# NETGEAR RangeMax Wireless-N ExpressCard WN711 User Manual

# NETGEAR®

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

202-10259-05
June 2008

## 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

North American NETGEAR website: *http://www.netgear.com*

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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 NETGEAR RangeMax Wireless-N ExpressCard WN711 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

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This device and its antenna(s) must not be co-located or operated in conjunction with any other antenna or transmitter. For products available in the USA market, only channels 1through 11 can be operated. Selection of other channels is not available.

## FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

## FCC RF Radiation Exposure and SAR Statements

### SAR Statement

The NETGEAR RangeMax Wireless-N ExpressCard WN711 has been tested for body-worn Specific Absorption Rate (SAR) compliance. The FCC has established detailed SAR requirements and has established that these requirements have been met while installed in a host notebook computer.

### RF Exposure Information

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

## 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.

## Europe – EU Declaration of Conformity $\quad$ CE ①

A printed copy of the EU Declaration of Conformity certificate for this product is provided in the WN711 product package.

| [cs] Česky [Czech] | *[NETGEAR Inc.]* tímto prohlašuje, že tento *[NETGEAR RangeMax Wireless-N ExpressCard WN711]* je ve shode se základními požadavky a dalšími príslušnými ustanoveními smernice 1999/5/ES. |
|---|---|
| [da] Dansk [Danish] | Undertegnede *[NETGEAR Inc.]* erklærer herved, at følgende udstyr *[NETGEAR RangeMax Wireless-N ExpressCard WN711]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF. |
| [de] Deutsch [German] | Hiermit erklärt *[NETGEAR Inc.]*, dass sich das Gerät *[NETGEAR RangeMax Wireless-N ExpressCard WN711]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet. |
| [et] Eesti [Estonian] | Käesolevaga kinnitab *[NETGEAR Inc.]* seadme *[NETGEAR RangeMax Wireless-N ExpressCard WN711]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele. |

| | |
|---|---|
| [en] English | Hereby, *[NETGEAR Inc.]*, declares that this *[NETGEAR RangeMax Wireless-N ExpressCard WN711]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. |
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## Product and Publication Details

| | |
|---|---|
| **Model Number:** | WN711 |
| **Publication Date:** | June 2008 |
| **Product Family:** | Wireless Adapter |
| **Product Name:** | NETGEAR RangeMax Wireless-N ExpressCard WN711 |
| **Home or Business Product:** | Home |
| **Language:** | English |
| **Publication Part Number:** | 202-10259-05 |

# Contents

*v1.0, June 2008*

# About This Manual

The *NETGEAR® RangeMax™ Wireless-N ExpressCard WN711 User Manual* describes how to install, configure and troubleshoot the NETGEAR RangeMax Wireless-N ExpressCard WN711. 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::

| *Italic* | Emphasis, books, CDs, file and server names, extensions |
|---|---|
| **Bold** | User input, IP addresses, GUI screen text |
| Fixed | Command prompt, CLI text |
| *italic* | URL links |

* **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 Wireless Express Card according to these specifications:

| Product Version | NETGEAR RangeMax Wireless-N ExpressCard WN711 |
|---|---|
| Manual Publication Date | June 2008 |

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://www.netgear.com/support*.

## How to Use This Manual

The HTML version of this manual includes the following:

- Buttons, $\boxed{>}$ and $\boxed{<}$, for browsing forward or backward through the manual one page at a time.

- A $\boxed{\equiv}$ button that displays the table of contents and a $\boxed{}$ button that displays an index. Double-click a link in the table of contents or index to navigate directly to where the topic is described in the manual.

- A $\boxed{}$ 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 options, according to your needs.

- **Printing a page from HTML**. Each page in the HTML version of the manual is dedicated to a major topic. Select File > Print from the browser menu to print the page contents.

- **Printing from PDF**. Your computer must have the free Adobe Acrobat reader installed in order to view and print PDF files. The Acrobat reader is available on the Adobe Web site at *http://www.adobe.com*.

  – **Printing a PDF chapter.** Use the **PDF of This Chapter** link at the top left corner of any page.

    • Click the **PDF of This Chapter** link at the top left corner 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 your browser window.

x

– **Printing a PDF version of the complete manual**. Use the **Complete PDF Manual** link at the top left corner of any page.

- Click the **Complete PDF Manual** link at the top left corner 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 corner of your browser 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. |

The NETGEAR® RangeMax™ Wireless-N ExpressCard WN711 User Manual lets you connect a computer to wireless networks. It is designed for laptop 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 Wireless Express Card and set up basic wireless connectivity on your wireless local area network (WLAN). Advanced wireless network settings are covered in Chapter 2, "Network Connections and Wireless Security" in this manual.

## What You Need Before You Begin

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

## Verify System Requirements

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

- A Pentium 300 MHz or higher compatible processor with an available Express Card slot.
- A CD drive.
- 105 MB of free hard disk space.
- Microsoft Vista, Windows XP Home, or XP Professional

    Some versions of Windows might ask for the original Windows operating system installation files to complete the installation of the WN711 driver software.

## Observe Wireless Location and Range Guidelines

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

- Large metal surfaces

- Microwave ovens
- 2.4 GHz cordless phones

In general, wireless devices can communicate through walls. However, if the walls are constructed with concrete, or have metal or metal mesh, the effective range decreases if such materials are between the devices. For more detailed information, see Chapter 3, "Wireless Network Performance".

# What Is in the Box

The product package should contain the following items:

- NETGEAR RangeMax Wireless-N ExpressCard WN711
- Installation Guide
- *Resource CD*, including:
    - The Smart Wizard Installation Assistant
    - This manual
- Warranty and Support information card

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

## Default Wireless Settings

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

Your Wireless Express Card factory default basic settings are:

• Network Name Service Set Identifier (SSID): **Any**

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

• Network Mode (Infrastructure or Ad Hoc): **Infrastructure**

• Data security WEP, WPA2-PSK, or WPA-PSK encryption: **Disabled**

# Installation

The instructions in this section explain how to install the Wireless Express Card 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 Wireless Express Card:

**1.** First, install the WN711 software.

Insert the *Resource CD*. If the CD main screen does not display, double-click **Autorun.exe** on the CD.

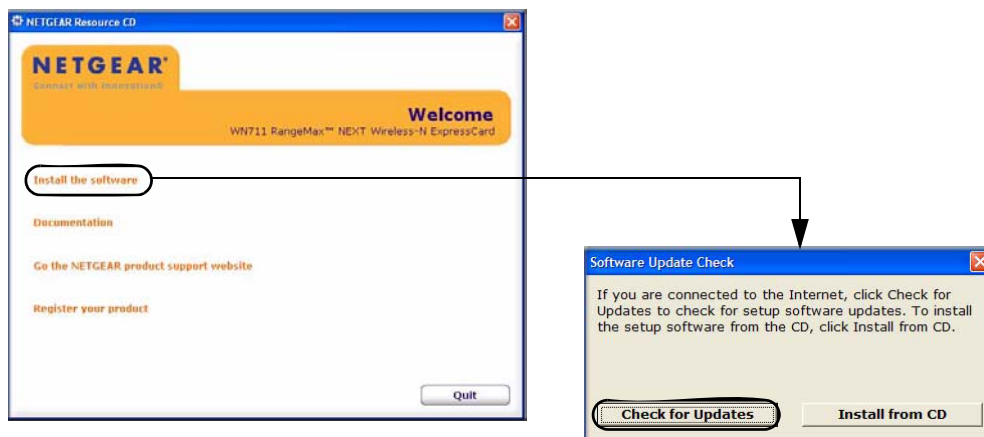**a.** Click **Install the Software**. The Check for Updates screen displays.



