Universal WiFi Internet Adapter WNCE2001 User Manual

NETGEAR

NETGEAR, Inc.
350 E. Plumeria Drive
San Jose, CA 95134 USA

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Product Registration, Support, and Documentation

Register your product at *http://www.NETGEAR.com/register*. Registration is required before you can use our telephone support service. Product updates and Web support are always available by going to:
http://www.netgear.com/support.

Setup documentation is available on the CD, on the support website, and on the documentation website. When the wireless router is connected to the Internet, click the Knowledgebase or the Documentation link under Web Support in the main menu to view support information.

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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.

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

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 generates, 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 of the following measures:

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

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.

This device complies with 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.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

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

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

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

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.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada 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.

IMPORTANT NOTE: Radiation Exposure Statement

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

Europe – EU Declaration of Conformity $C \in \textcircled{!}$

Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). Visit the NETGEAR EU Declarations of Conformity website at:
http://kb.netgear.com/app/answers/detail/a_id/11621/sno/0

Product and Publication Details

Contents

v1.0, April 2010

About This Manual

The *NETGEAR® Wireless-N 300 USB Adapter WNA3100 User Manual* describes how to install, configure, and troubleshoot the Universal WiFi Internet Adapter WNCE2001.

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
Bold	User input, screen text
`Fixed`	Command prompt, CLI text, code
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.

> **Warning:** Ignoring this type of note might result in a malfunction or damage to the equipment, a breach of security, or a loss of data.

*   **Scope**. This manual is written for the WiFi Internet Adapter. For more information about network, Internet, firewall, and VPN technologies, click the links to the NETGEAR website in Appendix B, "Related Documents."

> **Note:** Product updates are available on the NETGEAR, Inc. website at *http://kbserver.netgear.com/products/WNCE2001.asp*.

How to Print This Manual

To print this manual, 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*.

> **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.

Revision History

Part Number	Version Number	Date	Description
202-10598-01	1.0	April 2010	Original publication

Chapter 1
Installation

This chapter explains how to set up the Universal WiFi Internet Adapter, with or without WPS.

WPS (WiFi Protected Setup) is a simple and secured way to connect a device to an existing netowrk. If you have a NETGEAR router, this feature is called Push 'N' Connect. Look for the or symbols on the router to make sure the NETGEAR router supports WPS. For non-NETGEAR routers, please refer to that router's user manual to determine if the router supports WPS. Once you know whether your router supports WPS, choose the appropriate installation method.

Installation with WPS

If your are using the WNCE2001 with a router that supports WPS, follow the installation instructions in this section. If not, go to the next section

1. Use the included Ethernet cable to connect the WNCE2001 to your TV, XBox, or Blu-ray player..
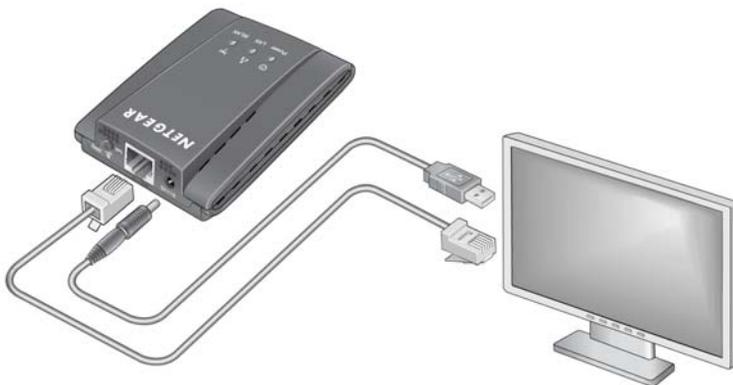
   Figure 1-1

2.

3. Connect the WNCE2001 to power by either plugging it directly into a wall outlet, or by connecting it to any USB port using the included USB power cable. For more information on power connection options, see "Power Connection Options" on page 1-4.

4. Push the WPS button on the WNCE2001.
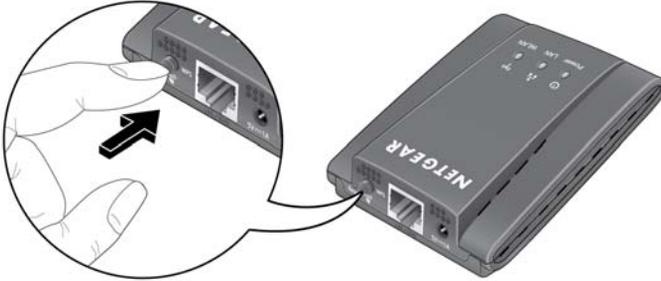
Figure 1-2

The WLAN LED will blink amber and green, showing that the WPS is running.

