NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B User Manual

NETGEAR

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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.

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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

Certification ID: FCC: PY306100041

IC: 4054A-06100041

The WN311B 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

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

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 WN311B product package.

Èesky [Czech]	NETGEAR, Inc. tímto prohlašuje, že tento NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt NETGEAR, Inc., dass sich das Gerät NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, NETGEAR, Inc., declares that this NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B atbilst Direktîvas 1999/5/EK bûtiskajâm prasîbâm un citiem ar to saistîtajiem noteikumiem.
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Slovensko [Slovenian]	NETGEAR, Inc. izjavlja, da je ta NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B v skladu z bistvenimi zahtevami in ostalimi relevantnimi doloèili direktive 1999/5/ES.

Slovensky [Slovak]	NETGEAR, Inc. týmto vyhlasuje, že NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B spåòa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	NETGEAR, Inc. vakuuttaa täten että NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B 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

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Contents

About This Manual

Conventions, Formats, and Scope ix

How to Print This Manual x

Chapter 1
Basic Setup

What You Need Before You Begin 4-2

Observe Wireless Location and Range Guidelines 4-2

Infrastructure and Ad Hoc Modes 4-2

WN311B Default Wireless Settings 4-3

Installation 4-4

Use the status bar to verify your wireless connectivity. 4-7

Connecting to Wireless Networks and the Internet 4-7

The Smart Wizard Status Bar 4-8

The WN311B Icon Colors 4-9

Removing the WN311B Software 4-10

Upgrading the WN311B Software 4-10

Chapter 2
Network Connections and Wireless Security

Understanding the WN311B Smart Wizard 5-1

Finding a Network 5-2

Profiles 5-3

Adding Profiles 5-3

Setting up a Profile to Connect to an Access Point or Router 5-3

Setting up a Computer-to-Computer (Ad Hoc) Profile 5-5

Starting a Computer-to-Computer (Ad Hoc) Network Connection 5-7

Wireless Security 5-8

Using Wireless Security Features 5-8

Wireless Network Name (SSID) and Security Settings 5-9

Setting up WEP Encryption Security 5-10

Setting up WPA2-PSK Security 5-11
Setting up WPA-PSK Security 5-13
Advanced Settings 5-14
Networks Page 5-14
Statistics Page 5-16
About Page 5-17

Chapter 3
Troubleshooting

Troubleshooting Tips 6-1
Frequently Asked Questions 6-2
XP Professional and XP Home occasional connection problems 6-3

Appendix A
Default Settings and Technical Specifications

Default Settings A-1
Technical Specifications A-2

Appendix B
Related Documents B1

About This Manual

The*NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B User Manual* describes how to install, configure, and troubleshoot the NETGEAR® WN311B Wireless PCI Adapter. 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 sections.

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

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

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

	Note: This format is used to highlight information of importance or special interest.
	Tip: This format is used to highlight a procedure that will save time or resources.
	Warning: Ignoring this type of note may result in a malfunction or damage to the equipment.
	Danger: This is a safety warning. Failure to take heed of this notice may result in personal injury or death.

- **Scope.** This manual is written for the WN311B Wireless PCI Adapter according to these specifications.

Product version	NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B
Manual publication date	May 2006

Product updates are available on the NETGEAR website at *http://kbserver.netgear.com/products/WN311B.asp.*

How to Print This Manual

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

- **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 right of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
  - 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 toner 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 toner by selecting this feature.

Chapter 1
Basic Setup

The NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B 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 Web site at *http://www.netgear.com*.

This chapter describes how to install your Wireless PCI Adapter and set up basic wireless connectivity on your Wireless Local Area Network (WLAN). Advanced wireless network set up is covered in Chapter 2, “Network Connections and Wireless Security” .

What’s in the Box?

The product package should contain the following items:

- NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B
- The antenna
- NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311T Installation Guide
- *Resource CD*, including:
  - Driver software
  - Smart Wizard setup software
  - Documentation including the NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311T Installation Guide, and the NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B User 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.

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 NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B, 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 WN311B 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 RangeMax™ NEXT Wireless PCI Adapter WN311B. 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.