**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 onscreen instructions for the InstallShield wizard and the NETGEAR Smart Wizard™.

- For Windows XP computers, if a Windows logo testing message displays, click **Continue Anyway**.

- If a message that Windows Vista cannot verify the publisher of this driver displays, click **Install this driver software anyway**.

    **d.** When the Installation Complete message displays, click **Next**.

**2.** Now, insert the Wireless Express Card.



**Figure 1-2**

Locate an available Express Card slot in your computer, and insert the wireless Express Card into the slot.

- For Windows XP computers, the Found New Hardware Wizard opens. Follow the wizard prompts.

- For Windows Vista computers, the Express Card is automatically added with the installed driver.

**3.** Set up the wireless adapter 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. See "Smart Wizard Status Bar" on page 1-8 and "Connecting to Wireless Networks and the Internet" on page 1-7.

- **Windows configuration utilities**. See the Windows documentation or click the link to the online document "Using Microsoft Vista and Windows XP to Manage Wireless Network Connections" in Appendix B.

**4.** Use the Smart Wizard to set up your Wireless Express Card.

When prompted, click **Next** to let the wizard help you connect to a network (recommended).



**Figure 1-4**

**5.** Depending on whether or not a wireless access point or router in the network supports a Wi-Fi Protected Setup (WPS), there are two possibilities:

•  If a wireless access point or router in the network supports WPS, a WPS screen displays. Select **Yes** to connect to the access point or router through WPS, and then click **Next**. Follow the wizard.

> **→**  **Note:** See "Using WPS to Connect to a Wireless Network" on page 2-5for a detailed explanation of how to connect to an access point or router through WPS.

•  If none of the wireless access points or routers in the network support WPS, the following screen displays. Select the wireless network from the list, and then click **Next**. The wizard records your choice. If the network uses security, then the Smart Wizard detects it. Follow the wizard steps for security (if used) and for saving a profile.
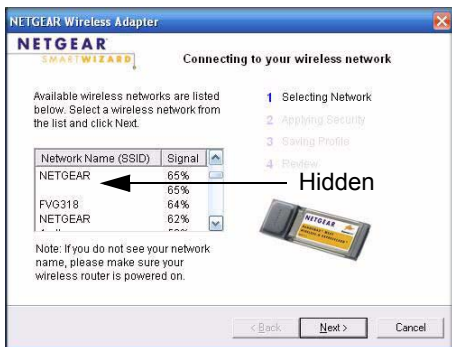


**Figure 1-5**

> **→**  **Note:** Hidden networks do not broadcast the network name (SSID). These networks are in the list, but the Network Name (SSID) field is blank.

The WN711 icon ![icon] appears in the system tray and on the desktop. The wizard initiates your wireless connection. It could take up to a minute to establish your wireless connection. The Smart Wizard Settings screen displays.



**Figure 1-6**

**6.** Use the status bar to verify your wireless connectivity. See "Connecting to Wireless Networks and the Internet" on page 1-7.

# Connecting to Wireless Networks and the Internet

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

*   ![icon] **Icon:** After you install the software, this icon appears on the desktop and in the lower right of the Windows task bar. It is color coded to show the status of the connection. See "Smart Wizard Status Bar" on page 1-8.

*   **Smart Wizard status bar.** Click the WN711 icon to open the Smart Wizard. The status bar at the bottom of the screen shows details about your wireless and Internet connection.

*   **Wireless Express Card LED**. The LED on the Wireless Express Card shows the network connection. Solid indicates a connection. The LED blinks when the Wireless Express Card is transferring data.

1-7

# WN711 Icon Colors

The WN711 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 Express Card has no connection to any other wireless node. | The Wireless Express Card cannot 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 Express Card has a connection with another wireless node. | The wireless link is weak. You might 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 Express Card has a connection with another wireless node. | The Wireless Express Card has established good communication with an access point, and the signal quality is strong. |

# Smart Wizard Status Bar

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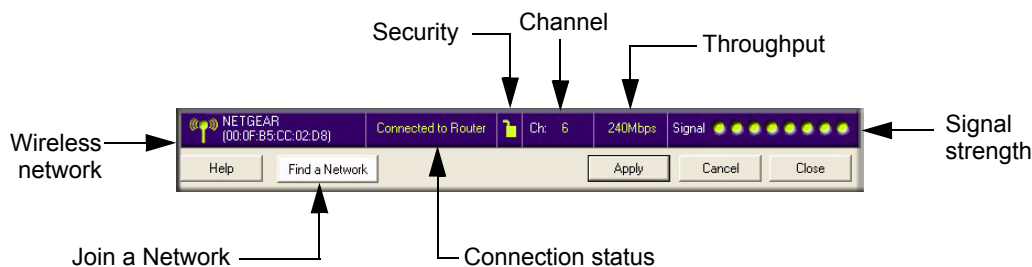


**Figure 1-7**

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.<br>• **Unlocked**. Security not enabled. |

| Understanding the Status Bar (continued) | |
|---|---|
| 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 experience higher throughput when the signal is strongest. |
| Join a Network | Click **Join a Network** to open the Connection Wizard. |
| Connection status | Identifies the status of your network connection.<br>• **Connected to Internet**. The Internet connection is OK.<br>• **Connected to Router**. The wireless connection to the router is OK, but the router is not connected to the Internet.<br>• **169.254.x.x or ___.___.___.___** . The wireless connection to the router is OK, but there is a problem with the router. See Chapter 4, "Troubleshooting". |

To optimize throughput, connect to a network with a high-speed router or access point, and a high-speed Internet connection. For more information about optimizing wireless performance, and network bandwidth, see "Optimizing Wireless Performance" on page 3-1 and "Optimizing Your Network Bandwidth" on page 3-2

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 the system tray icon, you can disable the Internet notification feature by clearing the check mark enabling notification, as shown in the following figure. If you do so, then only the IP address is shown.



**Figure 1-8**

In Vista, there is one more option: Enable NETGEAR Smart Wizard.
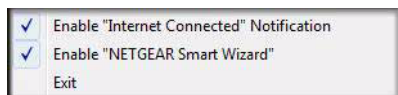


**Figure 1-9**

If you clear the check mark for Enable NETGEAR Smart Wizard, the NETGEAR Smart Wizard will be disabled, and you will need to set up the wireless adapter with Vista Auto configuration.

# Removing the WN711 Software

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

- From the Windows taskbar, click Start, and select the NETGEAR WN711 Smart Wizard program group Uninstall option, and follow the screen prompts.

- For Windows XP, from the Windows taskbar, click the Start button, select Control Panel, Add or Remove Program, and follow the screen prompts.

