NETGEAR®

User Manual

Nighthawk AC1900 Smart WiFi Router

Model R6900v2

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1

Hardware Overview of the Router

The NETGEAR Nighthawk® AC1900 Smart WiFi Router Model R6900v2, in this manual referred to as the router, delivers combined WiFi connection speeds up to AC1900 (600 Mbps[1] at 2.4 GHz 802.11n and 1300 Mbps[2] at 5 GHz 802.11ac). Both 2.4 GHz and 5 GHz radios can be active simultaneously.

Nighthawk, powered by a dual-core processor, is ideal for bandwidth-hungry activities such as online gaming and video streaming. High-powered amplifiers with antennas provide WiFi coverage anywhere around your home, inside or out.

For gamers, the router supports upstream Quality of Service (QoS) optimized for online game play with game consoles like Xbox. For uninterrupted HD streaming media, the router features multiuser multiple input, multiple output (MU-MIMO) for simultaneous streaming and downstream QoS to identify and prioritize streaming traffic from websites like Netflix, YouTube, and Hulu Plus.

The router provides fast central storage, backup, and streaming to every device in your home with the USB 3.0 port (10 times faster than USB 2.0). Sharing content across your network is easy, whether you're accessing stored photos and music or printing over WiFi. Stream your stored media files anywhere on the network to DLNA screens. Share your music to AirPlay-compatible devices from the USB hard drive connected to the router. Use the free NETGEAR ReadySHARE® Vault app to back up your Windows-based computers to a USB hard drive connected to the router.

The chapter contains the following sections:

- Unpack Your Router on page 12
- Attach the Antennas on page 13
- LEDs and Buttons on the Top Panel on page 14
- Ports, Buttons, and Connectors on the Back Panel on page 15
- USB Port on the Front Panel on page 16
- Router Label on page 16
- Position the Router on page 17
- Cable Your Router on page 18

For more information about the topics that are covered in this manual, visit the support website at netgear.com/support.

Firmware updates with new features and bug fixes are made available from time to time at downloadcenter.netgear.com. You can check for and download new firmware manually. If the features or behavior of your product does not match what is described in this guide, you might need to update your firmware.

In this manual, the terms *wireless* and *WiFi* are interchangeable.

1. Maximum WiFi signal rate derived from IEEE standard 802.11 specifications. Actual data throughput and WiFi coverage will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate and WiFi coverage. NETGEAR makes no express or implied representations or warranties about this product's compatibility with any future standards. 802.11ac 1300 Mbps is approximately 2x faster than 802.11n 600 Mbps.

2. Up to 1300 Mbps WiFi speeds can be achieved when you are connecting to other 802.11ac 1300 Mbps devices.

Unpack Your Router

The box contains the following items.

Figure 1. Package contents

Table 1. Legend

1.	Router
2.	Antennas (3)
3.	Ethernet cable
4	Power adapter

In some regions, a CD is included in the package.

Attach the Antennas

The router comes with three antennas.

To attach the antennas:

1. Remove the antenna caps from the antenna posts on the back panel of the router.
2. Align the antennas with the antenna posts.

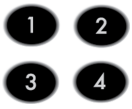
3. Attach the antennas on the threaded antenna posts.
4. Position the antennas for the best WiFi performance.

We recommend that the center antenna be vertical and that you aim the others outward at 45-degree angles, as shown.

LEDs and Buttons on the Top Panel

The status LEDs and buttons are located on the top of the router.

Table 2. LED and button descriptions

LED and Button	Description
Power	**Solid amber**. The router is starting. **Blinking amber**. The firmware is upgrading, or the **Reset** button was pressed. **Solid white**. The router is ready. **Blinking white**. The firmware is corrupted. **Off**. Power is not supplied to the router.
Internet	**Solid white**. The Internet connection is ready. **Solid amber**. The router detected an Ethernet cable connection to the modem. **Off**. No Ethernet cable is connected between the router and the modem.
2.4 GHz WiFi	**Solid white**. The 2.4 GHz WiFi radio is operating. **Blinking white**. The router is sending or receiving WiFi traffic. **Off**. The 2.4 GHz WiFi radio is off.
5 GHz WiFi	**Solid white**. The 5 GHz WiFi radio is operating. **Blinking white**. The router is sending or receiving WiFi traffic. **Off**. The 5 GHz WiFi radio is off.
Guest WiFi	**Solid white**. The guest WiFi network is operating. **Blinking white**. The router is sending or receiving WiFi traffic. **Off**. The guest WiFi network is off.
USB 3.0 port	**Solid white**. A USB device is connected and is ready. **Blinking white**. A USB device is plugged in and is trying to connect. **Off**. No USB device is connected, or someone clicked the **Safely Remove Hardware** button and it is now safe to remove the attached USB device.
Ethernet ports 1–4 	The LED color indicates the speed: white for Gigabit Ethernet connections and amber for 100 Mbps or 10 Mbps Ethernet connections. **Solid white or solid amber**. A powered-on device is connected to the Ethernet port. **Blinking white or blinking amber**. The port is sending or receiving traffic. **Off**. No device is connected to this Ethernet port.
WiFi On/Off button with LED	Pressing this button for two seconds turns the 2.4 GHz and 5 GHz WiFi radios on and off. If this LED is solid white, the WiFi radios are on. If this LED is off, the WiFi radios are turned off and you cannot use WiFi to connect to the router.
WPS button with LED	This button lets you use WPS to join the WiFi network without typing the WiFi password. The WPS LED blinks white during this process and then lights solid white.

For information about disabling LED blinking for network communications and turning off all LEDs except the Power LED, see Disable LED Blinking or Turn Off LEDs on page 160.

Ports, Buttons, and Connectors on the Back Panel

The back panel of the router provides ports, buttons, antenna connectors, and a DC power connector. For information about attaching the antennas, see Attach the Antennas on page 13.

Figure 2. Router back panel

In addition to the three antenna connectors, viewed from left to right, the back panel contains the following components:

- **Reset button**. For information about using the **Reset** button, see Return the Router to Its Factory Default Settings on page 161.
- **Ethernet LAN ports**. Use the four Gigabit Ethernet RJ-45 LAN ports to connect the router to LAN devices.
- **WAN port**. Use the yellow Gigabit Ethernet RJ-45 WAN port to connect the router to a modem.
- **Power On/Off button**. Press the **Power On/Off** button to provide power to the router.
- **DC power connector**. Connect the power adapter that came in the product package to the DC power connector.

USB Port on the Front Panel

A USB 3.0 port is located on the front of the router.

Figure 3. USB 3.0 port

Router Label

The router label on the bottom panel of the router lists the login information, WiFi network name (SSID) and password (network key), serial number, and MAC address of the router.

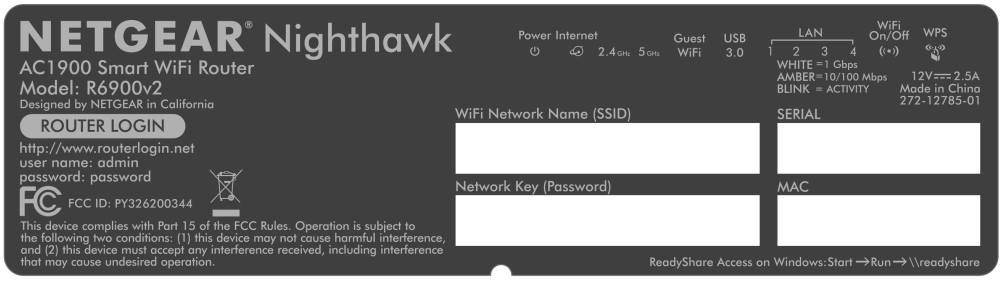


Figure 4. Router label

Position the Router

The router lets you access your network anywhere within the operating range of your WiFi network. However, the operating distance or range of your WiFi connection can vary significantly depending on the physical placement of the router. For example, the thickness and number of walls the WiFi signal passes through can limit the range.

Additionally, other WiFi access points in and around your home might affect your router's signal. WiFi access points are routers, repeaters, WiFi range extenders, and any other device that emits a WiFi signal for network access.

Position the router according to the following guidelines:

- Place the router near the center of the area where your computers and other devices operate and within line of sight to your WiFi devices.
- Make sure that the router is within reach of an AC power outlet and near Ethernet cables for wired computers.
- Place the router in an elevated location, minimizing the number walls and ceilings between the router and your other devices.
- Place the router away from electrical devices such as these:
  - Ceiling fans
  - Home security systems
  - Microwaves
  - Computers
  - Base of a cordless phone
  - 2.4 GHz cordless phone
  - 5 GHz cordless phone
- Place the router away from large metal surfaces, large glass surfaces, insulated walls, and items such as these:
  - Solid metal door
  - Aluminum studs
  - Fish tanks
  - Mirrors
  - Brick
  - Concrete

If you are using adjacent access points, use different radio frequency channels to reduce interference.

Cable Your Router

The following image shows how to cable your router:

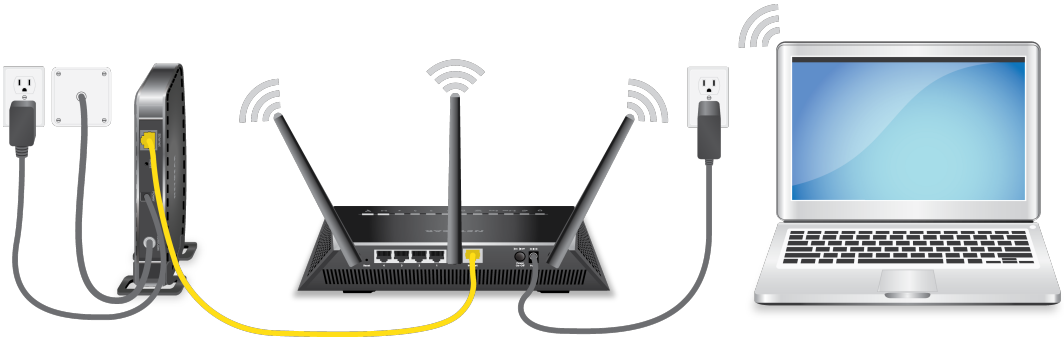


Figure 5. Router cabling

To cable your router:

1. Unplug your modem's power, leaving the modem connected to the wall jack for your Internet service.

   If your modem uses a battery backup, remove the battery.

2. Plug in and turn on your modem.

   If your modem uses a battery backup, put the battery back in.

3. Connect your modem to the Internet port of your router with the yellow Ethernet cable that came with your router.
4. Connect the power adapter to your router and plug the power adapter into an outlet.
5. Press the **Power On/Off** button on the back panel of the router.

2

Connect to the Network and Access the Router

You can connect to the router's WiFi networks or use a wired Ethernet connection. This chapter describes the ways you can connect and how to access the router and log in.

The chapter contains the following sections:

- Connect to the Router on page 20
- Use a Web Browser to Access the Router on page 22
- Change the Language on page 25
- Access the Router With the Mobile NETGEAR genie App on page 25

Connect to the Router

During and after installation, you can connect to the router's network through a wired or WiFi connection. If you set up your computer to use a static IP address, change the settings of your computer so that it uses Dynamic Host Configuration Protocol (DHCP).

Connect to the Router Through an Ethernet Cable

You can connect your computer to the router using an Ethernet cable and join the router's local area network (LAN).

To connect your computer to the router with an Ethernet cable:

1. Make sure that the router is receiving power (its Power LED is lit).
2. Connect an Ethernet cable to an Ethernet port on your computer.
3. Connect the other end of the Ethernet cable to one of the numbered Ethernet ports.

   Your computer connects to the local area network (LAN). A message might display on your computer screen to notify you that an Ethernet cable is connected.

Join the WiFi Network of the Router

Choose either the manual or the WPS method to add a WiFi device such as a WiFi-enabled computer, an iPhone, an iPad, another mobile device, or a gaming device to the WiFi network of the router.

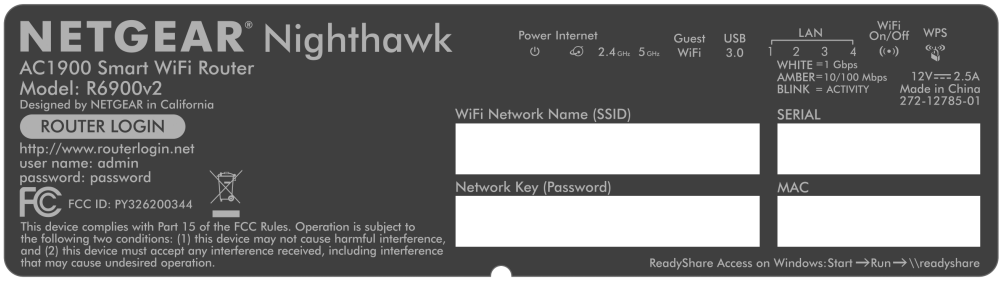
Manual Method On the WiFi device that you want to connect to the router, you can use the software application that manages your WiFi connections.

To connect a device manually to the WiFi network of the router:

1. Make sure that the router is receiving power (its Power LED is lit).
2. On the WiFi device that you want to connect to your router, open the software application that manages your WiFi connections.

   This software scans for all WiFi networks in your area.
3. Look for the router's network and select it.

If you did not change the name of the network during the setup process, look for the default WiFi network name (SSID) and select it. The default SSID is on the router label.



4. Enter the router WiFi password.

   The default WiFi password (also referred to as the *network key* or *passphrase*) is also on the router label.

5. Click the **Connect** button.

   The device connects to the WiFi network of the router.

Wi-Fi Protected Setup Method Wi-Fi Protected Setup (WPS) is a standard for easily adding computers and other devices to a home network while maintaining security. To use WPS (Push 'N' Connect), make sure that all WiFi devices to be connected to the network are Wi-Fi certified and support WPS. During the connection process, the client gets the security settings from the router so that every device in the network supports the same security settings.

To use WPS to connect a computer or mobile device to the WiFi network of the router:

1. Make sure that the router is receiving power (its Power LED is lit).
2. Check the WPS instructions for your computer or mobile device.
3. Press the **WPS** button of the router for three seconds.
4. Within two minutes, press the **WPS** button on your computer or mobile device, or follow the WPS instructions that came with the device.

   The WPS process automatically sets up the device with the network password and connects the device to the WiFi network of the router.

   For more information, see Use WPS to Add a Device to the WiFi Network on page 86.

Types of Logins

Separate types of logins serve different purposes. It is important that you understand the difference so that you know which login to use when.

Several types of logins are associated with the router:

- **ISP login**. The login that your ISP gave you logs you in to your Internet service. Your service provider gave you this login information in a letter or some other way. If you cannot find this login information, contact your service provider.
- **WiFi network key or password**. Your router is preset with a unique WiFi network name (SSID) and password for WiFi access. This information is on the router label.
- **Router login**. This logs you in to the router interface from a web browser as admin.

Use a Web Browser to Access the Router

When you connect to the network (either with WiFi or with an Ethernet cable), you can use a web browser to access the router to view or change its settings. When you access the router, the software automatically checks to see if your router can connect to your Internet service.

Automatic Internet Setup

You can set up your router automatically, or you can use a web browser to access the router and set up your router manually. The NETGEAR installation assistant launches automatically the first time that you set up the Internet connection for your router and runs on any device with a web browser.

Before you start the setup process, get your ISP information and make sure that the computers and devices in the network are using the settings described here.

When your Internet service starts, your Internet service provider (ISP) typically gives you all the information needed to connect to the Internet. For DSL service, you might need the following information to set up your router:

- The ISP configuration information for your DSL account
- ISP login name and password
- Fixed or static IP address setting (special deployment by ISP; this setting is rare)

If you cannot locate this information, ask your ISP to provide it. When your Internet connection is working, you no longer need to launch the ISP login program on your computer to access the Internet. When you start an Internet application, your router automatically logs you in.

Using the installation assistant, basic setup takes about 15 minutes to complete.

To automatically set up your router:

1. Turn the router on by pressing the **On/Off** button.
2. Make sure that your computer or mobile device is connected to the router with an Ethernet cable (wired) or over WiFi with the preset security settings listed on the label.

   Note: If you want to change the router's WiFi settings, use a wired connection to avoid being disconnected when the new WiFi settings take effect.