Infrastructure and Ad Hoc Modes

The WN311B Wireless PCI Adapter, like all 802.11b/g adapters, can operate in the following two modes:

- **Access Point (Infrastructure):** An 802.11 networking framework in which devices and computers communicate with each other by first going through an access point (AP). For example, this mode is used when computers in a house connect to an AP that is attached to a router which lets multiple computers share a single Cable or DSL broadband Internet connection.
- **Computer-to-Computer (Ad Hoc):** An 802.11 networking framework in which devices or computers communicate directly with each other, without the use of an access point. For example, Ad Hoc mode is used when two Windows computers are configured with file and print sharing enabled and you want to exchange files directly between them.

The instructions in this chapter are for an Access Point (Infrastructure) installation. Wireless security, advanced settings, and Computer-to-Computer (Ad Hoc) instructions are covered in Chapter 2, “Network Connections and Wireless Security” of this manual.

WN311B 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 NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B factory default basic settings are:

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

	Note: In order for the WN311B 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**

The section below provides instructions for setting up the NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B for basic wireless connectivity to an access point. The procedures below provide step-by-step installation instructions for Windows PCs. Use the procedure that corresponds to the version of Windows that you are using.

Installation

1. First, install the WN311B software.

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

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

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

c. When the Installation Complete message appears, click Next.

d. On the Smart Wizard screen, click Next to proceed with the Smart Wizard setup.

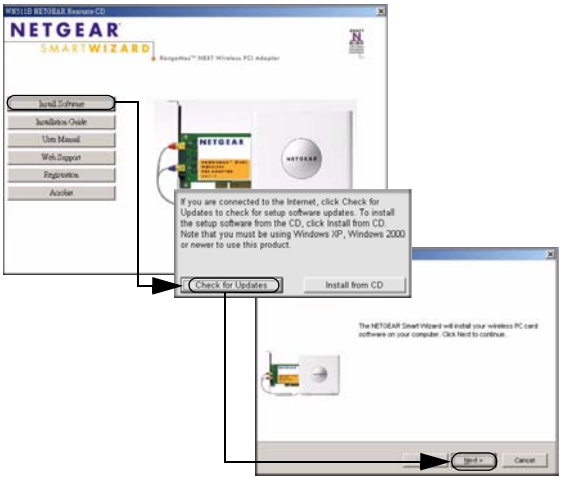


Figure 1-1

e. When prompted, select the country where you are located, and then click Agree.

2. Now, insert the wireless PCI adapter.

a. When prompted, shut down the computer.

b. Unplug the computer, open the case, and install the WN311B into a PCI slot.

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

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

Figure 1-2

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

a. Windows 2000 users skip to step c. For Windows XP users, choose to set up your wireless adapter either with the NETGEAR Smart Wizard (recommended) or the Windows configuration utility.

If you choose the Windows XP Zero Configuration option, then you must read the Windows XP documentation for instructions.

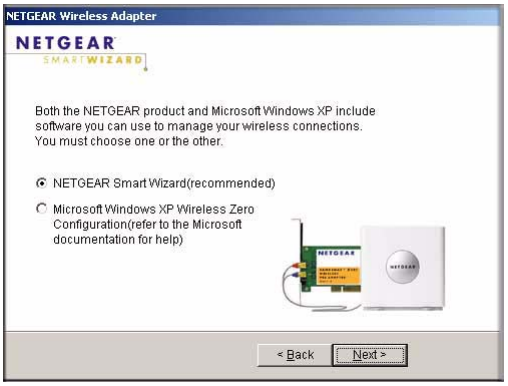


Figure 1-3

b. Click Next to accept the NETGEAR Smart Wizard.

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

c. Click Next to accept.

Figure 1-4

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

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

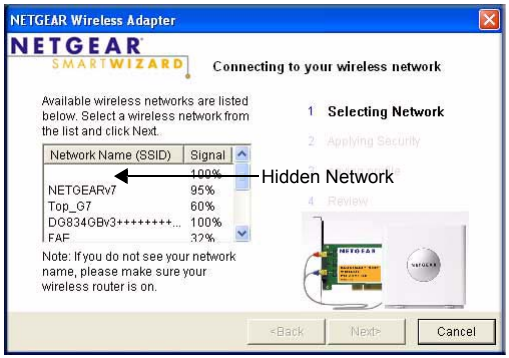


Figure 1-5

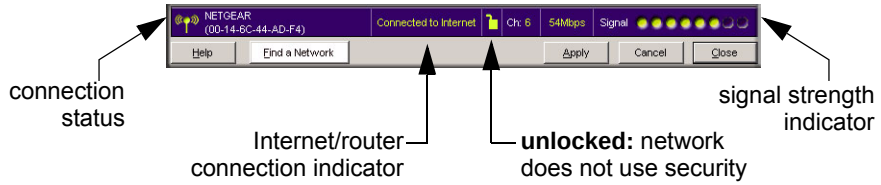
e. The Smart Wizard detects if the network uses security or not. Follow the Wizard steps for Security (if used) and for saving a Profile.

