Chapter 2
Introduction

Congratulations on your purchase of the NETGEAR® RangeMax 240 Wireless Router WPNT834. The WPNT834 router provides connection for multiple computers to the Internet through an external broadband access device (such as a cable modem or DSL modem) that is normally intended for use by a single computer. This chapter describes the features of the NETGEAR RangeMax 240 Wireless Router WPNT834.

Key Features

Note: This manual provides information on the complete features as of the date of publication. Earlier versions of this product may not have all the features presented in this manual. Go to *http://kbserver.netgear.com/products/WPNT834.asp* to find product firmware updates for your WPNT834.

The RangeMax 240 Wireless Router WPNT834 with 4-port switch connects your local area network (LAN) to the Internet through an external access device such as a cable modem or DSL modem.

The WPNT834 router provides you with multiple 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 site addresses and address keywords, and share high-speed cable/DSL Internet access for up to 253 computers. In addition to the Network Address Translation (NAT) feature, the built-in firewall protects you from hackers.

With minimum setup, you can install and use the router within minutes.

The WPNT834 router provides the following features:

- RangeMax™ 240 Multiple-Input, Multiple-Output (MIMO) technology

- 802.11g wireless networking, with the ability to operate in Up to 240 Mbps, Up to 126 Mbps, 802.11g-only, or 802.11b+g modes

	**Note:** The maximum wireless signal rate is derived from the IEEE Standard 802.11 Specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

- Easy, Web-based setup for installation and management
- Content Filtering and Site Blocking Security
- Built in 4-port 10/100 Mbps Switch
- Ethernet connection to a wide area network (WAN) device, such as a cable modem or DSL modem
- Extensive Protocol Support
- Login capability
- Front panel LEDs for easy monitoring of status and activity
- Flash memory for firmware upgrades

RangeMax™ 240 Multiple-Input, Multiple-Output (MIMO) Technology

NETGEAR's RangeMax 240 Multiple-Input, Multiple-Output (MIMO) technology provides ten times more coverage than standard 802.11g alone by eliminating "dead spots" in your area of coverage. Your whole house or office suite now becomes a "hot spot" without requiring any range extenders, repeaters, or external antennas. RangeMax maintains your high speed throughout your home, not just when you are close to your router.

RangeMax 240 is a TRUE MIMO (Multiple Input, Multiple Output) technology that uses three external antennas, capable of transmitting at speeds up to 240 Mbps. It can also transmit two different data streams on the same channel at the same time, at speeds up to 126 Mbps, if you use the WPNT511 or WPNT121 Wireless Adapters.

In "Up to 240 Mbps" mode the router uses channel expansion to achieve a data rate of 240 Mbps. The channel expansion uses the channel selected as the primary channel and expands to a secondary channel (primary channel + 4 or - 4) to achieve a frame-by-frame bandwidth of 40 MHz. The WPNT834 router detects channel usage and, if necessary, will disable frame-by-frame expansion to avoid interference with the data transmission from other access points or clients.

RangeMax 240 is also 100% compatible with your existing 802.11b/g products (i.e., 802.11b, 802.11g, and Centrino wireless clients) and boosts their range and speed by up to 50%.

802.11g Wireless Networking

The WPNT834 router includes an 802.11g wireless access point, providing continuous, high-speed 240 Mbps access between your wireless and Ethernet devices. The access point provides:

- 802.11g wireless networking at up to 240 Mbps.
- 802.11g wireless networking, with the ability to operate in Up to 240 Mbps, Up to 126 Mbps, 802.11g-only, or 802.11g and b modes, providing backwards compatibility with 802.11b or 802.11g devices or dedicating the wireless network to the higher bandwidth devices.
- 64-bit and 128-bit WEP encryption security.
- WEP keys can be generated manually or by passphrase.
- WPA-PSK and WPA2-PSK support. Support for Wi-Fi Protected Access (WPA) data encryption which provides strong data encryption and authentication based on a pre-shared key. WPA-PSK and WPA2-PSK will block eavesdropping. Because these are new standards, wireless device driver and software availability may be limited.
- Wireless access can be restricted by MAC address.
- Wireless network name broadcast can be turned off so that only devices that have the network name (SSID) can connect.

