

NETGEAR RangeMax Next Wireless PC Card WN511T 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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March 2006

Certificate of the Manufacturer/Importer

It is hereby certified that the Model WN511T Wireless PC Card has been suppressed in accordance with the conditions set out in the BMPT- AmtsblVfg 243/1991 and Vfg 46/1992. The operation of some equipment (for example, test transmitters) in accordance with the regulations may, however, be subject to certain restrictions. Please refer to the notes in the operating instructions.

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

VCCI Statement

This equipment is in the Class B category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential areas. When used near a radio or TV receiver, it may become the cause of radio interference. Read instructions for correct handling.

FCC Information to User

This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals

SAR compliance has been established in typical laptop computer(s) with CardBus slot, and product could be used in □ typical laptop computer with CardBus slot. Other application like handheld PC or similar device has not been verified □ and may not compliance with related RF exposure rule and such use shall be prohibited.

FCC & IC Guidelines for Human Exposure

This equipment complies with FCC & IC radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

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

FCC & IC Declaration Of Conformity

We NETGEAR, Inc., 4500 Great America Parkway, Santa Clara, CA 95054, declare under our sole responsibility that the model WN511T Cardbus Card Wireless Adapter complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

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

Regulatory Compliance Information

This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority.

NOTE: This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product.

FCC Requirements for Operation in the United States

Radio Frequency Interference Warnings & Instructions

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

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



Tested to Comply
with FCC Standards
FOR HOME OR OFFICE USE

Modifications made to the product, unless expressly approved by NETGEAR, Inc., could void the user's right to operate the equipment.

NETGEAR declares that US model of WN511T (FCC ID: PY306200052) is limited in CH1-CH11 for 2.4G band by specific □ firmware controlled by the manufacturer and is not user changeable.

Export Restrictions

This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license.

Canadian Department of Communications Radio Interference Regulations

This digital apparatus (NETGEAR RangeMax Next Wireless PC Card WN511T) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Canada ID: 4054A-06100040

Product and Publication Details

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Chapter 1

Introduction

This chapter introduces the NETGEAR RangeMax™ Next Wireless PC Card WN511T.

What's in the Box?

The product package should contain the following items:

- NETGEAR RangeMax Next Wireless PC Card WN511T
- Installation Guide for the NETGEAR RangeMax™ Next Wireless PC Card WN511T
- *Resource CD*, including:
 - Driver and Configuration Utility Software
 - NETGEAR RangeMax Next Wireless PC Card WN511T User Manual
 - PC Networking Tutorial
- Warranty card
- Support information card

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

The NETGEAR RangeMax Next Wireless PC Card WN511T has two interfaces:

- The PCMCIA Type II connector connects to any notebook PC with an available PCMCIA or CardBus slot.
- The wireless interface of the NETGEAR RangeMax Next Wireless PC Card WN511T remains outside of the notebook PC chassis when the wireless PC card is inserted into a notebook. The LED indicates the wireless link condition and signal quality of the NETGEAR RangeMax Next Wireless PC Card WN511T with another wireless node or the associated access point.

A Road Map for ‘How to Get There From Here’

The introduction and adoption of any new technology can be a difficult process. Wireless technology has removed one of the barriers to networking—running wires. It allows more people to try networking while at the same time exposes them to the inherent complexity of networking. General networking concepts, setup, and maintenance can be difficult to understand. In addition, wireless technology adds issues, such as range, interference, signal quality, and security to the picture.

To help overcome potential barriers to successfully using wireless networks, the table below identifies how to accomplish such things as connecting to a wireless network, assuring appropriate security measures are taken, browsing the Internet through your wireless connection, exchanging files with other computers and using printers in the combined wireless and wired network.

Table 2-1. A Road Map for How to Get There From Here ...