3. Launch a web browser.

   The page that displays depends on whether you accessed the router before:

   - The first time you set up the Internet connection for your router, the browser goes to **http://www.routerlogin.net.**
   - If you already set up the Internet connection, enter **http://www.routerlogin.net** in the address field for your browser to start the installation process.

4. Follow the onscreen instructions.

   The router connects to the Internet.

5. If the browser does not display the installation assistant page, do the following:

   - Make sure that the computer is connected to one of the four LAN Ethernet ports or over WiFi to the router.
   - Make sure that the router is receiving power and that its Power LED is lit white.
   - Close and reopen the browser or clear the browser cache.
   - Browse to **http://www.routerlogin.net**.
   - If the computer is set to a static or fixed IP address (this setting is uncommon), change it to obtain an IP address automatically from the router.

6. If the router does not connect to the Internet, do the following:
   a. Review your settings. Make sure that you selected the correct options and typed everything correctly.
   b. Contact your ISP to verify that you are using the correct configuration information.
   c. Read You Cannot Access the Internet on page 215. If problems persist, register your NETGEAR product and contact NETGEAR technical support.

When the router connects to the Internet, you are prompted to download and install the free NETGEAR Desktop genie app and the free ReadySHARE Vault app.

Log In to the Router

When you first connect to your router and launch a web browser, the browser automatically displays the router web interface. If you want to view or change settings for the router later, you can use a browser to log in to the router's web page.

To log in to the router:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   Note: You can also enter **http://www.routerlogin.com** or **http://192.168.1.1**. The procedures in this manual use **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

Install the Router With the NETGEAR Up App

With the NETGEAR Up app, you can easily install your router. The app automatically updates the router to the latest firmware, allows you to personalize your WiFi network, and even helps register your router with NETGEAR.

The NETGEAR Up app is available for iOS and Android mobile devices.

To install your router using the NETGEAR Up app:

1. Cable your router.

   For more information, see Cable Your Router on page 18.
2. On your iOS or Android mobile device, go to the app store, search for NETGEAR Up, and download the app.
3. On your iOS or Android mobile device, tap **Settings > Wi-Fi** and find and connect to your router's WiFi network.

   Your router's WiFi network name (SSID) and network key (password) are on the router label.
4. Launch the NETGEAR Up app on your mobile device.

5. Follow the instructions that display on the app to install your router and connect to the Internet.

Change the Language

By default, the language is set as Auto. You can change the language.

To change the language:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. In the upper right corner, select a language from the menu.
5. When prompted, click the **OK** button to confirm this change.
   The page refreshes with the language that you selected.

Access the Router With the Mobile NETGEAR genie App

The mobile NETGEAR genie app is the easy dashboard for managing, monitoring, and repairing your home network from a smartphone or tablet. The genie app can help you with the following:

- Automatically repair common WiFi network problems.
- Easily manage router features such as Live Parental Controls, guest access, Internet traffic meter, speed test, and more.
- Share and stream music or videos.

To use the genie app to access the router:

1. Visit the NETGEAR genie web page at netgear.com/genie.
2. Click the appropriate **Download** button.

3. Follow the onscreen instructions to install the app on your smartphone or tablet.
4. Launch the genie app.
   The genie app dashboard displays.

3

Specify Your Internet Settings

Usually, the quickest way to set up the router to use your Internet connection is to allow the NETGEAR installation assistant to detect the Internet connection when you first access the router with a web browser. You can also customize or specify your Internet settings.

This chapter contains the following sections:

- Use the Internet Setup Wizard on page 28
- Manually Set Up the Internet Connection on page 28
- Specify an IPv6 Internet Connection on page 33
- Manage the MTU Size on page 45

Use the Internet Setup Wizard

You can use the Setup Wizard to detect your Internet settings and automatically set up your router. The Setup Wizard is not the same as the installation assistant pages that display the first time you connect to your router to set it up.

To use the Setup Wizard:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup Wizard**.
   The Setup Wizard page displays.
5. Select the **Yes** radio button.
   If you select the **No** radio button, you are taken to the Internet Setup page (see Manually Set Up the Internet Connection on page 28).
6. Click the **Next** button.
   The Setup Wizard searches your Internet connection for servers and protocols to determine your Internet configuration.

Manually Set Up the Internet Connection

You can view or change the router's Internet connection settings.

Specify an Internet Connection Without a Login

You can manually specify the connection settings for an Internet service for which you do not need to log in.

Use the information that your ISP gave you to connect to your Internet service. If you cannot find this information, contact your ISP. Entering incorrect information might prevent the router from connecting to the Internet.

To specify the connection settings for an Internet service for which you do not need to log in:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Internet**.
   The Internet Setup page displays.
5. Leave the Does your Internet connection require a login? **No** radio button selected.
6. If your Internet connection requires an account name or host name, type it in the **Account Name (If Required)** field.
7. If your Internet connection requires a domain name, type it in the **Domain Name (If Required)** field.
   For the other sections on this page, the default settings usually work, but you can change them.
8. Select an Internet IP Address radio button:
   - **Get Dynamically from ISP**. Your ISP uses DHCP to assign your IP address. Your ISP automatically assigns these addresses.
   - **Use Static IP Address**. Enter the IP address, IP subnet mask, and the gateway IP address that your ISP assigned. The gateway is the ISP router to which your router connects.
9. Select a Domain Name Server (DNS) Address radio button:
   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
10. Select a Router MAC Address radio button:
    - **Use Default Address**. Use the default MAC address.

- **Use Computer MAC Address**. The router captures and uses the MAC address of the computer that you are now using. You must use the one computer that the ISP allows.
- **Use This MAC Address**. Enter the MAC address that you want to use.

11. Click the **Apply** button.
    Your settings are saved.

12. Click the **Test** button to test your Internet connection.
    If the NETGEAR website does not display within one minute, see You Cannot Access the Internet on page 215.

Specify an Internet Connection That Uses a Login and PPPoE Service

You can manually specify the connection settings for a PPPoE Internet service for which you must log in. Use the information that your ISP gave you to connect to your Internet service. If you cannot find this information, contact your ISP. Entering incorrect information might prevent the router from connecting to the Internet.

To specify the connection settings for a PPPoE Internet service for which you must log in:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Internet**.
   The Internet Setup page displays.
5. Select the Does your Internet connection require a login? **Yes** radio button.
   The page adjusts.
6. From the **Internet Service Provider** menu, select **PPPoE** as the encapsulation method.
   The Internet Setup page displays.

7. In the **Login** field, enter the login name that your ISP gave you.
   This login name is often an email address.
8. In the **Password** field, type the password that you use to log in to your Internet service.
9. If your ISP requires a service name, type it in the **Service Name (if Required)** field.
10. From the **Connection Mode** menu, select **Always On**, **Dial on Demand**, or **Manually Connect**.
11. To change the number of minutes until the Internet login times out, in the **Idle Timeout (In minutes)** field, type the number of minutes.
    This is how long the router keeps the Internet connection active when no one on the network is using the Internet connection. A value of 0 (zero) means never log out.
12. Select an Internet IP Address radio button:
    - **Get Dynamically from ISP**. Your ISP uses DHCP to assign your IP address. Your ISP automatically assigns these addresses.
    - **Use Static IP Address**. Enter the IP address, IP subnet mask, and the gateway IP address that your ISP assigned. The gateway is the ISP router to which your router connects.
13. Select a Domain Name Server (DNS) Address radio button:
    - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
    - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
14. Select a Router MAC Address radio button:
    - **Use Default Address**. Use the default MAC address.
    - **Use Computer MAC Address**. The router captures and uses the MAC address of the computer that you are now using. You must use the one computer that the ISP allows.
    - **Use This MAC Address**. Enter the MAC address that you want to use.
15. Click the **Apply** button.
    Your settings are saved.
16. Click the **Test** button to test your Internet connection.
    If the NETGEAR website does not display within one minute, see You Cannot Access the Internet on page 215.

Specify an Internet Connection That Uses a Login and PPTP or L2TP Service

You can manually specify the connection settings for a PPTP or L2TP Internet service for which you must log in. Use the information that your ISP gave you to connect to your Internet service. If you cannot find this information, contact your ISP. Entering incorrect information might prevent the router from connecting to the Internet.

To specify the connection settings for a PPTP or L2TP Internet service for which you must log in:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Internet**.
   The Internet Setup page displays.
5. Select the Does your Internet connection require a login? **Yes** radio button.
   The page adjusts.
6. From the **Internet Service Provider** menu, select **PPTP** or **L2TP** as the encapsulation method.
   The Internet Setup page displays.
7. In the **Login** field, enter the login name that your ISP gave you.
   This login name is often an email address.
8. In the **Password** field, type the password that you use to log in to your Internet service.
9. From the **Connection Mode** menu, select **Always On**, **Dial on Demand**, or **Manually Connect**.
10. To change the number of minutes until the Internet login times out, in the **Idle Timeout (In minutes)** field, type the number of minutes.
    This is how long the router keeps the Internet connection active when no one on the network is using the Internet connection. A value of 0 (zero) means never log out.

11. If your ISP gave you fixed IP addresses and a connection ID or name, type them in the **My IP Address**, **Subnet Mask**, **Server Address**, **Gateway IP Address**, and **Connection ID/Name** fields.

    If your ISP did not give you IP addresses, a connection ID, or name, leave these fields blank. The connection ID or name applies to a PPTP service only.

12. Select a Domain Name Server (DNS) Address radio button:

    - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
    - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.

13. Select a Router MAC Address radio button:

    - **Use Default Address**. Use the default MAC address.
    - **Use Computer MAC Address**. The router captures and uses the MAC address of the computer that you are now using. You must use the one computer that the ISP allows.
    - **Use This MAC Address**. Enter the MAC address that you want to use.

14. Click the **Apply** button.

    Your settings are saved.

15. Click the **Test** button to test your Internet connection.

    If the NETGEAR website does not display within one minute, see You Cannot Access the Internet on page 215.

Specify an IPv6 Internet Connection

The router supports many different types of IPv6 Internet connections for which you can specify the settings manually.

IPv6 Internet Connections and IPv6 Addresses

The router can support an IPv6 Internet connection through the following connection types:

- **Auto Detect**. For more information, see Use Auto Detect for an IPv6 Internet Connection on page 35.
- **Auto Config**. For more information, see Use Auto Config for an IPv6 Internet Connection on page 36.

- **6to4 tunnel**. For more information, see Set Up an IPv6 6to4 Tunnel Internet Connection on page 37.
- **Pass-through**. For more information, see Set Up an IPv6 Pass-Through Internet Connection on page 40.
- **Fixed**. For more information, see Set Up a Fixed IPv6 Internet Connection on page 41.
- **DHCP**. For more information, see Set Up an IPv6 DHCP Internet Connection on page 42.
- **6rd**. For more information, see Set Up an IPv6 6rd Tunnel Connection on page 39.
- **PPPoE**. For more information, see Set Up an IPv6 PPPoE Internet Connection on page 44.

Which connection type you must use depends on your IPv6 ISP. Follow the directions that your IPv6 ISP gave you.

- If your ISP did not provide details, use the 6to4 tunnel connection type (see Set Up an IPv6 6to4 Tunnel Internet Connection on page 37).
- If you are not sure what type of IPv6 connection the router uses, use the Auto Detect connection type, which lets the router detect the IPv6 type that is in use (see Use Auto Detect for an IPv6 Internet Connection on page 35).
- If your Internet connection does not use pass-through, a fixed IP address, DHCP, 6rd, or PPPoE but is IPv6, use the Auto Config connection type, which lets the router autoconfigure its IPv6 connection (see Use Auto Config for an IPv6 Internet Connection on page 36).

When you enable IPv6 and select any connection type other than IPv6 pass-through, the router starts the stateful packet inspection (SPI) firewall function on the WAN interface. The router creates connection records and checks every inbound IPv6 packet. If the inbound packet is not destined to the router itself and the router does not expect to receive such a packet, or the packet is not in the connection record, the router blocks this packet. This function works in two modes: In secured mode, the router inspects both TCP and UDP packets. In open mode, the router inspects UDP packets only.

IPv6 addresses are denoted by eight groups of hexadecimal quartets that are separated by colons. You can reduce any four-digit group of zeros within an IPv6 address to a single zero or omit it. The following errors invalidate an IPv6 address:

- More than eight groups of hexadecimal quartets
- More than four hexadecimal characters in a quartet
- More than two colons in a row

Use Auto Detect for an IPv6 Internet Connection

To set up an IPv6 Internet connection through autodetection:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **Auto Detect**.
   The page adjusts.
   The router automatically detects the information in the following fields:
   - **Connection Type**. This field indicates the connection type that is detected.
   - **Router's IPv6 Address on WAN**. This field shows the IPv6 address that is acquired for the router's WAN (or Internet) interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
   - **Router's IPv6 Address on LAN**. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
6. Select an IP Address Assignment radio button:
   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
7. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.

If you do not specify an ID here, the router generates one automatically from its MAC address.

8. Click the **Apply** button.
   Your settings are saved.

Use Auto Config for an IPv6 Internet Connection

To set up an IPv6 Internet connection through autoconfiguration:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **Auto Config**.
   The page adjusts.
   The router automatically detects the information in the following fields:
   - **Router's IPv6 Address on WAN**. This field shows the IPv6 address that is acquired for the router's WAN (or Internet) interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
   - **Router's IPv6 Address on LAN**. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
6. (Optional) In the **DHCP User Class (If Required)** field, enter a host name.
   Most people can leave this field blank, but if your ISP gave you a specific host name, enter it here.
7. (Optional) In the **DHCP Domain Name (If Required)** field, enter a domain name.

You can type the domain name of your IPv6 ISP. Do not enter the domain name for the IPv4 ISP here. For example, if your ISP's mail server is mail.xxx.yyy.zzz, type xxx.yyy.zzz as the domain name. If your ISP provided a domain name, type it in this field. For example, Earthlink Cable might require a host name of home, and Comcast sometimes supplies a domain name.

8. Select an IPv6 Domain Name Server (DNS) Address radio button:
   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
9. Select an IP Address Assignment radio button:
   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
10. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.

    If you do not specify an ID here, the router generates one automatically from its MAC address.
11. Click the **Apply** button.

    Your settings are saved.

Set Up an IPv6 6to4 Tunnel Internet Connection

The remote relay router is the device to which your router creates a 6to4 tunnel. Make sure that the IPv4 Internet connection is working before you apply the 6to4 tunnel settings for the IPv6 connection.

To set up an IPv6 Internet connection by using a 6to4 tunnel:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **6to4 Tunnel**.
   The page adjusts.

   The router automatically detects the information in the Router's IPv6 Address on LAN field. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
6. Select a Remote 6to4 Relay Router radio button:
   - **Auto**. Your router uses any remote relay router that is available on the Internet. This is the default setting.
   - **Static IP Address**. Enter the static IPv4 address of the remote relay router. Your IPv6 ISP usually provides this address.
7. Select an IPv6 Domain Name Server (DNS) Address radio button:
   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
8. Select an IP Address Assignment radio button:
   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
9. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.
   If you do not specify an ID here, the router generates one automatically from its MAC address.
10. Click the **Apply** button.

Your settings are saved.

Set Up an IPv6 6rd Tunnel Connection

The 6rd protocol makes it possible to deploy IPv6 to sites using a service provider's IPv4 network. 6rd uses the service provider's own IPv6 address prefix. This limits the operational domain of 6rd to the service provider's network and is under direct control of the service provider. The IPv6 service that is provided is equivalent to native IPv6.

The 6rd mechanism relies on an algorithmic mapping between the IPv6 and IPv4 addresses that are assigned for use within the service provider's network. This mapping allows for automatic determination of IPv4 tunnel endpoints from IPv6 prefixes, enabling stateless operation of 6rd.

To set up an IPv6 6rd tunnel connection:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **6rd Tunnel**.
   The page adjusts.
   The router automatically detects the information in the Router's IPv6 Address on LAN field. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
6. In the 6rd Configuration section, configure the 6rd settings:
   - **6rd Prefix**. Enter the IPv6 prefix that your ISP gave you.
   - **6rd Prefix Length**. Enter the IPv6 prefix length that your ISP gave you.
   - **6rd Border Relay Address**. Enter the border router's IPv4 address that your ISP gave you.