A Powerful, True Firewall with Content Filtering

Unlike simple Internet sharing NAT routers, the WPNT834 is a true firewall, using stateful packet inspection to defend against hacker attacks. Its firewall features include:

- Denial of Service (DoS) protection.

  Automatically detects and thwarts DoS attacks such as Ping of Death, SYN Flood, LAND Attack, and IP Spoofing.
- Blocks unwanted traffic from the Internet to your LAN.
- Blocks access from your LAN to Internet locations or services that you specify as off-limits.
- Logs security incidents.

  The WPNT834 will log security events such as blocked incoming traffic, port scans, attacks, and administrator logins. You can configure the router to E-mail the log to you at specified intervals. You can also configure the router to send immediate alert messages to your E-mail address or E-mail pager whenever a significant event occurs.

- Keyword screening.

  The WPNT834 prevents objectionable content from reaching your computers. The router allows you to control access to Internet content by screening for keywords within Web addresses. You can configure the router to log and report attempts to access objectionable Internet sites.

Security

The WPNT834 router is equipped with several features designed to maintain security, as described in this section.

- Computers Hidden by NAT.

  NAT opens a temporary path to the Internet for requests originating from the local network. Requests originating from outside the LAN are discarded, preventing users outside the LAN from finding and directly accessing the computers on the LAN.

- Port Forwarding with NAT.

  Although NAT prevents Internet locations from directly accessing the computers on the LAN, the router allows you to direct incoming traffic to specific computers based on the service port number of the incoming request, or to one designated “DMZ” host computer. You can specify forwarding of single ports or ranges of ports.

Autosensing Ethernet Connections with Auto Uplink

With its internal 4-port 10/100 switch, the WPNT834 can connect to either a 10 Mbps standard Ethernet network or a 100 Mbps Fast Ethernet network. Both the LAN and WAN interfaces are autosensing and capable of full-duplex or half-duplex operation.

The router incorporates Auto Uplink™ technology. Each Ethernet port will automatically sense whether the Ethernet cable plugged into the port should have a ‘normal’ connection such as to a computer or an ‘uplink’ connection such as to a switch or hub. That port will then configure itself to the correct configuration. This feature also eliminates the need to worry about crossover cables, as Auto Uplink will accommodate either type of cable to make the right connection.

Extensive Protocol Support

The WPNT834 router supports the Transmission Control Protocol/Internet Protocol (TCP/IP) and Routing Information Protocol (RIP). For further information about TCP/IP, see “Wireless Communications” in Appendix B.

- IP Address Sharing by NAT.

The WPNT834 router allows several networked computers to share an Internet account using only a single IP address, which your Internet service provider (ISP) may statically or dynamically assign. This technique, known as NAT, allows the use of an inexpensive single-user ISP account.

- Automatic Configuration of Attached Computers by DHCP.

  The WPNT834 router dynamically assigns network configuration information, including IP, gateway, and domain name server (DNS) addresses, to attached computers on the LAN using the Dynamic Host Configuration Protocol (DHCP). This feature greatly simplifies configuration of computers on your local network.

- DNS Proxy.

  When DHCP is enabled and no DNS addresses are specified, the router provides its own address as a DNS server to the attached computers. The router obtains actual DNS addresses from the ISP during connection setup and forwards DNS requests from the LAN.

- PPP over Ethernet (PPPoE).

  PPPoE is a protocol for connecting remote hosts to the Internet over a DSL connection by simulating a dial-up connection. This feature eliminates the need to run a login program such as Entersys or WinPOET on your computer.

Easy Installation and Management

You can install, configure, and operate the RangeMax 240 Wireless Router WPNT834 within minutes after connecting it to the network. The following features simplify installation and management tasks:

- Browser-based management.

  Browser-based configuration allows you to easily configure your router from almost any type of personal computer, such as Windows, Macintosh, or Linux. A user-friendly Setup Wizard is provided and online help documentation is built into the browser-based Web Management Interface.

- Smart Wizard.

  The WPNT834 router Smart Wizard automatically senses the type of Internet connection, asking you only for the information required for your type of ISP account.

- Firmware Update.

  The WPNT834 router can be updated if a newer version of firmware is available. This lets you take advantage of product enhancements for your WPNT834 as soon as they become available.

- Visual monitoring.

  The WPNT834 router's front panel LEDs provide an easy way to monitor its status and activity.

