

# **RangeMax NEXT Wireless Router Model WNR854T Reference Manual**

**NETGEAR**

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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.

## Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice

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 or more 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.

## EN 55 022 Declaration of Conformance

This is to certify that the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T is shielded against the generation of radio interference in accordance with the application of Council Directive 89/336/EEC, Article 4a. Conformity is declared by the application of EN 55 022 Class B (CISPR 22).

## Bestätigung des Herstellers/Importeurs

Es wird hiermit bestätigt, daß das RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T gemäß der im BMPT-AmtsblVfg 243/1991 und Vfg 46/1992 aufgeführten Bestimmungen entstört ist. Das vorschriftsmäßige Betreiben einiger Geräte (z.B. Testsender) kann jedoch gewissen Beschränkungen unterliegen. Lesen Sie dazu bitte die Anmerkungen in der Betriebsanleitung.

Das Bundesamt für Zulassungen in der Telekommunikation wurde davon unterrichtet, daß dieses Gerät auf den Markt gebracht wurde und es ist berechtigt, die Serie auf die Erfüllung der Vorschriften hin zu überprüfen.

## Certificate of the Manufacturer/Importer

It is hereby certified that the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T 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.

## **Voluntary Control Council for Interference (VCCI) Statement**

This equipment is in the second 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.

## **Customer Support**

Refer to the Support Information Card that shipped with your RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T.

## **World Wide Web**

NETGEAR maintains a World Wide Web home page that you can access at the universal resource locator (URL) <http://www.netgear.com>. A direct connection to the Internet and a Web browser such as Internet Explorer or Netscape are required.

## **Product and Publication Details**

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# About This Manual

This section describes the intended audience, scope, conventions, and formats of this manual.

## Audience, Scope, Conventions, and Formats

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This reference manual assumes that the reader has basic to intermediate computer and Internet skills. However, basic computer network, Internet, firewall, and VPN technologies tutorial information is provided in the Appendices and on the Netgear website.

This guide uses the following typographical conventions:

**Table 1. Typographical Conventions**

<i>italics</i>	Emphasis, books, CDs, URL names
<b>bold</b>	User input
<code>fixed</code>	Screen text, file and server names, extensions, commands, IP addresses

This guide uses the following formats to highlight special messages:

	<b>Note:</b> This format is used to highlight information of importance or special interest.
---	--

	<b>Tip:</b> This format is used to highlight a procedure that will save time or resources.
---	--

	<b>Warning:</b> Ignoring this type of note may result in a malfunction or damage to the equipment.
---	--



**Danger:** This is a safety warning. Failure to take heed of this notice may result in personal injury or death.

This manual is written for the RangeMax NEXT Wireless Router according to these specifications:

**Table 2. Manual Scope**

Product Version	RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T
Manual Publication Date	2006-04



**Note:** Product updates are available on the NETGEAR, Inc. Web site at <http://kbserver.netgear.com/products/WNR854T.asp>.

## How to Use This Manual

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The HTML version of this manual includes the following:

- Buttons,  and , for browsing forwards or backwards through the manual one page at a time
- A  button that displays the table of contents and an  button. Double-click on a link in the table of contents or index to navigate directly to where the topic is described in the manual.
- A  button to access the full NETGEAR, Inc. online knowledge base for the product model.
- Links to PDF versions of the full manual and individual chapters.

## How to Print this Manual

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

- **Printing a Page in the HTML View.**

Each page in the HTML version of the manual is dedicated to a major topic. Use the *Print* button on the browser toolbar to print the page contents.

- **Printing a Chapter.**

Use the *PDF of This Chapter* link at the top left of any page.

- Click the *PDF of This Chapter* link at the top right of any page in the chapter you want to print. The PDF version of the chapter you were viewing opens in a browser window.
- 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>.
- Click the print icon in the upper left of the window.



**Tip:** If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

- **Printing the Full Manual.**

Use the *Complete PDF Manual* link at the top left of any page.

- Click the Complete PDF Manual link at the top left of any page in the manual. The PDF version of the complete manual opens in a browser window.
- Click the print icon in the upper left of the window.



**Tip:** If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.



# Chapter 1

## Introduction

This chapter lists the package contents for the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T, describes the front and rear panel layouts, and describes your NETGEAR maintenance and support benefits.

### Package Contents

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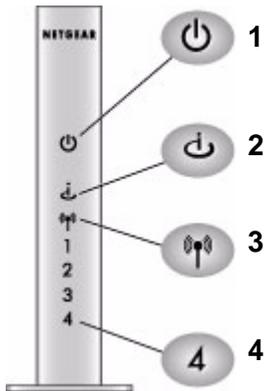
The product package should contain the following items:

- RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T.
- Base for standing the wireless router upright.
- AC power adapter.
- Category 5 (CAT5) Ethernet cable.
- *Resource CD*, including:
  - This guide.
  - The Installation Guide
  - Application Notes and other helpful information.
- Registration and 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 router for repair.

## The Router's Front Panel

The front panel of the RangeMax NEXT Wireless Router contains the status lights described below.



**Figure 1-1**

You can use the status lights to verify connections. Viewed from left to right, the table below describes the lights on the front panel of the router.

**Table 1-1. Status Light Descriptions**

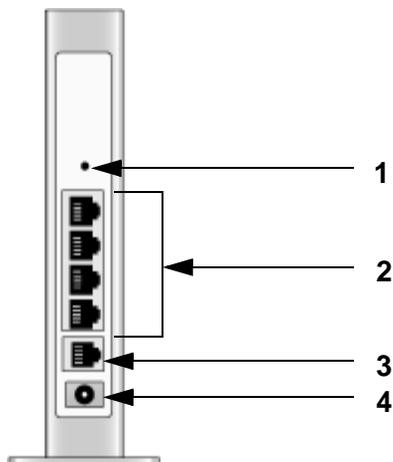
LED	Activity	Description
1. Power	On -- Amber On -- Green Blink -- Amber Blink -- Green Off	The router integrity test is running. Power is on and the router is ready. Software update is in progress. There is a problem with the wireless router software. Power is not supplied to the router.
2. Internet	On -- Amber On -- Green Blink -- Green/ Amber	The Ethernet cable is connected but the wireless router has not gotten an Internet address. The wireless router has an Internet address. Data is being communicated with the Internet.

**Table 1-1. Status Light Descriptions**

3. Wireless	On Blink Off	Indicates that the Wireless port is enabled. Traffic is being transmitted or received. Indicates that the Wireless port is disabled.
4. LAN (Local Area Network) Lights 1-4	On (Green) Blink (Green) On (Amber) Blink (Amber) Off	The local port is connected to a 1000 Mbps device. Data is being transmitted at 1000 Mbps. The local port has detected a link with a 10/100 Mbps device. Data is being transmitted at 10/100 Mbps. No link is detected on this port.

## The Router's Rear Panel

The rear panel of the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T contains these connections.

**Figure 1-2**

Viewed from top to bottom, the rear panel contains the following features:

- Factory Default Reset push button for [Restoring the Default Configuration and Password](#)
- Four Local (LAN) 10/100/1000 Mbps Ethernet ports for connecting the router to the local computers
- Internet (WAN) Ethernet port for connecting the router to a cable or DSL modem
- AC power adapter outlet for [12 V DC @ 1.5 A output](#)

## Installing the RangeMax NEXT Wireless Router

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For installation instructions refer to the setup manual that came on the CD, or refer to the online version at <http://documentation.netgear.com/wnr854t/enu/208-10082-01/index.html>.

## Maintenance and Support

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NETGEAR offers the following features to help you maximize your use of the RangeMax NEXT Wireless Router:

- Flash memory for firmware upgrades
- Free technical support seven days a week, twenty-four hours a day

# Chapter 2

## Wireless Configuration

This chapter describes how to configure the wireless features of your RangeMax NEXT Wireless Router. In planning your wireless network, you should consider the level of security required. You should also select the physical placement of your firewall in order to maximize the network speed. For further information on wireless networking, see [“Wireless Communications” in Appendix B](#).

### Observing Performance, Placement, and Range Guidelines

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The operating distance or range of your wireless connection can vary significantly based on the physical placement of the wireless firewall. The latency, data throughput performance, and notebook power consumption of wireless adapters also vary depending on your configuration choices.



**Note:** Failure to follow these guidelines can result in significant performance degradation or inability to wirelessly connect to the router. For complete range and performance specifications, please see [Appendix A, “Technical Specifications”](#).

For best results, place your firewall:

- Near the center of the area in which your computers operate.
- In an elevated location such as a high shelf where the wirelessly connected computers have line-of-sight access (even if through walls).
- Away from sources of interference, such as computers, microwaves, and 2.4 GHz cordless phones.
- Away from large metal surfaces.

The time it takes to establish a wireless connection can vary depending on both your security settings and placement. Wired Equivalent Privacy (WEP) connections can take slightly longer to establish. Also, WEP and Wi-Fi Protected Access, Pre-Shared Key (WPA-PSK and WPA2-PSK) encryption can consume more battery power on a notebook computer.

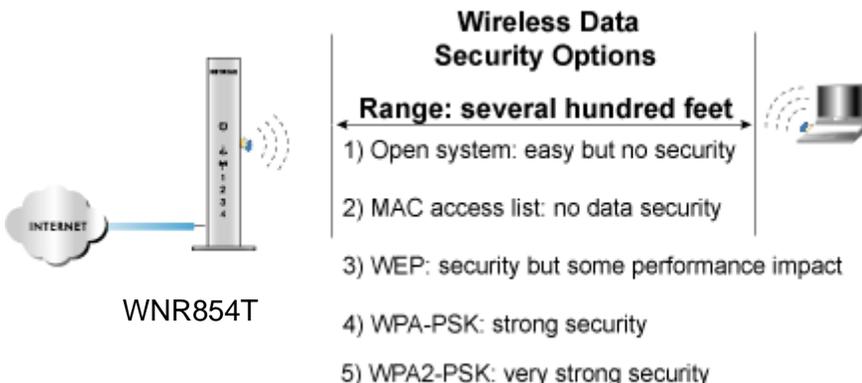
When used on a metallic surface, Multiple Input, Multiple Output (MIMO) units must be oriented vertically to ensure proper operation:

## Implementing Appropriate Wireless Security



**Note:** Indoors, computers can connect over 802.11b/g wireless networks at a range of several hundred feet. Such distances can allow for others outside of your immediate area to access your network.

Unlike wired network data, your wireless data transmissions can be received well beyond your walls by anyone with a compatible adapter. For this reason, use the security features of your wireless equipment. The RangeMax NEXT Wireless Router provides highly effective security features which are covered in detail in this chapter. Deploy the security features appropriate to your needs.



**Figure 2-1**

There are several ways you can enhance the security of your wireless network:

- **Restrict access based on MAC address.** You can restrict access to only trusted computers so that unknown computers cannot wirelessly connect to the WNR854T. MAC address filtering adds an obstacle against unwanted access to your network, but the data broadcast over the wireless link is fully exposed.
- **Turn off the broadcast of the Wireless Network Name SSID.** If you disable broadcast of the SSID, only devices that have the correct SSID can connect. This nullifies the wireless network ‘discovery’ feature of some products such as Windows XP, but the data is still fully exposed to a determined snoop using specialized test equipment like wireless sniffers.
- **WEP.** Provides data security. WEP Shared Key authentication and WEP data encryption will block all but the most determined eavesdropper.

- **WPA-PSK** and **WPA2-PSK**. Provides strong data security. WPA-PSK and WPA2-PSK will block eavesdropping. Because these are new standards, wireless device driver and software availability may be limited.
- **Turn off the wireless LAN**. If you disable the wireless LAN, wireless devices cannot communicate with the router at all. You might choose to turn off the wireless LAN when you are away and others on the network all use wired connections.

## Understanding Wireless Settings

To configure the Wireless settings of your wireless router, type <http://www.routerlogin.net> into your internet browser. Enter the default user name of **admin** and default password of **password**, or whatever LAN address and password you have set up. Click the **Wireless** link in the main menu of the browser interface. The Wireless Settings menu appears, as shown below.