- For Vista, from the Windows taskbar, click the Start button, select Control Panel, Programs and Features. Then select the NETGEAR WN711 wireless adapter option, and follow the screen prompts.

# Upgrading the WN711 Software

Upgrades might be available at the NETGEAR website.

To install an upgrade:

1. Write down the settings for any profiles that you want to save. They will not be retained.

2. Download the upgrade from the NETGEAR Support page.

3. Remove the WN711 software from your computer.

4. Remove the Wireless Express Card adapter from your computer, and if prompted restart your computer.

5. Run the installer that you downloaded (the file ends in .exe).

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

This chapter explains how to use your Wireless Express Card to connect to your wireless local area network (WLAN) and how to set up wireless security for the Wireless Express Card so that it matches the wireless security settings for your network.

If you chose the Windows XP Zero configuration 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, click the link to the online document "Using Microsoft Vista and Windows XP to Manage Wireless Network Connections" in Appendix B.

## Disabling the Windows XP Zero Configuration Utility

To disable the Windows Zero Configuration utility:

1. Insert the wireless adapter into an Express Card slot in your computer.

2. From the Windows taskbar, click Start, select Control Panel, Network Connections.

3. On the Network Connections screen, right-click Wireless Network Connection, and select Properties.
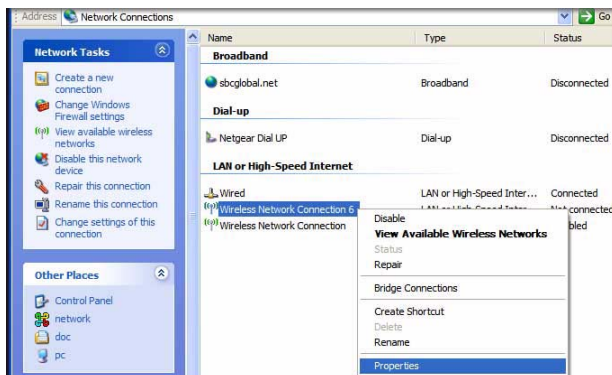


**Figure 2-1**

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

---

2-1

# Understanding the Smart Wizard

These instructions explain how to use the NETGEAR WN711 Smart Wizard to change the Wireless Express Card wireless settings.

When you have installed the software from the *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 connection
- 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.
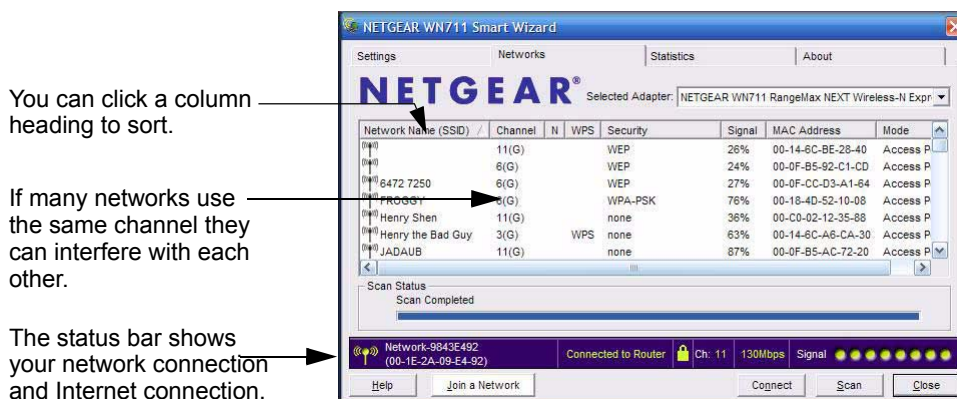
# Viewing Wireless Networks in Your Area

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 screen.

To view information about wireless networks:

1. Use the 🖥 icon to open the Smart Wizard. The Settings tab displays.
2. Click the Networks tab to view the following screen:

You can click a column heading to sort.

If many networks use the same channel they can interfere with each other.

The status bar shows your network connection and Internet connection.

**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 setting. Note that as a security measure, some wireless access points do not broadcast their SSID. In such cases, the SSID field is blank even though the rest of the information is still displayed.

- **Channel.** The channel determines which operating frequency will be used.

- **N.** The router supports wireless N mode.

- **WPS**. The access point supports WPS.

- **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.

- **Join a Network**. Join a network. See "Joining a Network" on page 2-4.

- **Connect**. Connect to the network that you selected.

- **Scan**. Check for wireless networks. Clicking **Scan** refreshes the screen.

- **Close**. Close the Wizard.

# Joining a Network

During installation, the wireless adapter either connects to a wireless access point or router, or lists the available networks to let you select a network. After installation you can use the **Join a Network** button or the Networks tab at any time to connect to another access point or router or to view the available networks and select one:

• If none of the wireless access points or routers in the network support WPS, or if you prefer to manually select a network, see "Connecting to Wireless Networks and the Internet" on page 1-7.

• If a wireless access point or router in the network supports Wi-Fi Protected Setup (WPS), see "Using WPS to Connect to a Wireless Network".

→ **Note:** Unless you are using WPS, 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.

Depending on whether or not a wireless access point or router in the network supports Wi-Fi Protected Setup (WPS), the Smart Wizard presents different screens.

To join a network:

1. Use the 🔲 icon to open the Smart Wizard. On the status bar, click **Join a Network**.



**Figure 2-3**

2. If the Smart Wizard detects an access point or router with WPS, it displays the WPS screen. To connect manually, select No, and click **Next**.

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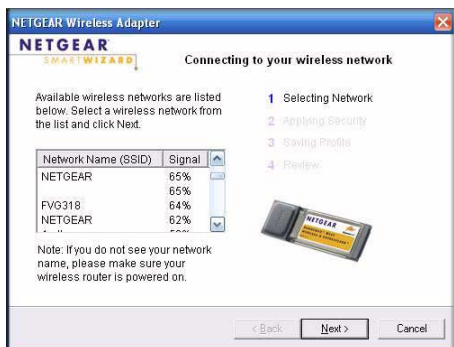


**Figure 2-4**

**4.** Follow the steps of the wizard to specify the wireless security if used, and to create a profile.

**5.** Review your settings, and click **Finish**.

**6.** You can use the status bar to verify your network connection. For more information, see "Smart Wizard Status Bar" on page 1-8. Click **Close** to exit the Smart Wizard.

## Using WPS to Connect to a Wireless Network

If an access point or router in the wireless network that you try to connect to supports WPS, you can use WPS to set up the WN711 wireless settings and connect securely to the access point or router. (An access point or router that supports WPS has a WPS symbol.) WPS automatically configures the network name (SSID) and WPA security key for the access point or router and the WN711. Note that WPS is not a new security feature—it makes existing security features easier to configure.

For an access point or router that supports WPS, there are two methods to enable WPS with a client such as the WN711:

- **Push Button Configuration (PBC)**. To enable WPS, press a push button or push dome on the access point or router, or click an onscreen button in the software. This is a fairly new technology, so only some access points and routers provide a PBC.

- **PIN entry**. To enable WPS, in the Smart Wizard for the WN711, enter a personal identification number (PIN) that is associated with the access point or router.