- **6rd Address Mask Length**. Enter the IPv4 mask length that your ISP gave you.

7. Select an IPv6 Domain Name Server (DNS) Address radio button:
   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
8. Select an IP Address Assignment radio button:
   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
9. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.

   If you do not specify an ID here, the router generates one automatically from its MAC address.
10. Click the **Apply** button.

    Your settings are saved.

Set Up an IPv6 Pass-Through Internet Connection

In pass-through mode, the router works as a Layer 2 Ethernet switch with two ports (LAN and WAN Ethernet ports) for IPv6 packets. The router does not process any IPv6 header packets.

To set up an IPv6 pass-through Internet connection:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **Pass Through**.
   The page adjusts, but no additional fields display.
6. Click the **Apply** button.
   Your settings are saved.

Set Up a Fixed IPv6 Internet Connection

To set up a fixed IPv6 Internet connection:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **Fixed**.
   The page adjusts.
6. Configure the fixed IPv6 addresses for the WAN connection:
   - **IPv6 Address/Prefix Length**. The IPv6 address and prefix length of the router WAN interface.
   - **Default IPv6 Gateway**. The IPv6 address of the default IPv6 gateway for the router's WAN interface.
   - **Primary DNS Server**. The primary DNS server that resolves IPv6 domain name records for the router.
   - **Secondary DNS Server**. The secondary DNS server that resolves IPv6 domain name records for the router.

Note: If you do not specify the DNS servers, the router uses the DNS servers that are configured for the IPv4 Internet connection on the Internet Setup page. (See Manually Set Up the Internet Connection on page 28.)

7. Select an IP Address Assignment radio button:
   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
8. In the **IPv6 Address/Prefix Length** fields, specify the static IPv6 address and prefix length of the router's LAN interface.

   If you do not specify an ID here, the router generates one automatically from its MAC address.
9. Click the **Apply** button.

   Your settings are saved.

Set Up an IPv6 DHCP Internet Connection

To set up an IPv6 Internet connection with a DHCP server:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.

   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **DHCP**.

   The page adjusts.

The router automatically detects the information in the following fields:

- **Router's IPv6 Address on WAN**. This field shows the IPv6 address that is acquired for the router's WAN (or Internet) interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
- **Router's IPv6 Address on LAN**. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.

6. (Optional) In the **DHCP User Class (If Required)** field, enter a host name.

   Most people can leave this field blank, but if your ISP gave you a specific host name, enter it here.

7. (Optional) In the **DHCP Domain Name (If Required)** field, enter a domain name.

   You can type the domain name of your IPv6 ISP. Do not enter the domain name for the IPv4 ISP here. For example, if your ISP's mail server is mail.xxx.yyy.zzz, type xxx.yyy.zzz as the domain name. If your ISP provided a domain name, type it in this field. For example, Earthlink Cable might require a host name of home, and Comcast sometimes supplies a domain name.

8. Select an IPv6 Domain Name Server (DNS) Address radio button:

   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.

9. Select an IP Address Assignment radio button:

   - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
   - **Auto Config**. This is the default setting.

   This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).

10. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.

    If you do not specify an ID here, the router generates one automatically from its MAC address.

11. Click the **Apply** button.

Your settings are saved.

Set Up an IPv6 PPPoE Internet Connection

To set up a PPPoE IPv6 Internet connection:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > IPv6**.
   The IPv6 page displays.
5. From the **Internet Connection Type** menu, select **PPPoE**.
   The page adjusts.
   The router automatically detects the information in the following fields:
   - **Router's IPv6 Address on WAN**. This field shows the IPv6 address that is acquired for the router's WAN (or Internet) interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
   - **Router's IPv6 Address on LAN**. This field shows the IPv6 address that is acquired for the router's LAN interface. The number after the slash (/) is the length of the prefix, which is also indicated by the underline (_) under the IPv6 address. If no address is acquired, the field displays Not Available.
6. In the **Login** field, enter the login information for the ISP connection.
   This is usually the name that you use in your email address. For example, if your main mail account is JerAB@ISP.com, you would type JerAB in this field. Some ISPs (like Mindspring, Earthlink, and T-DSL) require that you use your full email address when you log in. If your ISP requires your full email address, type it in this field.
7. In the **Password** field, enter the password for the ISP connection.
8. In the **Service Name** field, enter a service name.
   If your ISP did not provide a service name, leave this field blank.

Note: The default setting of the **Connection Mode** menu is Always On to provide a steady IPv6 connection. The router never terminates the connection. If the connection is terminated, for example, when the modem is turned off, the router attempts to reestablish the connection immediately after the PPPoE connection becomes available again.

9. Select an IPv6 Domain Name Server (DNS) Address radio button:
   - **Get Automatically from ISP**. Your ISP uses DHCP to assign your DNS servers. Your ISP automatically assigns this address.
   - **Use These DNS Servers**. If you know that your ISP requires specific servers, select this option. Enter the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, enter it also.
10. Select an IP Address Assignment radio button:
    - **Use DHCP Server**. This method passes more information to LAN devices but some IPv6 systems might not support the DHCv6 client function.
    - **Auto Config**. This is the default setting.

    This setting specifies how the router assigns IPv6 addresses to the devices on your home network (the LAN).
11. (Optional) Select the **Use This Interface ID** check box and specify the interface ID to be used for the IPv6 address of the router's LAN interface.

    If you do not specify an ID here, the router generates one automatically from its MAC address.
12. Click the **Apply** button.

    Your settings are saved.

Manage the MTU Size

The maximum transmission unit (MTU) is the largest data packet a network device transmits.

MTU Concepts

When one network device communicates across the Internet with another, the data packets travel through many devices along the way. If a device in the data path uses a lower maximum transmission unit (MTU) setting than the other devices, the data packets must be split or "fragmented" to accommodate the device with the smallest MTU.

The best MTU setting for NETGEAR equipment is often the default value. In some situations, changing the value fixes one problem but causes another.

Leave the MTU unchanged unless one of these situations occurs:

- You experience problems connecting to your ISP or other Internet service, and the technical support of either the ISP or NETGEAR recommends changing the MTU setting. These web-based applications might require an MTU change:
  - A secure website that does not open or displays only part of a web page
  - Yahoo email
- You use VPN and experience severe performance problems.
- You used a program to optimize MTU for performance reasons and now you are experiencing connectivity or performance problems.

If you suspect an MTU problem, a common solution is to change the MTU to 1400. If you are willing to experiment, you can gradually reduce the MTU from the maximum value of 1500 until the problem goes away. The following table describes common MTU sizes and applications.

Table 3. Common MTU sizes

MTU	Application
1500	The largest Ethernet packet size. This setting is typical for connections that do not use PPPoE or VPN and is the default value for NETGEAR routers, adapters, and switches.
1492	Used in PPPoE environments.
1472	Maximum size to use for pinging. (Larger packets are fragmented.)
1468	Used in some DHCP environments.
1458	Used in PPPoA environments.
1436	Used in PPTP environments or with VPN.

Change the MTU Size

WARNING: An incorrect MTU setting can cause Internet communication problems. For example, you might not be able to access certain websites, frames within websites, secure login pages, or FTP or POP servers. Change the MTU only if you are sure that it is necessary for your ISP connection.

To change the MTU size:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. In the **MTU Size** field, enter a value from 64 to 1500.
   The normal maximum transmit unit (MTU) value for most Ethernet networks is 1500 bytes, 1492 bytes for PPPoE connections, or 1436 for PPTP connections.
6. Click the **Apply** button.
   Your settings are saved.

4

Optimize Performance

This chapter describes how you can optimize the router's performance and manage the traffic flows through the router.

The chapter contains the following sections:

- Optimize Traffic With QoS on page 49
- Manage Default and Custom QoS Rules on page 50
- Manage Uplink Bandwidth Control on page 54
- Manage Wi-Fi Multimedia Quality of Service on page 55
- Improve Network Connections With Universal Plug-N-Play on page 56

Note: For information about how to configure how the router manages WiFi clients, which is another aspect of performance optimization, see Specify How the Router Manages WiFi Clients on page 178.

Optimize Traffic With QoS

You can use Quality of Service (QoS) to assign different priorities to Internet traffic, applications, and services. The router provides default QoS rules. You can add custom QoS rules and manage both default and custom QoS rules (see Manage Default and Custom QoS Rules on page 50).

We recommend that you enable QoS if you use streaming Internet. However, when QoS assigns a high priority to streaming video, it also assigns lower priority to the rest of your Internet traffic. That means that other tasks such as downloading content from the Internet take longer.

To view the default QoS rules with their default priorities and turn on QoS:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
   If you did not add any custom rules or change priorities, the QoS rules table displays the default QoS rules and their default priority queues, from the highest queue (the leftmost column) to the lowest priority (the rightmost column).
5. Select the **Turn Internet Access QoS On** check box.
6. Click the **Apply** button.
   Your settings are saved. The router assigns traffic priorities according to the QoS rules and their priority queues.

Manage Default and Custom QoS Rules

You can add custom QoS rules and change and remove both default and custom QoS rules. You can add QoS rules for services and applications but also for specific devices on your network.

Add a Custom QoS Rule for a Service or Application

If the service or application for which you want to assign a traffic priority is not part of the default QoS rules, you can add a custom QoS rule.

To add a custom QoS rule for a service or application:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. Make sure that the **Turn Internet Access QoS On** check box is selected.
6. Make sure that the **QoS By Service** radio button is selected.
7. From the **Applications** menu, select **Add a new application**.
   The page adjusts.
8. Specify a new QoS rule for a service or application as described in the following table.

Field	Description
Priority	
QoS Policy for	Enter a name for the QoS rule.
Priority	Select the priority (**Highest**, **High**, **Normal**, or **Low**) that must be assigned to the service or application. The priority selections correspond to the queue columns in the QoS rules table.

(Continued)

Field	Description
Specified Port Range	
Connection Type	Select the protocol (**TCP** or **UDP**) that is associated with the service or application. If you are unsure, select **TCP/UDP**.
Starting Port	Enter the start port number for the service or application.
Ending Port	Enter the end port number for the service or application.

9. On the QoS - Priority Rules page, click the **Apply** button.
   The new QoS rule is added to the QoS rules table.
10. On the QoS Setup page, click the **Apply** button.
    Your settings are saved.

Add a Custom QoS Rule for a Device

You can assign a traffic priority to a device on your network.

To add a QoS rule for a device:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. Make sure that the **Turn Internet Access QoS On** check box is selected.
6. Select the **By Device** radio button.
   The page adjusts.

7. Either select the radio button for a device in the MAC Device List to complete the fields automatically (by default, each device is assigned a normal priority) or specify the settings for the device as described in the following table.

Field	Description
QoS Policy for	Enter a name for the QoS rule.
MAC Address	Enter the MAC address for the device.
Device	Enter the name of the device.
Priority	Select the priority (**Highest**, **High**, **Normal**, or **Low**) that must be assigned to the service or application. The priority selections correspond to the queue columns in the QoS rules table.

8. Click the **Add** button.
   The new QoS rule is added to the QoS rules table.
9. Click the **Apply** button.
   Your settings are saved.

Change a QoS Rule or Change the Priority for a Rule

You can change an existing default or custom QoS rule. For default rules, you can change only the priority. For custom rules, you can change the priority and other settings.

To change a QoS rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. Make sure that the **Turn Internet Access QoS On** check box is selected.
6. In the QoS rules table, click the service, application, or device to select it.

The **Edit** button becomes available.

7. Click the **Edit** button.
   The QoS Priority Rules page displays.
8. Change the settings.
   For more information about the settings, see Add a Custom QoS Rule for a Service or Application on page 50 or Add a Custom QoS Rule for a Device on page 51.
9. On the QoS - Priority Rules page, click the **Apply** button.
   Your settings are saved. If you changed the priority, the QoS rule now displays in a different column of the QoS rules table on the QoS Setup page.

Remove a QoS Rule

You can remove an individual custom or default QoS rule.

To remove a QoS rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. In the QoS rules table, click the service, application, or device to select it.
   The **Delete** button becomes available.
6. Click the **Delete** button.
   The QoS rule is removed.
7. Click the **Apply** button.
   Your settings are saved.

Remove All QoS Rules

You can permanently remove all custom and default QoS rules.

WARNING: If you remove all QoS rules, both the custom and default QoS rules are permanently removed. The only way to get the default QoS rules back is by returning the router to factory default settings.

To remove all QoS rules:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.

   WARNING: If you click the **Delete All** button, all default and custom QoS rules are permanently removed.

5. Click the **Delete All** button.
   All QoS rules are permanently removed.
6. Click the **Apply** button.
   Your settings are saved.

Manage Uplink Bandwidth Control

Uplink bandwidth control lets you check the maximum uplink bandwidth that your Internet connection can support and specify the maximum uplink bandwidth.

To specify the maximum uplink bandwidth:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. To find out what uplink bandwidth your Internet connection supports, click the **Speedtest** button.
   The speed test checks your uplink bandwidth and the supported uplink bandwidth displays.
6. In the **Uplink bandwidth Maximum** field, enter the maximum uplink bandwidth that you want to specify.
7. From the associated menu, select **Kbps** or **Mbps**.
8. Click the **Apply** button.
   Your settings are saved.

Manage Wi-Fi Multimedia Quality of Service

Wi-Fi Multimedia Quality of Service (WMM QoS) prioritizes WiFi voice and video traffic over the WiFi link.

WMM QoS prioritizes WiFi data packets from different applications based on four access categories: voice, video, best effort, and background. For an application to receive the benefits of WMM QoS, WMM must be enabled on both the application and the client running that application. Legacy applications that do not support WMM and applications that do not require QoS are assigned to the best effort category, which receives a lower priority than voice and video.

WMM QoS is automatically enabled for the router. In some circumstances you might want to disable WMM.

To manage WMM QoS:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > QoS Setup**.
   The QoS Setup page displays.
5. Disable or enable WMM QoS by doing the following:
   - To disable WMM QoS for the 2.4 GHz radio, clear the **Enable WMM (Wi-Fi multimedia) settings (2.4GHz b/g/n)** check box.
   - To enable WMM QoS for the 2.4 GHz radio, select the **Enable WMM (Wi-Fi multimedia) settings (2.4GHz b/g/n)** check box.
     By default, WMM QoS is enabled for the 2.4 GHz radio.
   - To disable WMM QoS for the 5 GHz radio, clear the **Enable WMM (Wi-Fi multimedia) settings (5GHz a/n)** check box.
   - To enable WMM QoS for the 5 GHz radio, select the **Enable WMM (Wi-Fi multimedia) settings (5GHz a/n)** check box.
     By default, WMM QoS is enabled for the 5 GHz radio.
6. Click the **Apply** button.
   Your settings are saved.

Improve Network Connections With Universal Plug-N-Play

Universal Plug-N-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.

If you use applications such as multiplayer gaming, peer-to-peer connections, or real-time communications such as instant messaging or remote assistance, keep UPnP enabled, which it is by default.

To manage Universal Plug-N-Play:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > UPnP**.

   The UPnP page displays.

5. Select the **Turn UPnP On** check box.

   By default, this check box is selected. You can disable or enable UPnP for automatic device configuration. If the **Turn UPnP On** check box is cleared, the router does not allow any device to automatically control router resources, such as port forwarding.

6. Enter the advertisement period in minutes.

   The advertisement period specifies how often the router broadcasts its UPnP information. This value can range from 1 to 1440 minutes. The default period is 30 minutes. Shorter durations ensure that control points detect current device status at the expense of more network traffic. Longer durations can compromise the freshness of the device status but can significantly reduce network traffic.

7. Enter the advertisement time to live in hops.

   The time to live for the advertisement is measured in hops (steps) for each UPnP packet sent. Hops are the steps a packet takes between routers. The number of hops can range from 1 to 255. The default value for the advertisement time to live is 4 hops, which should be fine for most home networks. If you notice that some devices are not being updated or reached correctly, it might be necessary to increase this value.

8. Click the **Apply** button.

   The UPnP Portmap Table displays the IP address of each UPnP device that is accessing the router and which ports (internal and external) that device opened. The UPnP Portmap Table also displays what type of port is open and whether that port is still active for each IP address.