**Wireless Settings**

---

**Wireless Network**

Name (SSID):

Region:

Channel:

Mode:

---

**Security Options**

None

WEP

WPA-PSK [TKIP]

WPA2-PSK [AES]

WPA-PSK [TKIP] + WPA2-PSK [AES]

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**Figure 2-2**

- **Name (SSID).** The SSID is also known as the wireless network name. Enter a value of up to 32 alphanumeric characters. In a setting where there is more than one wireless network, different wireless network names provide a means for separating the traffic. Any device you want to participate in a particular wireless network will need to use this SSID for that network. The WNR854T default SSID is: **NETGEAR**.
- **Region.** This field identifies the region where the WNR854T can be used. It may not be legal to operate the wireless features of the wireless router in a region other than one of those identified in this field.



**Note:** The region selection feature may not be available in all countries.

- **Channel.** This field determines which operating frequency is used. It should not be necessary to change the wireless channel unless you notice interference problems with another nearby access point. For more information on the wireless channel frequencies, please see [“Wireless Communications” in Appendix B](#).
- **Mode.** The “11g/b/Next(20/40 MHz)” mode provides backward compatibility with the slower 802.11b and 802.11g wireless devices while still enabling 802.11n communications. The “11b/g” mode supports the older and slower 802.11b and 802.11g wireless modes only. The default and recommended mode is the “11g/b/Next(20/40 MHz)” mode.
- **Security Options.** These options are the wireless security features you can enable. The table below identifies the various basic wireless security options. A full explanation of these standards is available in [“Wireless Communications” in Appendix B](#).

Table 2-1. Basic Wireless Security Options

Field	Description
None	No wireless security.
WEP	<p>WEP offers the following options:</p> <ul style="list-style-type: none"> <li>• Open System With Open Network Authentication and 64- or 128-bit WEP Data Encryption, the WNR854T <i>does</i> perform 64- or 128-bit data encryption but <i>does not</i> perform any authentication.</li> <li>• Shared Key Shared Key authentication encrypts the SSID and data. Choose the Encryption Strength (64- or 128-bit data encryption). Manually enter the key values or enter a word or group of printable characters in the Passphrase box. Manually entered keys <i>are</i> case sensitive but passphrase characters <i>are not</i> case sensitive. <b>Note:</b> Not all wireless adapter configuration utilities support passphrase key generation.</li> <li>• Auto The router automatically detects whether Open System or Shared Key is being used.</li> </ul>
WPA-PSK WPA2-PSK	<p>WPA-Pre-shared Key <i>does</i> perform authentication. WPA-PSK uses TKIP (Temporal Key Integrity Protocol) data encryption and WPA2-PSK uses AES (Advanced Encryption Standard) data encryption. Both dynamically change the encryption keys, making them nearly impossible to circumvent.</p> <p>Enter a word or group of printable characters in the Passphrase box. These characters <i>are</i> case sensitive.</p> <p><b>Note:</b> Not all wireless adapter configuration utilities support WPA. Furthermore, client software is required on the client. Windows XP Service Pack 2 and Windows XP Service Pack 1 with the WPA patch do include the client software that supports WPA. Nevertheless, the wireless adapter hardware and driver must also support WPA.</p>

To configure the advanced wireless settings of your wireless router, click the **Wireless Setup** link in the Advanced section of the main menu of the browser interface. The Advanced Wireless Settings menu appears, as shown below.



**Advanced Wireless Settings**

**Wireless Router Settings**

Enable Wireless Router Radio

Enable SSID Broadcast

Fragmentation Threshold (256 - 2346):

CTS/RTS Threshold (256 - 2346):

Preamble Mode:

**Wireless Card Access List**

**Figure 2-3**

- **Enable Wireless Router Radio.** If you disable the wireless router radio, wireless devices cannot connect to the WNR854T.
- **Enable SSID Broadcast.** If you disable broadcast of the SSID, only devices that have the correct SSID can connect. Disabling SSID broadcast nullifies the wireless network ‘discovery’ feature of some products such as Windows XP.
- **Wireless Card Access List.** When the Trusted PCs Only radio button is selected, the WNR854T checks the MAC address of the wireless station and only allows connections to computers identified on the trusted computers list.



**Note:** The **Fragmentation Threshold**, **CTS/RTS Threshold**, and **Preamble Mode** options are reserved for wireless testing and advanced configuration only. Do not change these settings.

## Information to Gather Before Changing Basic Wireless Settings

Before customizing your wireless settings, print this form and record the following information. If you are working with an existing wireless network, the person who set up or is responsible for the network must provide this information. Otherwise, you must choose the settings for your wireless network. Either way, record the settings for your wireless network in the spaces below.

- **Wireless Network Name (SSID):** \_\_\_\_\_ The SSID identifies the wireless network. You can use up to 32 alphanumeric characters. The SSID *is* case sensitive. The SSID in the wireless adapter card must match the SSID of the wireless router. In some configuration utilities (such as in Windows XP), the term “wireless network name” is used instead of SSID.
- **If WEP Authentication is Used, circle one: Open System, Shared Key, or Auto.**



**Note:** If you select **Shared Key**, the other devices in the network will not connect unless they are set to Shared Key as well and are configured with the correct key.

- **WEP Encryption key size.** Choose one: **64-bit** or **128-bit**. Again, the encryption key size must be the same for the wireless adapters and the wireless router.
- **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 WPA-PSK or WPA2-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. Similarly, when you use WPA2-PSK, the other devices in the network will not connect unless they are set to WPA2-PSK and are configured with the correct Passphrase.

Use the procedures described in the following sections to configure the WNR854T. Store this information in a safe place.

## Default Factory Settings

When you first receive your WNR854T, the default factory settings are in effect as shown below. You can restore these defaults with the Factory Default Restore button on the rear panel. After you install the RangeMax NEXT Wireless Router, use the procedures below to customize any of the settings to better meet your networking needs.

FEATURE	DEFAULT FACTORY SETTINGS
Wireless Router Radio	<b>Enabled</b>
Wireless Access List (MAC Filtering)	<b>All wireless stations allowed</b>
SSID broadcast	<b>Enabled</b>
SSID	<b>NETGEAR</b>
802.11b/g/n RF Channel	<b>6</b>
Mode	<b>802.11b/g/Next</b>
Authentication Type	<b>Automatic</b>
WEP	<b>Disabled</b>
DHCP Server	<b>Enabled</b>
DHCP range	<b>192.168.1.2 to 192.168.1.254</b>

## How to Set Up and Test Basic Wireless Connectivity



**Note:** If you use a wireless computer to configure WPA settings, you will be disconnected when you click **Apply**. Reconfigure your wireless adapter to match the new settings or access the wireless router from a wired computer to make any further changes.

Follow the instructions below to set up and test basic wireless connectivity. Once you have established basic wireless connectivity, you can enable security settings appropriate to your needs.

1. Log in to the WNR854T wireless router at URL <http://www.routerlogin.net>. Enter the default user name of **admin** and default password of **password**, or whatever LAN address and password you have set up.
2. Click **Wireless Settings** in the Setup section of the main menu of the WNR854T wireless router.

**Wireless Settings**

---

**Wireless Network**

Name (SSID):

Region:

Channel:

Mode:

---

**Security Options**

None

WEP

WPA-PSK [TKIP]

WPA2-PSK [AES]

WPA-PSK [TKIP] + WPA2-PSK [AES]

---

**Figure 2-4**

3. Choose a suitable descriptive name for the wireless network name (SSID). In the SSID box, enter a value of up to 32 alphanumeric characters. The default SSID is NETGEAR.



**Note:** The SSID is case sensitive; NETGEAR is not the same as nETgear. Also, the SSID of any wireless access adapters must match the SSID you configure in the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T. If they do not match, you will not get a wireless connection to the WNR854T.

4. Set the Region. Select the region in which the wireless interface will operate.
5. Set the Channel. The default channel is 6.

This field determines which operating frequency to use. It should not be necessary to change the wireless channel unless you notice interference problems with another nearby wireless router or access point. Select a channel that is not being used by any other wireless networks within several hundred feet of your firewall. For more information on the wireless channel frequencies please see [“Wireless Communications” in Appendix B](#).

6. For initial configuration and testing, leave the security option set to “None”.
7. Click **Apply** to save your changes.



**Note:** If you are configuring the wireless router from a wireless computer and you change the wireless router’s SSID, channel, or security settings, you will lose your wireless connection when you click **Apply**. You must then change the wireless settings of your computer to match the firewall’s new settings.

8. Configure and test your computers for wireless connectivity.

Program the wireless adapter of your computers to have the same SSID and channel that you configured in the router. Check that they have a wireless link and are able to obtain an IP address by DHCP from the firewall.



**Warning:** The Network Name (SSID) is case sensitive. If NETGEAR is the Network Name (SSID) in your wireless router, you must enter **NETGEAR** in your computer's wireless settings. Typing **nETgear** will not work.

Once your computers have basic wireless connectivity to the firewall, you can configure the advanced wireless security functions of the firewall.

## How to Configure WEP Wireless Security

To configure WEP data encryption, follow these steps:



**Note:** If you use a wireless computer to configure WEP settings, you will be disconnected when you click **Apply**. You must then either configure your wireless adapter to match the wireless router WEP settings or access the wireless router from a wired computer to make any further changes.

1. Log in to the WNR854T wireless router using URL <http://www.routerlogin.net>. Enter the default user name of **admin** and default password of **password**, or whatever LAN address and password you have set up.
2. Click **Wireless Settings** in the main menu of the WNR854T wireless router.
3. From the Security Options menu, select **WEP**. The WEP options display.

4. Select the **Authentication Type** and **Encryption Strength** from the drop-down lists.

**Wireless Settings**

**Wireless Network**

Name (SSID): NETGEAR

Region: United States

Channel: 06

Mode: 11b/g/Next (20/40 MHz)

**Security Options**

None

WEP

WPA-PSK [TKIP]

WPA2-PSK [AES]

WPA-PSK [TKIP] + WPA2-PSK [AES]

**Security Encryption (WEP)**

Authentication Type: Automatic

Encryption Strength: 64bit

**Security Encryption (WEP) Key**

Passphrase:

Key 1:

Key 2:

Key 3:

Key 4:

**Figure 2-5**

5. You can manually or automatically program the four data encryption keys. These values must be identical on all computers and Access Points in your network.
- Automatic—enter a word or group of printable characters in the Passphrase box and click the **Generate** button. The passphrase is case sensitive; NETGEAR is not the same as nETgear. The four key boxes are automatically populated with key values.
  - Manual—enter ten hexadecimal digits (any combination of 0-9, a-f, or A-F). These entries are not case sensitive; AA is the same as aa. Select which of the four keys to activate.

Please see [“Wireless Communications” in Appendix B](#) for a full explanation of each of these options, as defined by the IEEE 802.11 wireless communication standard.

- Click **Apply** to save your settings.

## How to Configure WPA-PSK or WPA2-PSK Wireless Security



**Note:** Not all wireless adapters support WPA. Furthermore, client software is also required. Windows XP and Windows 2000 with Service Pack 3 do include WPA support. Nevertheless, the wireless adapter hardware and driver must also support WPA. For instructions on configuring wireless computers or PDAs (Personal Digital Assistants) for WPA-PSK security, consult the documentation for the product you are using.

To configure WPA-PSK, follow these steps:

- Click **Wireless Settings** in the Setup section of the main menu and select one of the WPA-PSK or WPA2-PSK options for the Security Type. The third option (**WPA-PSK [TKIP] + WPA2-PSK [AES]**) is the most flexible, since it allows clients using either WPA-PSK or WPA2-PSK.