If I Want To ... ?	What Do I Do?	What's Needed?	How Do I?
Connect to a wireless network	1. Identify the wireless network name (SSID) and, if used, the wireless security settings. 2. Set up the NETGEAR RangeMax Next Wireless PC Card WN511T with the settings from step 1.	1. A wireless network 2. A notebook PC within the operating range of the wireless network. For guidelines about the range of wireless networks, see “Observing Location and Range Guidelines” on page 3-2.	To set up the WN511T, see Chapter 3, “Basic Setup” and follow the instructions provided. To learn about wireless networking technology, see Appendix B, “Wireless Networking Basics” for a general introduction.

Table 2-1. A Road Map for How to Get There From Here ...

If I Want To ... ?	What Do I Do?	What's Needed?	How Do I?
Protect my wireless connection from snooping, hacking, or information theft.	1. Assure that the wireless network has security features enabled. 2. Configure my WN511T with the security settings of the wireless network. 3. Use Windows security features.	1. A wireless network with authentication and WEP encryption enabled. 2. Wireless networking equipment that supports WEP encryption, such as the WN511T and all NETGEAR wireless networking products.	To learn about wireless networking security, see "Authentication and WEP" on page B-2. To use WEP security features, see "Enabling Wireless Security Features" on page 4-7 and configure your WN511T accordingly.
Note: Secure Internet sites such as banks and online merchants use encryption security built into browsers like Internet Explorer and Netscape. Any wireless networking security features you might implement are in addition to those already in place on secure Internet sites.			
Connect to the Internet over my wireless network.	1. Activate my wireless link and verify my network connection. 2. Open an Internet browser such as Internet Explorer or Netscape Navigator.	1. An active Internet connection like those from cable or DSL service providers. 2. A wireless network connected to the cable or DSL Internet service through a cable/DSL router as illustrated in "Connecting to an Access Point in Infrastructure Mode" on page 4-2. 3. TCP/IP Internet networking software installed and configured on my notebook PC according to the requirements of the Internet service provider. 4. A browser like Internet Explorer or Netscape Navigator.	To configure your WN511T in Infrastructure Mode, see "Basic Installation Instructions" on page 3-3, and locate the section for your version of Windows. For assistance with configuring the TCP/IP Internet software on a PC, see "Preparing Your Computers for TCP/IP Networking" on page C-1 or refer to the PC Networking Tutorial on the <i>Resource CD</i> and the Help information provided in the Windows system you are using.

Table 2-1. A Road Map for How to Get There From Here ...

If I Want To ... ?	What Do I Do?	What's Needed?	How Do I?
Exchange files between a wirelessly connected notebook computer and other computers in a my combined wireless and wired network.	1. Use the Windows Network Neighborhood feature to browse for computers in the combined wireless and wired network. 2. Browse the hard drive of the target computer in the network in order to locate the directory or files you want to work with. 3. Use the Windows Explorer copy and paste functions to exchange files between the computers.	1. The notebook computer I am using to connect to the wireless network needs to be configured with the Windows Client and File and Print Sharing. 2. The notebook computer I am using to connect to the wireless network needs to be configured with the same Windows Workgroup or Domain settings as the other Windows computers in the combined wireless and wired network. 3. Any Windows networking security access rights such as login user name/ password that have been assigned in the Windows network or for sharing particular files must be provided when Windows prompts for such information. 4. If so-called Windows 'peer' Workgroup networking is being used, the drive, file system directory, or file need to be enabled for sharing.	For assistance with Windows networking software, see Appendix , "Preparing Your Computers for TCP/IP Networking" for configuration scenarios or refer to the Help system included with your version of Windows. Windows Domain settings are usually managed by corporate computer support groups. Windows Workgroup settings are commonly managed by individuals who want to set up small networks in their homes, or small offices. For assistance with setting up Windows networking, refer to the PC Networking Tutorial on the <i>Resource CD</i> and the Help information provided in the Windows system you are using.

Table 2-1. A Road Map for How to Get There From Here ...