9. To refresh the information in the UPnP Portmap table, click the **Refresh** button.

5

Control Access to the Internet

The router comes with a built-in firewall that helps protect your home network from unwanted intrusions from the Internet.

This chapter includes the following sections:

- Set Up Parental Controls on page 59
- Allow or Block Access to Your Network on page 61
- Use Keywords to Block Internet Sites on page 65
- Manage Simple Outbound Firewall Rules for Services and Applications on page 68
- Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules on page 73
- Set Up Security Event Email Notifications on page 74

Set Up Parental Controls

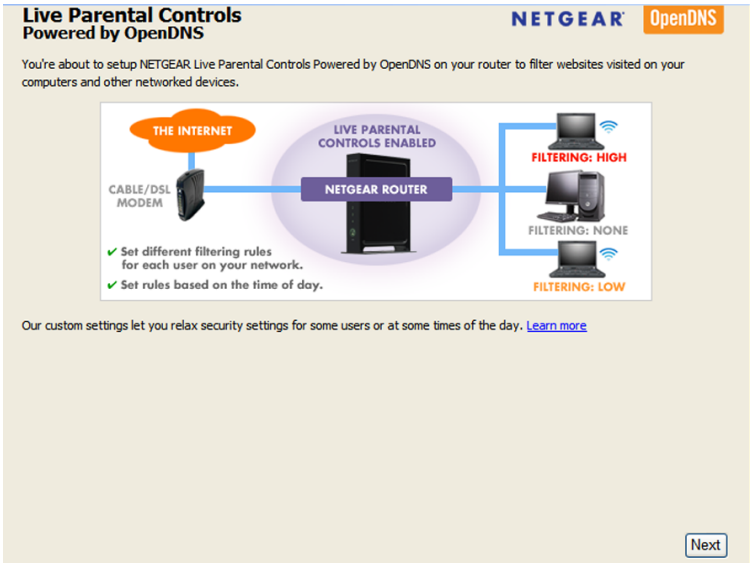
The first time that you select **Parental Controls** from the BASIC Home page, your browser goes to the Parental Controls website. You can learn more about parental controls or download the application.

After you set up and enable parental controls, you can change the web filtering level for each device on the network through the network map page on the genie app.

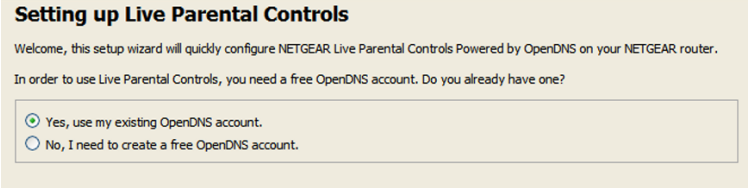
To set up parental controls:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Parental Controls**.
   The Parental Controls website opens.
5. Click the button for the app or version that you want to download and use.
6. Follow the onscreen instructions to download and install the genie app.
7. Open the genie app and select **Parental Controls**.

After installation, Live Parental Controls automatically starts.



8. Click the **Next** button, read the note, and click the **Next** button again.
   Because Live Parental Controls uses free OpenDNS accounts, you are prompted to log in or create a free account.



9. Select a radio button as follows:
   - If you already own an OpenDNS account, leave the **Yes** radio button selected.
   - If you do not own an OpenDNS account, select the **No** radio button.
     If you are creating an account, the Create a free OpenDNS account page displays. Do the following:
     a. Complete the fields.
     b. Click the **Next** button.

   After you log on or create your account, the filtering level page displays.

10. Select the radio button for the filtering level that you want and click the **Next** button.
    The Setup is complete page displays.

11. Click the **Take me to the status screen** button.
    The Status page displays. Parental controls are now set up for the router.

12. To enable parental controls, click the **Enable Live Parental Controls** button.

    After you set up and enable parental controls, you can change the web filtering level for each device on the network through the network map page of the genie app.

Allow or Block Access to Your Network

You can use access control to block or allow access of devices to your network. You define access by selecting or specifying the MAC addresses of the wired and WiFi devices that either can access your entire network or are blocked from accessing your entire network.

Enable and Manage Network Access Control

When you enable access control, you must select whether new devices are allowed to access the network or are blocked from accessing the network. By default, currently connected devices are allowed to access the network, but you can also block these devices from accessing the network.

To set up network access control:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Security > Access Control**.

   The Access Control page displays.
5. Select the **Turn on Access Control** check box.

   You must select this check box before you can specify an access rule and use the **Allow** and **Block** buttons. When the **Turn on Access Control** check box is cleared, all devices are allowed to connect, even if a device is in the list of blocked devices.
6. Click the **Apply** button.

   Your settings are saved.
7. Select an access rule for new devices:

- **Allow all new devices to connect**. With this setting, if you add a new device, it can access your network. You do not need to enter its MAC address on this page. We recommend that you leave this radio button selected.
- **Block all new devices from connecting**. With this setting, if you add a new device, before it can access your network, you must enter its MAC address for an Ethernet connection and its MAC address for a WiFi connection in the allowed list. For more information, see Manage Network Access Control Lists on page 62.

The access rule does not affect previously blocked or allowed devices. It applies only to devices joining your network in the future after you apply these settings.

8. To manage access for currently connected computers and devices, do the following:
   - If you blocked all new devices from connecting, to allow the computer or device that you are currently using to continue to access the network, select the check box next to your computer or device in the table, and click the **Allow** button.
   - To either continue to allow or to block other computers and devices that are currently connected, select the check box next to the computer or device in the table, and click either the **Allow** button or the **Block** button.
9. Click the **Apply** button.
   Your settings are saved.

Manage Network Access Control Lists

You can use access control to block or allow access to your network. An access control list (ACL) functions with the MAC addresses of wired and WiFi devices that can either access your entire network or are blocked from accessing your entire network.

The router can detect the MAC addresses of devices that are connected to the network and list the MAC addresses of devices that were connected to the network.

Each network device owns a MAC address, which is a unique 12-character physical address, containing the hexadecimal characters 0–9, a–f, or A–F (uppercase or lowercase) only, and separated by colons (for example, 00:09:AB:CD:EF:01). Typically, the MAC address is on the label of the WiFi card or network interface device. If you cannot see the label, you can display the MAC address using the network configuration utilities of the computer. You might also find the MAC addresses through the web pages of the router (see View Devices Currently on the Network on page 167).

Add Devices to or Remove Them From the Allowed List If you set up an access list that blocks all new devices from accessing your network, you must specify which devices are allowed to access your network.

To add or remove devices that are allowed:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Access Control**.
   The Access Control page displays.
5. Click the **View list of allowed devices not currently connected to the network** link.
   The Access Control page displays.
   A table displays the detected device name, MAC address, and connection type of the devices that are not connected but allowed to access the network.
6. To add a device to the allowed list, do the following:
   a. Click the **Add** button.
      The Add Allowed Device page displays.
   b. Enter the MAC address and device name for the device that you want to allow.
   c. On the Add Allowed Device page, click the **Apply** button.
      The device is added to the allowed list on the Access Control page.
7. To remove a device from allowed list, do the following:
   a. Select the check box for the device.
   b. Click the **Delete** button.
      The device is removed from the allowed list.
8. Click the **Apply** button.
   Your settings are saved.

Add Devices to or Remove Them From the Blocked List

If you set up an access list that allows all new devices to access your network but you want to block some devices from accessing your network, you must specify the devices that you want to block.

To add or remove devices that are blocked:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Access Control**.
   The Access Control page displays.
5. Click the **View list of blocked devices not currently connected to the network** link.
   The Access Control page displays.
   A table displays the detected device name, MAC address, and connection type of the devices that are not connected and are blocked from accessing the network.
6. To add a device to the blocked list, do the following:
   a. Click the **Add** button.
      The Add Blocked Device page displays.
   b. Enter the MAC address and device name for the device that you want to block.
   c. On the Add Blocked Device page, click the **Apply** button.
      The device is added to the blocked list on the Access Control page.
7. To remove a device from blocked list, do the following:
   a. Select the check box for the device.
   b. Click the **Delete** button.
      The device is removed from the blocked list.
8. Click the **Apply** button.
   Your settings are saved.

Use Keywords to Block Internet Sites

You can block keywords and domains (websites) to prevent certain types of HTTP traffic from accessing your network. By default, keyword blocking is disabled and no domains are blocked.

Set Up Blocking

You can set up blocking of specific keywords and domains to occur continuously or according to a schedule.

To set up keyword and domain blocking:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
   The Block Sites page displays.
5. Specify a keyword blocking option:
   - **Per Schedule**. Use keyword blocking according to a schedule that you set. For more information, see Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules on page 73.
   - **Always**. Use keyword blocking continuously.
6. In the **Type keyword or domain name here** field, enter a keyword or domain.
   Here are some sample entries:
   - Specify XXX to block http://www.badstuff.com/xxx.html.
   - Specify .com if you want to allow only sites with domain suffixes such as .edu or .gov.
   - Enter a period (**.**) to block all Internet browsing access.
7. Click the **Add Keyword** button.

The keyword or domain is added to the **Block sites containing these keywords or domain names** field (which is also referred to as the blocked list).

8. To add more keywords or domains, repeatStep 6 andStep 7.
   The keyword list supports up to 32 entries.
9. Click the **Apply** button.
   Your settings are saved.

Remove a Keyword or Domain From the Blocked List

If you no longer need a keyword or domain on the blocked list, you can remove the keyword or domain.

To remove a keyword or domain from the blocked list:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
   The Block Sites page displays.
5. In the **Block sites containing these keywords or domain names** field, select the keyword or domain.
6. Click the **Delete Keyword** button.
   The keyword or domain is removed from the blocked list.
7. Click the **Apply** button.
   Your settings are saved.

Remove All Keywords and Domains From the Blocked List

You can simultaneously remove all keywords and domains from the blocked list.

To remove all keywords and domains from the blocked list:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
   The Block Sites page displays.
5. Click the **Clear List** button.
   All keywords and domains are removed from the blocked list.
6. Click the **Apply** button.
   Your settings are saved.

Specify a Trusted Computer

You can exempt one trusted device from blocking and logging. The device that you exempt must be assigned a fixed (static) IP address.

To specify a trusted device:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
   The Block Sites page displays.

5. Scroll down and select the **Allow trusted IP address to visit blocked sites** check box.
6. In the **Trusted IP Address** field, enter the IP address of the trusted device.
   The first three octets of the IP address are automatically populated and depend on the IP address that is assigned to the router on the LAN Setup page.
7. Click the **Apply** button.
   Your settings are saved.

Manage Simple Outbound Firewall Rules for Services and Applications

A firewall protects one network (the trusted network, such as your LAN) from another (the untrusted network, such as the Internet), while allowing communication between the two.

The router provides one default outbound firewall rule: It allows all access to the Internet (that is, the WAN). You can add simple rules to prevent access to specific services and applications on the Internet. In addition, you can specify if a rule applies to one user, a range of users, or all users on your LAN.

The router lists many default services and applications that you can use in outbound rules. You can also add an outbound firewall rule for a custom service or application.

For information about blocking specific keywords, URLs, or sites, see Use Keywords to Block Internet Sites on page 65. This type of blocking is another aspect of the outbound firewall. For information about inbound firewall rules, see Manage Port Forwarding and Port Triggering on page 198.

Note: Service blocking means the same thing as applying outbound firewall rules.

Add an Outbound Firewall Rule

You can add an outbound firewall rule to prevent access to a specific service or application on the Internet.

To add an outbound firewall rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Security > Block Services**.

   The Block Services page displays.

5. In the Services Blocking section, specify how the router applies outbound rules:

   - **Per Schedule**. Use keyword blocking according to a schedule that you set. For more information, see Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules on page 73.
   - **Always**. Use keyword blocking continuously.

6. Below the Service Table, click the **Add** button.

   The Block Services Setup page displays.

7. From the **Service Type** menu, select service or application to be covered by this rule.

   If the service or application does not display in the list, you can add it (see Add an Outbound Firewall Rule for a Custom Service or Application on page 70).

8. Specify which devices on your LAN are affected by the rule, based on their IP addresses:

   - **Only This IP Address**. Enter the required address in the fields to apply the rule to a single device on your LAN.
   - **IP Address Range**. Enter the required addresses in the start and end fields to apply the rule to a range of devices.
   - **All IP Addresses**. All computers and devices on your LAN are covered by this rule.
     By default, the **All IP Addresses** radio button is selected.

9. Click the **Add** button.

   The new rule is added to the Service Table on the Block Services page.

Add an Outbound Firewall Rule for a Custom Service or Application

The router lists many default services and applications that you can use in outbound rules. If the service or application is not predefined, you can specify a custom service or application in an outbound rule.

To add an outbound firewall rule for a custom service or application:

1. Find out which protocol and port number or range of numbers the service or application uses.

   You can usually find this information by contacting the publisher of the service or application or through online user or news groups.

2. Launch a web browser from a computer or mobile device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.

   A login window opens.

4. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

5. Select **ADVANCED > Security > Block Services**.

   The Block Services page displays.

6. If this is the first time that you add an outbound firewall rule, in the Services Blocking section, specify how the router applies outbound rules:

   - **Per Schedule**. Use keyword blocking according to a schedule that you set. For more information, see Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules on page 73.
   - **Always**. Use keyword blocking continuously.

7. Below the Service Table, click the **Add** button.

   The Block Services Setup page displays.

8. From the **Service Type** menu, select **User Defined**.
9. Specify a new outbound rule as described in the following table.

Field	Description
Protocol	Select the protocol (**TCP** or **UDP**) that is associated with the service or application. If you are unsure, select **TCP/UDP**.
Starting Port	Enter the start port for the service or application.
Ending Port	If the service or application uses a range of ports, enter the end port for the range. If the service or application uses a single port, repeat the port number that you entered in the **Starting Port** field.
Service Type/User Defined	Enter the name of the custom service or application.

10. Specify which devices on your LAN are affected by the rule, based on their IP addresses:
    - **Only This IP Address**. Enter the required address in the fields to apply the rule to a single device on your LAN.
    - **IP Address Range**. Enter the required addresses in the start and end fields to apply the rule to a range of devices.
    - **All IP Addresses**. All computers and devices on your LAN are covered by this rule.
      By default, the **All IP Addresses** radio button is selected.
11. Click the **Add** button.
    The new rule is added to the Service Table on the Block Services page.

Change an Outbound Firewall Rule

You can change an existing outbound firewall rule.

To change an outbound firewall rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.

4. Select **ADVANCED > Security > Block Services**.
   The Block Services page displays.

   The previous figure shows two rules in the Service Table.

5. In the Service Table, select the radio button for the rule.
6. Click the **Edit** button.
   The Block Services Setup page displays.

7. Change the settings.
   For more information about the settings, see Add an Outbound Firewall Rule for a Custom Service or Application on page 70.

8. Click the **Accept** button.
   Your settings are saved. The changed rule displays in the Service Table on the Block Services page.

Remove an Outbound Firewall Rule

You can remove an outbound firewall rule that you no longer need.

To remove an outbound firewall rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Security > Block Services**.
   The Block Services page displays.

   The previous figure shows two rules in the Service Table.

5. In the Service Table, select the radio button for the rule.
6. Click the **Delete** button.
   The rule is removed from the Service Table.

Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules

You can set up a schedule that you can apply to keyword blocking and outbound firewall rules.

The schedule can specify the days and times that these features are active. After you set up the schedule, if you want it to become active, you must apply it to keyword blocking (see Set Up Blocking on page 65), outbound firewall rules (see Manage Simple Outbound Firewall Rules for Services and Applications on page 68), or both. Without a schedule, you can only enable or disable these features. By default, no schedule is set.

To set up a schedule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > Schedule**.
   The Schedule page displays.
5. Set up the schedule for blocking:
   - **Days to Block**. Select the check box for each day that you want to block access or specify that blocking occurs on every day by selecting the **Every Day** check box.
     By default, the **Every Day** check box is selected.
   - **Time of Day to Block**. Select a start and end time for blocking in 24-hour format or select the **All Day** check box for 24-hour blocking.
     By default, the **All Day** check box is selected.
6. From the **Time Zone** menu, select your time zone.
7. If you live in an area that observes daylight saving time, select the **Automatically adjust for daylight savings time** check box.

