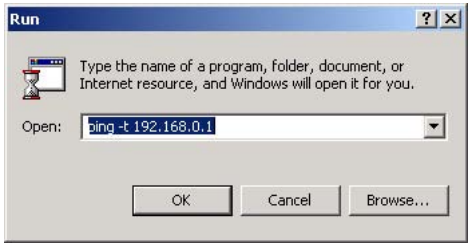


Figure 2-6

   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.”

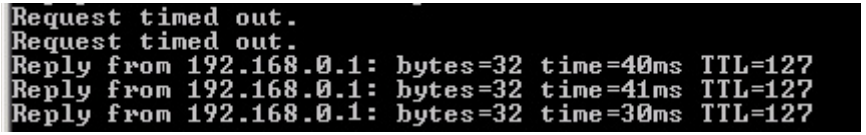


Figure 2-7

At this point the connection is established.

Note: If you cannot connect, see “Removing the WG311 v3 Software” 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. Please see the link to “Internet Networking and TCP/IP Addressing:” in Appendix B.

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

1. On the Settings tab page of the Smart Wizard, select or type the Network Name (SSID).
2. Select the Computer-to-Computer (Ad Hoc) network type.
3. Click Initiate Ad Hoc. The Ad Hoc Setting dialog box opens:



Figure 2-8

4. 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.
5. In the Channel field, Automatic should work. If you notice interference problems with another nearby wireless device, select a channel that is not being used by any other wireless networks near your wireless adapter. Use the Networks tab to view the channels in use in your area.

6. 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. If you try to connect to a network with wireless security the Smart Wizard detects it. Before you can use that network you must set up the WG311 v3 with exactly the same kind of wireless security settings. The main types of wireless security used for home networks are:

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

For more information about wireless security, see the wireless reference 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.

Using Wireless Security Features

You can strengthen the security of your wireless connection by enabling Wired Equivalent Privacy (WEP) encryption of the wireless data communications. Or, you can use WPA-PSK (Wi-Fi Protected Access Pre-Shared Key) encryption. For more information about wireless security, see the Web link to “Wireless Communications:” in Appendix B.

In addition to the WG311 v3 wireless security features, you should also configure appropriate LAN network security features such as requiring a user name and password to access the shared resources in your network.

Wireless Network Name (SSID) and Security Settings

Print this form, fill in the configuration parameters and put it in a safe place for possible 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 WG311 v3 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: The SSID in the wireless access point is the SSID you configure in the wireless PCI adapter. For the access point and wireless nodes to communicate with each other, all must be configured with the same SSID.

Wireless network name (SSID): _____

- **If WEP Authentication is Used.**
  - **WEP Encryption key size**. Identify one: **64-bit** or **128-bit**. The encryption key size must 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

Follow the steps below to configure WEP Encryption Security.

1. Run the WG311 v3 Smart Wizard.

a. Make sure the WG311 v3 software is installed and the WG311 v3 is installed in a PCI slot in your computer.

b. Use the icon to open the Smart Wizard. The Settings tab page opens.

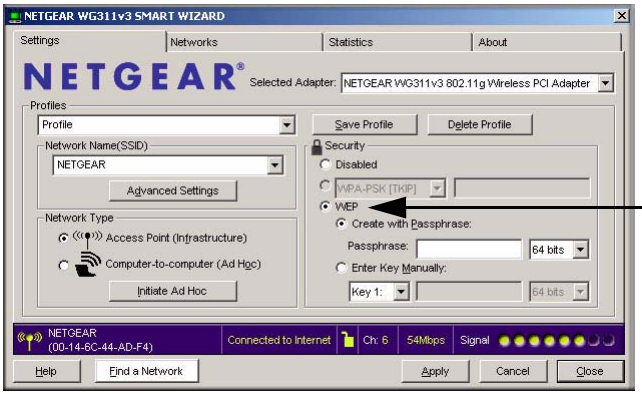


Figure 2-9

2. Configure the Security settings.

a. In the Profile box, select the profile or type in a profile name.

b. In the Network Name (SSID) field select the network, or enter the SSID.

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

c. In the Security section, select WEP.

3. Select the WEP encryption strength you will use.
   - 64-bit WEP data encryption
   - 128-bit WEP data encryption

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

4. 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.

5. Save your settings in a Profile.
   a. Click the Save Profile button. All the configuration settings are saved in this profile.
   b. Click **Apply**.
   c. Click Close to exit the configuration utility.

Setting up WPA2-PSK Security

Follow the steps below to configure WPA2-PSK Security.