If I Want To ... ?	What Do I Do?	What's Needed?	How Do I?
Use printers in a combined wireless and wired network.	1. Use the Windows Printers and Fax features to locate available printers in the combined wireless and wired network. 2. Use the Windows Add a Printer wizard to add access to a network printer from the notebook PC you are using to wirelessly connect to the network. 3. From the File menu of an application such as Microsoft Word, use the Print Setup feature to direct your print output to the printer in the network.	1. The notebook computer I am using to connect to the wireless network needs to be configured with the Windows Client and File and Print Sharing. 2. The notebook computer I am using to connect to the wireless network needs to be configured with the same Windows Workgroup or Domain settings as the other Windows computers in the combined wireless and wired network. 3. Any Windows networking security access rights such as login user name/ password that have been assigned in the Windows network must be provided when Windows prompts for such information. 4. If so-called Windows 'peer' networking is being used, the printer needs to be enabled for sharing.	Windows Domain settings are usually managed by corporate computer support groups. Windows Workgroup settings are commonly managed by individuals who want to set up small networks in their homes, or small offices. For assistance with setting up Windows networking, refer to the PC Networking Tutorial on the <i>Resource CD</i> and the Help information provided in the Windows system you are using. For assistance with setting up printers in Windows, refer to the Help and Support information that comes with the version of the Windows operating systems you are using.

Chapter 3

Basic Setup

This chapter describes how to install your NETGEAR RangeMax Next Wireless PC Card WN511T and set up basic wireless connectivity on your Wireless Local Area Network (WLAN). Advanced wireless network configuration is covered in [Chapter 4, “Configuration”](#) in this manual.



Note: Indoors, computers can easily connect to 802.11 wireless networks at distances of several hundred feet. Because walls do not always block wireless signals, others outside your immediate area could access your network. It is important to take appropriate steps to secure your network from unauthorized access. The NETGEAR RangeMax Next Wireless PC Card WN511T provides highly effective security features which are covered in [“Enabling Wireless Security Features” on page 4-7](#) in this manual. Deploy the security features appropriate to your needs.

What You Need Before You Begin

You need to verify your computer meets the minimum system requirements and identify the wireless network configuration settings of the WLAN where you will connect before you can configure your wireless pc card and connect.

Verifying System Requirements

Before installing the NETGEAR RangeMax Next Wireless PC Card WN511T, please make sure that these minimum requirements have been met:

- You must have a notebook PC with a Pentium® 300 MHz or higher compatible processor with an available Cardbus slot.
- A CD drive.
- 5 Mbytes of free hard disk space.
- Windows XP Home, Windows XP Professional, 2000
- Some versions of Windows may ask for the original Windows operating system installation files to complete the installation of the WN511T driver software.

Observing 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 PC Card WN511T. 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.

Two Basic Operating Modes

The WN511T Wireless PC Card can operate in the following two basic modes:

- **Infrastructure Mode:** 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 Access Point that is attached to a router which lets multiple computers share a single Cable or DSL broadband Internet connection.
- **Ad-Hoc Mode:** An 802.11 networking framework in which devices or computers communicate directly with each other, without the use of an AP. 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.

Both of these configuration options are available with the WN511T Wireless PC Card. Infrastructure configuration procedures for basic network connectivity are covered below. Advanced infrastructure configuration procedures and ad-hoc configuration are covered in [Chapter 4, “Configuration”](#) of this manual.

WN511T Default Wireless Configuration 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 configuration and security parameters already defined.

Your NETGEAR RangeMax Next Wireless PC Card WN511T factory default basic settings are:

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

Note: In order for the WN511T Wireless PC Card to communicate with a wireless access point or wireless adapter, all devices must be configured with the same wireless network name (SSID).

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

The section below provides instructions for setting up the NETGEAR RangeMax Next Wireless PC Card WN511T 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 you are using.

Basic Installation Instructions

1

Install the WN511T driver and configuration utility software.