### Using a WPS Button to Connect to a Wireless Access Point or Router

To join a network using a PBC:

**1.** Use the 🔵 icon to open the Smart Wizard. On the status bar, click **Join a Network**. The adapter detects a network with WPS:
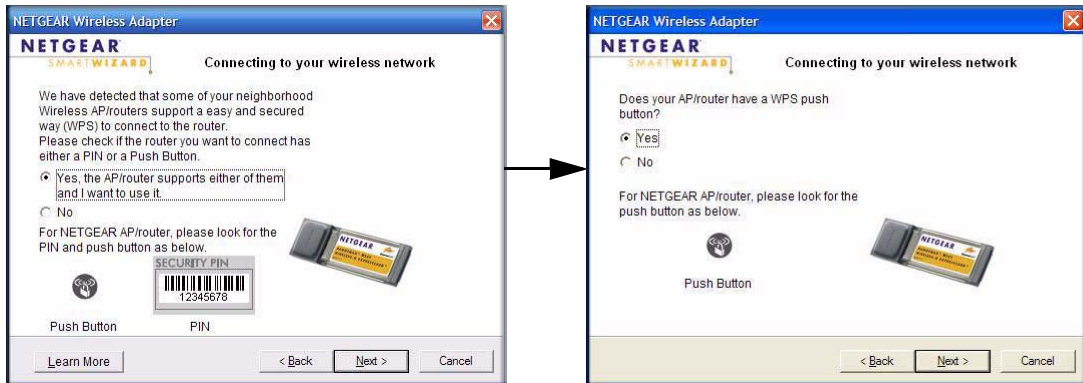


**Figure 2-5**

**2.** Select **Yes** to use WPS, and then click Next.

**3.** Select **Yes** (to use a push button), and then click **Next**.

**4.** On the access point or router that you have selected, open its Smart Wizard or configuration utility.

**5.** Select Add WPS Client. On the Add WPS Client screen, select **Push Button**.

**6.** To start the WPS process, either press the push button on the access point or router, or click the 🟢 icon on the Add WPS Client screen.

**7.** Within 2 minutes, return to the Smart Wizard screen for the WN711, and click the 🟢 icon. The Smart Wizard initiates your wireless connection.

**8.** You can use the status bar to verify your network connection. For more information, see "Smart Wizard Status Bar" on page 1-8. Click **Close** to exit the Smart Wizard.

**9.** Close the Smart Wizard or configuration utility for the access point or router.

### Using the Router PIN to Connect to a Wireless Access Point or Router

If you know the router PIN, then you can enter it to to connect to the router with WPS. If you do not know the router PIN, then the wireless adapter can generate a PIN to connect to the router. See "Generating a PIN to Connect to a Wireless Access Point or Router" on page 2-8.

To connect to a WPS router or access point using its PIN:

1. Use the 🔲 icon to open the Smart Wizard. On the status bar, click **Join a Network**. (or click the Networks tab and select a network).

   The wireless adapter detects the network with WPS.



   **Figure 2-6**

2. Select **Yes** to use WPS, and then click **Next**.

3. Select **No** (to use a PIN), and then click **Next**.
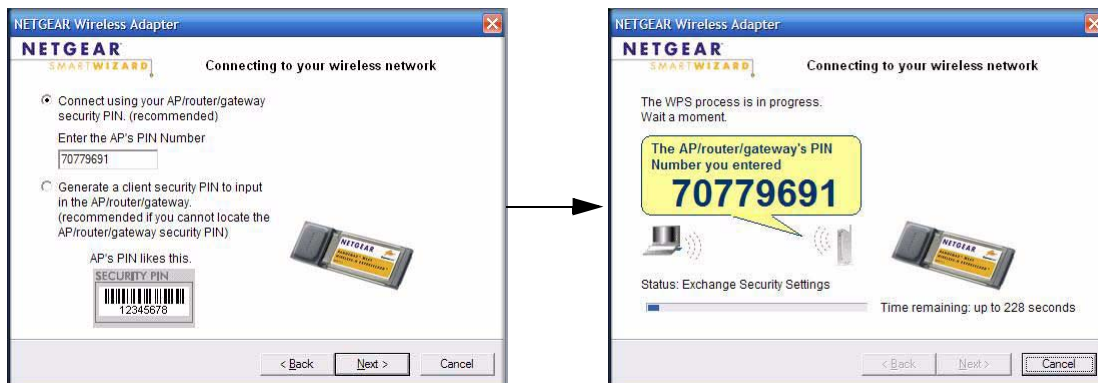


   **Figure 2-7**

**4.** When prompted, enter the router PIN, and then click **Next**.

The Smart Wizard initiates your wireless connection. Within 4 minutes it displays a message telling you whether or not it successfully connected to the WPS router or access point.

**5.** You can use the Status Bar to verify your network connection. For more information, see "Smart Wizard Status Bar" on page 1-8. Click **Close** to exit the Smart Wizard.

### Generating a PIN to Connect to a Wireless Access Point or Router

The wireless adapter can generate a PIN to connect to the router. This is useful if you do not know what the router PIN is. If you know the router PIN and want to enter it, see"Using the Router PIN to Connect to a Wireless Access Point or Router" on page 2-7.

To generate a PIN and connect to a WPS wireless router or access point:

**1.** Use the [icon] icon to open the Smart Wizard. On the status bar, click **Join a Network** (or click the Networks tab and select the network).
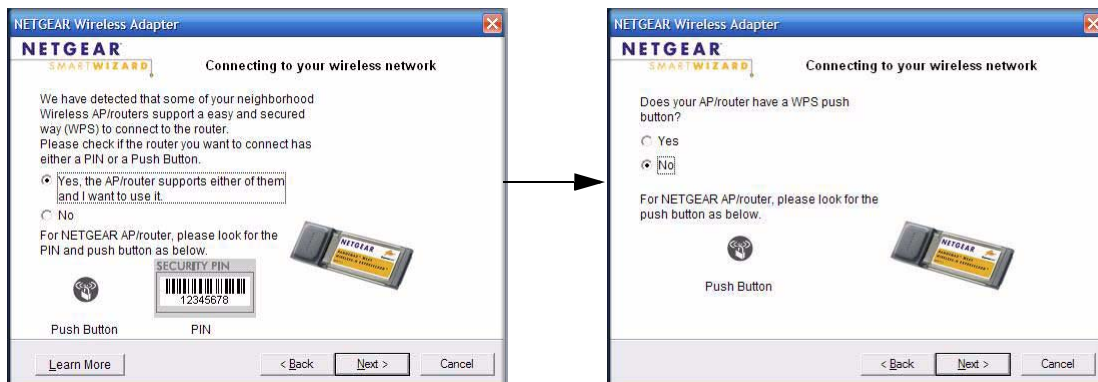
The wireless adapter detects a network with WPS.