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

The WN311B icon appears in the system tray and on the desktop, and the Settings page opens. The wizard initiates your wireless connection. It could take up to a minute for your wireless connection to be established.

Use the status bar to verify your wireless connectivity.

The status bar is located at the bottom of the Settings page.



- The connection status indicator and the WN311B icon show the status of the connection.
- For details about the icons in the status bar, the WN311B LEDs, and troubleshooting tips, see the *User Manual* on the NETGEAR CD.
- The Internet/Router connection indicator shows the progress of your connection.

Connection Indicator	Description
Connected to Internet	Wireless Internet connection OK.
Connected to Router	Wireless connection to router OK but no Internet connection at router.
___.___.___.___ or 169.254..x.x	Wireless connection to a router OK but problem with the router. See the online help or *User Manual* for troubleshooting tips.

For more details about connecting, see "Connecting to Wireless Networks and the Internet" on page 4-7.

Connecting to Wireless Networks and the Internet

The WN311B has indicators in three locations that show the status of your connection to a wireless network and to the Internet:

- **WN311B Icon:** After you install the WN311B 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. See "The Smart Wizard Status Bar" on page 4-8.

- **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.
- **WN311B Wireless PCI Adapter LEDs:** The LEDs on the wireless PCI adapter show the network connection. The LEDs shoe an alternate blink when the wireless PCI adapter is looking for a network association. When there is a good connection, the LEDs blink together. If the LEDs are off, then the WN311B is not properly seated in the computer.

The Smart Wizard Status Bar

Click the WN311B icon to open the Smart Wizard so you can view the status bar. The Smart Wizard Settings page opens.

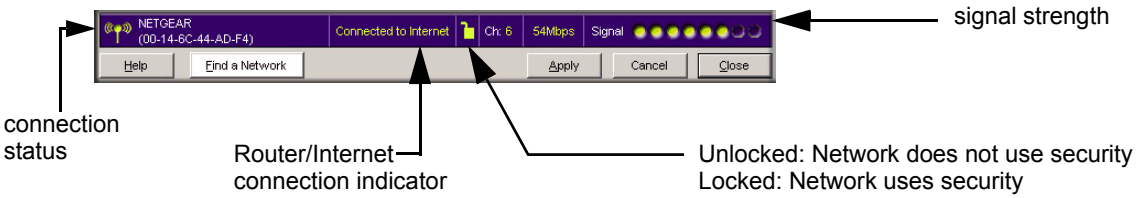


Figure 1-6

Connection Status: The color shows the connection status.

Signal Strength: Shows the signal strength of the wireless network. If the signal is poor, then try moving closer to the wireless access point.

Lock icon: Shows if security is used on the network.

Router/Internet Connection Indicator: This shows the progress of your connection. By default, this feature is on.

Figure 1-7

This connection indicator 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.

Connection Indicator	Description
Connected to Internet	Wireless Internet connection OK.
Connected to Router	Wireless connection to router OK but no Internet connection at router.
___.___.___.___ or 169.254..x.x	Wireless connection to a router OK but problem with the router. See Chapter 3, "Troubleshooting" .

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.

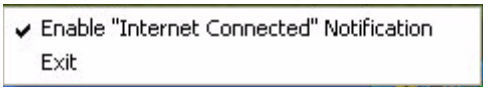


Figure 1-8

The WN311B Icon Colors

The WN311B icon is on the desktop and in the Windows System Tray (SysTray). The System Tray resides 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.

Removing the WN311B Software

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

- Navigate the Windows Start menu to the WN311B 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 WN311B Wireless PCI Adapter option, and follow the screen prompts.