- a. Power on your notebook, let the operating system boot up completely, and log in as needed.
- b. Insert the *Resource CD* for the WN511T into your CD drive. The Resource CD main page shown at the right will load.
- c. Click the “Install Driver & Utility” link.
- d. Follow the Smart Wizard Install Assistant steps, and click Finish when done to restart your computer.



WN511T Resource CD main page

Note: If a Windows XP Certification warning appears, click **Continue Anyway** to proceed.

2

Install the NETGEAR RangeMax Next Wireless PC Card WN511T.

- a. Locate an available CardBus slot on the side of your notebook. Hold the PC Card with the NETGEAR logo facing up and insert it into the CardBus slot.

The Found New Hardware Wizard displays.

Note: Click **Continue Anyway** if you are prompted with a Windows XP Logo testing message.

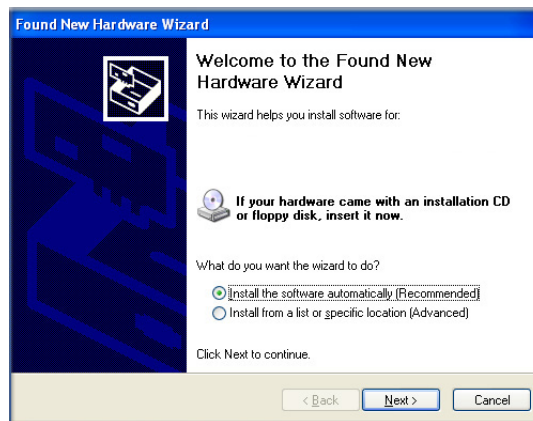
- b. For Windows XP users only, you will be prompted to enable the NETGEAR Smart Wireless Settings Utility configuration utility.

Click Yes to accept this option.

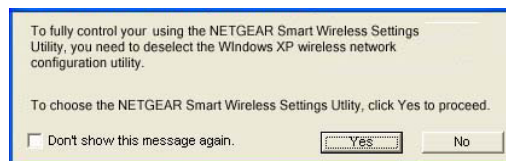
If you choose No, you must read the Windows XP documentation for an explanation of how to use the Windows XP wireless network configuration utility

You will also be prompted to choose the country you are located in. Select your location from the list.

- c. Click Finish to complete the installation. You will see the WN511T system tray icon on the lower right portion of the Windows task bar.



Found New Hardware Wizard



Windows XP Only



WN511T System Tray Icon

3

Configure your WN511T.

- a. Click the WN511T icon in the Windows system tray to open the WN511T Smart Wizard Wireless Assistant.

The Settings tab page opens.

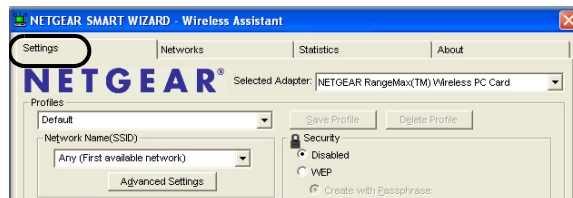
- b. Change the Network Name SSID to match your network.

Tip: Instead of typing in the SSID, you can use the drop-down list or the Networks tab to view the available wireless networks, and choose the one you want.

- c. Click **Apply** to activate the connection.

You can also enter a profile name and click Save Profile to store the current settings.

Tip: Create profiles called *work* and *home*. Then, activate whichever one you need for your current location.



Smart Wizard Wireless Assistant Settings page

Tip: Click Help to view the context-sensitive help information.

Note: The NETGEAR default settings are **Infrastructure mode**, with **Any** (case sensitive) for the wireless network name SSID, and WEP disabled. If your WLAN settings are different from the NETGEAR default settings, you will not connect. Set up your WN511T accordingly.

This procedure assumes you are connecting to a wireless network which is not using WEP or WPA security. If your network includes WEP or WPA settings, click the Security tab page and configure the WN511T accordingly. For help with these steps, click the Help button in the Install Assistant to view context-sensitive help information, or see [“Enabling Wireless Security Features” on page 4-7](#).