The screenshot shows the 'Wireless Settings' page. Under the 'Wireless Network' section, the SSID is 'NETGEAR', Region is 'United States', Channel is '06', and Mode is '11b/g/Next (20/40 MHz)'. In the 'Security Options' section, three radio buttons are visible: 'None', 'WEP', and 'WPA-PSK [TKIP] + WPA2-PSK [AES]'. The third option is selected and circled in black. Below this, the 'Security Encryption (WPA-PSK + WPA2-PSK)' section has a 'Passphrase' field and 'Apply' and 'Cancel' buttons.

Figure 2-6

2. Enter a word or group of 8-63 printable characters in the Passphrase box.
3. Click **Apply** to save your settings.



**Note:** If you use a wireless computer to configure WPA-PSK or WPA2-PSK settings, you will be disconnected when you click **Apply**. You must then either configure your wireless adapter to match the wireless router WPA settings or access the wireless router from a wired computer to make any further changes.

## How to Restrict Wireless Access by MAC Address

---

To restrict access based on MAC addresses, follow these steps:

1. Log in to the WNR854T wireless router at URL <http://www.routerlogin.net>. Enter the default user name of **admin** and default password of **password**, or whatever LAN address and password you have set up.



**Note:** When configuring the wireless router from a wireless computer whose MAC address is not in the Trusted PC list, if you select **Turn Access Control On**, you will lose your wireless connection when you click on **Apply**. You must then access the wireless router from a wired computer or from a wireless computer which is on the access control list to make any further changes.

2. Click **Wireless Settings** in the **Advanced** section of the main menu of the WNR854T firewall.
3. From the Wireless Settings menu, click **Setup Access List** to display the Wireless Access menu shown below.



Figure 2-7

4. Select the **Turn Access Control On** check box.
5. Click **Add** to add a wireless device to the wireless access control list. The Wireless Card Access Setup dialog displays.



The image shows a dialog box titled "Wireless Card Access Setup". It has a header section with the title. Below the header is a section titled "Available Wireless Cards" which contains a table with two columns: "Device Name" and "MAC Address". Below this table is a section titled "Wireless Card Entry" which contains two input fields: "Device Name:" and "MAC Address:". At the bottom of the dialog are three buttons: "Add", "Cancel", and "Refresh".

**Figure 2-8**

6. In the Available Wireless Cards list, either select from the list of available wireless cards the WNR854T has found in your area, or enter the MAC address and device name for a device you plan to use. You can usually find the MAC address printed on the wireless adapter.



**Note:** You can copy and paste the MAC addresses from the router's Attached Devices menu into the MAC Address box of this menu. To do this, configure each wireless computer to obtain a wireless link to the wireless router. The computer should then appear in the Attached Devices menu.

7. Click **Add** to add this wireless device to the Wireless Card Access List. The screen changes back to the list screen.
8. Repeat [step 5](#) to [step 7](#) for each additional device you wish to add to the list.
9. Be sure to click **Apply** to save your Wireless Card Access List settings.

Now, only devices on this list will be allowed to wirelessly connect to the WNR854T.



# Chapter 3

## Content Filtering

This chapter describes how to use the content filtering features of the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T to protect your network. These features can be found by clicking on the Content Filtering heading in the Main Menu of the browser interface.

### Content Filtering Overview

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The RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T provides you with Web content filtering options, plus browsing activity reporting and instant alerts via e-mail. Parents and network administrators can establish restricted access policies based on time of day, Web addresses and Web address keywords. You can also block Internet access by applications and services, such as chat or games.

To configure these features of your router, click on the subheadings under the Content Filtering heading in the Main Menu of the browser interface at <http://www.routerlogin.net>. The subheadings are described below:

## Blocking Access to Internet Sites

The RangeMax NEXT Wireless Router allows you to restrict access based on Web addresses and Web address keywords. Up to 255 entries are supported in the Keyword list. The Block Sites menu is shown in [Figure 3-1](#) below:

**Block Sites**

**Keyword Blocking**

Never  
 Per Schedule  
 Always

Type keyword or domain name here.

Block sites containing these keywords or domain names:

discodanny

Allow Trusted IP Address To Visit Blocked Sites

Trusted IP Address

**Figure 3-1**

To enable keyword blocking:

1. Select either “Per Schedule” or “Always”
2. Click **Apply**.
3. If you want to block by schedule, be sure to specify a time period in the Schedule menu, as described in [“Scheduling When Blocking Will Be Enforced”](#) on page 3-6.

To add a keyword or domain, type it in the Keyword box, click **Add Keyword**, then click **Apply**.

To delete a keyword or domain, select it from the list, click **Delete Keyword**, then click **Apply**.

Keyword application examples:

- If the keyword “XXX” is specified, the URL <http://www.badstuff.com/xxx.html> is blocked.
- If the keyword “.com” is specified, only Web sites with other domain suffixes (such as .edu or .gov) can be viewed.
- If you wish to block all Internet browsing access during a scheduled period, enter the keyword “.” and set the schedule in the Schedule menu.

To specify a Trusted User:

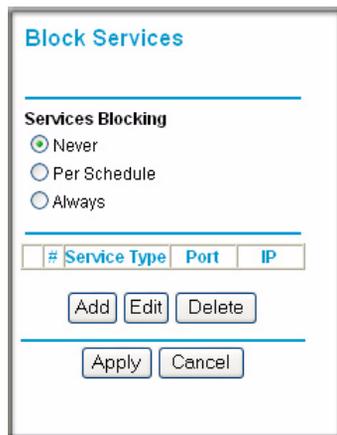
1. Enter that computer’s IP address in the Trusted User box.
2. Click **Apply**.

You may specify one Trusted User, which is a computer that will be exempt from blocking and logging. Since the Trusted User will be identified by an IP address, you should configure that computer with a fixed IP address.

## Blocking Access to Internet Services

---

The RangeMax NEXT Wireless Router allows you to block the use of certain Internet services by computers on your network. This is called service blocking or port filtering. The Block Services menu is shown below:



The screenshot shows the 'Block Services' configuration window. At the top, the title 'Block Services' is displayed in blue. Below the title is a horizontal line. Underneath, the section 'Services Blocking' is shown with three radio button options: 'Never' (selected), 'Per Schedule', and 'Always'. Another horizontal line follows. Below this line is a table with four columns: '#', 'Service Type', 'Port', and 'IP'. Under the table are three buttons: 'Add', 'Edit', and 'Delete'. A final horizontal line is present, followed by two buttons: 'Apply' and 'Cancel'.

**Figure 3-2**

Services are functions performed by server computers at the request of client computers. For example, Web servers serve Web pages, time servers serve time and date information, and game hosts serve data about other players' moves. When a computer on your network sends a request for service to a server computer on the Internet, the requested service is identified by a service or port number. This number appears as the destination port number in the transmitted IP packets. For example, a packet that is sent with destination port number 80 is an HTTP (Web server) request.

To enable service blocking:

1. Select either Per Schedule or Always
2. Click **Apply**.
3. If you want to block by schedule, be sure to specify a time period in the Schedule menu, as described in [“Scheduling When Blocking Will Be Enforced”](#) on page 3-6.

To specify a service for blocking:

1. Click **Add**. The Add Services menu will appear, as shown below:

**Block Services Setup**

Service Type: User Defined (dropdown)  
Protocol: TCP (dropdown)  
Starting Port: (1~65534)  
Ending Port: (1~65534)  
Service Type/User Defined: (text box)

**Filter Services For :**

Only This IP Address: 192 . 168 . 1 . (text boxes)  
 IP Address Range: 192 . 168 . 1 . (text boxes) to 192 . 168 . 1 . (text boxes)  
 All IP Addresses

Add Cancel (buttons)

**Figure 3-3**

2. From the Service Type list, select the application or service to be allowed or blocked. The list already displays several common services, but you are not limited to these choices. To add any additional services or applications that do not already appear, select User Defined.

## **Configuring a User Defined Service**

To define a service, first you must determine which port number or range of numbers is used by the application. The service numbers for many common protocols are defined by the Internet Engineering Task Force (IETF) and published in RFC1700, “Assigned Numbers.” Service numbers for other applications are typically chosen from the range 1024 to 65535 by the authors of the application. This information can usually be determined by contacting the publisher of the application or from user groups of newsgroups.

1. Enter the Starting Port and Ending Port numbers. If the application uses a single port number, enter that number in both boxes.
2. If you know that the application uses either TCP or UDP, select the appropriate protocol. If you are not sure, select Both.

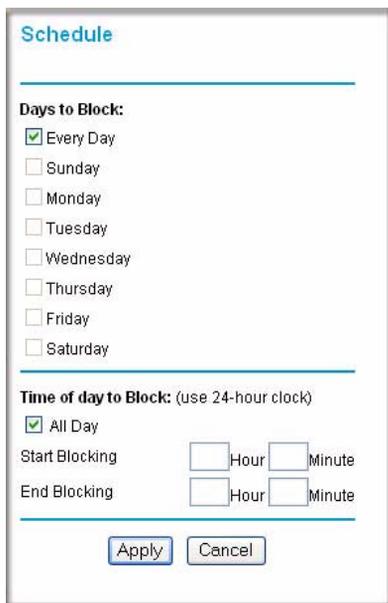
## **Configuring Service Blocking by IP Address Range**

Under “Filter Services For”, you can block the specified service for a single computer, a range of computers (having consecutive IP addresses), or all computers on your network.

## Scheduling When Blocking Will Be Enforced

---

The RangeMax NEXT Wireless Router allows you to specify when blocking will be enforced. The Schedule menu is shown below:



The screenshot shows a web-based configuration window titled "Schedule". It contains two main sections: "Days to Block:" and "Time of day to Block: (use 24-hour clock)".

**Days to Block:**

- Every Day
- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

**Time of day to Block: (use 24-hour clock)**

- All Day
- Start Blocking:  Hour  Minute
- End Blocking:  Hour  Minute

At the bottom of the window are two buttons: "Apply" and "Cancel".

**Figure 3-4**

Use this schedule for blocking content. Check this box if you wish to enable a schedule for Content Filtering.

- **Days to Block.** Select days to block by checking the appropriate boxes. Select “Every day” to check the boxes for all days.
- **Time of Day to Block.** Select a start and end time in 23:59 format. Select “All Day” for 24 hour blocking.
- Click **Apply** to make the schedule take effect.

Be sure to select your Time Zone in the E-Mail menu; see [“Configuring E-Mail Alert and Web Access Log Notifications” on page 3-9](#) for details.

## Viewing Logs of Web Access or Attempted Web Access

The log is a detailed record of what Web sites you have accessed or attempted to access. Up to 128 entries are stored in the log. Log entries will only appear when keyword blocking is enabled, and no log entries will be made for the Trusted User. An example is shown below:



**Figure 3-5**

Log entries are described in [Table 3-1](#).

**Table 3-1. Log entry descriptions**

Field	Description
Date and Time	The date and time the log entry was recorded.
Source IP	The IP address of the initiating device for this log entry.
Action	This field displays whether the access was blocked or allowed.
Target URL	The name or IP address of the Web site or newsgroup visited or attempted to access.

Log action buttons are described in [Table 3-2](#).

**Table 3-2. Log action buttons**

<b>Field</b>	<b>Description</b>
Refresh	Click this button to refresh the log screen.
Clear Log	Click this button to clear the log entries.
Send Log	Click this button to E-mail the log immediately.

## Configuring E-Mail Alert and Web Access Log Notifications

In order to receive logs and alerts by E-mail, you must provide your E-mail information in the E-Mail menu, shown below:

The screenshot shows the 'E-mail' configuration page. At the top, there is a title 'E-mail' in blue. Below it is a checkbox labeled 'Turn E-mail Notification On'. Underneath is a section titled 'Send Alerts and Logs Via E-mail' with two text input fields: 'Your Outgoing Mail Server:' and 'Send To This E-mail Address:'. Below these is another checkbox labeled 'Send Alert Immediately' with the text 'When Someone Attempts To Visit A Blocked Site.' Underneath is a section titled 'Send Logs According to this Schedule' with a dropdown menu set to 'None', a 'Day' dropdown set to 'Sunday', and a 'Time' dropdown set to '1:00' with radio buttons for 'a.m.' and 'p.m.'. Below this is a 'Time Zone' section with a dropdown menu set to '(GMT-08:00) Pacific Time (US Canada)' and a checked checkbox for 'Automatically Adjust for Daylight Savings Time'. At the bottom of the form, it displays 'Current Time: Wed Apr 19 16:34:06 2006' and two buttons: 'Apply' and 'Cancel'.