Upgrading the WN311B Software

Upgrades may be available at the NETGEAR Web site. 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 Web site Support page.
3. Remove the WN311B software from your laptop computer.
4. Remove the WN311B adapter from your laptop computer, and if prompted restart your laptop computer.
5. Run the installer that you downloaded (the file ends in .exe).
6. Follow the installer instructions, and if prompted, then restart your laptop computer.

Chapter 2
Network Connections and Wireless Security

This chapter explains how to use your NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B to connect to your Wireless Local Area Network (WLAN) and how to set up wireless security for the WN311B so that it matches the wireless security settings for your network.

Understanding the WN311B Smart Wizard

	Note: These instructions explain how to use the NETGEAR WN311B Smart Wizard to change the WN311B wireless settings. If you use Windows XP, and chose the Windows XP configuration utility during installation, then you must disable it now. Open the network connections from the system tray icon, click the Properties button, click the Wireless Networks tab and then clear the “Use Windows to configure my wireless network settings” check box.

When you have installed the WN311B 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 Wizard. This software automatically restarts when you reboot your computer.

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

- Choose the network that you want to use
- Configure wireless settings for your wireless PCI adapter
- Monitor wireless network connections
- Save your settings in profiles
- Remove or reinstall the wireless adapter software

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

Finding a Network

During the WN311B 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.

Follow the steps below to Find a Network.

1. Use the icon to open the Smart Wizard.

   The Settings tab page opens.

2. On the Networks tab page, click **Find a Network**.
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.

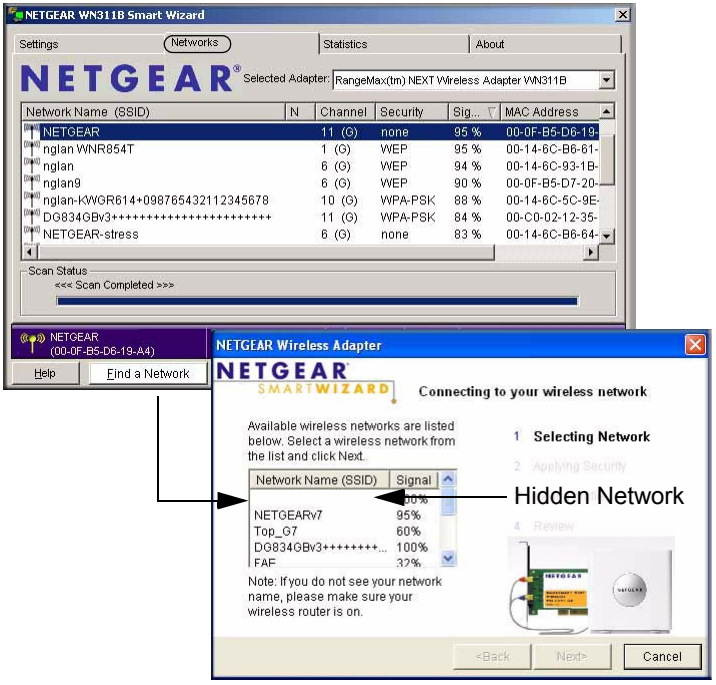


Figure 2-1

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 4-8.

Profiles

The WN311B 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 WN311B 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.

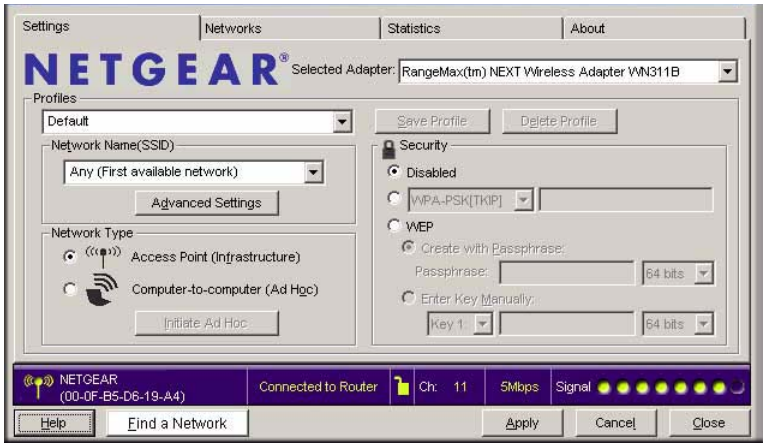


Figure 2-2

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.