Note: If the router synchronized its internal clock with a time server on the Internet and you selected the correct time zone, the **Current Time** field displays the correct date and time.

8. Click the **Apply** button.
   Your settings are saved.

Set Up Security Event Email Notifications

The router can email you its logs of router activity. The log records router activity and security events such as attempts to access blocked sites or services.

To set up email notifications:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Security > E-mail**.
   The E-mail page displays.
5. Select the **Turn E-mail Notification On** check box.
6. In the **Your Outgoing Mail Server** field, enter the name of your ISP outgoing (SMTP) mail server (such as mail.myISP.com).
   You might be able to find this information in the configuration window of your email program. If you leave this field blank, log and alert messages are not sent.
7. In the **Send to This E-mail Address** field, type the email address to which logs and alerts are to be sent.
   This email address is also used for the From address. If this field is blank, log and alert messages are not sent.
8. In the **Outgoing Mail Server Port Number** field, enter the port number that the mail server uses.
   If you do not know the port number, leave the default port number, which is 25.

9. If your outgoing email server requires authentication, select the **My Mail Server requires authentication** check box, and do the following:
   a. In the **User Name** field, type the user name for the outgoing email server.
   b. In the **Password** field, type the password for the outgoing email server.
10. To send alerts when someone attempts to visit a blocked site, select the **Send Alerts Immediately** check box.
    Email alerts are sent immediately when someone attempts to visit a blocked site.
11. To send logs based on a schedule, specify these settings:
    a. From **Send logs according to this schedule** menu, select the schedule type.
    b. From the **Day** menu, select the day.
    c. From the **Time** menu, select the time, and select the **am** or **pm** radio button.
12. Click the **Apply** button.
    Your settings are saved.

    Logs are sent automatically according to the schedule that you set. If the log fills before the specified time, it is sent. After the log is sent, it is cleared from the router memory. If the router cannot email the log and the log buffer fills, the router overwrites the log.

6

Manage the Basic WiFi Network Settings

This chapter describes how you can manage the basic WiFi network settings of the router. For information about the advanced WiFi settings, see Manage the Advanced WiFi Features on page 174.

The chapter includes the following sections:

- Manage the Basic WiFi Settings and WiFi Security of the Main Network on page 77
- Use WPS to Add a Device to the WiFi Network on page 86
- Manage the Basic WiFi Settings and WiFi Security of the Guest Network on page 89
- Control the WiFi Radios on page 93

For information about setting up an access control list (ACL) and managing WiFi access for enhanced security, see Control Access to the Internet on page 58.

Manage the Basic WiFi Settings and WiFi Security of the Main Network

The router comes with preset security. This means that the WiFi network name (SSID), network key (password), and security option (encryption protocol) are preset in the factory. The preset SSID and password are uniquely generated for every device to protect and maximize your WiFi security. You can find the preset SSID and password on the router label (see Router Label on page 16).

IMPORTANT: If you change your preset security settings, make a note of the new settings and store the note in a safe place where you can easily find it.

View or Change the Basic WiFi Settings and WiFi Security Settings

You can view or change the basic WiFi settings and WiFi security. The router is a dual-band WiFi access point that simultaneously supports the 2.4 GHz band for 802.11b/g/n devices and the 5 GHz band for 802.11a/n/ac devices.

Tip: If you change the WiFi settings of the router's main network, use a wired connection to avoid being disconnected when the new WiFi settings take effect.

To view or change the basic WiFi settings and WiFi security settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Wireless**.
   The Wireless Network page displays.
5. View or change the basic WiFi settings and security settings.
   The following table describes the fields on the Wireless Network page.

Field	Description
Region Selection	
Region	From the menu, select the region in which the router operates. **Note:** It might not be legal to operate the router in a region other than the regions listed in the menu. If your country or region is not listed, check with your local government agency.
Wireless Network (2.4GHz b/g/n)	
Name (SSID)	The SSID is the 2.4 GHz WiFi network name. If you did not change the SSID, the default SSID displays. The default SSID is also printed on the router label (see Router Label on page 16). **Note:** If you change the SSID, enter a 32-character (maximum), case-sensitive name in this field.
Channel	From the **Channel** menu, select **Auto** for automatic channel selection or select an individual channel. The default selection is Auto. **Note:** In some regions, not all channels are available. Do not change the channel unless you experience interference (shown by lost connections or slow data transfers). If this situation occurs, experiment with different channels to see which is the best. **Note:** If you use multiple WiFi access points (APs), reduce interference by selecting different channels for adjacent APs. We recommend a channel spacing of four channels between adjacent APs (for example, use Channels 1 and 5, or 6 and 10).

(Continued)

Field	Description
Mode	From the **Mode** menu, select one of the following modes: • **Up to 54 Mbps**. Legacy mode. This mode allows 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11n devices to functioning at up to 54 Mbps. • **Up to 289 Mbps**. Neighbor-friendly mode for reduced interference with neighboring WiFi networks. This mode allows 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11n devices to functioning at up to 289 Mbps. • **Up to 600 Mbps**. Performance mode. This mode allows 802.11n, 802.11g, and 802.11b devices to join the network and allows 802.11n devices to function at up to 600 Mbps. This mode is the default mode. **Note:** WPA-PSK security supports speeds of up to 54 Mbps. Even if your devices are capable of a higher speed, WPA-PSK security limits their speed to 54 Mbps.
Enable SSID Broadcast	By default, the router broadcasts its SSID so that WiFi stations can detect the WiFi name (SSID) in their scanned network lists. To turn off the SSID broadcast, clear the **Enable SSID Broadcast** check box. Turning off the SSID broadcast provides additional WiFi security, but users must know the SSID to be able to join the WiFi network of the router.
Enable 20/40 MHz Coexistence	By default, 20/40 MHz coexistence is enabled to prevent interference between WiFi networks in your environment at the expense of the WiFi speed. If no other WiFi networks are present in your environment, you can clear the **Enable 20/40 MHz Coexistence** check box to increase the WiFi speed to the maximum supported speed.

(Continued)

Field	Description
Security Options This information applies to the 2.4 GHz WiFi network.	
If you change the WiFi security, select one of the following WiFi security options for the router's WiFi network: • **None**. An open WiFi network that does not provide any security. Any WiFi device can join the WiFi network. We recommend that you do *not* use an open WiFi network. • **WEP**. Wired Equivalent Privacy (WEP) security is a legacy authentication and data encryption mode that is superseded by WPA-PSK and WPA2-PSK. The WEP option displays only if you select **Up to 54 Mbps** from the **Mode** menu. For information about configuring WEP, see Configure WEP Legacy WiFi Security on page 83. • **WPA2-PSK [AES]**. This option is the default setting. This type of security enables WiFi devices that support WPA2 to join the router's 2.4 GHz WiFi network. If you did not change the passphrase, the default passphrase displays. The default passphrase is printed on the router label (see Router Label on page 16). WPA2 provides a secure connection but some older WiFi devices do not detect WPA2 and support only WPA. If your network includes such older devices, select WPA-PSK [TKIP] + WPA2-PSK [AES] security. If you change the passphrase, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the router's WiFi network, a user must enter this passphrase. • **WPA-PSK [TKIP] + WPA2-PSK [AES]**. This type of security enables WiFi devices that support either WPA or WPA2 to join the router's 2.4 GHz WiFi network. However, WPA-PSK [TKIP] is less secure than WPA2-PSK [AES] and limits the speed of WiFi devices to 54 Mbps. To use this type of security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the router's WiFi network, a user must enter this passphrase. • **WPA/WPA2 Enterprise**. This type of security requires that your WiFi network can access a RADIUS server. For information about configuring WPA/WPA2 Enterprise, see Configure WPA/WPA2 Enterprise WiFi Security on page 84.	
Wireless Network (5GHz a/n/ac)	
Name (SSID)	The SSID is the 5 GHz WiFi band name. If you did not change the SSID, the default SSID displays. The default SSID is also printed on the router label (see Router Label on page 16). **Note:** If you change the SSID, enter a 32-character (maximum), case-sensitive name in this field.

(Continued)

Field	Description
Channel	From the **Channel** menu, select an individual channel for a 5 GHz SSID. The default channel depends on your selection from the **Region** menu. **Note:** In some regions, not all channels are available. Do not change the channel unless you experience interference (shown by lost connections or slow data transfers). If this situation occurs, experiment with different channels to see which is the best. **Note:** If you use multiple WiFi access points (APs), reduce interference by selecting different channels for adjacent APs. We recommend a channel spacing of four channels between adjacent APs.
Mode	From the appropriate **Mode** menu, select one of the following modes for a 5 GHz SSID: • **Up to 289 Mbps**. Legacy mode. This mode allows 802.11ac, 802.11n, and 802.11a devices to join the selected WiFi network in the 5 GHz band of the network but limits 802.11ac and 802.11n devices to functioning at up to 289 Mbps. • **Up to 600 Mbps**. Neighbor-friendly mode for reduced interference with neighboring WiFi networks. This mode allows 802.11ac, 802.11n, and 802.11a devices to join the selected WiFi network in the 5 GHz band of the network but limits 802.11ac devices to functioning at up to 600 Mbps. • **Up to 1300 Mbps**. Performance mode. This mode allows 802.11ac, 802.11n, and 802.11a devices to join the selected WiFi network in the 5 GHz band of the network and allows 802.11ac devices to function at up to 1300 Mbps. This mode is the default mode.
Enable SSID Broadcast	By default, for an SSID in the 5 GHz band, the router broadcasts the SSID so that WiFi stations can detect the WiFi name (SSID) in their scanned network lists. To turn off an SSID broadcast, clear the appropriate **Enable SSID Broadcast** check box. Turning off an SSID broadcast provides additional WiFi security, but users must know the SSID to be able to join the WiFi network of the router.

(Continued)

Field	Description
Security Options This information applies to the 5 GHz WiFi network.	
If you change the WiFi security, select one of the following WiFi security options for the router's WiFi network: • **None**. An open WiFi network that does not provide any security. Any WiFi device can join the selected WiFi network in the 5 GHz band of the WiFi network. We recommend that you do *not* use an open WiFi network. • **WPA2-PSK [AES]**. This option is the default setting. This type of security enables WiFi devices that support WPA2 to join the selected WiFi network in the 5 GHz band of the WiFi network. If you did not change the passphrase, the default passphrase displays. The default passphrase is printed on the router label (see Router Label on page 16). WPA2 provides a secure connection but some older WiFi devices do not detect WPA2 and support only WPA. If your network includes such older devices, select WPA-PSK [TKIP] + WPA2-PSK [AES] security. If you change the passphrase, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the selected WiFi network in the 5 GHz band of the WiFi network, a user must enter this passphrase. • **WPA-PSK [TKIP] + WPA2-PSK [AES]**. This type of security enables WiFi devices that support either WPA or WPA2 to join the selected WiFi network in the 5 GHz band of the WiFi network. However, WPA-PSK [TKIP] is less secure than WPA2-PSK [AES] and limits the speed of WiFi devices to 54 Mbps. To use this type of security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the selected WiFi network in the 5 GHz band of the WiFi network, a user must enter this passphrase. • **WPA/WPA2 Enterprise**. This type of security requires that your WiFi network can access a RADIUS server. For information about configuring WPA/WPA2 Enterprise, see Configure WPA/WPA2 Enterprise WiFi Security on page 84.	

6. Click the **Apply** button.
   Your settings are saved.

   If you connected over WiFi to the network and you changed the SSID, you are disconnected from the network.

7. Make sure that you can reconnect over WiFi to the network with its new settings.
   If you cannot connect over WiFi, check the following:

   - If your computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the router provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
   - If your computer or mobile device is trying to connect to your network with its old settings (before you changed the settings), update the WiFi network selection in your computer or mobile device to match the current settings for your network.

- Does your computer or mobile device display as an attached device? (See View Devices Currently on the Network on page 167.) If it does, it is connected to the network.
- Are you using the correct network name (SSID) and password?

Configure WEP Legacy WiFi Security

Wired Equivalent Privacy (WEP) security is a legacy authentication and data encryption mode that is superseded by WPA-PSK and WPA2-PSK. WEP limits the WiFi transmission speed to 54 Mbps (the router is capable of higher speeds in the 2.4 GHz band).

Tip: If you want to change the WiFi settings of the router's main network, use a wired connection to avoid being disconnected when the new WiFi settings take effect.

To configure WEP security:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Wireless**.
   The Wireless Network page displays.

   Note: If you are configuring a guest network, select **Guest Network** instead. The Guest Network Settings page displays. In this situtation disregard Step 5 and go to Step 6.
5. From the **Mode** menu, select **Up to 54 Mbps**.
   The page adjusts to display the **WEP** radio button.

   Note: If you are configuring a guest network, disregard this step.
6. In the Security Options section, select the **WEP** radio button.
7. From the **Authentication Type** menu, select one of the following types:
   - **Automatic**. Clients can use either Open System or Shared Key authentication.

- **Shared Key**. Clients can use only Shared Key authentication.

8. From the **Encryption Strength** menu, select the encryption key size:
   - **64-bit**. Standard WEP encryption, using 40/64-bit encryption.
   - **128-bit**. Standard WEP encryption, using 104/128-bit encryption. This selection provides higher encryption security.
9. Specify the active key by selecting the **Key 1**, **Key 2**, **Key 3**, or **Key 4** radio button.
   Only one key can be the active key. To join the router's WiFi network, a user must enter the key value for the key that you specified as the active key.
10. Enter a value for the key:
    - For 64-bit WEP, enter 10 hexadecimal digits (any combination of 0–9, A–F). The key values are not case-sensitive.
    - For 128-bit WEP, enter 26 hexadecimal digits (any combination of 0–9, A–F). The key values are not case-sensitive.
11. Click the **Apply** button.
    Your settings are saved.
12. Make sure that you can reconnect over WiFi to the network with its new security settings.
    If you cannot connect over WiFi, check the following:
    - If your computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the router provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
    - If your computer or mobile device is trying to connect to your network with its old settings (before you changed the settings), update the WiFi network selection in your computer or mobile device to match the current settings for your network.
    - Does your computer or mobile device display as an attached device? (See View Devices Currently on the Network on page 167.) If it does, it is connected to the network.
    - Are you using the correct WiFi network name (SSID) and password?

Configure WPA/WPA2 Enterprise WiFi Security

Remote Authentication Dial In User Service (RADIUS) is an enterprise-level method for centralized Authentication, Authorization, and Accounting (AAA) management. To enable the router to provide WPA and WPA2 enterprise WiFi security, the WiFi network that the router provides must be able to access a RADIUS server.

Tip: If you want to change the WiFi settings of the router's main network, use a wired connection to avoid being disconnected when the new WiFi settings take effect.

To configure WPA and WPA2 enterprise security:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Wireless**.
   The Wireless Network page displays.

   Note: If you are configuring a guest network, select **Guest Network** instead. The Guest Network Settings page displays.

5. In the Security Options section below either the Wireless Network (2.4GHz b/g/n) section or the Wireless Network (5GHz a/n/ac) section, select the **WPA/WPA2 Enterprise** radio button.
6. In the WPA/WPA2 Enterprise section, enter the settings as described in the following table.

Field	Description
Encryption Mode	From the **Encryption Mode** menu, select the enterprise mode: • **WPA [TKIP] +WPA2 [AES]**. This type of security enables WiFi devices that support either WPA or WPA2 to join the router's WiFi network. This is the default mode. • **WPA2 [AES]**. WPA2 provides a secure connection but some older WiFi devices do not detect WPA2 and support only WPA. If your network includes such older devices, select WPA [TKIP] + WPA2 [AES] security.
Group Key Update Interval	Enter the interval in seconds after which the RADIUS group key is updated. The default interval is 3600 seconds.
RADIUS server IP Address	Enter the IPv4 address of the RADIUS server to which the WiFi network can connect.

(Continued)

Field	Description
RADIUS server Port	Enter the number of the port on the router that is used to access the RADIUS server for authentication. The default port number is 1812.
RADIUS server Shared Secret	Enter the shared secret (RADIUS password) that is used between the router and the RADIUS server during authentication of a WiFi user.