5. Push the WPS button on your router. The WLAN LED on the WNCE2001 will stay green for 5 seconds when the wireless connection has been established.

6. Your installation is complete.

Installation without WPS

To install your WNCE2001 without WPS, do the following:

1. Disconnect any wireless connection to the router and/or remove the Ethernet cable currently connected to the computer. (You may restore the connection after theWNCE2001 installation is complete.)

2. Connect the WNCE2001 to your computer, using the Ethernet cable (included) and one of the power connection options described in .

Figure 1-3

3. Open your Internet browser and it will automatically take you to the setup page.

Figure 1-4

4. Select the language you want to use from the drop-down list. You can choose English, German, French or Italian. Press **Continue**.

5. The Smart Wizard will look for wireless networks in your neighborhood, and then ask you to select a network on the screen..

Figure 1-5

6. Select a network and click **Continue**.

The Smart Wizard connects the WNCE2001 to the existing network you chose.

Power Connection Options

Power on your WNCE201, using **either** of these methods:

• Connect the WNCE2001 to a wall outlet with the included power adapter.

• Connect the WNCE2001 to any USB port using the included USB power cable.

•

LEDs

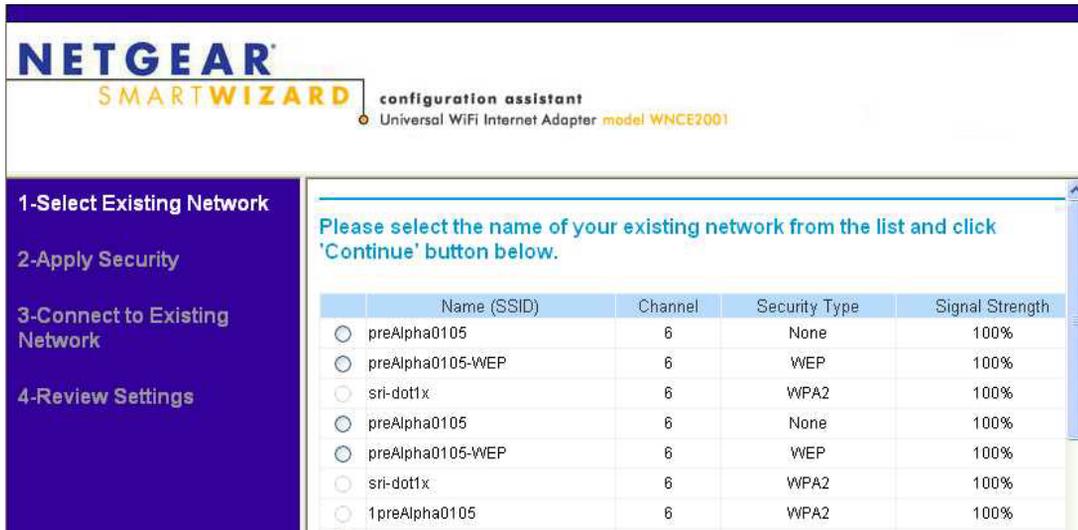The LEDs on the WNCE2001 indicate the power, LAN, and WLAN conditions of the unit, as described in the following table.

LED Activity			
⏻	**POWER**	**OFF** **Solid RED** **Solid/Blinking AMBER** **Solid GREEN**	Unit is not powered. Power source does not provide enough power. Unit is busy. Unit is powered on.
🖧	**LAN**	**ON** **OFF**	Ethernet cable is plugged in. No Ethernet cable is attached.
((•))	**WLAN**	**OFF** **RED** **AMBER** **GREEN**	No wireless connection. Connection to router is poor. Connection to router is good. Connection to router is excellent.

Chapter 2
Network Connections and Wireless Security

This chapter explains how to use the Smart Wizard to connect to wireless networks and how to set up wireless security on your adpater if you are joining a secured wireless network.

Viewing Wireless Networks in Your Area

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

Selecting a Network

During the installation, the Smart Wizard lists the available networks. When you select a network, the Smart Wizard prompts you to select a passphrase to associate with that network.:

1. Enter a passphrase.
2. Click **Continue**.

Using Push 'N' Connect to Join a Network

If there is a WPS network in your area, you can use Push 'N' Connect to join it and automatically configure the wireless security settings for your adapter.

> **Note:** To use Push 'N' Connect you need to know the location of the wireless router, and you must have access to the router so that you can push its WPS button.