**Figure 2-8**

**2.** Select **Yes** to use WPS, and then click **Next**.

**3.** Select **No** (to use a PIN), and then click **Next**.
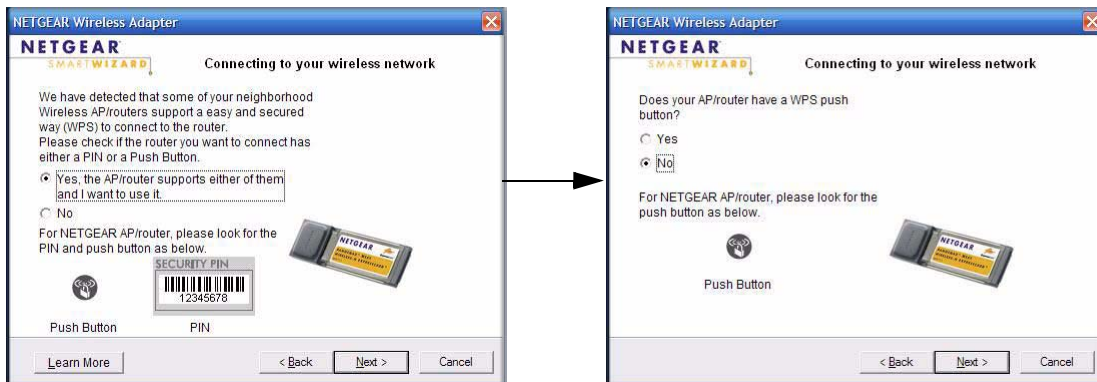
You are prompted to either enter the router PIN or generate a new PIN.



**Figure 2-9**

**4.** Select the radio button to generate a PIN, and then click **Next**. Write down (or copy) the PIN.

**5.** On the access point or router that you have selected, open its Smart Wizard or configuration utility.

**6.** Select Add WPS Client. On the Add WPS Client screen, select PIN.

**7.** Within 4 minutes, enter the PIN in the client's PIN field on the router Add WPS Client screen, and then click **Next**. The Smart Wizard initiates your wireless connection.

**8.** You can use the Status Bar to verify your network connection. For more information, see "Smart Wizard Status Bar" on page 1-8. Click **Close** to exit the Smart Wizard.

**9.** Close the Smart Wizard for the access point or router.

# Profiles

The WN711 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** field, then the name Profile is used to save your settings. If you do this more than once, you are asked if you want to replace the previous settings stored in Profile.

2-9

## 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 link to the online document "Wireless Networking Basics" in Appendix B.

## Setting Up a Profile to Connect to an Access Point or Router

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

1. Use the ![icon] icon to open the Smart Wizard. The Settings tab displays:



**Figure 2-10**

2. Enter the network settings.

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

   b. In the **Profile** field, type the name of the profile.

2-10

    **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 SSID that you enter exactly matches 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 4, "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. See the link to the online document "TCP/IP Networking Basics" on page B-1.

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

The Computer-to-Computer setting uses Ad Hoc mode. Ad Hoc mode is an 802.11 networking framework in which devices or computers communicate directly with each other, without 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. It requires either static IP addresses (such as 192.168.0.1) or the IPX protocol. For help with static IP addresses on Windows PCs, see the link to the online document "TCP/IP Networking Basics" on page B-1.

To create an Ad Hoc mode profile:

1.  Use the ![icon] icon to open the Smart Wizard. The Settings tab displays.



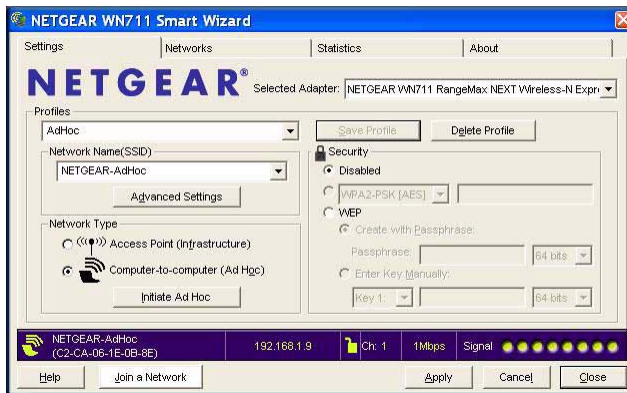**Figure 2-11**

2.  Enter the network settings.

    a.  Select **Computer-to-Computer (Ad Hoc)** for the network type.

    b.  Select or enter the network vame (SSID) for the Ad Hoc network.

    c.  In the **Profile** field, type the name of the profile.

    d.  Click **Apply**.

3.  Save your settings in a Profile.

    a.  Click the **Save Profile** button.

        The configuration settings are saved in this profile.

    b.  Click **Apply**, and then 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, see the link to the online document "TCP/IP Networking Basics" on page B-1.

    b.  Restart the PCs.

**5.** Verify wireless connectivity between your peer devices using ping:

    **a.** On the Windows taskbar, click the **Start** button, and select Run.
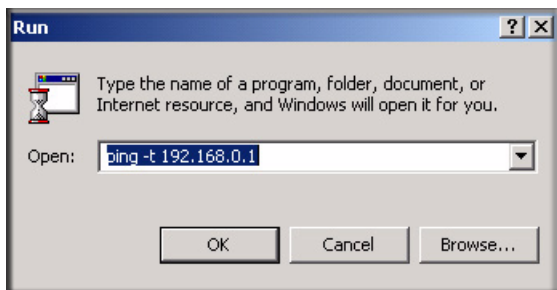
**Figure 2-12**

    **b.** Assuming that the target PC is configured with 192.168.0.1 as its IP address, type
       **ping -t 192.168.0.1** and then click **OK**.

    **c.** This will cause a continuous ping to be sent to the device with the 192.168.0.1 static IP
       address. The ping response should change to reply.

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

**Figure 2-13**

At this point the connection is established.

> **Note:** If you cannot connect, see "Connecting to Wireless Networks and the Internet" in
> Chapter 1. If you have problems with accessing network resources, the Windows
> Client and File and Print Sharing software might not be installed and configured
> properly on your computers. Click the link to "TCP/IP Networking Basics" on
> page B-1.

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

**1.** On the Settings tab 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 screen displays:
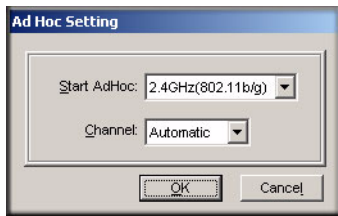


**Figure 2-14**

**4.** In the **Start Ad Hoc** drop-down list, select the wireless standard 802.11b, or 802.11g for your Ad Hoc computer-to-computer network.

**5.** In the **Channel** drop-down list, **Automatic** should work. If there is interference with another 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 Wireless Express Card with exactly the same kind of wireless security settings. The Wireless Express Card supports the following types of wireless security:

• Wi-Fi Protected Access 2 Pre-Shared Key (WPA2-PSK)

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

• Wired Equivalent Privacy (WEP)

For more information about wireless security, see the link to the online document "Wireless Networking Basics" in Appendix B. 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.

2-14

# Wireless Network Name (SSID) and Security Settings

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

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

**Wireless network name (SSID)**. _____

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

• If WEP authentication is used:

   – **WEP Encryption key size**. Select one: 64-bit or 128-bit. The encryption key size must be the same for the access point and the wireless adapter.

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

      • **Passphrase method**. _____ These characters *are* case-sensitive. Enter a word or group of printable characters, and click the **Generate Keys** button. Not all wireless devices support the passphrase method.