7. Click the **Apply** button.
   Your settings are saved.
8. Make sure that you can reconnect over WiFi to the network with its new security settings.
   If you cannot connect over WiFi, check the following:
   - If your computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the router provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
   - If your computer or mobile device is trying to connect to your network with its old settings (before you changed the settings), update the WiFi network selection in your computer or mobile device to match the current settings for your network.
   - Does your computer or mobile device display as an attached device? (See View Devices Currently on the Network on page 167.) If it does, it is connected to the network.
   - Are you using the correct network name (SSID) and password?

Use WPS to Add a Device to the WiFi Network

WPS (Wi-Fi Protected Setup) lets you connect a computer or mobile device to the router's network without entering the WiFi network passphrase or key. Instead, you use a **WPS** button or enter a PIN to connect.

If you use the push button method, the computer or device that you are trying to connect must provide either a physical button or a software button. If you use the PIN method, you must know the PIN of the computer or device that you are trying to connect.

WPS supports WPA and WPA2 WiFi security. If your router network is open (no WiFi security is set, which is not the default setting for the router), connecting with WPS

automatically sets WPA + WPA2 WiFi security on the router network and generates a random passphrase. You can view this passphrase (see Manage the Basic WiFi Settings and WiFi Security of the Main Network on page 77).

Use WPS With the Push Button Method

For you to use the push button method to connect a WiFi device to the router's WiFi network, the WiFi device that you are trying to connect must provide either a physical button or a software button. You can use the physical button and software button to let a WiFi device join only the main WiFi network, not the guest WiFi network.

To let a WiFi device join the router's main WiFi network using WPS with the push button method:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > WPS Wizard**.
   The page displays a description of the WPS method.
5. Click the **Next** button.
   By default, the **Push Button (recommended)** radio button is selected.
6. Either click the button onscreen or press the **WPS** button on the right side panel of the router.
   For two minutes, the router attempts to find the WiFi device (that is, the client) that you want to join the router's main WiFi network.
   During this time, the WiFi LED on the top panel of the router blinks white.
7. Within two minutes, go to the WiFi device and press its **WPS** button to join the router's main WiFi network without entering a password.
   After the router establishes a WPS connection, the WiFi LED lights solid white and the Add WPS Client page displays a confirmation message.
8. To verify that the WiFi device is connected to the router's main WiFi network, select **BASIC > Attached Devices**.
   The WiFi device displays onscreen.

Use WPS With the PIN Method

To use the PIN method to connect a WiFi device to the router's WiFi network, you must know the PIN of the WiFi device that you are trying to connect.

To let a WiFi device join the router's WiFi network using WPS with the PIN method:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > WPS Wizard**.
   The page displays a description of the WPS method.
5. Click the **Next** button.
   The Add WPS Client page adjusts.
   The **Push Button (recommended)** radio button is selected by default.
6. Select the **PIN Number** radio button.
7. In the **Enter Clients' PIN** field, enter the PIN number of the WiFi device.
8. Click the **Next** button.
   For four minutes, the router attempts to find the WiFi device (that is, the client) that you want to join the router's main WiFi network.
   During this time, the WiFi LED on the top panel of the router blinks white.
9. Within four minutes, go to the WiFi device and use its WPS software to join the network without entering a password.
   After the router establishes a WPS connection, the WiFi LED lights solid white and the Add WPS Client page displays a confirmation message.
10. To verify that the WiFi device is connected to the router's main WiFi network, select **BASIC > Attached Devices**.
    The WiFi device displays onscreen.

Manage the Basic WiFi Settings and WiFi Security of the Guest Network

A guest network allows visitors to use the Internet without using your WiFi security password or with a different WiFi password. By default, the guest WiFi network is disabled. You can enable and configure the guest WiFi network for each WiFi band. The router simultaneously supports the 2.4 GHz band for 802.11n, 802.11g, and 802.11b devices and the 5 GHz band for 802.11ac, 802.11n, and 802.11a devices.

The WiFi mode of the guest WiFi network depends on the WiFi mode of the main WiFi network. For example, if you configure the WiFi mode for the main WiFi network as Up to 54 Mbps in the 2.4 GHz band, the guest WiFi network also functions in the Up to 54 Mbps mode in the 2.4 GHz band. For information about configuring the WiFi mode, see View or Change the Basic WiFi Settings and WiFi Security Settings on page 77. The channel also depends on the channel selection of the main WiFi network.

The router provides two default guest networks with the following names (SSIDs):

- **2.4 GHz band**. NETGEAR_Guest
- **5 GHz band**. NETGEAR-5G_Guest

By default, these networks are configured as open networks without security but are disabled. You can enable one or both networks. You can also change the SSIDs for these networks.

To set up a guest network:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.

4. Select **Guest Network**.

5. Enable the guest network and configure its WiFi settings as described in the following table.

Field	Description
Wireless Network (2.4GHz b/g/n)	
Name (SSID)	The SSID is the 2.4 GHz WiFi band name. If you did not change the SSID, the default SSID displays, which is NETGEAR_Guest. To change the SSID in the 2.4 GHz WiFi band for the guest WiFi network, enter a 32-character (maximum), case-sensitive name in this field.
Enable Guest Network	By default, the guest WiFi network is disabled. To enable the guest WiFi network for the 2.4 GHz WiFi band, select the **Enable Guest Network** check box.
Enable SSID Broadcast	By default, the router broadcasts the SSID of the 2.4 GHz WiFi band so that WiFi stations can detect the WiFi name (SSID) in their scanned network lists. To turn off the SSID broadcast for the 2.4 GHz WiFi band for the guest WiFi network, clear the **Enable SSID Broadcast** check box.

(Continued)

Field	Description
Allow guests to see each other and access my local network	By default, WiFi clients that are connected to the 2.4 GHz WiFi band of the guest WiFi network cannot access WiFi devices or Ethernet devices that are connected to the main WiFi network. To allow access to the main WiFi network, select the **Allow guests to see each other and access my local network** check box.
Security Options	
If you want to change the WiFi security, select one of the following WiFi security options for the 2.4 GHz band of the guest WiFi network: • **None**. An open WiFi network that does not provide any security. Any WiFi device can join the 2.4 GHz band of the guest WiFi network. This is the default setting for the guest WiFi network. • **WEP**. Wired Equivalent Privacy (WEP) security is a legacy authentication and data encryption mode that is superseded by WPA-PSK and WPA2-PSK. The **WEP** option displays only if you configure the WiFi mode for the main WiFi network as Up to 54 Mbps in the 2.4 GHz band (see View or Change the Basic WiFi Settings and WiFi Security Settings on page 77). For information about configuring WEP, see Configure WEP Legacy WiFi Security on page 83. • **WPA2-PSK [AES]**. WPA2 provides a secure and fast connection but some older WiFi devices do not detect WPA2 and support only WPA. Select WPA2-PSK [AES] security to allow 802.11n devices to connect to the 2.4 GHz band of the guest WiFi network at the fastest speed. If your network includes older devices that do not support WPA2, select WPA-PSK [TKIP] + WPA2-PSK [AES] security. To use WPA2 security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the 2.4 GHz band of the guest WiFi network, a user must enter this passphrase. • **WPA-PSK [TKIP] + WPA2-PSK [AES]**. This type of security enables WiFi devices that support either WPA or WPA2 to join the 2.4 GHz band of the guest WiFi network. However, WPA-PSK [TKIP] is less secure than WPA2-PSK [AES] and limits the speed of WiFi devices to 54 Mbps. To use WPA + WPA2 security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the 2.4 GHz band of the guest WiFi network, a user must enter this passphrase.	
Passphrase	The passphrase that provides users access to the guest WiFi network in the 2.4 GHZ band. The passphrase is also referred to as the *password* or *key*.
Wireless Network (5GHz a/n/ac)	
Name (SSID)	The SSID is the 5 GHz WiFi band name. If you did not change the SSID, the default SSID displays, which is NETGEAR-5G_Guest. To change the SSID in the 5 GHz WiFi band for the guest WiFi network, enter a 32-character (maximum), case-sensitive name in this field.

(Continued)

Field	Description
Enable Guest Network	By default, the guest WiFi network is disabled. To enable the guest WiFi network for an SSID in the 5 GHz WiFi band, select the appropriate **Enable Guest Network** check box.
Enable SSID Broadcast	By default, for an SSID in the 5 GHz band, the router broadcasts the SSID so that WiFi stations can detect the WiFi name (SSID) in their scanned network lists. To turn off an SSID broadcast for the 5 GHz WiFi band for the guest WiFi network, clear the appropriate **Enable SSID Broadcast** check box.
Allow guests to see each other and access my local network	By default, WiFi clients that are connected to an SSID in the 5 GHz WiFi band of the guest WiFi network cannot access WiFi devices or Ethernet devices that are connected to the main WiFi network. To allow access to the main WiFi network, select the appropriate **Allow guests to see each other and access my local network** check box.
Security Options	
If you want to change the WiFi security for an SSID in the 5 GHz band, select one of the following WiFi security options for that SSID in the guest WiFi network: • **None**. An open WiFi network that does not provide any security. Any WiFi device can join the selected WiFi network in the 5 GHz band of the guest WiFi network. This is the default setting for the guest WiFi network. • **WPA2-PSK [AES]**. WPA2 provides a secure and fast connection but some older WiFi devices do not detect WPA2 and support only WPA. Select WPA2-PSK [AES] security to allow 802.11ac and 802.11n devices to connect to the selected WiFi network in the 5 GHz band of the guest WiFi network at the fastest speed. If your network includes older devices that do not support WPA2, select WPA-PSK [TKIP] + WPA2-PSK [AES] security. To use WPA2 security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the WiFi network in the 5 GHz band of the guest WiFi network, a user must enter this passphrase. • **WPA-PSK [TKIP] + WPA2-PSK [AES]**. This type of security enables WiFi devices that support either WPA or WPA2 to join the selected WiFi network in the 5 GHz band of the guest WiFi network. However, WPA-PSK [TKIP] is less secure than WPA2-PSK [AES] and limits the speed of WiFi devices to 54 Mbps. To use WPA + WPA2 security, in the **Passphrase** field, enter a phrase of 8 to 63 characters. To join the 5 GHz band of the guest WiFi network, a user must enter this passphrase.	
Passphrase	The passphrase that provides users access to the selected WiFi network in the 5 GHz band of the guest WiFi network. The passphrase is also referred to as the *password* or *key*.

6. Click the **Apply** button.
   Your settings are saved.

7. Make sure that you can reconnect over WiFi to the guest network.

   If you cannot connect over WiFi, check the following:

   - If your computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the router provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
   - Does your computer or mobile device display as an attached device? (See View Devices Currently on the Network on page 167.) If it does, it is connected to the network.
   - Are you using the correct network name (SSID) and password?

Control the WiFi Radios

The router provides internal WiFi radios that broadcast signals in the 2.4 GHz and 5 GHz ranges. By default, they are on so that you can connect over WiFi to the router. When the WiFi radios are off, you can still use an Ethernet cable for a LAN connection to the router.

You can turn the WiFi radios on and off with the **WiFi On/Off** button on the front panel, or you can log in to the router and enable or disable the WiFi radios through the router web pages. If you are close to the router, it might be easier to press the **WiFi On/Off** button. If you are away from the router or already logged in, it might be easier to enable or disable the radios through the router web pages. You can also turn the WiFi radios off and on based on a schedule. (See Set Up a WiFi Schedule on page 175.)

Use the WiFi On/Off Button

To turn the WiFi radios off and on with the WiFi On/Off button:

Press the **WiFi On/Off** button on the front panel of the router for two seconds.

If you turned off the WiFi radios, the 2.4 GHz and 5 GHz LEDs, the LED on the **WiFi On/Off** button, and the LED on the **WPS** button turn off. If you turned on the WiFi radios, the 2.4 GHz and 5 GHz LEDs, the LED on the **WiFi On/Off** button, and the LED on the **WPS** button light solid white.

Tip: If you want to disable the WiFi radio or radios of the router, use a wired connection to avoid being disconnected when WiFi radio or radios turn off.

Enable or Disable the WiFi Radios

If you used the **WiFi On/Off** button to turn off the WiFi radios, you cannot log in to the router over WiFi to turn them back on. You must press the **WiFi On/Off** button again for two seconds to turn the WiFi radios back on.

To enable or disable the WiFi radios:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. Do one of the following in the Wireless Network (2.4GHz b/g/n) section or Wireless Network (5GHz a/n/ac), or both sections:
   - **Turn off the radios**. Clear the **Enable Wireless Router Radio** check box. The 2.4 GHz and 5 GHz LEDs, the LED on the **WiFi On/Off** button, and the LED on the **WPS** button turn off.
   - **Turn on the radios**. Select the **Enable Wireless Router Radio** check box. The 2.4 GHz and 5 GHz LEDs, the LED on the **WiFi On/Off** button, and the LED on the **WPS** button light solid white.
6. Click the **Apply** button.
   Your settings are saved.

7

Share a Storage Device Attached to the Router

This chapter describes how to access and manage a storage device attached to your router. ReadySHARE lets you access and share a storage device, such as a USB storage device, connected to the router. (If your storage device uses special drivers, it is not compatible.)

Note: The USB port on the router can be used only to connect a USB storage device such as flash drives or hard drives or a printer. Do not connect computers, USB modems, CD drives, or DVD drives to the router USB port.

This chapter contains the following sections:

- USB Device Requirements on page 96
- Connect a USB Device to the Router on page 96
- Access a Storage Device Connected to the Router on page 97
- Map a USB Device to a Windows Network Drive on page 99
- Back Up Windows-Based Computers With ReadySHARE Vault on page 100
- Back Up Mac Computers With Time Machine on page 100
- Manage Access to a Storage Device on page 103
- Enable FTP Access Within Your Network on page 105
- View Network Folders on a Device on page 106
- Add a Network Folder on a Storage Device on page 107
- Change a Network Folder, Including Read and Write Access, on a USB Drive on page 108
- Approve USB Devices on page 109
- Safely Remove a USB Device on page 110

For more information about ReadySHARE features, visit netgear.com/readyshare.

USB Device Requirements

The router works with most USB-compliant external flash and hard drives. For the most up-to-date list of USB devices that the router supports, visit kbserver.netgear.com/readyshare.

Some USB external hard drives and flash drives require you to load the drivers onto the computer before the computer can access the USB device. Such USB devices do not work with the router.

The router supports the following file system types for full read/write access:

- FAT16
- FAT32
- NTFS
- NTFS with compression format enabled
- Ext2
- Ext3
- Ext4

The router supports the following file system types with read-only access:

- HFS
- HFS+

Connect a USB Device to the Router

ReadySHARE lets you access and share a USB device connected to the router USB port. (If your USB device uses special drivers, it is not compatible.)

Figure 6. One USB 3.0 port is located on the front panel of the router

To connect a USB device:

1. Insert your USB storage drive into the USB port on the router.
2. If your USB device uses a power supply, connect it.

   You must use the power supply when you connect the USB device to the router.

   When you connect the USB device to the router USB port, it might take up to two minutes before it is ready for sharing. By default, the USB device is available to all computers on your local area network (LAN).

Access a Storage Device Connected to the Router

From a computer or device on the network, you can access a storage device that is connected to the router.

Access the Storage Device From a Windows-Based Computer

To access the storage device from a Windows-based computer:

1. Connect a USB storage device to the USB port on the router.
2. If your USB device uses a power supply, connect it.

   You must use the power supply when you connect the USB device to the router.

When you connect the storage device to the router's port, it might take up to two minutes before the storage device is ready for sharing. By default, the device is available to all computers on your local area network (LAN).

3. On a Windows-based computer that is connected to the network, select **Start > Run**.
4. Enter **\\readyshare** in the dialog box.
5. Click the **OK** button.
   A window displays the files and folders on the device.

Access the Storage Device From a Mac

To access the storage device from a Mac:

1. Connect a USB storage device to the USB port on the router.
2. If your USB device uses a power supply, connect it.
   You must use the power supply when you connect the USB device to the router.

   When you connect the storage device to the router's port, it might take up to two minutes before the storage device is ready for sharing. By default, the device is available to all computers on your local area network (LAN).
3. On a Mac that is connected to the network, launch Finder and select **Go > Connect to Server**.
   The Connect to Server window displays.
4. In the **Server Address** field, enter **smb://readyshare**.
5. Click the **Connect** button.
6. When prompted, select the **Guest** radio button.
7. If you set up access control on the router and you allowed your Mac to access the network, select the **Registered User** radio button and enter **admin** for the name and **password** for the password.
   For more information about access control, see Allow or Block Access to Your Network on page 61.
8. Click the **Connect** button.
   A window displays the files and folders on the device.