To join a network:

1. On the Networks tab, select the network and click **Connect**.
2. Press and hold the push button on the side of the WiFi Internet adapter for 2 seconds. The LED flashes.

3. Follow the wizard steps to push the router's WPS button within 2 minutes, and connect to the wireless network.

About Wireless Security

Many networks use wireless security to encrypt wireless data communications. To connect to a network with wireless security, you must set up the WiFi Internet adapter with exactly the same kind of wireless security settings. If you use the Smart Wizard to set up security, you can take advantage of Push 'N' Connect (WPS) to set up WPA-PSK [TKIP] security. Otherwise, you can manually set one of the following types of wireless security used for home networks:

*   **WPA-PSK [TKIP] or WPA2-PSK [AES]. S**ee "Setting Up WPA-PSK [TKIP] or WPA2-PSK [AES] Security" on page 2-3.
*   **WEP**. See "Setting Up WEP Encryption Security" on page 2-4.

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

Wireless Network Name (SSID) and Security Settings

If you do not use WPS, then you need to know the security settings to join a secured wireless network. You can save the settings in a profile. You can also print this page, fill in the wireless network settings, and put it in a safe place for future reference.

*   **Network Name (SSID)** _____

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

    Passphrase: _____ These characters are case-sensitive.

*   **If WEP authentication is used**:

    –   **WEP encryption key size**. Circle one: **64-bit** or **128-bit**.

    –   **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**: _____ This is case-sensitive. 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: _____

Setting Up WPA-PSK [TKIP] or WPA2-PSK [AES] Security

To configure WPA-PSK (TKIP) or WPA2-PSK (AES) security:

1. Run the WNCE2001 Smart Wizard.

    a. Make sure that the WiFi Internet adapter is fully inserted in a USB port in your computer.

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

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, select **WPA-PSK [TKIP]** or **WPA2-PSK [AES]**, and enter the passphrase.
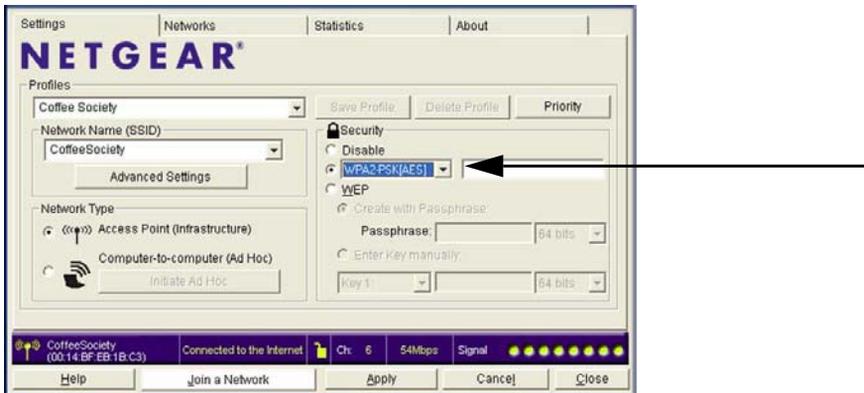
Figure 2-1

    For more about WPA2-PSK, click the link to "Wireless Networking Basics" in Appendix B.

3. Save your settings in a profile.

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

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

Setting Up WEP Encryption Security

To configure WEP encryption security:

1. Run the WNCE2001 Smart Wizard.

    a. Make sure that the WiFi Internet adapter is connected to the USB port in your computer.

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

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, select **WEP**.

Figure 2-2

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 **Create with Passphrase**, and enter the passphrase. The Smart Wizard 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 wireless devices.

5. Save your settings in a profile.

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

    b. Click **Apply**.

    c. Click **Close** to exit the configuration utility.

Chapter 3 Wireless Network Performance

This chapter explains how to use your WiFi Internet adapter to connect to your wireless local area network (WLAN) and how to maximize the performance of your WiFi Internet adapter within your network. Included are scenarios for setting up your network in a mixed-use environment and the trade-off of using different types of technology—wireless, wired, Powerline, and so on.

Optimizing Wireless Performance

The speed and 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 maximizes 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 the 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. Figure 3-1 on page 3-3 shows a home network that includes many different connection speeds.