4

Verify wireless connectivity to your network.

- a. Verify that your Connection and Status Monitor information matches your wireless network.
- b. Check the two LEDs on the WN511T:

Table 3-1. LED Descriptions

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

- c. Verify connectivity to the Internet or network resources.

Note: If you are unable to connect, see troubleshooting tips in the Basic Installation section of the Reference Manual on the *Resource CD*.

WN511T Wireless Connection Indicators

The NETGEAR RangeMax Next Wireless PC Card WN511T provides the following three indicators which give you feedback on the status of your wireless connection:

- The two LEDs on the NETGEAR RangeMax Next Wireless PC Card WN511T indicate the condition of wireless link.
- The color of the SysTray icon is on the System Tray portion of the taskbar in the Microsoft Windows desktop indicates the status of the connection.

Interpreting the LEDs on the WN511T

Figure 3-1: WN511T LEDs

These LEDs are described in this table.

Table 3-1. LED Descriptions

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

Interpreting System Tray Icon Colors

The System Tray (SysTray) resides on one end of the taskbar in the Microsoft Windows desktop.

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

Green 	The wireless PC Card has a connection with another wireless node.	The wireless PC Card has established good communication with an access point and the signal quality is strong.
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Troubleshooting

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

Also, for problems with accessing network resources, the Windows software might not be installed and configured properly on your computers. Please refer to [Appendix C, “Preparing Your PCs for Network Access”](#) .

Basic Tips

If you have problems connected to your wireless network, try the tips below.

Symptom	Cause	Solution
The PC Card LEDs are not lit.	The WN511T is not inserted into the slot properly or the WN511T software is not loaded.	Remove and reinsert the WN511T. Check the Windows device manager to see if the PC Card is recognized and enabled. Reload the WN511T software, if necessary. Try to install the WN511T in a different slot on your system if one is available.
The LEDs blink alternately and cannot connect to an access point.	The WN511T 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 PC card 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.

Troubleshooting Frequently Asked Questions

1. **Question:** The product literature says the WN511T can operate at high speeds. Why do I see no more than 54 Mbps speed on my WN511T Smart Configuration Utility status line?

Answer: You are probably connecting to standard 802.11g network. If you use a router capable of higher speeds, you will see higher network speeds.

2. **Question:** Why does the utility kept asking me to Save my settings when I'm trying to close the utility?

Answer: This is because you've made changes to the settings and the utility 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 utility program.

3. **Question:** Why doesn't Ad Hoc mode work correctly after I enter a SSID and click Apply?

Answer: You need to click the Initiate Ad Hoc button before you click Apply.

Here is how you start an Ad Hoc network:

- a. Fill in the Network Name (SSID).
- b. Select the Computer-to-Computer (Ad-Hoc) network Type.
- c. Click initiate Ad Hoc.
- d. Accept default settings or make proper changes and click OK
- e. Click **Apply**

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

4. **Question:** How do I remove the WN511T software and utility? How come there is no "Uninstall WN511T Software" shortcut in the "Start>Program> NETGEAR WN511T Adapter" menu?

Answer: The WN511T uninstaller program is in the Windows Control Panel. To remove the WN511T software, do the following: Use "Add or Remove Programs" in the Control Panel and remove the "NETGEAR WPN511 Wireless PC Card" entry.

5. **Question:** How do I know if my WN511T card has received a valid IP address from my Wireless Router/AP?

Answer: One easy way is to open up the WN511T utility program and check the "IP Address" in the About page.

6. **Question:** (XP Professional and XP Home user only): How do I use XP's own Wireless configuration utility that came with the OS?

Answer: The NETGEAR WN511T software is designed in such way that user will be asked to choose one of the utility programs during initial software installation. Be sure the card is in the notebook and follow these instructions to change your selection. Go to Control Panel> Network Connections> Wireless Network Connection > Properties> Wireless Networks tab> for the wireless card and check or uncheck “Use Windows to configure my wireless network settings”.