Figure 3-6

- **Turn E-mail Notification On**—Check this box if you wish to receive e-mail logs and alerts from the router.
- **Your Outgoing Mail Server**—Enter the name of your outgoing (SMTP) mail server (such as mail.myISP.com). You may be able to find this information in the configuration menu of your e-mail program. If you leave this box blank, log and alert messages will not be sent via e-mail.

- **Send To This E-mail Address**—Enter the e-mail address to which logs and alerts are sent. This e-mail address will also be used as the From address. If you leave this box blank, log and alert messages will not be sent via e-mail.

You can specify that logs are automatically sent to the specified e-mail address with these options:

- **Send alert immediately**—Check this box if you would like immediate notification of attempted access to a blocked site.
- **Send logs according to this schedule**—Use this option to specify how often to send the logs: Hourly, Daily, Weekly, or When Full.
  - Day for sending log  
Specifies which day of the week to send the log. Relevant when the log is sent weekly or daily.
  - Time for sending log  
Specifies the time of day to send the log. Relevant when the log is sent daily or weekly.

If the Weekly, Daily or Hourly option is selected and the log fills up before the specified period, the log is automatically e-mailed to the specified e-mail address. After the log is sent, the log is cleared from the router's memory. If the router cannot e-mail the log file, the log buffer may fill up. In this case, the router overwrites the log and discards its contents.

The RangeMax NEXT Wireless Router uses the Network Time Protocol (NTP) to obtain the current time and date from one of several Network Time Servers on the Internet. In order to localize the time for your log entries, you must specify your Time Zone:

- **Time Zone**—Select your local time zone. This setting will be used for the blocking schedule and for time-stamping log entries.
- **Daylight Savings Time**—Check this box if your time zone is currently under daylight savings time.

# Chapter 4

## Maintenance

This chapter describes how to use the maintenance features of your RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T. These features can be found by clicking on the Maintenance heading in the Main Menu of the browser interface.

## How to Manually Configure Your Internet Connection

You can manually configure your router using the Basic Settings menu, shown below.

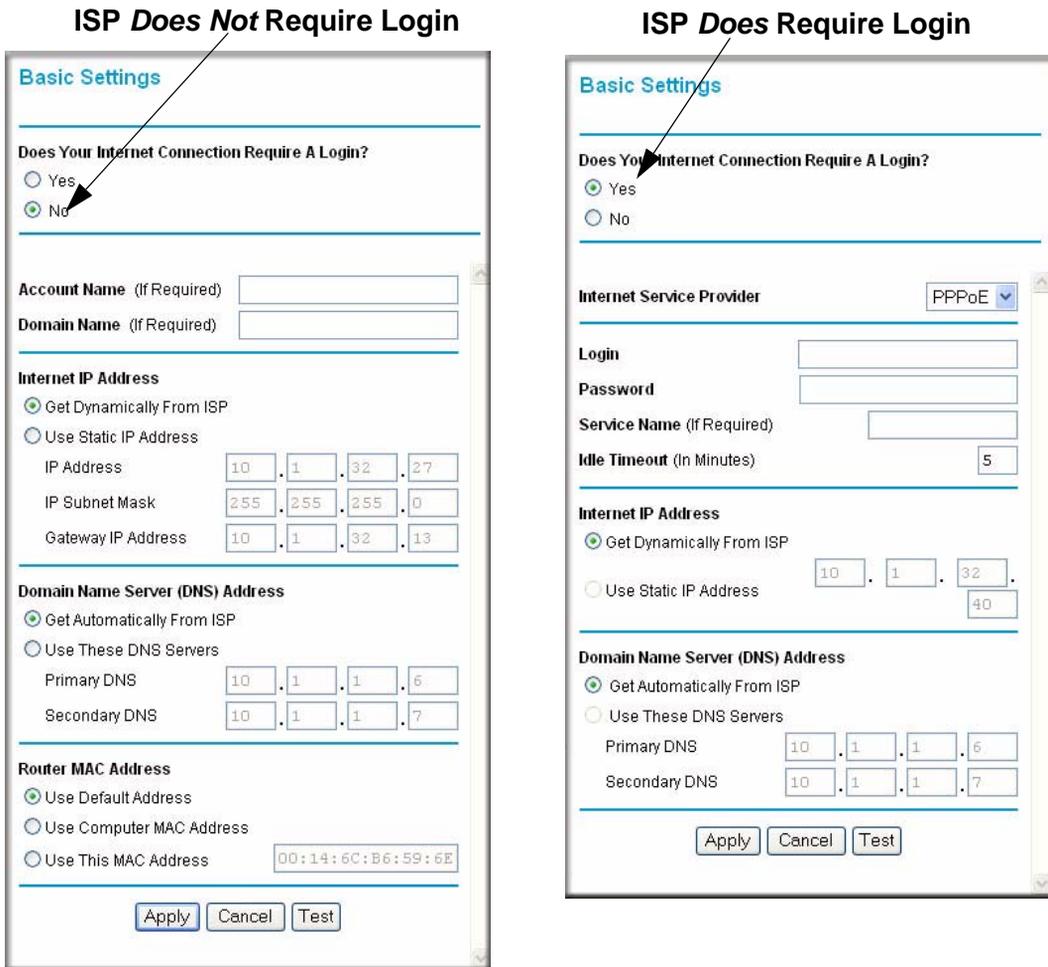


Figure 4-1

You can manually configure the router using the Basic Settings menu shown in Figure 4-1 using these steps:

1. Connect to the wireless router by typing <http://www.routerlogin.net> in the address field of your browser, then click **Enter**.

2. For security reasons, the wireless router has its own user name and password. When prompted, enter **admin** for the router user name and **password** for the router password, both in lower case letters.
3. Click **Basic Settings** on the Setup menu.
4. If your Internet connection does not require a login, click **No** at the top of the Basic Settings menu and fill in the settings according to the instructions below. If your Internet connection does require a login, click **Yes**, and skip to step 5.
  - a. Enter your Account Name (may also be called Host Name) and Domain Name.  
These parameters may be necessary to access your ISP's services such as mail or news servers.
  - b. Internet IP Address:  
If your ISP has assigned you a permanent, fixed (static) IP address for your computer, select **Use Static IP Address**. Enter the IP address that your ISP assigned. Also enter the net mask and the Gateway IP address. The Gateway is the ISP's router to which your router will connect.
  - c. Domain Name Server (DNS) Address:  
If you know that your ISP does not automatically transmit DNS addresses to the router during login, select **Use These DNS Servers** and enter the IP address of your ISP's Primary DNS Server. If a Secondary DNS Server address is available, enter it also.



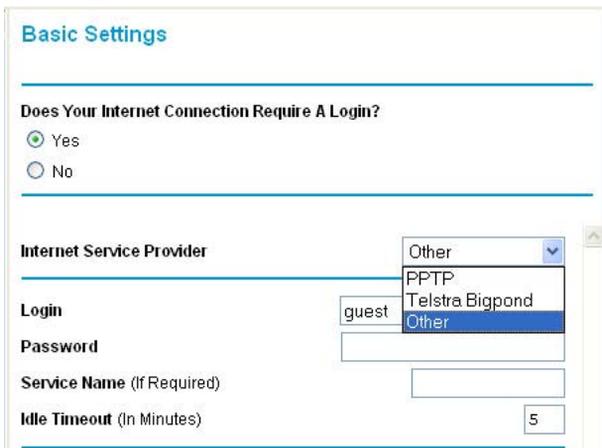
**Note:** If you enter an address here, restart the computers on your network so that these settings take effect.

- d. Router's MAC Address:  
This section determines the Ethernet MAC address that will the router will use on the Internet port. Some ISPs will register the Ethernet MAC address of the network interface card in your computer when your account is first opened. They will then only accept traffic from the MAC address of that computer. This feature allows your router to masquerade as that computer by "cloning" its MAC address.  
  
To change the MAC address, select **Use Computer MAC Address**. The router will then capture and use the MAC address of the computer that you are now using. You must be using the one computer that is allowed by the ISP. Or, select **Use this MAC address** and type it in here.
- e. Click **Apply** to save your settings.

5. If your Internet connection does require a login, fill in the settings according to the instructions below. Select **Yes** if you normally must launch a login program such as Enternet or WinPOET in order to access the Internet.

	<p><b>Note:</b> After you finish setting up your router, you will no longer need to launch the ISP's login program on your computer in order to access the Internet. When you start an Internet application, your router will automatically log you in.</p>
---	---

- a. Select your Internet service provider from the drop-down list.



**Figure 4-2**

	<p><b>Note:</b> Not all ISPs are listed here. The ones on this list have special requirements.</p>
---	--

- b. The screen will change according to the ISP settings requirements of the ISP you select.
- c. Fill in the parameters for your Internet service provider.
- d. Click **Apply** to save your settings. Click the **Test** button to verify you have Internet access.

## Viewing Wireless Router Status Information

The Router Status menu provides status and usage information. From the Main Menu of the browser interface, click on Maintenance, then select System Status to view the Router Status screen, shown below.

The screenshot shows the 'Router Status' page with the following information:

- Account Name:** 1.1.05NA
- Firmware Version:** 1.1.05NA
- Internet Port:**
  - MAC Address: 00:14:6C:B6:59:6E
  - IP Address: 10.1.32.27
  - DHCP: DHCP Client
  - IP Subnet Mask: 255.255.255.0
  - Domain Name Server: 10.1.1.6
- LAN Port:**
  - MAC Address: 00:14:6C:B6:59:6D
  - IP Address: 192.168.1.1
  - DHCP: ON
  - IP Subnet Mask: 255.255.255.0
- Wireless Port:**
  - Name (SSID): DOCTEST
  - Region: United States
  - Channel: 6
  - Mode: 11 b/g/Next (20/40 MHz)
  - Wireless AP: ON
  - Broadcast Name: Enabled

At the bottom of the page, there are two buttons: 'Show Statistics' and 'Connection Status'.

**Figure 4-3**

This screen shows the following parameters:

**Table 4-1. Wireless Router Status Fields**

Field	Description
Account Name	This field displays the Host Name assigned to the router.
Firmware Version	This field displays the router firmware version.
Internet Port	These parameters apply to the Internet (Wire Area Network also referred to as WAN) port of the router.

**Table 4-1. Wireless Router Status Fields**

Field	Description
MAC Address	This field displays the Media Access Control address being used by the Internet (WAN) port of the router.
IP Address	This field displays the IP address being used by the Internet (WAN) port of the router. If no address is shown, the router cannot connect to the Internet.
DHCP	If set to FixedIP, the router is configured to use a fixed IP address on the WAN. If set to Client, the router is configured to obtain an IP address dynamically from the ISP.
IP Subnet Mask	This field displays the IP Subnet Mask being used by the Internet (WAN) port of the router.
Domain Name Server (DNS)	This field displays the IPAddress(es) of the DNS server(s).
LAN Port	These parameters apply to the Local (LAN) port of the router.
MAC Address	This field displays the Media Access Control address being used by the LAN port of the router.
IP Address	This field displays the IP address being used by the Local (LAN) port of the router. The default is 192.168.1.1
DHCP	Identifies if the router's built-in DHCP server is active for the LAN attached devices.
IP Subnet Mask	This field displays the IP Subnet Mask being used by the Local (LAN) port of the router. The default is 255.255.255.0
Wireless Port	These parameters apply to the Wireless port of the router.
Name (SSID)	This field displays the wireless network name (SSID) being used by the wireless port of the router. The default is NETGEAR.
Region	This field displays the geographic region where the router being used. It may be illegal to use the wireless features of the router in some parts of the world.
Channel	Identifies the channel of the wireless port being used. See <a href="#">"Wireless Communications" in Appendix B</a> for the frequencies used on each channel.
Mode	Indicates the router communication mode: 802.11g and 802.11b, or 802.11g, 802.11b, and 802.11Next (20/40 MHz).
Wireless AP	Indicates if the Access Point feature of the Router is enabled. If not enabled, the Wireless LED on the front panel will be off.
Broadcast Name	Indicates if the router is broadcasting its SSID.