      • **Manual method**. These values *are not* case-sensitive. For 64-bit WEP, enter 10 hex digits (any combination of 0–9 or a–f). For 128–bit WEP, enter 26 hex digits.

      Key 1: _____ Key 2: _____

      Key 3: _____ Key 4: _____

• If WPA2-PSK or WPA-PSK authentication is used:

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

# Setting Up WEP Encryption Security

To configure WEP encryption security:

**1.** Run the Smart Wizard.

   **a.** Make sure that the NETGEAR software is installed and that the Wireless Express Card is fully inserted in the Express Card slot in your computer.

   **b.** Use the 🔳 icon to open the Smart Wizard. The Settings tab displays.



   **Figure 2-15**

**2.** Configure the security settings.

   **a.** In the **Profile** field, 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 of the screen, 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 might slow the communications response times.

**4.** Select the **Create with Passphrase** radio button, and enter the passphrase. The configuration utility automatically generates 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 802.11n, 802.11b, or 802.11g 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**, and then click **Close** to exit the Smart Wizard.

# Setting up WPA2-PSK Security

Follow these steps to configure WPA2-PSK s

**1.** Run the Smart Wizard.

    **a.** Make sure that the NETGEAR software is installed and that the Wireless Express Card is fully inserted in the Express Card slot in your computer.

    **b.** Use the 🔲 icon to open the Smart Wizard. The Settings tab displays.
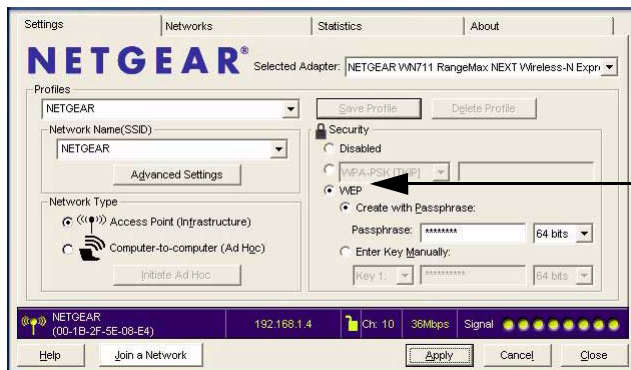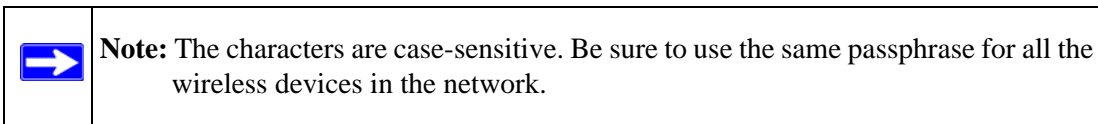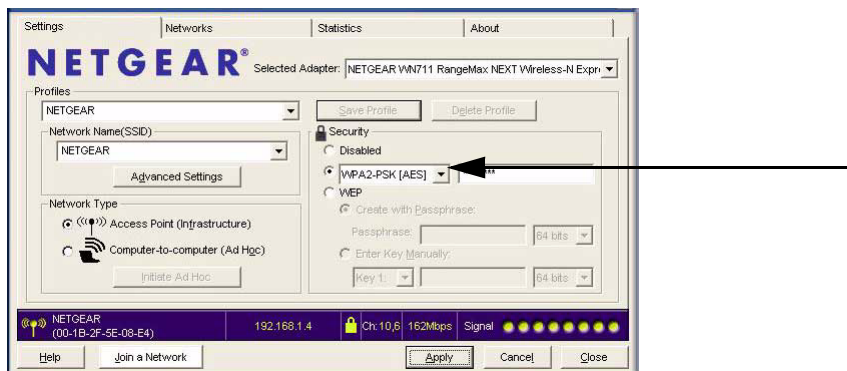


**Figure 2-16**

**2.** Configure the security settings.

    **a.** In the **Profile** field, 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 SSID that you enter exactly matches the SSID used by the access point.

**c.** In the Security section of the screen, select **WPA2-PSK [AES]**, and enter the passphrase.

The passphrase can be a word or group of printable characters. For more information about wireless security, see the link to the online document "Wireless Networking Basics" in Appendix B.

**3.** Save your settings in a profile.

**a.** Click **Save Profile**. 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

To configure WPA-PSK security:

**1.** Run the Smart Wizard.

**a.** Make sure that the NETGEAR software is installed and the Wireless Express Card is fully inserted in the Express Card slot in your computer.

**b.** Use the [icon] icon to open the Smart Wizard. The Settings tab displays.
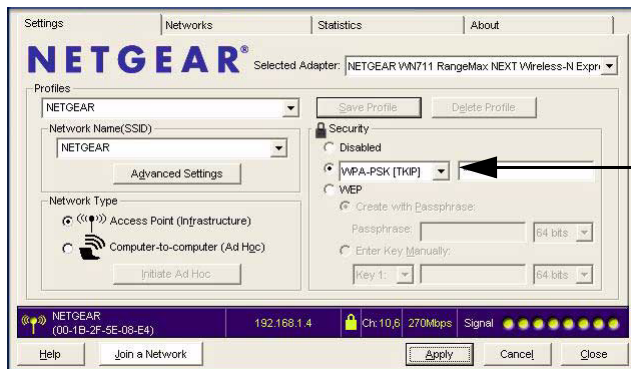


**Figure 2-17**

**2.** Configure the security settings.

a. In the **Profile** field, 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 SSID that you enter exactly matches the SSID used by the access point.
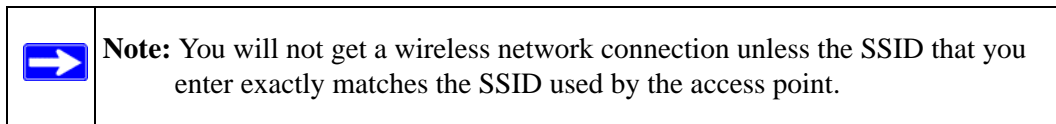
c. In the Security section of the screen, select **WPA-PSK [TKIP]**.

For more information about wireless security, see the link to the online document "Wireless Networking Basics" in Appendix B.

3. Save your settings in a profile.

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

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

# Advanced Settings

The default Advanced settings usually work fine. To view them, click the **Advanced Settings** button on the Settings tab. Changing these settings is recommended only for advanced users who have a specific reason to adjust them. Use the Help button to understand these options.