1. Run the WG311 v3 Smart Wizard.

a. Make sure the WG311 v3 software is installed and the WG311 v3 is properly installed in the PCI slot in your computer.

b. Use the  icon to open the Smart Wizard. The Settings tab page opens.

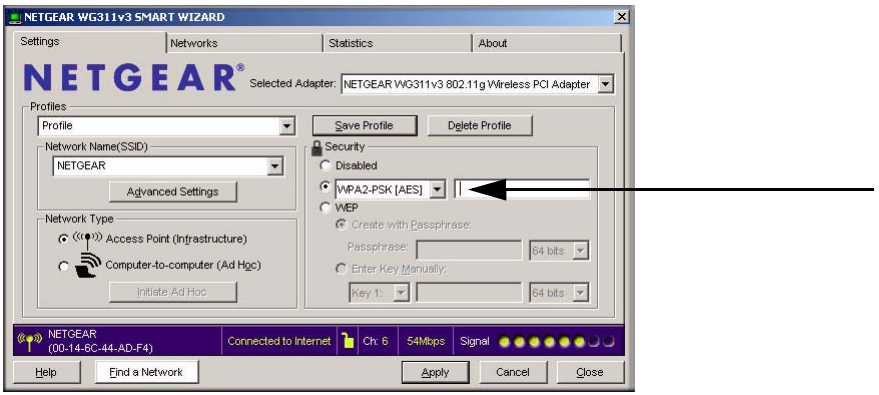


Figure 2-10

2. Configure the Security settings.

a. In the Profile box, select the profile or type in a profile name.

b. In the Network Name (SSID) field select the network, or enter the SSID.

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

c. In the Security section, select WPA2-PSK [AES].

For more information, see the link to "Wireless Communications:" in Appendix B.

3. Save your settings in a Profile.

a. Click the Save Profile button. All the configuration settings are saved in this profile.

b. Click **Apply**, and then click Close to exit the Smart Wizard.

Setting up WPA-PSK Security

Follow the steps below to configure WPA-PSK Security.

1. Run the WG311 v3 Smart Wizard.

a. Make sure the WG311 v3 software is installed and the WG311 v3 is properly installed in a PCI slot in your computer.

b. Use the  icon to open the Smart Wizard. The Settings tab page opens.

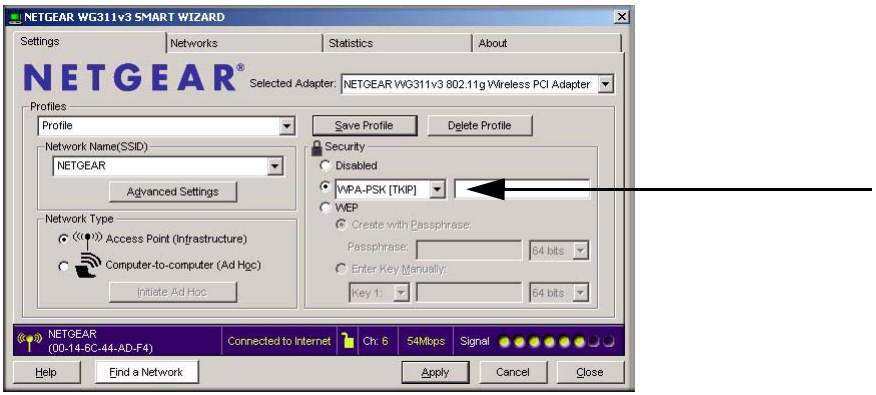


Figure 2-11

2. Configure the Security settings.

a. In the Profile box, select the profile or type in a profile name.

b. In the Network Name (SSID) field select the network, or enter the SSID.

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

c. In the Security section, select WPA-PSK [TKIP].

For more information, see the link to "Wireless Communications:" in Appendix B.

3. Save your settings in a Profile.

a. Click the Save Profile button. All the configuration settings are saved in this profile.

b. Click **Apply**, and then click Close to exit the Smart Wizard.

Advanced Settings

The Advanced Settings should normally work in their default settings. On the Settings tab click the Advanced Settings button to display the dialog box shown below:

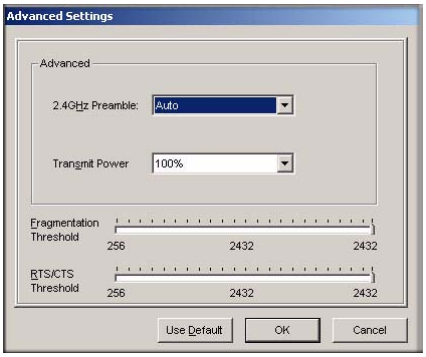


Figure 2-12

Statistics Page

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

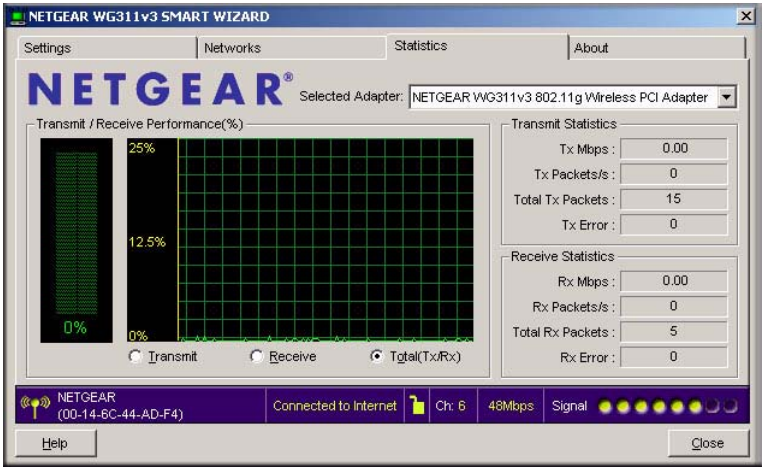


Figure 2-13

- **Transmit/Receive Performance (%):** A real time graph identifying the total, receive, and transmit utilization as a percentage 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 2-14

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.
- **Driver Version:** The wireless adapter driver version.
- **Driver Date:** The wireless adapter driver release date.

- **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.
- **Smart Wireless Utility:** The version and release date of the Smart Wizard.

Chapter 3
Troubleshooting

This chapter provides information about troubleshooting your WG311 v3 Wireless PCI Adapter. For information about connecting to wireless networks and the Internet, see “Connecting to Wireless Networks and the Internet” on page 1-7.

Troubleshooting Tips

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*.

Table 3-1. Troubleshooting Tips

Problem	Action
The WG311 v3 LEDs are not lit.	he WG311 v3 is not installed in the PCI slot properly or the WG311 v3 software is not loaded. • Remove and reinstall the WG311 v3. • Check the Windows device manager to see if the WG311 v3 is recognized and enabled. Reload the WG311 v3 software, if necessary. • Try to install the WG311 v3 in a different PCI slot in your computer if one is available.
The WG311 v3 wireless LED blinks but the WG311 v3 is not connected to an access point.	The WG311 v3 is trying to connect to an access point, but cannot. • The access point may not be powered on. • Or, the access point and the WG311 v3 are not configured with the same wireless parameters. Check the SSID and wireless security settings.
I cannot connect to an access point. The access point is available and there is good signal strength.	• If the access point is WPA-PSK protected, you need the correct WPA-PSK passphrase. Otherwise, the WG311 v3 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.

Table 3-1. Troubleshooting Tips (continued)

Problem	Action
The Smart Wizard keeps asking me to save settings.	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.
Two WG311 v3 icons are in the system tray.	You have an older software version installed on your system and it needs to be removed. See "Removing the WG311 v3 Software" in Chapter 1 or "Upgrading the WG311 v3 Software" in Chapter 1.
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. 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 WG311 v3 Wireless PCI Adapter IP address, click the WG311 v3 icon to open the Smart Wizard. Then check the IP address in the About page.
No IP address is assigned to the WG311 v3 Wireless PCI Adapter.	This may occur if you upgraded your WG311 v3 Wireless PCI Adapter software and did not reboot your system. • 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.

Windows XP Occasional Connection Problems

Windows XP users who apply Windows XP Hotfix (SP2) Q815485 from the Windows XP Update Service may not be able to connect to the Internet, may have dropped wireless connections, or both when using the WG311 v3 Wireless PCI Adapter. You can delete this Hotfix from the Add or Remove Program utility in the Control Panel.

To delete Windows XP Hotfix (SP2) Q815485:

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
Technical Specifications

This appendix provides technical specifications for the WG311 v3 Wireless PCI Adapter.

Antenna	1 Integrated internal antenna
Antenna	external antenna
Radio Data Rate	1, 2, 5.5, 11, 6, 9, 12, 18, 24, 36, 48, and 54 Mbps (Auto Rate Sensing)
Frequency	2.4GHz to 2.5GHz (CCK and OFDM Modulation)
Emissions	FCC, CE, TELEC
Bus interface	PCI
Provided drivers	Microsoft Vista, Windows XP, 2000, 98, and Me
Weight	40 g
LED	Link
Operating Environment	Operating temperature: 0 to 55 degrees C, 32 to 131 degrees F
Encryption	WPA2-PSK, WPA-PSK, and 40-bit (also called 64-bit) and 128-bit WEP data encryption
Warranty	Limited 1-year warranty

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
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*

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