Click on the **Connection Status** button to display the connection status, as shown below.

The screenshot shows a window titled "Connection Status" with a table of network parameters and three buttons: "Release", "Renew", and "Close Window".

Connection Status	
IP Address	10.1.32.66
Subnet Mask	255.255.255.0
Default Gateway	10.1.32.13
DHCP Server	10.1.32.13
DNS Server	10.1.1.6 10.1.1.7
Lease Obtained	8 days, 0 hrs, 0 minutes
Lease Expires	7 days, 23 hrs, 18 minutes

Buttons: Release, Renew, Close Window

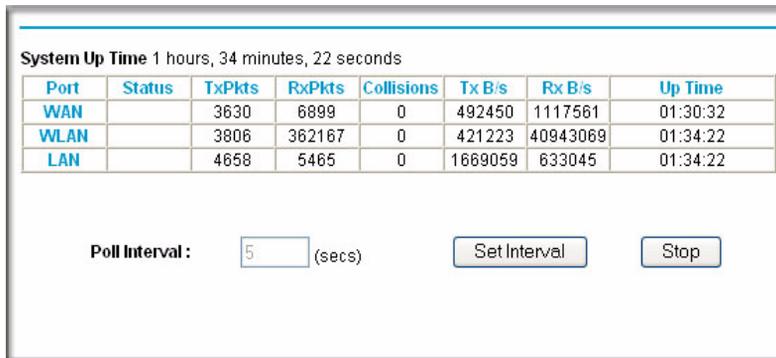
**Figure 4-4**

This screen shows the following statistics:.

**Table 4-2: Connection Status Items**

Item	Description
IP Address	The WAN (Internet) IP Address assigned to the router.
Subnet Mask	The WAN (Internet) Subnet Mask assigned to the router.
Default Gateway	The WAN (Internet) default gateway the router communicates with.
DHCP Server	The IP address of the DHCP server which provided the IP configuration addresses.
DNS Server	The IP address of the DNS server which provides network name to IP address translation.
Lease Obtained	When the DHCP lease was obtained.
Lease Expires	When the DHCP lease was expires.
Release	Click the Release button to release the DHCP lease.
Renew	Click the Renew button to renew the DHCP lease.

Click on the **Show Statistics** button to display router usage statistics, as shown below.



**Figure 4-5**

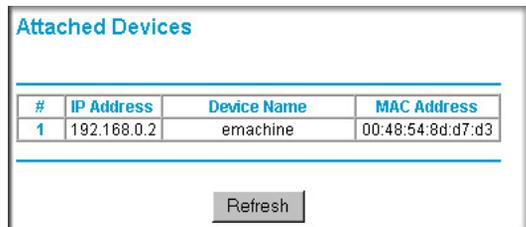
This screen shows the following statistics:

**Table 4-3: Router Statistics Items**

Item	Description
System Up Time	The amount of time since the router was last restarted.
Port	The statistics for the WAN (Internet), LAN (local) and WLAN (wireless) ports. For each port, the screen displays:
Status	The link status of the port.
TxPkts	The number of packets transmitted on this port since reset or manual clear.
RxPkts	The number of packets received on this port since reset or manual clear.
Collisions	The number of collisions on this port since reset or manual clear.
Tx B/s	The current transmission (outbound) bandwidth used on the LAN ports.
Rx B/s	The current reception (inbound) bandwidth used on the LAN ports.
Up Time	The time elapsed since this port acquired the link.
Poll Interval	Specifies the intervals at which the statistics are updated in this window. Click on Stop to freeze the display.
Set Interval	Enter a time and click the button to set the polling frequency.
Stop	Click the Stop button to freeze the polling information.

## Viewing a List of Attached Devices

The Attached Devices menu contains a table of all IP devices that the router has discovered on the local network. From the Main Menu of the browser interface, under the Maintenance heading, select Attached Devices to view the table, shown below.



Attached Devices

#	IP Address	Device Name	MAC Address
1	192.168.0.2	emachine	00:48:54:8d:d7:d3

Refresh

Figure 4-6

For each device, the table shows the IP address, Device Name (if available), and Ethernet MAC address. To force the router to look for attached devices, click the **Refresh** button.

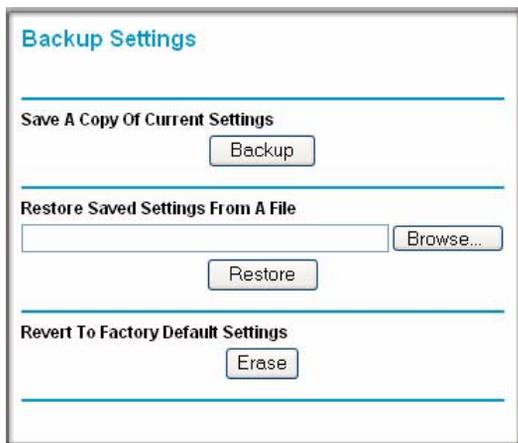


**Note:** If the router is rebooted, the table data is lost until the router rediscovers the devices.

## Configuration File Management

The configuration settings of the RangeMax NEXT Wireless Router are stored within the router in a configuration file. This file can be saved (backed up) to a user's computer, retrieved (restored) from the user's computer, or cleared to factory default settings.

From the Main Menu of the browser interface, under the Maintenance heading, select the Backup Settings heading to bring up the menu shown below.



**Figure 4-7**

Three options are available, and are described in the following sections.

## Restoring and Backing Up the Configuration

The Restore and Backup options in the Backup Settings menu allow you to save and retrieve a file containing your router's configuration settings.

To save your settings, click the **Backup** button. Your browser will extract the configuration file from the router and will prompt you for a location on your computer to store the file. You can give the file a meaningful name at this time, such as pacbell.cfg.

To restore your settings from a saved configuration file, enter the full path to the file on your computer or click the **Browse** button to browse to the file. When you have located it, click the **Restore** button to send the file to the router. The router will then reboot automatically.



**Note:** You must not interrupt the router while it is rebooting.

## Erasing the Configuration

It is sometimes desirable to restore the router to the factory default settings. This can be done by using the Erase function, which will restore all factory settings. After an erase, the router's password will be **password**, the LAN IP address will be 192.168.1.1, and the router's DHCP client will be enabled. For other default settings, refer to [“Factory Default Settings” in Appendix A](#).

To erase the configuration, click the **Erase** button.

To restore the factory default configuration settings without knowing the login password or IP address, you must use the Default Reset button on the rear panel of the router. See [“Restoring the Default Configuration and Password” on page 6-7](#).

## Upgrading the Router Software

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**Note:** Before upgrading the router software, use the router backup utility to save your configuration settings. Any router upgrade will revert the router settings back to the factory defaults. After completing the upgrade, you can restore your settings from the backup.

The routing software of the RangeMax NEXT Wireless Router is stored in FLASH memory, and can be upgraded as new software is released by NETGEAR. Upgrade files can be downloaded from the NETGEAR Web site. If the upgrade file is compressed (.ZIP file), you must first extract the binary (.BIN or .IMG) file before sending it to the router. The upgrade file can be sent to the router using your browser.



**Note:** The Web browser used to upload new firmware into the RangeMax NEXT Wireless Router must support HTTP uploads. NETGEAR recommends using Microsoft Internet Explorer or Netscape Navigator 4.0 or higher.

From the Main Menu of the browser interface, under the Maintenance heading, select the Router Upgrade heading.

To upload new firmware:

1. Download and unzip the new software file from NETGEAR.
2. In the Router Upgrade menu, click the **Browse** button and browse to the location of the binary (.BIN or .IMG) upgrade file

### 3. Click **Upload**.

	<p><b>Note:</b> When uploading software to the RangeMax NEXT Wireless Router, it is important not to interrupt the Web browser by closing the window, clicking a link, or loading a new page. If the browser is interrupted, it may corrupt the software. When the upload is complete, your router will automatically restart. The upgrade process will typically take about one minute.</p>
---	--

In some cases, you may need to reconfigure the router after upgrading.

## Changing the Administrator Password

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	<p><b>Note:</b> Before changing the router password, use the router backup utility to save your configuration settings. If after changing the password, you forget the new password you assigned, you will have to reset the router back to the factory defaults to be able to log in using the default password of password. This means you will have to restore all the router configuration settings. If you ever have to reset the router back to the factory defaults, you can restore your settings from the backup.</p>
---	--

The default password for the router's Web Configuration Manager is **password**. Change this password to a more secure password.

From the Main Menu of the browser interface, under the Maintenance heading, select Set Password to bring up the menu shown below.



The screenshot shows a web form titled "Set Password". It has three text input fields labeled "Old Password", "New Password", and "Repeat New Password". At the bottom of the form are two buttons: "Apply" and "Cancel".

**Figure 4-8**

To change the password:

1. First enter the old password

2. Enter the new password twice.
3. Click **Apply** to save your changes.



**Tip:** After changing the password, it is a good idea to create a new backup file so that it includes the new password (see [“Restoring and Backing Up the Configuration”](#) on page 4-10 for details).



# Chapter 5

## Advanced Configuration of the Router

This chapter describes how to configure the advanced features of your RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T. These features can be found under the Advanced heading in the Main Menu of the browser interface.

### Configuring Port Triggering

---

Port Triggering is an advanced feature that can be used to easily enable gaming and other internet applications. Port Forwarding is typically used to enable similar functionality, but it is static and has some limitations.



**Note:** If you use applications such as multi-player gaming, peer-to-peer connections, real time communications such as instant messaging, or remote assistance (a feature in Windows XP), you should also enable UPnP according to the instructions at [“Using Universal Plug and Play \(UPnP\)” on page -17](#).

Port Triggering opens an incoming port temporarily and does not require the server on the internet to track your IP address if it is changed by DHCP, for example.

Port Triggering monitors outbound traffic. When the router detects traffic on the specified outbound port, it remembers the IP address of the computer that sent the data and triggers the incoming port. Incoming traffic on the triggered port is then forwarded to the triggering computer.

Using the Port Triggering page, you can make local computers or servers available to the Internet for different services (for example, FTP or HTTP), to play Internet games (like Quake III), or to use Internet applications (like CUseeMe).

Port Forwarding is designed for FTP, Web Server or other server based services. Once port forwarding is set up, a request from the Internet will be forwarded to the proper server. In contrast, port triggering will only allow request from Internet after a designated port is 'triggered'. Port triggering applies to chat and Internet games.

**Port Forwarding / Port Triggering**

Please select the service type

Port Forwarding

Port Triggering

Disable Port Triggering

Port Triggering Timeout (in minutes)

Port Triggering Portmap Table

#	Enable	Service Name	Service Type	Inbound Connection	Service User
<input type="button" value="Add Service"/> <input type="button" value="Edit Service"/> <input type="button" value="Delete Service"/>					

Figure 5-1



**Note:** If the **Disable Port Triggering** box is checked after configuring port triggering, port triggering will be disabled but any port triggering configuration information you added to the router will be retained even though it will not be used.

- **Port Triggering Timeout**  
Enter a value up to 9999 minutes. The Port Triggering Timeout value controls the inactivity timer for the designated inbound port(s). The inbound port(s) will be closed when the inactivity timer expires.
- **For Internet Games or Applications**  
Before starting, you'll need to know which service, application or game you'll be configuring. Also, you'll need to have the outbound port (triggering port) address for this game or application.

Follow these steps to set up a computer to play Internet games or use Internet applications:

1. Click **Add Service**.

**Port Triggering - Services**

**Service**

Service Name

Service User

.  .  .