Chapter 4

Configuration

This chapter describes how to configure your NETGEAR RangeMax Next Wireless PC Card WN511T for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features.



Note: The instructions in this section refer to the NETGEAR WN511T configuration utility. For Windows XP users to use the NETGEAR configuration utility, you must first disable the Windows XP configuration utility. 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.

Understanding the Configuration Options

The WN511T configuration utility provides a complete and easy to use set of tools to:

- Configure wireless settings.
- Monitor wireless network connections.
- Save your settings in configuration profiles.

The section below introduces these capabilities of the configuration utility.

Using Configuration Profiles

The WN511T configuration utility uses profiles to store all the configuration settings for a particular wireless network. You can store multiple profiles and recall the one which matches the network you want to join.

For example, if you use your notebook PC to connect to a wireless network in an office and a wireless network in your home, you can create a profile for each wireless network. Then, you can easily load the profile that has all the configuration settings you need to join the network you are using at the time.

There are two types of wireless network connections you can configure:

- **Infrastructure Mode** — uses the 802.11 infrastructure mode.
- **Ad-hoc Mode** — uses the 802.11 ad-hoc mode

For more information on 802.11 wireless network modes, see [“Wireless Networking Overview” on page B-1](#) of this manual.

Connecting to an Access Point in Infrastructure Mode

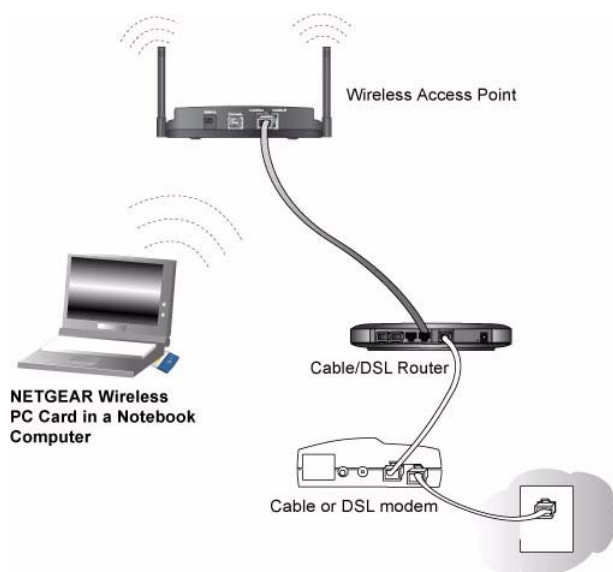


Figure 4-1: WN511T Wireless PC Card connecting to a wireless access point.

How to Configure an Infrastructure Mode Profile

Follow the instructions below to configure an infrastructure mode profile for connecting to an access point.

1. Run the WN511T Smart Wizard Wireless Assistant.

- Make sure the WN511T software is installed and the WN511T is fully inserted in an available CardBus slot in your PC.
- Click the WN511T icon  in the Windows system tray to open the Smart Wizard Wireless Assistant.

- c. The Settings tab displays as shown below.



Figure 4-2: Smart Wizard Wireless Assistant Settings tab page

2. Configure the wireless Network settings.

- In the Network Type section, be sure that Infrastructure is selected.
- Enter the SSID. This is also called the Wireless Network Name.

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

Tip: You can click the Network tab to view a list of the available wireless networks and their SSIDs at the location where you are.

3. Save your settings in a Profile.

- Type a descriptive name for the Profile in the “Profiles” field.
- Click Save Profile. All the configuration settings are saved in this profile.
- Click **Apply**.
- Click Close to exit the configuration utility 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 configuration utility for the current connection status.

Note: If you cannot connect, see the [“Troubleshooting” on page 3-8](#). 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 [“Preparing Your Computers for TCP/IP Networking” on page C-1](#).

Connecting to Another PC in Ad-hoc Mode

The peer-to-peer setting of the WN511T 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.