   Verify connectivity by using a browser such as Netscape or Internet Explorer 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. 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 refer 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 *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.
2. Enter the network settings.
   a. Select Computer-to-Computer (Ad Hoc) for the Network Type.
   b. Select or enter the Network Name (SSID) for the Ad Hoc network.
   c. In the Profile box, type the name of the profile.
   d. Click **Apply**.

need screen shot of settings page in ad hoc mode with security disabled

Figure 2-3

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 Smart Wizard, or Cancel to return to the previous settings.

4. 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 *Resource CD*.

b. Restart the PCs.

5. 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.

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.

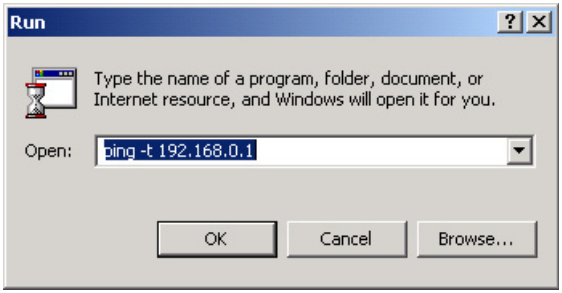


Figure 2-4

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 2-5

At this point the connection is established.

	Note: If you cannot connect, see "Removing the WN311B Software" in Chapter 4. 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 2-6

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 page to identify 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 WN311B with exactly the same kind of wireless security settings. The WN311B 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 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.

The procedures below explain how to configure the wireless encryption settings of your NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B.

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 WN311B 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.

The procedures below show how to set up the WEP encryption settings of your NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B.

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 WN311B 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 match 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.

Use the procedures below to set up basic security settings in the WN311B.

Setting up WEP Encryption Security

Follow the steps below to configure WEP Encryption Security.

1. Run the WN311B Smart Wizard.
   a. Make sure the WN311B software is installed and the WN311B is installed in a PCI slot in your computer.
   b. Use the icon to open the Smart Wizard. The Settings tab page opens

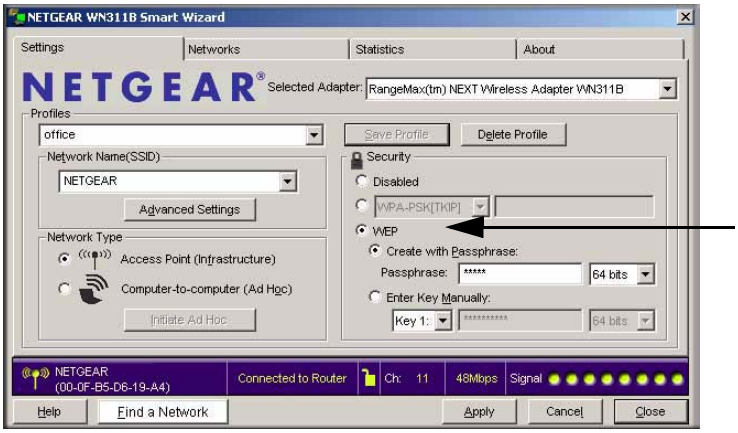


Figure 2-7

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.

   The choices are:
   - 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/g 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 WN311B Smart Wizard.
   a. Make sure the WN311B software is installed and the WN311B is properly installed in the PCI slot in your computer.

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

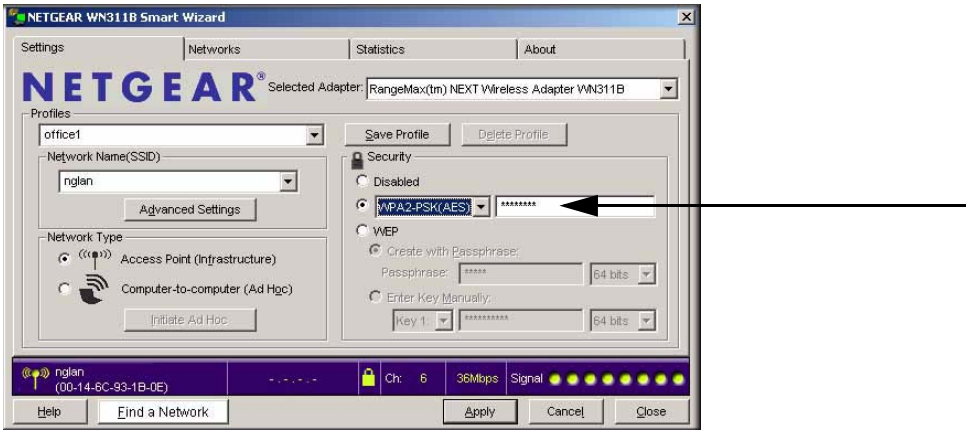


Figure 2-8

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], and enter the passphrase.