Map a USB Device to a Windows Network Drive

To map the USB device to a Windows network drive:

1. Connect a USB storage device to the router's USB port.

   If your USB device uses a power supply, connect it. You must use the power supply when you connect the USB device to the router.

   When you connect the storage device to the router's port, it might take up to two minutes before it is ready for sharing. By default, the device is available to all computers on your local area network (LAN).

2. Select **Start > Run**.
3. Enter **\\readyshare** in the dialog box.
4. Click the **OK** button.

   A window automatically opens and displays the USB device.

5. Right-click the USB device and select **Map network drive**.

   The Map Network Drive window opens.

6. Select the drive letter to map to the new network folder.
7. Click the **Finish** button.

   The USB device is mapped to the drive letter that you specified.

8. To connect to the USB storage device as a different user, select the **Connect using different credentials** check box, click the **Finish** button, and do the following:
   a. Type the user name and password.
   b. Click the **OK** button.

Back Up Windows-Based Computers With ReadySHARE Vault

Your router comes with free backup software for all Windows-based computers in your home. Connect a USB hard disk drive (HDD) to the router for centralized, continuous, and automatic backup.

The following operating systems support ReadySHARE Vault:

- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

To back up your Windows-based computer:

1. Connect a USB storage device to the router's USB port.
2. If your USB device uses a power supply, connect it.

   You must use the power supply when you connect the USB device to the router.

   When you connect the storage device to the router's port, it might take up to two minutes before it is ready for sharing. By default, the device is available to all computers on your local area network (LAN).
3. Download ReadySHARE Vault from netgear.com/readyshare and install it on each Windows-based computer.
4. Launch ReadySHARE Vault.
5. Use the dashboard or the **Backup** tab to set up and run your backup.

Back Up Mac Computers With Time Machine

You can use Time Machine to back up your Mac computers onto a USB hard drive that is connected to the router's USB port. You can access the connected storage device from your Mac with a wired or WiFi connection to your router.

Set Up a Storage Device on a Mac

We recommend that you use a new USB HDD storage device, or format your old USB HDD storage device to do the Time Machine backup for the first time. Use a blank

partition to prevent some issues during backup using Time Machine. The router supports GUID or MBR partitions.

To format your device and specify partitions:

1. Connect a USB storage device to your Mac.
2. If your USB device uses a power supply, connect it.
   You must use the power supply when you connect the USB device to the Mac.
3. On your Mac, open **Spotlight** (or click the magnifying glass at the top right of the page) and search for **Disk Utility**.
4. Open the Disk Utility, select your USB storage device, click the **Erase** tab, and click the **Erase** button.
5. Click the **Partition** tab.
6. In the **Partition Layout** menu, set the number of partitions that you want to use.
7. Click the **Options** button.
   The Partition schemes display.
8. Select the **GUID Partition Table** or **Master Boot Record** radio button.
9. In the **Format** menu, select **Mac OS Extended (Journaled)**.
10. Click the **OK** button.
11. Click the **Apply** button.
    Your settings are saved.

Prepare to Back Up a Large Amount of Data

Before you back up a large amount of data with Time Machine, we recommend that you follow this procedure.

To prepare to back up a large amount of data:

1. Upgrade the operating system of the Mac computer.
2. Verify and repair the backup disk and the local disk.
3. Verify and repair the permissions on the local disk.
4. Set Energy Saver:
   a. From the **Apple** menu, select **System Preferences**.
      The System Preferences page displays.
   b. Select **Energy Saver**.
      The Energy Saver page displays.

c. Click the **Power Adapter** tab.

d. Select the **Wake for Wi-Fi network access** check box.

e. Click the **back arrow** to save the changes and exit the page.

5. Modify your security settings:

   a. From the **System Preferences** page, select **Security & Privacy**.
   The Security & Privacy page displays.

   b. Click the **Advanced** button at the bottom of the page.
   If the **Advanced** button is grayed out, click the lock icon so that you can change the settings.

   c. Clear the **Log out after minutes of inactivity** check box.

   d. Click the **OK** button.
   Your settings are saved.

Use Time Machine to Back Up Onto a Storage Device

You can use Time Machine to back up your Mac computers onto a USB hard disk drive (HDD) that is connected to the router's USB ports.

To back up your Mac onto a USB HDD:

1. Prepare your USB HDD with a compatible format and partitions.
2. If you plan to back up a large amount of data, see Prepare to Back Up a Large Amount of Data on page 101.
3. Connect your USB HDD to the router's USB port.
4. If your USB device uses a power supply, connect it.
   You must use the power supply when you connect the USB device to the router.

   When you connect the storage device to the router's port, it might take up to two minutes before it is ready for sharing. By default, the device is available to all computers on your local area network (LAN).

5. On a Mac computer that is connected to the network, launch Finder and select **Go > Connect to Server**.
   The Connect to Server window displays.

6. Type **smb://routerlogin.net** and click the **Connect** button.
7. When prompted, select the **Registered User** radio button.

8. Enter **admin** for the name and **password** for the password and click the **Connect** button.

   A list of USB devices connected to your router displays.

9. From the **Apple** menu, select **System Preferences**.

   The System Preferences window displays.

10. Select **Time Machine**.

    The Time Machine window displays.

11. Click the **Select Backup Disk** button and select your USB device from the list.
12. Click the **Use Disk** button.

    Note: If you do not see the USB partition that you want in the Time Machine disk list, go to Mac Finder and click that USB partition. It displays in the Time Machine list.

13. When prompted, select the **Registered User** radio button.
14. Enter **admin** for the name and **password** for the password and click the **Connect** button.

    The setup is complete and the Mac automatically schedules a full backup. You can back up immediately if you want.

Manage Access to a Storage Device

You can specify the device name, workgroups, and network folders for a storage device connected to the USB port on the router.

To specify the storage device access settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.

3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > USB Functions > ReadySHARE**.

The USB Storage (Advanced Settings) page displays.

The previous figure shows one USB device attached to the router.

5. To specify a name that is used to access the USB device or devices that are connected to the router, in the **Network/Device Name** field, enter a name.
   By default, the name is readyshare.

6. To specify a name for the workgroup that the USB device or devices are members of, in the **Workgroup** field, enter a name.
   By default, the name is Workgroup. The name works only in an operating system that supports NetBIOS, such as Microsoft Windows. If you are using a Windows workgroup rather than a domain, the workgroup name is displayed here.

7. Enable or disable access methods by selecting or clearing the corresponding check boxes and specifying access to the storage device as described in the following table.

Access Method	Description
Network Connection	Enabled by default. You can type **\\readyshare** to access the storage device within your network. If you change the name in the **Network/Device Name** field from readyshare to another name, the link changes accordingly. You can enable password protection.
HTTP	Enabled by default. You can type **http://readyshare.routerlogin.net/shares** to access the USB device within your network and download or upload files. In this URL, readyshare is the name that is specified in the **Network/Device Name** field. If you change the name in the **Network/Device Name** field from readyshare to another name, the link changes accordingly. You can also click the link that is shown in the Link column. The fixed port is number is 80. You can enable password protection.
HTTPS (via internet)	Disabled by default. If you enable this feature, remote users can type **https://***<public IP address>***/shares** to access the USB device over the Internet. *<public IP address>* is the external or public IP address that is assigned to the router (for example, 1.1.10.102). This feature supports file uploading only. The default port is number 443, which you can change. Password protection is enabled by default.

(Continued)

Access Method	Description
FTP	Enabled by default. You can type **ftp://readyshare.routerlogin.net/shares** to access the USB device within your network and download or upload files. In this URL, readyshare is the name that is specified in the **Network/Device Name** field. If you change the name in the **Network/Device Name** field from readyshare to another name, the link changes accordingly. You can also click the link that is shown in the Link column. The fixed port is number is 21. You can enable password protection.
FTP (via internet)	Disabled by default. If you enable this feature, remote users can type **ftp://**<*public IP address*>**/shares** to access the USB device over the Internet and download or upload files. <*public IP address*> is the external or public IP address that is assigned to the router (for example, 1.1.10.102). The default port is number 21, which you can change. Password protection is enabled by default. If you set up Dynamic DNS (see Manage Dynamic DNS and Access Storage Devices Through the Internet on page 112), you can also type a URL domain name. For example, if your domain name is MyName and you use the NETGEAR DDNS server, you can type **ftp://MyName.mynetgear.com** to access the USB device over the Internet and download or upload files.

8. Click the **Apply** button.
   Your settings are saved.

Enable FTP Access Within Your Network

File Transfer Protocol (FTP) lets you download (receive) and upload (send) large files faster.

Note: For information about using FTP to access a storage device through the Internet, see Access Storage Devices Through the Internet on page 116.

To enable FTP access within your network:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.

The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.

   The previous figure shows a USB device attached to the router.

5. Select the **FTP** check box.
6. Click the **Apply** button.
   Your settings are saved.

View Network Folders on a Device

You can view or change the network folders on a USB storage device connected to the router.

To view network folders:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.

   The previous figure shows a USB device attached to the router.

5. The Available Networks Folder section shows the following settings:

   - **Share Name**. The default share name is USB_Storage.
   - **Read Access and Write Access**. The permissions and access controls on the network folder. All–no password (the default) allows all users to access the network folder. The password for admin is the same one that you use to log in to the router.
   - **Folder Name**. Full path of the network folder.

- **Volume Name**. Volume name from the storage device.
- **Total Space and Free Space**. The current utilization of the storage device.

Add a Network Folder on a Storage Device

You can add network folders on a storage device connected to the USB port on the router.

To add a network folder:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.
   The previous figure shows a USB device attached to the router.
5. In the Available Network Folders table, select a device.
   If a single device is attached to the USB port, the radio button is selected automatically.
6. Click the **Create Network Folder** button.
   The Create Network Folder window opens.
   If this pop-up window does not display, your web browser might be blocking pop-ups. If it is, change the browser settings to allow pop-ups.
7. From the **USB Device** menu, select the USB drive.

   Note: We recommend that you do not attach more than one drive to one USB port (for example, through a USB hub).

8. Click the **Browse** button and in the **Folder** field, select the folder.
9. In the **Share Name** field, type the name of the share.

10. From the **Read Access** menu and the **Write Access** menu, select the settings that you want.

    All–no password (the default) allows all users to access the network folder. The other option is that only the admin user is allowed access to the network folder. The password for admin is the same one that you use to log in to the router.

11. Click the **Apply** button.

    The folder is added on the storage device.

12. Click the **Close Window** button.

    The pop-up window closes.

Change a Network Folder, Including Read and Write Access, on a USB Drive

You can change network folders on a storage device that is connected to the USB port on the router.

To change a network folder:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > USB Functions > ReadySHARE**.

   The USB Storage (Advanced Settings) page displays.

   The previous figure shows a USB device attached to the router.
5. In the Available Network Folders table, select a device.

   If a single device is attached to the USB port, the radio button is selected automatically.
6. Click the **Edit** button.

   The Edit Network Folder page displays.

7. Change the settings in the fields as needed.
   For more information about the settings, see Add a Network Folder on a Storage Device on page 107.
8. Click the **Apply** button.
   Your settings are saved.
9. Click the **Close Window** button.
   The pop-up window closes.

Approve USB Devices

For more security, you can set up the router to share only USB devices that you approve.

To allow only approved USB devices to connect to the router and specify which USB devices are approved:

1. Make sure that the USB device that you want to approve is attached to the router.
2. Launch a web browser from a computer or mobile device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.
   A login window opens.
4. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
5. Select **ADVANCED > Advanced Setup > USB Settings**.
   The USB Settings page displays.
6. Select the **No** radio button.
   By default the **Yes** radio button is selected. This setting lets you connect and access all your USB devices.
7. Click the **Apply** button.
   Your settings are saved.
8. Click the **Approved Devices** button.
   The USB Drive Approved Devices page displays.

9. In the Available USB Devices table, select the USB device that you want to approve.
   If a single device is attached to the USB port, the radio button is selected automatically.
10. Click the **Add** button.
    The USB device is added to the Approved USB Devices table.
11. Select the **Allow only approved devices** check box.
12. Click the **Apply** button.
    Your settings are saved.

To approve another USB device that is not attached to a USB port, first remove the attached USB device from the USB port (see Safely Remove a USB Device on page 110), attach the other USB device, and repeat this procedure.

Safely Remove a USB Device

Before you physically disconnect a USB device from the USB port on the router, log in to the router and take the drive offline.

To remove a USB device safely:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.
   The previous figure shows a USB device attached to the router.
5. In the Available Network Folders table, select a device.
   If a single device is attached to the USB port, the radio button is selected automatically.
6. Click the **Safely Remove USB Device** button.
   The device goes offline and a pop-up window opens.

7. Click the **OK** button.
8. Physically disconnect the USB device.

8

Manage Dynamic DNS and Access Storage Devices Through the Internet

With Dynamic DNS, you can use the Internet and a personal domain name to access a USB storage device that is attached to a USB port on the router when you are not home. If you know the IP address of the router (and the IP address did not change), you can also access the USB storage device by using the IP address.

This chapter includes the following sections:

- Set Up and Manage Dynamic DNS on page 113
- Access Storage Devices Through the Internet on page 116
- Remotely Access a USB Device Using ReadyCLOUD on page 119

Note: For information about how to connect the device and specify its settings, see Share a Storage Device Attached to the Router on page 95.

Set Up and Manage Dynamic DNS

Internet service providers (ISPs) assign numbers called IP addresses to identify each Internet account. Most ISPs use dynamically assigned IP addresses. This means that the IP address can change at any time. You can use the IP address to access your network remotely, but most people do not know what their IP address is or when this address changes.

To make it easier to connect, you can get a free account with a Dynamic DNS service that lets you use a domain name to access your home network. To use this account, you must set up the router to use Dynamic DNS. Then the router notifies the Dynamic DNS service provider whenever its IP address changes. When you access your Dynamic DNS account, the service finds the current IP address of your home network and automatically connects you.

If your ISP assigns a private WAN IP address (such as 192.168.x.x or 10.x.x.x), the Dynamic DNS service does not work because private addresses are not routed on the Internet.

Your Personal FTP Server

With your customized free URL, you can use FTP to access your network when you are not home through Dynamic DNS. To set up your FTP server, you must register for a NETGEAR Dynamic DNS (DDNS) service account and specify the account settings.

To set up your personal account and use FTP:

1. Get your NETGEAR Dynamic DNS domain name.
   For more information, see Set Up a New Dynamic DNS Account on page 114.
2. Make sure that your Internet connection is working.
   Your router must use a direct Internet connection. It cannot connect to a different router to access the Internet.
3. Connect a USB storage device to one of the USB ports of the router.
4. If your USB device uses a power supply, connect it.
   You must use the power supply when you connect the USB device to the router.
   When you connect the storage device to the router's port, it might take up to two minutes before the storage device is ready for sharing. By default, the device is available to all computers on your local area network (LAN).
5. Set up FTP access on the router.
   For more information, see Set Up FTP Access Through the Internet on page 117.

6. On a remote computer with Internet access, you can use FTP to access your router using ftp://*yourname*.mynetgear.com, in which *yourname* is your specific domain name.

   For more information, see Use FTP to Access Storage Devices Through the Internet on page 118.

Set Up a New Dynamic DNS Account

NETGEAR offers you the opportunity to set up and register for a free Dynamic DNS account.

To set up Dynamic DNS and register for a free NETGEAR account:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.

   The Dynamic DNS page displays.
5. Select the **Use a Dynamic DNS Service** check box.
6. From the **Service Provider** menu, select **NETGEAR**.
7. Select the **No** radio button.
8. In the **Host Name** field, enter the name that you want to use for your URL.

   The host name is sometimes called the domain name. Your free URL includes the host name that you specify and ends with mynetgear.com. For example, enter *MyName***.mynetgear.com**.
9. In the **Email** field, enter the email address that you want to use for your account.
10. In the **Password (6-32 characters)** field, enter the password that you want to use for your account.
11. Click the **Register** button.
12. Follow the onscreen instructions to register for your NETGEAR Dynamic DNS service.