How to Configure an Ad-hoc Mode Profile

Note: Ad-hoc mode will not work using DHCP settings. Ad-hoc mode requires either static IP addresses (such as **192.168.0.1**). 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 configure an Ad-hoc mode profile.

1. Run the WN511T Smart Wizard Wireless Utility.

- a. Make sure the WN511T software is installed and the WN511T is fully inserted in an available CardBus slot in your PC.
- b. Click the WN511T icon  in the Windows system tray to open the Smart Wizard Wireless Assistant.

- c. The Settings tab displays as shown below.

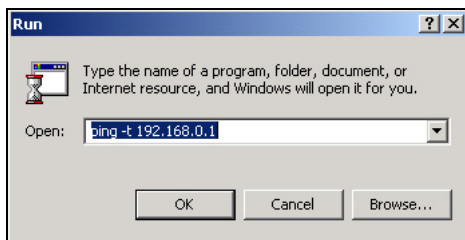


Figure 4-3: Smart Wizard Wireless Assistant Settings tab page

- d. Select Computer-to-Computer (Ad hoc) for the Network Type.
- e. Enter the SSID for the Ad-Hoc network.
- f. Click **Apply**.
- 2. Save your settings in a Profile.**
- a. Type a descriptive name in the “Profiles” field.
- b. Click Save Profile. All the configuration settings are saved in this profile.
- c. Click **Apply**.
- d. Click Close to exit the configuration utility.
- 3. Configure the PC network settings.**
- a. Configure each PC with either a static IP address or with the IPX protocol.
- Note:** For instructions on configuring static IP addresses, refer to the networking tutorial on your *Resource CD*.
- b. Restart the PCs.
- 4. Verify wireless connectivity between your peer devices.**

Verify connectivity by using the Ping program:

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



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

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

At this point the connection is established.

You may need to reboot in certain Windows operating systems such as Windows 98.

Note: If you cannot connect, see the [“Troubleshooting” on page 3-8](#). 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 [“Preparing Your Computers for TCP/IP Networking” on page C-1](#).

How to Start a Computer-to-Computer (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**. The Ad-Hoc Setting dialog box will appear, as shown below.
4. In the Start Ad-Hoc field, choose the wireless standard (802.11a, 802.11b, or 802.11g) for your Ad-Hoc computer-to-computer network.
5. In the Channel field, Automatic should work. If you notice interference problems with another nearby wireless device, select a channel that is not being used by any other wireless networks near your wireless adapter. Use the Networks tab to 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.

Enabling Wireless Security Features

You can strengthen the security of your wireless connection by enabling Wired Equivalent Privacy (WEP) encryption of the wireless data communications. For more information on 802.11 wireless security, see [“Authentication and WEP” on page B-2](#).

In addition to the WN511T 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 identify how to configure the WEP encryption settings of your NETGEAR RangeMax Next Wireless PC Card WN511T.

Identifying the Wireless Network Name (SSID) and WEP 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.

- **Wireless Network Name (SSID):** The Service Set Identification (SSID) identifies the wireless local area network. **Any** (First available network) is the default WN511T 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 pc card. For the access point and wireless nodes to communicate with each other, all must be configured with the same SSID.

Wireless network name (SSID): _____

- **WEP Security Encryption key:** The default WEP encryption key number is 1, and the default key size is 64 bits.

Note: The key number as well as the key value used by all wireless nodes must be the same. If they are different, you will not be able to connect.

WEP Encryption Key Size, circle one: 64 or 128 bits

WEP Encryption Passphrase, if used: _____

A Passphrase is used to automatically generate the WEP hexadecimal numbers for the key. If the wireless network Access Point uses a Passphrase, you can also use that here. Otherwise, you will have to manually enter the hexadecimal numbers.

WEP Hexadecimal Numbers: _____

The WEP Hexadecimal Numbers are needed if a Passphrase is not used in the wireless network access point, but rather if the key is manually entered.

Use the procedures below to configure basic security settings in the WN511T.

How to Configure WEP Encryption Security

Follow the steps below to configure WEP Encryption Security.