Service Type

Triggering Port  (1~65535)

**Required Inbound Connection**

Connection Type

Starting Port  (1~65535)

Ending Port  (1~65535)

**Figure 5-2**

2. Enter a service name in the Service Name box.
3. In the Service User box, selecting the default value of **Any** allows the service to be used by everyone in your network. Otherwise, to restrict the service to a particular PC, select **Single address** and enter the PC's IP address.
4. In the Service Type box, select between **TCP** (the default) and **UDP**.
5. In the Triggering Port box, enter the outbound port number that the application will use.
6. Set the parameters for the inbound connection—the connection type (TCP or UDP), the starting port, and ending port numbers.



**Note:** For the information required for steps 4-6 above, refer to the game or applications manual or support website.

7. Click **Apply** to save your changes.

## Configuring for Port Forwarding to Local Servers

Although the router causes your entire local network to appear as a single machine to the Internet, you can make a local server (for example, a Web server or game server) visible and available to the Internet. This is done using the Port Forwarding menu. From the Main Menu of the browser interface, under Advanced, click on Port Forwarding to view the port forwarding menu, shown below.

#	Service Name	Start Port	End Port	Server IP Address
---	--------------	------------	----------	-------------------

Figure 5-3



**Note:** If you are unfamiliar with networking and routing, refer to [“Internet Networking and TCP/IP Addressing”](#) in Appendix B, to become more familiar with the terms and procedures used in this manual.

Use the Port Forwarding menu to configure the router to forward incoming protocols to computers on your local network. In addition to servers for specific applications, you can also specify a Default DMZ Server to which all other incoming protocols are forwarded. The DMZ Server is configured in the Security Menu.

Before starting, you need to determine which type of service, application or game you will provide and the IP address of the computer that will provide each service. Be sure the computer’s IP address never changes. To configure port forwarding to a local server:



**Note:** To assure that the same computer always has the same IP address, use the reserved IP address feature of your RangeMax NEXT Wireless Router. See [“Using Address Reservation”](#) on page 5-11 for instructions on how to use reserved IP addresses.

1. From the Service & Game box, select the service or game that you will host on your network. If the service does not appear in the list, refer to the following section, [“Adding a Custom Service”](#).
2. Enter the IP address of the local server in the corresponding Server IP Address box.
3. Click the **Add** button.

## Adding a Custom Service

To define a service, game or application that does not appear in the Services & Games list, you must determine what port numbers are used by the service. For this information, you may need to contact the manufacturer of the program that you wish to use. When you have the port number information, follow these steps:

1. If port forwarding services are already configured, make a note of the Start Port and the End Port used by each service.
2. Click the **Add Custom Service** button.

Ports - Custom Services

Service Name

Service Type

Starting Port  (1~65534)

Ending Port  (1~65534)

Server IP Address  .  .  .

**Figure 5-4**

3. In the Service Name box, type a name.
4. Enter an unused port number Starting Port box.

5. To forward only one port, enter it again in the Ending Port box. To specify a range of ports, enter the last port to be forwarded in the Ending Port box, making sure that the range of ports being forwarded does not overlap with any currently configured services.
6. Enter the IP address of the local server in the corresponding Server IP Address box.
7. Click **Apply** at the bottom of the menu.

## Editing or Deleting a Port Forwarding Entry

To edit or delete a Port Forwarding entry, follow these steps.

1. In the table, select the button next to the service name.
2. Click Edit or Delete.

## Local Web and FTP Server Example

If a local computer with a private IP address of 192.168.1.33 acts as a Web and FTP server, configure the Ports menu to forward HTTP (port 80) and FTP (ports 20 and 21) to local address 192.168.1.33.

To access this server from the Internet, the remote user must know the IP address that has been assigned by your ISP. If this address is 172.16.1.23, for example, an Internet user can access your Web server by directing the browser to <http://172.16.1.23>. The assigned IP address can be found in the Router Status Menu, where it is shown as the WAN IP Address.

Some considerations for this application are:

- If your account's IP address is assigned dynamically by your ISP, the IP address may change periodically as the DHCP lease expires.
- If the IP address of the local computer is assigned by DHCP, it may change when the computer is rebooted. To avoid this, you can manually configure the computer to use a fixed address.
- Local computers must access the local server using the computers' local LAN address (192.168.1.33 in this example). Attempts by local computers to access the server using the external IP address (172.16.1.23 in this example) will fail.

## Multiple Computers for Internet Game Example

To set up an additional computer to play an Internet game:

1. Select the game again from the Services/Games list.

2. Change the beginning port number in the Start Port box.  
For these games, use the supplied number in the default listing and add +1 for each additional computer. For example, if you've already configured one computer to play Hexen II (using port 26900), the second computer's port number would be 26901, and the third computer would be 26902.
3. Type the same port number in the End Port box that you typed in the Start Port box.
4. Type the IP address of the additional computer in the Server IP Address box.
5. Click Apply.

Some online games and videoconferencing applications are incompatible with NAT. The RangeMax NEXT Wireless Router is programmed to recognize some of these applications and to work properly with them, but there are other applications that may not function well. In some cases, one local computer can run the application properly if that computer's IP address is entered as the default in the Ports Menu. If one local computer acts as a game or videoconferencing host, enter its IP address as the default.

## Configuring the WAN Setup Options

---

The WAN Setup options let you configure a DMZ server, change the MTU size and enable the wireless router to respond to a Ping on the WAN port. These options are discussed below.

### Setting Up a Default DMZ Server

The default DMZ server feature is helpful when using some online games and videoconferencing applications that are incompatible with NAT. The router is programmed to recognize some of these applications and to work properly with them, but there are other applications that may not function well. In some cases, one local computer can run the application properly if that computer's IP address is entered as the default DMZ server.

Incoming traffic from the Internet is normally discarded by the router unless the traffic is a response to one of your local computers or a service that you have configured in the Ports menu. Instead of discarding traffic for services you have not defined, you can have it forwarded to one computer on your network. This computer is called the Default DMZ Server.



**Note:** DMZ servers pose a security risk. A computer designated as the default DMZ server loses much of the protection of the firewall, and is exposed to exploits from the Internet. If compromised, the DMZ server can be used to attack your network.

If you are willing to risk open access, the WAN Setup menu shown below lets you configure a Default DMZ Server.

The screenshot shows the WAN Setup configuration interface. At the top, the title 'WAN Setup' is displayed in blue. Below the title, there are several configuration options, each with a horizontal line above it. The first option is 'Connect Automatically, as Required', which is checked with a green box. The second option is 'Disable SPI Firewall', which is unchecked. The third option is 'Default DMZ Server', which is unchecked, and it has four input fields containing the IP address 192.168.1. The fourth option is 'Respond to Ping on Internet Port', which is unchecked. Below these options is the 'MTU Size (in bytes)' field, which contains the value 1500. At the bottom of the form are two buttons: 'Apply' and 'Cancel'.

**Figure 5-5**

To assign a computer or server to be a Default DMZ server, follow these steps:

1. Click the WAN Setup link on the Advanced section of the main menu.
2. Check the Default DMZ Server box and type the IP address for that server. To remove the default DMZ server, uncheck the Default DMZ Server box.
3. Click **Apply**.

## Disabling the SPI Firewall

The SPI (Stateful Packet Inspection) Firewall protects your LAN against Denial of Service attacks. This should only be disabled in special circumstances.

## Responding to Ping on the Internet WAN Port

If you want the router to respond to a 'ping' from the Internet, click the 'Respond to Ping on Internet WAN Port' check box. This should only be used as a diagnostic tool, since it allows your router to be discovered. Do not check this box unless you have a specific reason to do so.

## Setting the MTU Size

The default MTU size is usually fine. The normal MTU (Maximum Transmit Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs, particularly some using PPPoE, you may need to reduce the MTU to 1492. This should not be done unless you are sure it is necessary by your ISP.

Any packets sent through the router that are larger than the configured MTU size will be repackaged into smaller packets to meet the MTU requirement. To change the MTU size:

1. Under MTU Size, enter a new size between 64 and 1500.
2. Click **Apply** to save the new configuration.

## Using the LAN IP Setup Options

The second feature category under the Advanced heading is LAN IP Setup. This menu allows configuration of local TCP/IP addresses, DHCP and address reservation. From the Main Menu of the browser interface, under Advanced, click on LAN IP Setup to view the LAN IP Setup menu, shown below.

**LAN IP Setup**

---

**LAN TCP/IP Setup**

IP Address: 192 . 168 . 1 . 1

IP Subnet Mask: 255 . 255 . 255 . 0

RIP Direction: None

RIP Version: Disabled

---

**Use Router as DHCP Server**

Starting IP Address: 192 . 168 . 1 . 2

Ending IP Address: 192 . 168 . 1 . 254

---

**Address Reservation**

#	IP Address	Device Name	Mac Address
---	------------	-------------	-------------

Add Edit Delete

---

Apply Cancel

Figure 5-6

## Configuring LAN TCP/IP Setup Parameters

The router is shipped preconfigured to use private IP addresses on the LAN side, and to act as a DHCP server. The router's default LAN IP configuration is:

- LAN IP addresses—192.168.1.1
- Subnet mask—255.255.255.0

These addresses are part of the IETF-designated private address range for use in private networks, and should be suitable in most applications. If your network has a requirement to use a different IP addressing scheme, you can make those changes in this menu.

The LAN IP parameters are:

- **IP Address.** This is the LAN IP address of the router.



**Note:** If you change the LAN IP address of the router while connected through the browser, you will be disconnected. You must then open a new connection to the new IP address and log in again.

- **IP Subnet Mask.** This is the LAN Subnet Mask of the router. Combined with the IP address, the IP Subnet Mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or router.

## Using the Router as a DHCP server

By default, the router will function as a DHCP (Dynamic Host Configuration Protocol) server, allowing it to assign IP, DNS server, and default gateway addresses to all computers connected to the router's LAN. The assigned default gateway address is the LAN address of the router. IP addresses will be assigned to the attached computers from a pool of addresses specified in this menu. Each pool address is tested before it is assigned to avoid duplicate addresses on the LAN.

For most applications, the default DHCP and TCP/IP settings of the router are satisfactory. See [“Internet Networking and TCP/IP Addressing” in Appendix B](#) for an explanation of DHCP and information about how to assign IP addresses for your network.

If another device on your network will be the DHCP server, or to manually configure the network settings of all of your computers, clear the ‘Use router as DHCP server’ check box. Otherwise, leave it checked.

Specify the pool of IP addresses to be assigned by setting the Starting IP Address and Ending IP Address. These addresses should be part of the same IP address subnet as the router's LAN IP address. Using the default addressing scheme, you should define a range between 192.168.1.2 and 192.168.1.253, although you may wish to save part of the range for devices with fixed addresses.

The router will deliver the following parameters to any LAN device that requests DHCP:

- An IP Address from the range you have defined
- Subnet Mask
- Gateway IP Address (the router's LAN IP address)
- Primary DNS Server (if you entered a Primary DNS address in the Basic Settings menu; otherwise, the router's LAN IP address)
- Secondary DNS Server (if you entered a Secondary DNS address in the Basic Settings menu)

## Using Address Reservation

When you specify a reserved IP address for a computer on the LAN, that computer will always receive the same IP address each time it accesses the router's DHCP server. Reserved IP addresses should be assigned to servers that require permanent IP settings.

To reserve an IP address:

1. Click the **Add** button.
2. In the IP Address box, type the IP address to assign to the computer or server. Choose an IP address from the router's LAN subnet, 192.168.1.X.
3. Type the MAC Address of the computer or server.



**Tip:** If the computer is already present on your network, you can copy its MAC address from the Attached Devices menu and paste it here.

4. Click **Apply** to enter the reserved address into the table.

Note: The reserved address will not be assigned until the next time the computer contacts the router's DHCP server. Reboot the computer or access its IP configuration and force a DHCP release and renew.