In this network, the two computers with gigabit 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 computer 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.
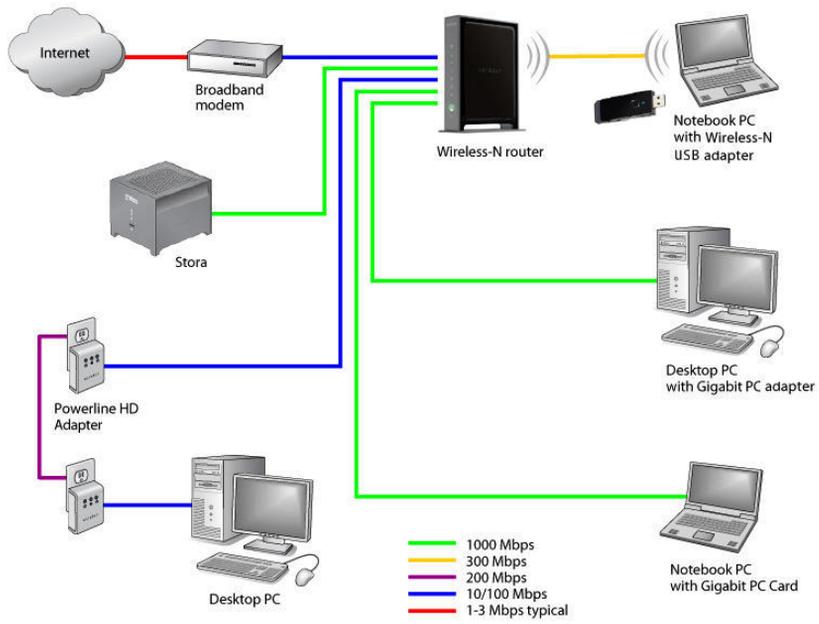
Figure 3-1

Chapter 4 Troubleshooting

This chapter provides information about troubleshooting your WiFi Internet adapter.

Troubleshooting Tips

Use the following information to resolve common situations you might encounter. Also, refer to the knowledge base on the NETGEAR website at *http://www.netgear.com/support.*

1. Push 'N' Connect timed out when I tried to connect to a router.

    Make sure that your router supports WPS. If there is more than one WPS network in your area, make sure you selected the correct wireless network. .

2. Why does the Smart Wizard keep asking me to save my 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.

3. I cannot connect to a wireless network. The router is available, and there is good signal strength.

    Try the following:

    *   Check to see if you are still connected to the previous network. Use the Networks tab to select the network that you want.

    *   If the network uses Push 'N' Connect, make sure you select the right network, and go to the correct router when you are prompted to push its WPS button.

    *   If you are typing a passphrase or key, or the SSID for a hidden network, it must match the wireless network settings exactly.

4. My connection seems slow.

    The USB port that you use and the network that you connect to affect your connection speed. Check the status bar to see if the data rate is 54 Mpbs or 14 Mbps. The WiFi Internet adapter can operate at faster speeds.

    *   At 54 Mbps you are probably connecting to a standard 802.11g network.

    *   If you do not have a USB 2.0 port on your computer, the throughput is limited to the 14 Mbps of the USB 1.1 standard.

5. I connected wirelessly to a network, but I cannot access the Internet.

First, check to make sure that the router's Internet connection is working.

6. I can connect to the wireless network, but not to the other computers on the network or to the Internet.

This could be a physical layer problem or a network configuration problem.

- Check to make sure that the router is physically connected to the Ethernet network.

- Make sure that the IP addresses and the Windows networking are configured correctly.

- Restart the modem, router, and computer.

Appendix A Technical Specifications and Factory Default Settings

Technical Specifications

Antenna	1 integrated internal wireless antenna
Standards	802.11n, 802.11g, or 802.11b
Radio data rate	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54, 108, 140, 246, and 300 Mbps (Auto Rate Sensing)
Frequency	2.4 GHz to 2.5 GHz CCK and OFDM Modulation
Power	5V Bus powered
Emissions	FCC, CE
Bus interface	USB 2.0
Provided drivers	Microsoft Windows 7, Vista, and Windows XP
Operating environment	Operating temperature: 0 to 45° C
Encryption	WPA2-PSK, WPA-PSK, and 40-bit (also called 64-bit) and 128-bit WEP data encryption
Warranty	Limited 1-year warranty

Factory Default Settings

Feature	Description
Smart Wizard	Enabled
Wireless Communication	Enabled
Wireless Network Name (SSID)	Any (will connect to first wireless network that responds)
Security	Disabled
Network Type	Infrastructure
Transmission Speed	Auto[a]
Country/Region	United States (varies by region)
Operating Mode	802.11n, 802.11g, 802.11b
Data Rate	Up to 300 Mbps

a. Maximum wireless signal rate (IEEE Standard 802.11). 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.

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	*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*