   The passphrase can be a word or group of printable characters. For more information about WPA2-PSK security, see the Web 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**.

   c. Click Close to exit the Smart Wizard.

Setting up WPA-PSK Security

Follow the steps below to configure WPA-PSK Security.

1. Run the WN311B Smart Wizard.
   a. Make sure the WN311B software is installed and the WN311B 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 2-9

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 WPA-PSK [TKIP] and enter the passphrase.

      The passphrase can be a word or group of printable characters. For more information on WPA security, see the Web 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**.

c. 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 and make any adjustments.

Networks Page

The Networks Page scans and displays all available wireless networks in your area.

1. Use the icon to open the Smart Wizard. The Settings tab page opens.
2. Click the Networks tab.

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

- **Help:** Display online help.
- **Find a Network:** Use the wizard to help you connect to a network. See "Finding a Network" on page 5-2.
- **Connect:** Connect to the network that you selected.
- **Scan:** Check for wireless networks.
- **Close:** Close the window of the Wizard.

Figure 2-10

The screen also 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 WEP or WPA-PSK security settings.
- **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).

	Note: You can click the Scan button to scan for networks and refresh the page.

Statistics Page

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

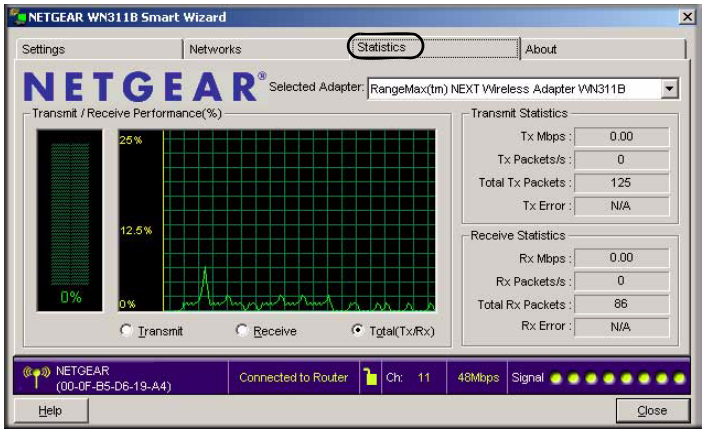


Figure 2-11

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

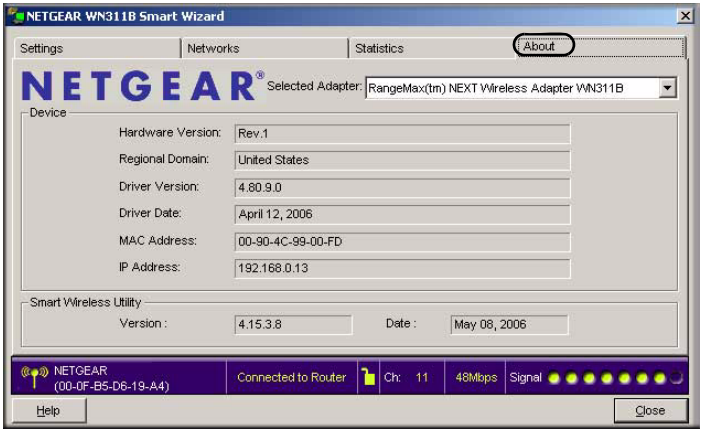


Figure 2-12

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.
- **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 NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B. After each problem description, instructions are given to help you diagnose and solve the problem. For information about connecting to wireless networks and the Internet, see "Connecting to Wireless Networks and the Internet" on page 4-7.

Also, for problems with accessing network resources, the Windows software might not be installed and configured properly on your computers. Please refer to the link to "Internet Networking and TCP/IP Addressing:" in Appendix B.