To edit or delete a reserved address entry:

1. Click the button next to the reserved address you want to edit or delete.
2. Click **Edit** or **Delete**.

## Using a Dynamic DNS Service

If your network has a permanently assigned IP address, you can register a domain name and have that name linked with your IP address by public Domain Name Servers (DNS). However, if your Internet account uses a dynamically assigned IP address, you will not know in advance what your IP address will be, and the address can change frequently. In this case, you can use a commercial dynamic DNS service, which will allow you to register your domain to their IP address, and will forward traffic directed at your domain to your frequently-changing IP address.



**Note:** If your ISP assigns a private WAN IP address (such as 192.168.x.x or 10.x.x.x), the dynamic DNS service will not work because private addresses will not be routed on the Internet.

The router contains a client that can connect to many popular dynamic DNS services. You can select one of these services and obtain an account with them. Then, whenever your ISP-assigned IP address changes, your router will automatically contact your dynamic DNS service provider, log in to your account, and register your new IP address.

To configure Dynamic DNS:

1. From the Main Menu of the browser interface, under Advanced, click on Dynamic DNS.

The screenshot shows the 'Dynamic DNS' configuration page. At the top, the title 'Dynamic DNS' is displayed. Below the title is a horizontal line. Underneath, there is a checkbox labeled 'Use a Dynamic DNS Service'. Below this is another horizontal line. The 'Service Provider' is set to 'www.DynDNS.org' in a dropdown menu. There are three input fields: 'Host Name', 'User Name', and 'Password'. Below these is a checkbox labeled 'Use Wildcards'. At the bottom of the form, there are three buttons: 'Apply', 'Cancel', and 'Show Status'.

**Figure 5-7**

2. Register for an account with one of the dynamic DNS service providers whose names appear in the 'Service Provider' box. For example, for dyndns.org, go to [www.dyndns.org](http://www.dyndns.org).

3. Check the Use a dynamic DNS service check box.
4. Select your dynamic DNS Service Provider from the Service Provider box.
5. Type the Host Name (or domain name) that your dynamic DNS service provider gave you.
6. Type the User Name for your dynamic DNS account.
7. Type the Password (or key) for your dynamic DNS account.
8. If your dynamic DNS provider allows the use of wildcards in resolving your URL, you may select the Use wildcards check box to activate this feature. For example, the wildcard feature will cause \*.yourhost.dyndns.org to be aliased to the same IP address as yourhost.dyndns.org
9. Click **Apply** to save your configuration.

## Configuring Static Routes

---

Static Routes provide additional routing information to your router. Under normal circumstances, the router has adequate routing information after it has been configured for Internet access, and you do not need to configure additional static routes. You must configure static routes only for unusual cases such as multiple routers or multiple IP subnets located on your network.

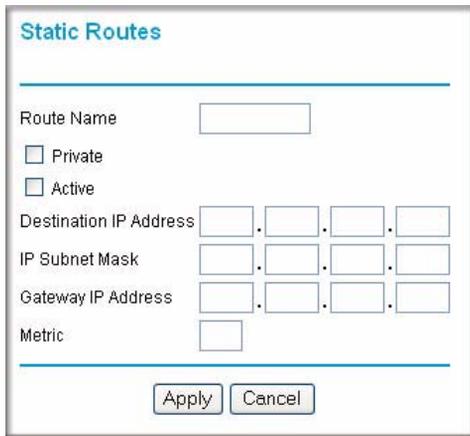
From the Main Menu of the browser interface, under Advanced, click on Static Routes to view the IP Static Routes menu, shown below.



**Figure 5-8**

To add or edit a Static Route:

1. Click the Add button to open the Add/Edit Menu.



Static Routes

Route Name

Private

Active

Destination IP Address  .  .  .

IP Subnet Mask  .  .  .

Gateway IP Address  .  .  .

Metric

**Figure 5-9**

2. Type a route name for this static route in the Route Name box under the table. This is for identification purposes only.
3. Check the Private box if you want to limit access to the LAN only. The static route will not be reported in RIP.
4. Select Active to make this route effective.
5. Type the Destination IP Address of the final destination.
6. Type the IP Subnet Mask for this destination. If the destination is a single host, type 255.255.255.255.
7. Type the Gateway IP Address, which must be a router on the same LAN segment as the router.
8. Type a number between 1 and 15 as the Metric value. This represents the number of routers between your network and the destination. Usually, a setting of 2 or 3 works, but if this is a direct connection, set it to 1.
9. Click **Apply** to have the static route entered into the table.

As an example of when a static route is needed, consider the following case:

- Your primary Internet access is through a cable modem to an ISP.
- You have an ISDN router on your home network for connecting to the company where you are employed. This router's address on your LAN is 192.168.1.100.
- Your company's network is 134.177.0.0.

When you first configured your router, two implicit static routes were created. A default route was created with your ISP as the gateway, and a second static route was created to your local network for all 192.168.1.x addresses. With this configuration, if you attempt to access a device on the 134.177.0.0 network, your router will forward your request to the ISP. The ISP forwards your request to the company where you are employed, and the request will likely be denied by the company's firewall.

In this case you must define a static route, telling your router that 134.177.0.0 should be accessed through the ISDN router at 192.168.1.100.

In this example:

- The Destination IP Address and IP Subnet Mask fields specify that this static route applies to all 134.177.x.x addresses.
- The Gateway IP Address fields specifies that all traffic for these addresses should be forwarded to the ISDN router at 192.168.1.100.
- A Metric value of 1 will work since the ISDN router is on the LAN.
- Private is selected only as a precautionary security measure in case RIP is activated.

## Enabling Remote Management Access

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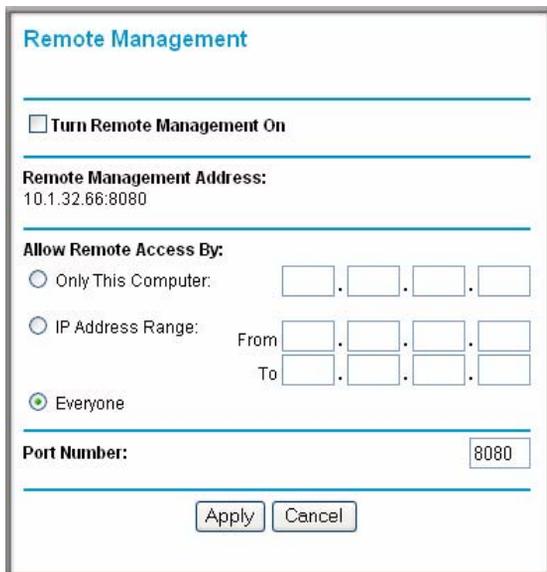
Using the Remote Management page, you can allow a user or users on the Internet to configure, upgrade and check the status of your RangeMax NEXT Wireless Router.



**Note:** Be sure to change the router's default configuration password to a very secure password. The ideal password should contain no dictionary words from any language, and should be a mixture of letters (both upper and lower case), numbers, and symbols. Your password can be up to 30 characters.

To configure your router for Remote Management:

1. From the Main Menu of the browser interface, under Advanced, click on Remote Management



The screenshot shows a web browser interface for configuring Remote Management. The title is "Remote Management". There is a checkbox labeled "Turn Remote Management On" which is currently unchecked. Below this, the "Remote Management Address" is set to "10.1.32.86:8080". Under "Allow Remote Access By:", there are three radio button options: "Only This Computer:" (unchecked), "IP Address Range:" (unchecked), and "Everyone" (checked). The "IP Address Range:" option has "From" and "To" fields, each with four input boxes for IP address octets. The "Port Number:" field contains the value "8080". At the bottom, there are "Apply" and "Cancel" buttons.

**Figure 5-10**

2. Check the Turn Remote Management On check box.
3. Specify what external addresses will be allowed to access the router's remote management. For enhanced security, restrict access to as few external IP addresses as practical.
  - a. To allow access from any IP address on the Internet, select **Everyone**.
  - b. To allow access from a range of IP addresses on the Internet, select **IP address range**. Enter a beginning and ending IP address to define the allowed range.
  - c. To allow access from a single IP address on the Internet, select **Only this Computer**. Enter the IP address that will be allowed access.
4. Specify the Port Number that will be used for accessing the management interface.

Web browser access normally uses the standard HTTP service port 80. For greater security, change the remote management Web interface to a custom port by entering that number in the box provided. Choose a number between 1024 and 65535, but do not use the number of any common service port. The default is 8080, which is a common alternate for HTTP.

5. Click **Apply** to have your changes take effect.



**Note:** When accessing your router from the Internet, you will type your router's WAN IP address into your browser's Address (in IE) or Location (in Netscape) box, followed by a colon (:) and the custom port number. For example, if your external address is 134.177.0.123 and you use port number 8080, you must enter http://134.177.0.123:8080 in your browser.

## Using Universal Plug and Play (UPnP)

Universal Plug and Play (UPnP) helps devices, such as Internet appliances and computers, access the network and connect to other devices as needed. UPnP devices can automatically discover the services from other registered UPnP devices on the network.

From the Main Menu of the browser interface, under Advanced, click on UPnP.

Active	Protocol	Int. Port	Ext. Port	IP Address
--------	----------	-----------	-----------	------------

**Figure 5-11**

Set up UPnP according to the guidelines below.

- **Turn UPnP On.** UPnP can be enabled or disabled for automatic device configuration. The default setting for UPnP is disabled. If disabled, the router will not allow any device to automatically control the resources, such as port forwarding (mapping), of the router.



**Note:** If you use applications such as multi-player gaming, peer-to-peer connections, real time communications such as instant messaging, or remote assistance (a feature in Windows XP), you should enable UPnP.

- **UPnP Portmap Table.** The UPnP Portmap Table displays the IP address of each UPnP device that is currently accessing the router and which ports (Internal and External) that device has opened. The UPnP Portmap Table also displays what type of port is opened and if that port is still active for each IP address.

# Chapter 6

## Troubleshooting

This chapter gives information about troubleshooting your RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T. After each problem description, instructions are provided to help you diagnose and solve the problem.

### Basic Functioning

---

After you turn on power to the router, the following sequence of events should occur:

1. When power is first applied, verify that the Power light  is on.
2. After approximately 10 seconds, verify that:
  - a. The power light is solid green.
  - b. The LAN port lights are lit for any local ports that are connected.
  - c. The Internet port light is lit.

If a port's light is lit, a link has been established to the connected device. If a LAN port is connected to a 100 Mbps device, verify that the port's light is green. If the port is 10 Mbps, the light will be amber.

If any of these conditions does not occur, refer to the appropriate following section.

### Power Light Not On

If the Power and other lights are off when your router is turned on:

- Make sure that the power cord is properly connected to your router and that the power supply adapter is properly connected to a functioning power outlet.
- Check that you are using the 5 V DC 1A power adapter supplied by NETGEAR for this product.

If the error persists, you have a hardware problem and should contact technical support.

## Power Light Stays Amber

When the router is turned on, the power light is amber and then changes to green after about 30 seconds. If the power light stays amber, there is a fault within the router.

If the power light is still amber 1 minute after power-on:

- Cycle the power to see if the router recovers.
- Clear the router's configuration to factory defaults. This will set the router's IP address to 192.168.1.1. This procedure is explained in [“Restoring the Default Configuration and Password” on page -7.](#)

If the error persists, you might have a hardware problem and should contact technical support.

## LAN or Internet Port Lights Not On

If either the LAN lights or Internet light do not light when the Ethernet connection is made, check the following:

- Make sure that the Ethernet cable connections are secure at the router and at the hub or workstation.
- Make sure that power is turned on to the connected hub or workstation.
- Be sure you are using the correct cable.



**Note:** When connecting the router's Internet port to a cable or DSL modem, use the cable that was supplied with the cable or DSL modem. This cable could be a standard straight-through Ethernet cable or an Ethernet crossover cable.

## Troubleshooting the Web Configuration Interface

---

If you are unable to access the router's Web Configuration interface from a computer on your local network, check the following:

- Check the Ethernet connection between the computer and the router as described in the previous section.