Maintenance and Support

NETGEAR offers the following features to help you maximize your use of the WPNT834 router:

- Flash memory for firmware upgrades.
- Free technical support seven days a week, twenty-four hours a day, for 90 days from the date of purchase.

NETGEAR Related Products

NETGEAR products related to the RangeMax 240 Wireless Router WPNT834 are as follows:

- RangeMax 240 Wireless Notebook Adapter (WPNT511)
- RangeMax 240 Wireless USB 2.0 Adapter (WPNT121)

Package Contents

The product package should contain the following items:

- RangeMax 240 Wireless Router WPNT834
- AC power adapter
- Vertical stand
- Category 5 (CAT5) Ethernet cable
- *NETGEAR RangeMax 240 Wireless Router WPNT834 Resource CD*, including:
  - The Setup manual
  - Application Notes and other helpful information
- *Wireless Home Router Setup Guide*
- Warranty and Support Information Card
- Detachable antenna

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 WPNT834 router contains the status lights described below.

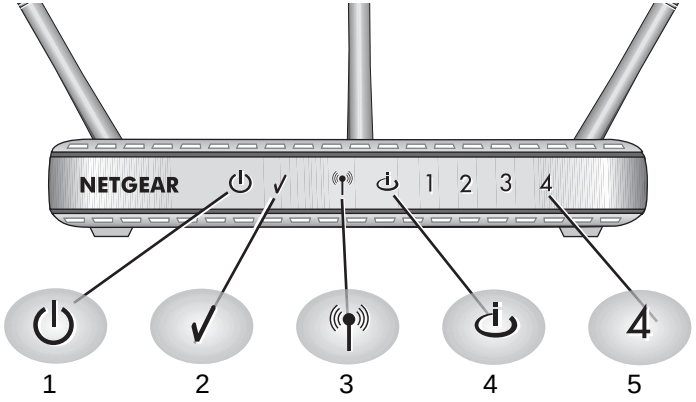

Figure 2-1

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 2-1. Status Light Descriptions

Item	Function	Activity	Description
1	Power	On Blue Solid	Power is supplied to the router.
		Off	Power is not supplied to the router.
2	Test	On	The router is performing its power-on self-test diagnostic.
		Off	The router successfully completed its power on self test diagnostic.
		Slow blinking	Reset button is being pushed, restoring the factory default settings.
3	Wireless	On	The wireless interface is enabled.
		Off	The wireless interface is turned off.
		Blinking	Data is being communicated over the wireless network.
4	Internet Port	Amber Off	No Ethernet cable is connected to the modem.
		Amber On	Ethernet cable connection to modem is good.
		Amber blinking	Packets are being transmitted and received from a modem or other network device, but no IP address has been received.
		Green off	No IP address received.
		Green on	IP address received.
		Blink	IP address received and data is being transmitted and received.
5	LAN Ports	Green	The LAN port has detected a 100 Mbps link with an attached device.
		Amber	The LAN port has detected a 10 Mbps link with an attached device

The Router's Rear Panel

The rear panel of the WPNT834 router contains the items listed below.

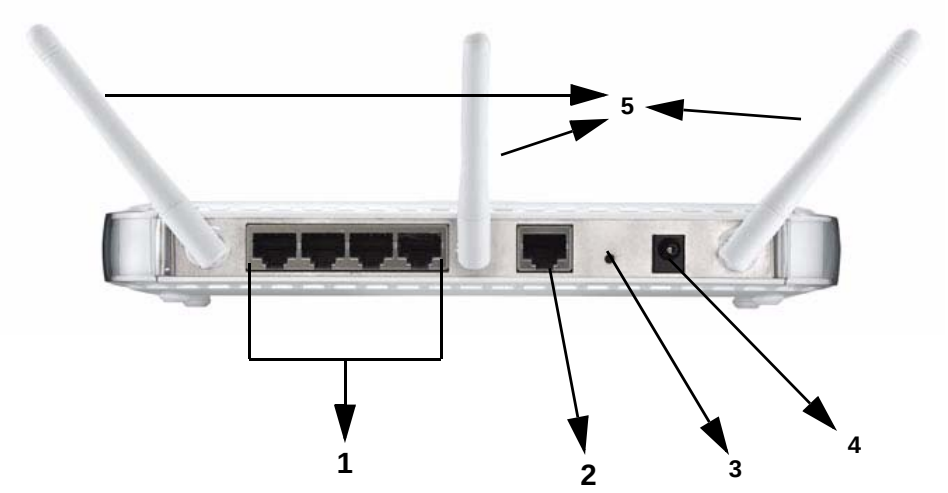

Figure 2-2

Viewed from left to right, the rear panel contains the following features:

1. Four Local (LAN) 10/100 Mbps Ethernet ports for connecting the router to the local computers.
2. Internet (WAN) Ethernet port for connecting the router to a cable or DSL modem.
3. Factory Default Reset push button for "Restoring the Default Configuration and Password" on page 7-7.
4. AC power adapter outlet for 12V DC @ 1A output, 12W maximum.
5. Antennae.

A Road Map for 'How to Get There From Here'

The introduction and adoption of any new technology can be a difficult process. Broadband Internet service is considered so useful that more and more people want to set up networks in their home to share a broadband connection. Wireless technology has removed one of the barriers to networking—running wires. It allows more people to try networking while at the same time exposes them to the inherent complexity of networking. General networking concepts, setup, and maintenance can be difficult to understand. In addition, wireless technology adds issues, such as range, interference, signal quality, and security to the picture.

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

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

If I Want To?	What Do I Do?	What's Needed?	How Do I?
Set up a wireless network	1. Set up the RangeMax 240 Wireless Router WPNT834 2. Identify the wireless network name (SSID) and, if used, the wireless security settings. 3. Set up the wireless computers with the settings from step 1.	• A wireless network • A computer within the operating range of the wireless network. For guidelines about the range of wireless networks, see "Observing Performance, Placement, and Range Guidelines" on page 4-1.	To set up the WPNT834, see Chapter 3, "Connecting the Router to the Internet" and follow the instructions provided. To learn about wireless networking technology, see Chapter 4, "Wireless Configuration" for a general introduction.

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

If I Want To?	What Do I Do?	What's Needed?	How Do I?
Protect my wireless connection (from snooping, hacking, or information theft).	1. Assure that the wireless network has security features enabled. 2. Configure my WPNT834 with the security settings of the wireless network. 3. Use Windows security features.	• A wireless network WEP or WPA security enabled. • Wireless networking equipment that supports WEP or WPA, such as the WPNT834.	To learn about wireless networking security, see "Wireless Communications" in Appendix B. To use WEP security features, see "Implementing Appropriate Wireless Security" on page 4-2 and configure your WPNT834 accordingly.
Note: Secure Internet sites such as banks and online merchants use encryption security built into browsers like Internet Explorer and Netscape. Any wireless networking security features you might implement are in addition to those already in place on secure Internet sites.			

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

If I Want To?	What Do I Do?	What's Needed?	How Do I?
Share Windows PC files and printers (in a combined wireless and wired network). **Note:** For sharing files and printers on other types of computers like Macintosh or Linux, refer to the product documentation that came with those computers.	1. Use the Windows Printers and Fax features to locate available printers in the combined wireless and wired network in your home. 2. Use the Windows Add a Printer wizard to add access to a network printer from the PC you are using to wirelessly connect to the network. 3. From the File menu of an application such as Microsoft Word, use the Print Setup feature to direct your print output to the printer on the network.	• Windows computers (wired and wireless) you are using to connect to the network need to be configured with the Windows Client and File and Print Sharing. • Windows computers (wired and wireless) I am using to connect to the network need to be configured with the same Windows Workgroup or Domain settings as the other Windows computers in the combined wireless and wired network. • Any Windows networking security access rights such as login user name/ password that have been assigned in the Windows network must be provided when Windows prompts for such information. • If so-called Windows 'peer' networking is being used, the printer needs to be enabled for sharing.	Windows Domain settings are usually managed by corporate computer support groups. Windows Workgroup settings are commonly managed by individuals who want to set up small networks in their homes, or small offices. For assistance with setting up Windows networking,see the PC Networking Tutorial on the *NETGEAR RangeMax 240 Wireless Router WPNT834 Resource CD* and the Help information provided in the Windows system you are using. For assistance with setting up printers in Windows, see the Help and Support information that comes with the version of the Windows operating systems you are using.