**Figure 2-18**

2-19
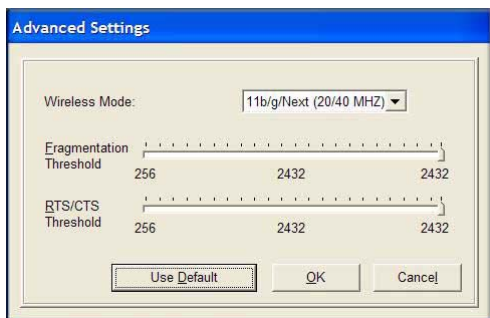
# Statistics Tab

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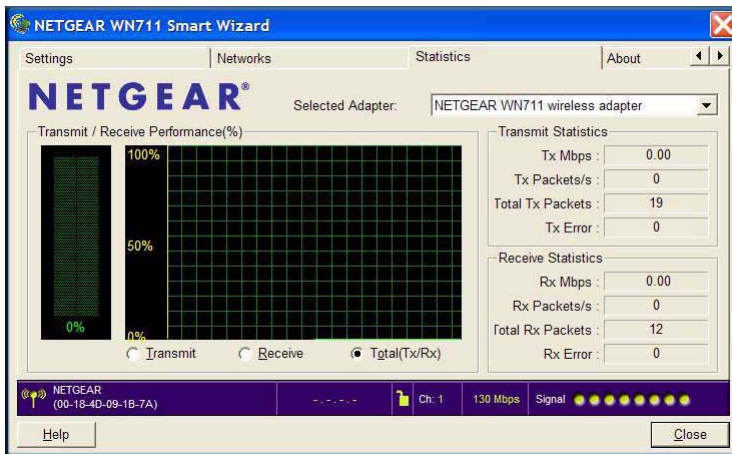


**Figure 2-19**

The Statistics tab shows the following information:

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

• **Transmit, Receive, and Total (TxRx)**. Radio buttons let you select whether to display the transmit performance, the receive performance, or both in the same graph.

• **Transmit Statistics**. Identifies transmit megabits per second (Mbps), transmit packets per second (Tx Packets/s), total transmitted packets, and transmit errors.

• **Receive Statistics**. Identifies receive megabits per second (Mbps), receive packets per second (Rx Packets/s), total received packets, and reception errors.

# About Tab

The About tab displays the current software version information.



**Figure 2-20**

The following information is displayed in the About tab:

- **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 might 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 restrict access based on a list of known MAC addresses. If you are communicating with such a network, you must provide the address shown here to the network administrator before you can 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
# Wireless Network Performance

This chapter explains how to use your Wireless Express Card to connect to your wireless local area network (WLAN) and how to set up wireless security for the Wireless Express Card so that it matches the wireless security settings for your network.

## Optimizing Wireless Performance

The speed and operating distance or range of your wireless connection can vary significantly based on the location of the wireless router. You should choose a location for your router that will maximize the network speed.

The following list describes how to optimize wireless router performance.

*   Identify critical wireless links. If your network has several wireless devices, decide which wireless devices need the highest data rate, and locate the router near them. Many wireless products have automatic data-rate fallback, which allows increased distances without loss of connectivity. This also means that devices that are farther away might be slower. Therefore, the most critical links in your network are those where the traffic is high and the distances are great. Optimize those first.

*   Choose placement carefully. For best results, place your router:
    –   Near the center of the area in which your computers will operate.
    –   In an elevated location such as a high shelf where the wirelessly connected computers have line-of-sight access (even if through walls).

*   Avoid obstacles to wireless signals.
    –   Keep wireless devices at least 2 feet from large metal fixtures such as file cabinets, refrigerators, pipes, metal ceilings, reinforced concrete, and metal partitions.
    –   Keep wireless devices away from large amounts of water such as fish tanks and water coolers.

*   Reduce interference. Avoid windows unless communicating between buildings.
    Place wireless devices away from various electromagnetic noise sources, especially those in the 2400–2500 MHz frequency band. Common noise-creating sources are:
    –   Computers and fax machines (no closer than 1 foot)

- – Copying machines, elevators, and cell phones (no closer than 6 feet)
- – Microwave ovens (no closer than 10 feet)
- • Choose your settings.
  - – Use a scanning utility to determine what other wireless networks are operating nearby, and choose an unused channel.
  - – Turn off SSID broadcast, and change the default SSID. Other nearby devices might automatically try to connect to your network several times a second, which can cause significant performance reduction.

# Optimizing Your Network Bandwidth

The speed of network connections depends on the type of equipment that you use. Try to use high-speed technologies for network connections with the heaviest traffic to avoid lower-speed bottlenecks in the path. The following figure shows a home network that includes many different connection speeds.
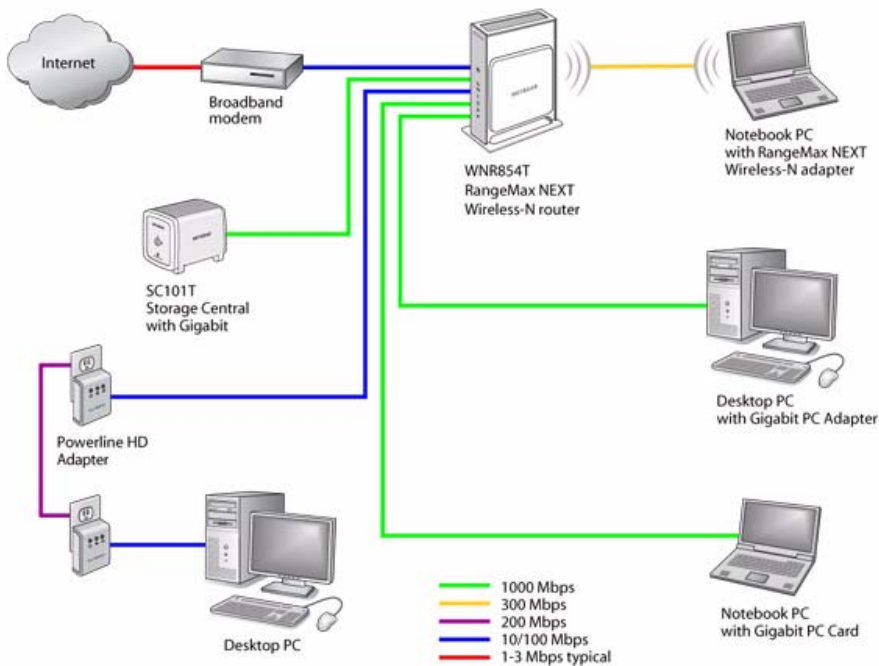


**Figure 3-1**

In the network shown in Figure 3-1, the two PCs with Gigabit (1000 Mbps) Ethernet adapters have a gigabit connection through the router to the storage server. With a high-speed router this connection allows for extremely fast backups or quick access to large files on the server. The PC connected through a pair of Powerline HD adapters is limited to the 200 Mbps speed of the Powerline HD connection. Although any of the links in this example would be sufficient for high-traffic applications such as streaming HD video, the use of older devices such as 10 Mbps Ethernet or 802.11b wireless would create a significant bottleneck.

In planning your network, think about which tasks will have the heaviest traffic flow between them. Examples are:

* A media center in one room streaming high-definition video from a server in another room
* A storage device that is used for backing up your computers

# Overview of Home and Small Office Networking Technologies

Common connection types and their speed and security considerations are:

* **Broadband Internet**. Your Internet connection speed is determined by your modem type, such as ADSL or cable modem, as well as the connection speed of the sites to which you connect, and general Internet traffic. ADSL and cable modem connections are asymmetrical, meaning they have a lower data rate *to* the Internet (upstream) than *from* the Internet (downstream). Keep in mind that when you connect to another site that also has an asymmetrical connection, the data rate between your sites is limited by each side's upstream data rate. A typical residential ADSL or cable modem connection provides a downstream throughput of about 1 to 3 megabits per second (Mbps). Newer technologies such as ADSL2+ and Fiber to the Home (FTTH) increase the connection speed to tens of Mbps.