- Make sure your computer's IP address is on the same subnet as the router. If you are using the recommended addressing scheme, your computer's address should be in the range of 192.168.1.2 to 192.168.1.254. Refer to [“Preparing a Computer for Network Access” in Appendix B](#) for instructions on how to verify TCP/IP properties and for instructions on how to configure your computer.



**Note:** If your computer's IP address is shown as 169.254.x.x: Recent versions of Windows and MacOS will generate and assign an IP address if the computer cannot reach a DHCP server. These auto-generated addresses are in the range of 169.254.x.x. If your IP address is in this range, check the connection from the computer to the router and reboot your computer.

- If your router's IP address has been changed and you do not know the current IP address, clear the router's configuration to factory defaults. This will set the router's IP address to 192.168.1.1. This procedure is explained in [“Restoring the Default Configuration and Password” on page -7](#).
- Make sure your browser has Java, JavaScript, or ActiveX enabled. If you are using Internet Explorer, click Refresh to be sure the Java applet is loaded.
- Try quitting the browser and launching it again.
- Make sure you are using the correct login information. The factory default login name is **admin** and the password is **password**. Make sure that CAPS LOCK is off when entering this information.

If the router does not save changes you have made in the Web Configuration Interface, check the following:

- When entering configuration settings, be sure to click Apply before moving to another menu or tab, or your changes will be lost.
- Click the Refresh or Reload button in the Web browser. The changes may have occurred, but the Web browser may be caching the old configuration.

## Troubleshooting the ISP Connection

---

If your router is unable to access the Internet, you should first determine whether the router is able to obtain a WAN IP address from the ISP. Unless you have been assigned a static IP address, your router must request an IP address from the ISP. You can determine whether the request was successful using the Web Configuration Manager.

To check the WAN IP address:

1. Launch your browser and select an external site such as [www.netgear.com](http://www.netgear.com).
2. Access the Main Menu of the router's configuration at <http://www.routerlogin.net>.
3. Under the Maintenance heading, select Router Status.
4. Check that an IP address is shown for the Internet (WAN) Port.  
If 0.0.0.0 is shown, your router has not obtained an IP address from your ISP.

If your router is unable to obtain an IP address from the ISP, you may need to force your cable or DSL modem to recognize your new router by performing the following procedure:

1. Turn off power to the cable or DSL modem.
2. Turn off power to your router.
3. Wait five minutes and reapply power to the cable or DSL modem.
4. When the modem's lights indicate that it has reacquired sync with the ISP, reapply power to your router.
5. Then restart your computer.

If your router is still unable to obtain an IP address from the ISP, the problem may be one of the following:

- Your ISP may require a login program.  
Ask your ISP whether they require PPP over Ethernet (PPPoE) or some other type of login.
- If your ISP requires a login, you may have incorrectly set the login name and password.
- Your ISP may check for your computer's host name.  
Assign the computer Host Name of your ISP account as the Account Name in the Basic Settings menu.
- Your ISP only allows one Ethernet MAC address to connect to Internet, and may check for your computer's MAC address. In this case:

Inform your ISP that you have bought a new network device, and ask them to use the router's MAC address.

OR

Configure your router to spoof your computer's MAC address. This can be done in the Basic Settings menu.

If your router can obtain an IP address, but your computer is unable to load any Web pages from the Internet:

- Your computer may not recognize any DNS server addresses.

A DNS server is a host on the Internet that translates Internet names (such as www addresses) to numeric IP addresses. Typically your ISP will provide the addresses of one or two DNS servers for your use. If you entered a DNS address during the router's configuration, reboot your computer and verify the DNS address as described in [“Preparing a Computer for Network Access” in Appendix B](#). Alternatively, you may configure your computer manually with DNS addresses, as explained in your operating system documentation.

- Your computer may not have the router configured as its TCP/IP gateway.

If your computer obtains its information from the router by DHCP, reboot the computer and verify the gateway address. For details, see [“Preparing a Computer for Network Access” in Appendix B](#).

## Troubleshooting a TCP/IP Network Using a Ping Utility

---

Most TCP/IP terminal devices and routers contain a ping utility that sends an echo request packet to the designated device. The device then responds with an echo reply. Troubleshooting a TCP/IP network is made very easy by using the ping utility in your computer or workstation.

### Testing the LAN Path to Your Router

You can ping the router from your computer to verify that the LAN path to your router is set up correctly.

To ping the router from a PC running Windows 95 or later:

1. From the Windows toolbar, click on the Start button and select Run.
2. In the field provided, type Ping followed by the IP address of the router, as in this example:

```
ping 192.168.1.1
```

3. Click on OK.

You should see a message like this one:

```
Pinging <IP address> with 32 bytes of data
```

If the path is working, you see this message:

```
Reply from < IP address >: bytes=32 time=NN ms TTL=xxx
```

If the path is not working, you see this message:

```
Request timed out
```

If the path is not functioning correctly, you could have one of the following problems:

- Wrong physical connections
  - Make sure the LAN port LED is on. If the LED is off, follow the instructions in [“LAN or Internet Port Lights Not On”](#) on page 6-2.
  - Check that the corresponding Link LEDs are on for your network interface card and for the hub ports (if any) that are connected to your workstation and router.
- Wrong network configuration
  - Verify that the Ethernet card driver software and TCP/IP software are both installed and configured on your computer or workstation.
  - Verify that the IP address for your router and your workstation are correct and that the addresses are on the same subnet.

## Testing the Path from Your Computer to a Remote Device

After verifying that the LAN path works correctly, test the path from your computer to a remote device. From the Windows run menu, type:

```
PING -n 10 <IP address>
```

where *<IP address>* is the IP address of a remote device such as your ISP’s DNS server.

If the path is functioning correctly, replies as in the previous section are displayed. If you do not receive replies:

- Check that your computer has the IP address of your router listed as the default gateway. If the IP configuration of your computer is assigned by DHCP, this information will not be visible in your computer’s Network Control Panel. Verify that the IP address of the router is listed as the default gateway. For details, refer to [“Preparing a Computer for Network Access”](#) in Appendix B.
- Check to see that the network address of your computer (the portion of the IP address specified by the netmask) is different from the network address of the remote device.
- Check that your cable or DSL modem is connected and functioning.
- If your ISP assigned a host name to your computer, enter that host name as the Account Name in the Basic Settings menu.

- Your ISP could be rejecting the Ethernet MAC addresses of all but one of your computers. Many broadband ISPs restrict access by only allowing traffic from the MAC address of your broadband modem, but some ISPs additionally restrict access to the MAC address of a single computer connected to that modem. If this is the case, you must configure your router to “clone” or “spoof” the MAC address from the authorized computer. To do this, click on the Basic Settings link under the Setup heading of the browser interface at [www.routerlogin.com](http://www.routerlogin.com), and click the Use Computer MAC Address radio button.

## Restoring the Default Configuration and Password

---

This section explains how to restore the factory default configuration settings, changing the router’s administration password to **password** and the IP address to 192.168.1.1. You can erase the current configuration and restore factory defaults in two ways:

- Use the Erase function of the router (see “Erasing the Configuration” on page 4-11).
- Use the Default Reset button on the rear panel of the router. Use this method for cases when the administration password or IP address is not known.

To restore the factory default configuration settings without knowing the administration password or IP address, you must use the Default Reset button on the rear panel of the router.

1. Press and hold the Default Reset button until the power light blinks on (about 10 seconds).
2. Release the Default Reset button and wait for the router to reboot.

If the wireless router fails to restart or the power light continues to blink or turns solid amber, the unit may be defective. If the error persists, you might have a hardware problem and should contact technical support.

## Problems with Date and Time

---

The E-mail menu in the Content Filtering section displays the current date and time of day. The RangeMax NEXT Wireless Router uses the Network Time Protocol (NTP) to obtain the current time from one of several Network Time Servers on the Internet. Each entry in the log is stamped with the date and time of day. Problems with the date and time function can include:

- Date shown is January 1, 2000. Cause: The router has not yet successfully reached a Network Time Server. Check that your Internet access settings are configured correctly. If you have just completed configuring the router, wait at least five minutes and check the date and time again.

- Time is off by one hour. Cause: The router does not automatically sense Daylight Savings Time. In the E-mail menu, select or clear the checkbox marked “Adjust for Daylight Savings Time”.

# Appendix A

## Technical Specifications

This appendix provides technical specifications for the RangeMax NEXT Wireless Router Gigabit Edition Model WNR854T.

### Factory Default Settings

---

<b>Smart Wizard</b>	Enabled
<b>Router Login Default Access</b>	
Router Login URL	http://www.routerlogin.net or http://www.routerlogin.com
Login Name (case sensitive) printed on product label	admin
Login Password (case sensitive) printed on product label	password
<b>Internet Connection</b>	
WAN MAC Address	Use default hardware address
MTU Size	1500
<b>Local Network</b>	
Router Lan IP address printed on product label (also known as Gateway IP address)	192.168.1.1
Router Subnet	255.255.255.0
DHCP Server	Enabled
Time Zone	Pacific Time
Time Zone Adjusted for Daylight Saving Time	Disabled
<b>Firewall</b>	
Inbound (communications coming in from the Internet)	Disabled (bars all unsolicited requests)
Outbound (communications going out to the Internet)	Enabled (all)

## Wireless

Wireless Communication	Enabled
SSID Name	NETGEAR
Security	Disabled
Broadcast SSID	Enabled
Transmission Speed	Auto*
Country/Region	United States in the US, otherwise varies by region
RF Channel	6 until region selected
Operating Mode	802.11 g/b/Next (20/40 MHz)
Data Rate	Best
Output Power	Full

\*. Maximum Wireless signal rate derived from IEEE Standard 802.11 specifications. 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.

## General Specifications

---

### Network Protocol and Standards Compatibility

Data and Routing Protocols: TCP/IP, RIP-1, RIP-2, DHCP, PPP over Ethernet (PPPoE), Point-to-Point Tunneling Protocol (PPTP), Telstra BigPond

### Power Adapter

North America: 120V, 60 Hz, input  
United Kingdom, Australia: 240V, 50 Hz, input  
Europe: 230V, 50 Hz, input  
Japan: 100V, 50/60 Hz, input  
All regions (output): 12 V DC @ 1.5 A output

### Physical Specifications

Dimensions: 225.5 x 172 x 39 mm (8.9 x 6.8 x 1.5 in.)  
Weight: 0.56 kg (1.24 lb)

### Environmental Specifications

Operating temperature: 0° to 40° C (32° to 104° F)  
Operating humidity: 90% maximum relative humidity, noncondensing

### Regulatory Compliance

Meets requirements of: FCC Part 15  
EN 55022/24 (CISPR 22/24)  
EN 60950 (CE LVD)

### Interface Specifications

LAN: 10BASE-T, 100BASE-Tx, or 1000BASE-T, RJ-45  
WAN: 10BASE-T, 100BASE-Tx, or 1000BASE-T RJ-45

---



# 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.

<b>Document</b>	<b>Link</b>
Internet Networking and TCP/IP Addressing	<a href="http://documentation.netgear.com/reference/enu/tcpip/index.htm">http://documentation.netgear.com/reference/enu/tcpip/index.htm</a>
Wireless Communications	<a href="http://documentation.netgear.com/reference/enu/wireless/index.htm">http://documentation.netgear.com/reference/enu/wireless/index.htm</a>
Preparing a Computer for Network Access	<a href="http://documentation.netgear.com/reference/enu/wsdhcp/index.htm">http://documentation.netgear.com/reference/enu/wsdhcp/index.htm</a>
Virtual Private Networking (VPN)	<a href="http://documentation.netgear.com/reference/enu/vpn/index.htm">http://documentation.netgear.com/reference/enu/vpn/index.htm</a>
Glossary	<a href="http://documentation.netgear.com/reference/enu/glossary/index.htm">http://documentation.netgear.com/reference/enu/glossary/index.htm</a>



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