Troubleshooting Tips

Symptom	Cause	Solution
The LED is not lit.	The WN311B is installed in the PCI slot properly or the WN311B software is not loaded.	Remove and reinstall the WN311B. Check the Windows device manager to see if the WN311B is recognized and enabled. Reload the WN311B software, if necessary. Try to install the WN311B in a different PCI slot in your computer if one is available.
The wireless LED blinks and cannot connect to an access point.	The WN311B is attempting to connect to an access point, but cannot connect.	The access point may not be powered on. Or, the access point and the WN311B are not configured with the same wireless parameters. Check the SSID and WEP settings.
I can connect to an access point, but I cannot connect to other computers on the network or the Internet.	This could be a physical layer problem or a network configuration problem.	Check to make sure that the access point is physically connected to the Ethernet network. Make sure that the IP addresses and the Windows networking parameters are all configured correctly. Restart the cable or DSL modem, router, access point, and notebook PC.

Frequently Asked Questions

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

The WN311B Smart Wizard keeps asking me to save my settings

This is because you have made changes to the settings and the Smart Wizard is offering you the chance to save the changes. If you want to avoid these Profile setting prompts, simply click **Apply** before you close the Smart Wizard.

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.

How to use the wireless configuration utility that comes with Windows XP

During the WN311B software installation the wizard prompts you to choose either the NETGEAR Smart Wizard or the Windows configuration utility. Be sure the WN311B is properly installed in the PCI slot in the computer and follow these instructions to change your selection.

1. Go to Control Panel and select Network Connections.
2. Right click on the connection and select Properties.
3. Click the Wireless Networks tab.
4. Select or clear the WN311B “Use Windows to configure my wireless network settings” check box.

Did the WN311B card receive a valid IP address from the Wireless Router/AP?

The easiest way is to click the system tray icon to open the WN311B Smart Wizard. Then check the IP address in the About page.

I cannot connect to the AP that I want from the Networks browser list.

The access point is available and there is good signal strength. There are a few possibilities:

- If the access point (AP) is WPA-PSK protected, you will need the correct WPA-PSK passphrase. Otherwise, the WN311B 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.

The WN311B is not getting an IP address

You probably upgraded your WN311B software and did not reboot your system.

To get an IP address assigned, you can either restart your computer or choose another access point to connect to. If there are no additional access points for you to choose from, restart your system and connect to your desired access point again.

	Note: It does not usually help to shut down the Smart Wizard or disable/enable the card.

Why do I see two WN311B icons in the System Tray?

If you see two WG511 icons in the System Tray at the bottom right corner of the screen, you have an older software version installed on your system and it needs to be removed. See "Removing the WN311B Software" on page 4-10 or "Upgrading the WN311B Software" on page 4-10.

XP Professional and XP Home occasional connection problems

Some WN311B 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.
3. You may receive an error message that states that some program on the computer may not work correctly if the update is removed.
4. You can ignore this error message, and then click Yes to remove the update.
5. 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:

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

Appendix A
Default Settings and Technical Specifications

Default Settings

The following table lists the default settings of your Wireless USB 2.0 Adapter.

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*
	Country/Region	United States (varies by region)
	Operating Mode	g and b, up to 270 Mbps, g only up to 270 Mbps
	Data Rate	up to 300 Mbps

*. 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

This table below describes technical specifications for the NETGEAR RangeMax™ NEXT Wireless PCI Adapter WN311B.

Antennas	Detachable antenna
Standards	802.11g, 802.11b
Radio Data Rate	1, 2, 5.5, 6, 6.5, 9, 11, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 81,104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, and 300 Mbps
Frequency	2.4GHz to 2.5GHz CCK, BPSK, QPSK, 16-QAM, 64-QAM Modulations
LED	Single LED • Solid indicates connected to network. • Blinking indicates attempting to connect to network.
Power	3.3V bus powered
Emissions	FCC Part 15 Class B, CE
Bus interface	PCI
Provided drivers	Microsoft Windows XP and Windows 2000
Operating Environment	Operating temperature: 0 to 45 degrees C, 32 to 113 degrees F
Encryption	40-bit (also called 64-bit) and 128-bit WEP data encryption, WPA2-PSK, and WPA-PSK
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
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*

Industry Canada Statement
Operation is subject to the following two conditions:
1) this device may not cause interference and
2) this device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 1dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna
impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:
IC Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.