* **Wireless**. A high-speed wireless router can provide a wireless data throughput of up to 300 Mbps using technology called multiple input, multiple-output (MIMO), in which multiple antennas transmit multiple streams of data. The use of multiple antennas also provides excellent range and coverage. With the introduction of the newer WPA and WPA2 encryption and authentication protocols, wireless security is extremely strong.

  To get the best performance, use newer adapters such as RangeMax adapters for your computers. A high-speed router might be compatible with older 802.11b and 802.11g adapters, but the use of these older wireless technologies in your network can result in lower throughput overall (typically less than 10 Mbps for 802.11b and less than 40 Mbps for 802.11g). In addition, many older wireless products do not support the latest security protocols, WPA and WPA2.

- **Powerline**. For connecting rooms or floors that are blocked by obstructions or are distant vertically, consider networking over your building's AC wiring. NETGEAR's Powerline HD family of products delivers up to 200 Mbps to any outlet, while the older-generation XE family of products delivers 14 Mbps or 85 Mbps. Data transmissions are encrypted for security, and you can specify an individual network password to prevent neighbors from connecting.

  The Powerline HD family of products can coexist on the same network with older-generation XE family products or HomePlug 1.0 products, but they are not interoperable with these older products.

- **Wired Ethernet**. As Gigabit Ethernet ports become common on newer computers, wired Ethernet remains a good choice for speed, economy, and security. Gigabit Ethernet can extend up to 100 meters with twisted-pair wiring of CAT 5e or better. A wired connection is not susceptible to interference, and eavesdropping would require a physical connection to your network.

> **Note:** Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, can lower actual data throughput rate.

## Assessing Your Speed Requirements

Because your Internet connection is likely to operate at a much lower speed than your local network, faster local networking technologies might not improve your Internet experience. However, many emerging home applications require high data rates. For example:

- Streaming HD video requires 10 to 30 Mbps per stream. Because latency and packet loss can disrupt your video, plan to provide at least twice the capacity you need.

- Streaming MP3 audio requires less than 1 Mbps per stream and does not strain most modern networks. Like video, however, streaming audio is also sensitive to latency and packet loss, so a congested network or a noisy link can cause problems.

• Backing up computers over the network has become popular due to the availability of inexpensive mass storage. Table 3-1 shows the time to transfer 1 gigabyte (GB) of data using various networking technologies.

**Table 3-1.   Theoretical Transfer Time for 1 Gigabyte**

| Network Connection | Theoretical Raw Transfer Time |
|---|---|
| Gigabit wired Ethernet | 8 seconds |
| RangeMax NEXT Wireless-N | 26 seconds |
| Powerline HD | 40 seconds |
| 100 Mbps wired Ethernet | 80 seconds |
| 802.11g wireless | 150 seconds |
| 802.11b wireless | 700 seconds |
| 10 Mbps wired Ethernet | 800 seconds |
| Cable modem (3 Mbps) | 2700 seconds |
| Analog modem (56 kbps) | 144,000 seconds (40 hours) |

# Chapter 4
# Troubleshooting

This chapter provides information about troubleshooting your Wireless Express Card. 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 following information to solve common problems you might encounter. Also, refer to the knowledge base on the NETGEAR website at *http://www.netgear.com*.

**Table 4-1.   Troubleshooting Tips**

| Problem | Action |
|---------|--------|
| 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 WN711 will still be connected to the previous access point and you will not be able to change to the WPA-PSK access point.<br>• If the access point is WEP protected (either 64 or 128 bit encryption), you will be prompted to enter the WEP encryption security information. |
| Throughput is only 54 Mbps. | The Wireless Express Card can operate at faster speeds. You are probably connecting to a standard 802.11g network. See Chapter 3, "Wireless Network Performance" for help in understanding how to get the best performance from your Wireless Express Card. |
| 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 WN711 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 WN711 Software" on page 1-10 or "Upgrading the WN711 Software" on page 1-10. |

**Table 4-1.   Troubleshooting Tips (continued)**

| Problem | Action |
|---------|--------|
| I can connect to the access point, but not the other computers on the network or to the Internet. | This could be a physical layer problem or a network configuration problem.<br>1. Check to make sure that the access point is physically connected to the Ethernet network.<br>2. Make sure that the IP addresses and the Windows networking parameters are all configured correctly. See the link to "TCP/IP Networking Basics" in Appendix B.<br>3. Restart the cable or DSL modem, router, access point, and computer. |
| How can I view the Wireless Express Card IP address? | To view the Wireless Express Card IP address, click the WN711 icon to open the Smart Wizard. Then check the IP address in the About screen. |
| No IP address is assigned to the Wireless Express Card. | This might occur if you upgraded your Wireless Express Card software and did not reboot your system.<br>• Either restart your computer, or connect to a different access point.<br>• It does not usually help to shut down the Smart Wizard or disable and enable the card. |

# Ad Hoc Mode Is Not Working Correctly

You must click the **Initiate Ad Hoc** button before you click **Apply**.

To start an Ad Hoc network:

1. Fill in the **Network Name (SSID)** field.

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 then click **OK**.

5. Click **Apply**.

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

# Appendix A
# Default Configuration Settings and Technical Specifications

## Default Configuration Settings

The following table lists the default settings of your Wireless 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[a] |
| | Country/Region | United States (varies by region) |
| | Operating Mode | 802.11n, 802.11g and 802.11b |
| | Data Rate | up to 270 Mbps |

a. Maximum wireless signal rate (IEEE Standard 802.11n draft specification). Actual throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

# Technical Specifications

The following table describes technical specifications for the NETGEAR RangeMax Wireless-N ExpressCard WN711.

| | |
|---|---|
| Antennas | 2 separate PCB internal antennas |
| Standards | 802.11n, 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, 78, 81,104, 108, 117, 121.5, 130, 135, 162, 216, 243, and 270 Mbps |
| Frequency | 2.4GHz to 2.5GHz CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM Modulations |
| LED | Single LED<br>• Solid indicates connected to network<br>• Blinking indicates transferring data |
| Power | 3.3V bus powered |
| Emissions | FCC Part 15 Class B, CE, C-Tick, VCCI Class B, TELEC |
| Bus interface | Express Card 3.3V |
| Provided drivers | Microsoft Vista and Windows XP |
| Operating Environment | Operating temperature: 0 to 45 degrees C |
| 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 |
| --- | --- |
| Using Microsoft Vista and Windows XP to Manage Wireless Network Connections | *http://documentation.netgear.com/reference/enu/winzerocfg/index.htm* |
| TCP/IP Networking Basics | *http://documentation.netgear.com/reference/enu/tcpip/index.htm* |
| Wireless Networking Basics | *http://documentation.netgear.com/reference/enu/wireless/index.htm* |
| Preparing Your Network | *http://documentation.netgear.com/reference/enu/wsdhcp/index.htm* |
| Virtual Private Networking Basics | *http://documentation.netgear.com/reference/enu/vpn/index.htm* |
| Glossary: | *http://documentation.netgear.com/reference/enu/glossary/index.htm* |