1. Run the WN511T Smart Wizard Wireless Assistant.

- Make sure the WN511T software is installed and the WN511T is fully inserted in an available CardBus slot in your PC.
- Click the WN511T icon  in the Windows system tray to open the Smart Wizard Wireless Assistant.
- The Settings tab displays as shown below.



Figure 4-4: Smart Wizard Wireless Assistant Settings tab page

2. Configure the Security settings.

- a. Select the Use WEP Encryption check box.
- b. Enter the SSID. This is also called the Wireless Network Name.

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

Tip: You can click the Networks tab to view a list of the available wireless networks and their SSIDs at your location.

3. Save your settings in a Profile.

- a. Type a descriptive name in the “Profiles” field.
- b. Click Save Profile. All the configuration settings are saved in this profile.
- c. Click **Apply**.
- d. Click Close to exit the configuration utility.

4. 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.

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

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

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

6. The Default Key setting must match what is set in the access point and the other 802.11 wireless devices.
7. Click **Apply** for the changes to take effect.

Statistics Page

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

- **Transmit/Receive Performance (%):** A real time graph identifying the total, receive, and transmit utilization as a percentage the total possible.
- **Total/Receive/Transmit Graph:** Identifies the trend of transmit/receive data communications over time.
- **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 received errors.

Advanced Settings Page

The Advanced settings should not require adjustment. Except for the power saving setting, changing any of the settings incorrectly on this page could cause your wireless connection to fail.

- **Power Saving:** Select On if you are using a notebook computer running on battery power.
- **Preamble:** A long transmit preamble may provide a more reliable connection or slightly longer range. A short transmit preamble might give slightly better performance.
- **Transmit Power:** Lowering the output power level lets you reduce the chance of interference with other nearby access points, but reduces the range of your adapter.
- **Wireless Mode:** Select the wireless protocols you will use. Depending on your wireless adapter, you can choose some or all of the available 802.11 wireless protocols. Note that if the wireless network you are communicating with uses the 108 Mbps 802.11g mode, you must include that in your selection (for example, if you are using the WN511T with the NETGEAR WGT624 108 Mbps Wireless Firewall Router).
- **Fragmentation Threshold:** This is the maximum packet size used for fragmentation. Packets larger than the size programmed in this field will be fragmented. The Fragmentation Threshold value must be larger than the RTS/CTS Threshold value.
- **RTS/CTS Threshold:** The packet size that is used to determine whether to use the CSMA/CD (Carrier Sense Multiple Access with Collision Detection) mechanism or the CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance) mechanism for packet transmission. CSMA/CD is slightly more efficient.

Appendix A

Technical Specifications

This appendix provides technical specifications for the NETGEAR RangeMax Next Wireless PC Card WN511T.

Antennae	3 antennas, 2 Tx, and 3 Rx
Radio Data Rate	802.11b: 1,2,5.5,11 Mbps 802.11g: 6,9,12,18,24,36,48,54 Mbps Draft N: 6, 6.5, 13, 13.5, 19.5, 26, 27, 39, 40.5, 53, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300Mbps
Frequency	2.4GHz to 2.5GHz CCK and OFDM Modulation)
Power Consumption	3.3V DC, typically 400mA in full transmit (TX), 300mA in full Receive (RX) and 40mA in power save mode
Emissions	FCC
Bus interface	Cardbus
Provided drivers	Microsoft Windows XP, 2000
Dimensions	L: 120mm W: 54 mm H: 7 mm
Weight	40 g
Status LED	Wireless Link
Operating Environment	Operating temperature: 0 to 55 degree C
Safety	US: UL1950
Encryption	40-bit (also called 64-bit) and 128-bit WEP data encryption
Warranty	Limited 3-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
Preparing a Computer for Network Access	http://documentation.netgear.com/reference/enu/wsdhcp/index.htm
Glossary	http://documentation.netgear.com/reference/enu/glossary/index.htm