Specify a DNS Account That You Already Created

If you already created a Dynamic DNS account with NETGEAR, No-IP, or Dyn, you can set up the router to use your account.

To set up Dynamic DNS if you already created an account:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.
   The Dynamic DNS page displays.
5. Select the **Use a Dynamic DNS Service** check box.
6. From the **Service Provider** menu, select your provider.
7. Select the **Yes** radio button.
8. In the **Host Name** field, enter the host name (sometimes called the domain name) for your account.
9. Depending on the type of account, specify your user name or email address:
   - For a No-IP or Dyn account, in the **User Name** field, enter the user name for your account.
   - For a NETGEAR account, in the **Email** field, enter the email address for your account.
10. In the **Password (6~32 characters)** field, enter the password for your DDNS account.
11. Click the **Apply** button.
    Your settings are saved.
12. To verify that your Dynamic DNS service is enabled in the router, click the **Show Status** button.
    A message displays the Dynamic DNS status.

Change the Dynamic DNS Settings

You can change the settings for your Dynamic DNS account.

To change your settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.
   The Dynamic DNS page displays.
5. Change your DDNS account settings as necessary.
6. Click the **Apply** button.
   Your settings are saved.

Access Storage Devices Through the Internet

If you connect a USB storage device to the router, you can access the USB device through the Internet when you are not home. After you gain access, you can use FTP to share files on the USB device.

Access Storage Devices From a Remote Computer

From a remote computer, you can access storage devices that are attached to the router on your home network.

To access devices from a remote computer:

1. Launch a web browser on a computer that is not on your home network.
2. Connect to the router on your home network:
   - To connect with Dynamic DNS, type the DNS name.
     To use a Dynamic DNS account, you must enter the account information on the Dynamic DNS page (see Set Up and Manage Dynamic DNS on page 113).
   - To connect without Dynamic DNS, type the router's Internet port IP address.

You can view the router's Internet IP address on the BASIC Home page.

Set Up FTP Access Through the Internet

If you attach a storage device to the router, you can access the storage device from your network (see Enable FTP Access Within Your Network on page 105). You can also set up FTP access through the Internet so that you can access the storage device from outside your local network, for example, when you are not at home.

To set up FTP access through the Internet:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.
5. Select the **FTP (via internet)** check box.
   Admin password protection is enabled by default.
6. Click the **Apply** button.
   Your settings are saved.
7. To limit access to the admin user, do the following:
   a. In the Available Network Folders list, select a device.
      If a single device is attached to the USB port, the radio button is selected automatically.
   b. Click the **Edit** button.
      The Edit Network Folder page displays.
   c. In the **Read Access** menu, select **admin**.
      The default setting is All - no password.
   d. In the **Write Access** menu, select **admin**.
      The default setting is All - no password.

e. Click the **Apply** button.
   Your settings are saved.

f. Click the **Close Window** button.
   The pop-up window closes.

Use FTP to Access Storage Devices Through the Internet

If you attached a storage device to the router, before you can access the storage device through the Internet with FTP, you must first set up FTP access (see Set Up FTP Access Through the Internet on page 117).

To access a USB device with FTP from a remote computer to download or upload a file:

1. Take one of the following actions:
   - To download a file from a storage device connected to the router, launch a web browser.
   - To upload a file to a storage device connected to the router, launch an FTP client such as Filezilla.
2. Type **ftp://** and the Internet port IP address in the address field of the browser.
   For example, if your IP address is 10.1.65.4, type **ftp://10.1.65.4**.
   If you are using Dynamic DNS, type the DNS name. For example, type **ftp://***MyName***.mynetgear.com**, in which *MyName* is your DNS name.
3. When prompted, log in:
   - To log in as admin, in the **user name** field, enter **admin** and in the **password** field, enter the same password that you use to log in to the router.
   - To log in as a guest, in the **user name** field, enter **guest**.
     The guest user name does not need a password.

   The files and folders that your account can access on the USB device display. For example, you might see `share/partition1/directory1`.
4. Navigate to a location on the USB device.
5. Download or upload the file.

Remotely Access a USB Device Using ReadyCLOUD

NETGEAR ReadyCLOUD® for routers lets you remotely access files stored on a USB storage device that is connected to the router. Before you can use ReadyCLOUD, you must create a ReadyCLOUD account and register your router.

A ReadyCLOUD app is also available for Windows-based computers, Android mobile devices, and iOS mobile devices. For more information about setting up ReadyCLOUD, see the *NETGEAR ReadyCLOUD for Routers User Manual*, which is available online at downloadcenter.netgear.com.

Create a ReadyCLOUD Account

To create a ReadyCLOUD account:

1. Launch a web browser from a computer or mobile device.
2. Visit readycloud.netgear.com.
   The ReadyCLOUD Welcome page displays.
3. Click the **Sign In** link.
   The Sign In page displays.
4. Click the **Create Account** link.
   The Create a MyNETGEAR account page displays.
5. Complete the fields to set up your account, and click the **Create** button.
   You are now ready to register your router with your ReadyCLOUD account.

Register Your Router With ReadyCLOUD

After you create a ReadyCLOUD account, you must register your router with your ReadyCLOUD account.

To register your router with your ReadyCLOUD account:

1. Visit kb.netgear.com/app/answers/detail/a_id/27323/ and check to see if you router supports ReadyCLOUD.
2. Connect a USB storage device to a USB port on the router.
   If your USB device uses a power supply, connect it. You must use the power supply when you connect the USB device to the router.

When you connect the USB storage device to the router's USB port, it might take up to two minutes before it is ready for sharing. By default, the USB storage device is available to all computers on your local area network (LAN).

3. Launch a web browser from a computer or mobile device that is connected to the network.
4. Enter **http://www.routerlogin.net**.
   A login window opens.
5. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
6. Select **ReadySHARE**.
   The USB Storage (Basic Settings) page displays.
7. Select the **ReadyCLOUD** radio button.
   The ReadyCLOUD page displays.
8. Enter your ReadyCLOUD user name and password and click the **Register** button.
   If you did not create a ReadyCLOUD account, see Create a ReadyCLOUD Account on page 119.
   The router is registered with ReadyCLOUD.

   Note: If the router's Internet connection mode is set to Dial on Demand, the router automatically changes the connection mode to Always On. This change is required for ReadyCLOUD to remotely access the USB storage device.

9. After registration, visit readycloud.netgear.com.
10. Click the **Sign In** link, enter your ReadyCLOUD user name and password, and click the **Sign In** button.
    The ReadyCLOUD page displays the router that you registered and the contents of the USB storage device that is connected to the router.

9

Use the Router as a Media Server

You can set up the router to work as a ReadyDLNA media server. You can also set up the router to play music from iTunes Server.

This chapter contains the following sections:

- Specify ReadyDLNA Media Server Settings on page 122
- Play Music From a Storage Device With iTunes Server on page 123

Specify ReadyDLNA Media Server Settings

The router can function as a ReadyDLNA media server, which lets you view movies and photos on DLNA/UPnP AV-compliant media players, such as Xbox360, Playstation, and NETGEAR media players.

To specify media server settings:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > USB Functions > ReadySHARE**.
   The USB Storage (Advanced Settings) page displays.
5. Click the **Media Server** tab.
   The Media Server (Settings) page displays.
6. Select the **Enable Media Server** check box.
   For information about enabling iTunes Server, see Play Music From a Storage Device With iTunes Server on page 123.
7. To change the media server name, in the **Media Server Name** field, type a new media server name for the router.
   By default, the media server name is ReadyDLNA. Whether you use the default media server name of another name, the media server name is appended by a semicolon followed by the device name of the router, which is, by default, the model number of the router.
8. Click the **Apply** button.
   Your settings are saved.
9. To rescan media files, click the **Rescan media files** button.

Play Music From a Storage Device With iTunes Server

iTunes Server lets you play music with your Windows or Mac iTunes app from a storage device that is connected to the router. You can also use the Apple Remote app from an iPhone or iPad to play music on any AirPlay devices, such as Apple TV or AirPlay-supported receivers.

Figure 7. Play music on a USB device with iTunes

Supported music file formats are MP3, AAC, and FLAC. The maximum number of music files supported is 10,000.

To specify the iTunes Server settings:

1. On your iPhone or iPad, find and connect to the WiFi network.
2. Launch the Remote app.
3. Click the **Add a Device** button.
   A passcode displays.
4. Specify the passcode in the router:
   a. Launch a web browser from a computer or mobile device that is connected to the network.
   b. Enter **http://www.routerlogin.net**.
      A login window opens.

c. Enter the router user name and password.

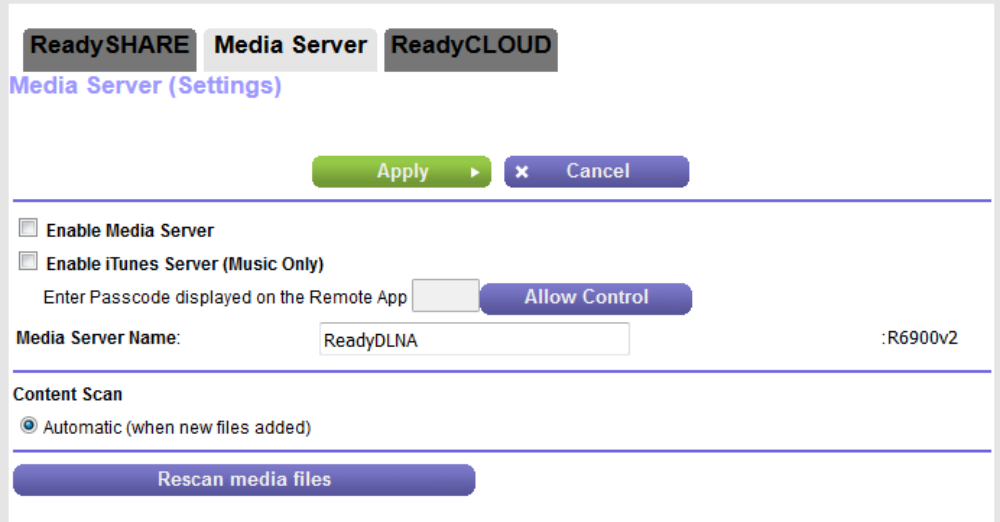
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.

   The BASIC Home page displays.

d. Select **ADVANCED > USB Functions > ReadySHARE**.

   The USB Storage (Advanced Settings) page displays.

e. Click the **Media Server** tab.



f. Select the **Enable iTunes Server (Music Only)** check box.

g. If the **Enter Passcode displayed on the Remote App** field is masked, click the **Apply** button.

h. Enter the passcode.

i. Click the **Allow Control** button.

j. Click the **Apply** button.

   Your settings are saved.

On your iPhone or iPad, the ReadySHARE music library displays in the Remote app. You can play this music on AirPlay devices.

10

Share a USB Printer

The ReadySHARE Printer utility lets you share a USB printer that is connected to the USB port on your router. You can share this USB printer among the Windows and Mac computers on your network.

This chapter contains the following sections:

- Install the Printer Driver and Cable the Printer on page 126
- Download the ReadySHARE Printer Utility on page 126
- Install the ReadySHARE Printer Utility on page 126
- Use the Shared Printer on page 128
- View or Change the Status of a Printer on page 129
- Use the Scan Feature of a Multifunction USB Printer on page 130
- Manage the NETGEAR USB Control Center Settings on page 132

Install the Printer Driver and Cable the Printer

Some USB printer manufacturers (for example, HP and Lexmark) request that you do not connect the USB cable until the installation software prompts you to do so.

To install the driver and cable the printer:

1. On each computer on your network that shares the USB printer, install the driver software for the USB printer.

   If the printer driver is not installed, contact the printer manufacturer.

2. Use a USB printer cable to connect the USB printer to the router USB 3.0 port on the front panel.

Download the ReadySHARE Printer Utility

The utility works on Windows-based computers, Mac computers, smartphones, and tablets.

To download the ReadySHARE Printer utility:

1. Visit netgear.com/readyshare.
2. Scroll down to the Print From the Comfort of Your Home Network section at the bottom of the page.
3. Click one of the following links:
   - **Download PC installer and get started**. This is the utility for Windows-based computers.
   - **Download Mac installer and get started**. This is the utility for MAC computers.
   - **Download the genie App and get started**. This is the utility for smartphones and tablets.
4. Follow the onscreen instructions to download the ReadySHARE Printer utility setup file.

Install the ReadySHARE Printer Utility

You must install the ReadySHARE Printer utility on each computer that will share the printer. After you install it, the utility displays as NETGEAR USB Control Center on your computer.

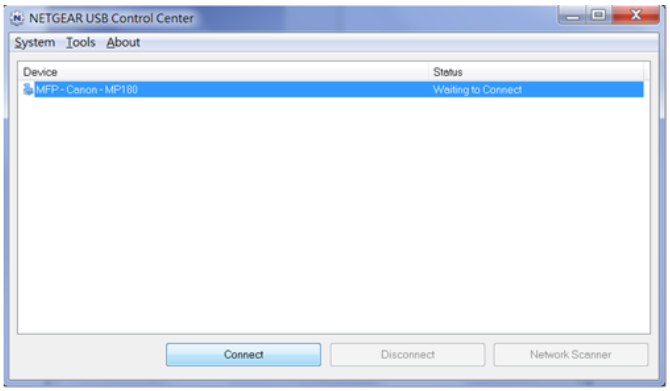
To install the utility:

1. If necessary, unzip the ReadySHARE Printer utility setup file.
2. Double-click the ReadySHARE Printer utility setup file that you downloaded.

3. Follow the wizard instructions to install NETGEAR USB Control Center.

   After the InstallShield Wizard completes the installation, the NETGEAR USB Control Center prompts you to select a language.

4. Select a language from the menu and click the **OK** button.



   Some firewall software, such as Comodo, blocks NETGEAR USB Control Center from accessing the USB printer. If you do not see the USB printer displayed onscreen, you can disable the firewall temporarily to allow the utility to work.

5. Select the printer and click the **Connect** button.

   The printer status changes to Manually connected by *Mycomputer*. Now only the computer that you are using can use this printer.

6. Click the **Disconnect** button.

   The status changes to Available. Now all computers on the network can use the printer.

7. To exit the utility, select **System > Exit**.

Use the Shared Printer

For each computer, after you click the **Connect** and **Disconnect** buttons once, the utility automatically manages the printing queue. By default, the utility starts automatically whenever you log on to Windows and runs in the background.

Manually Connect and Print

For each computer, after you click the **Connect** and **Disconnect** buttons once, the utility automatically manages the printing queue. By default, the utility starts automatically whenever you log on to Windows and runs in the background.

To manually connect and print:

1. Click the **NETGEAR USB Control Center** icon .
   The main page displays.

2. Click the **Connect** button.

The printer status changes to Manually connected by *Mycomputer*. Now only the computer that you are using can use this printer.

3. Use the print feature in your application to print your document.
4. To release the printer so that all computers on the network can use it, click the **Disconnect** button.

Print and Release the Printer

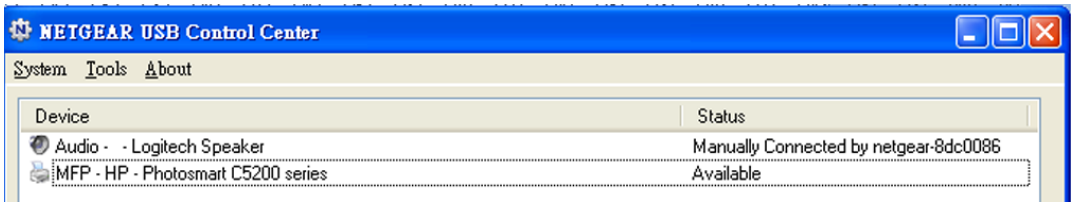
To print and release the printer to any computer on the network:

1. To print your document, use the print feature in your application.
   The NETGEAR USB Control Center automatically connects your computer to the USB printer and prints the document. If another computer is already connected to the printer, your print job goes into a queue to wait to be printed.
2. If your document does not print, use the NETGEAR USB Control Center to check the status.
   See View or Change the Status of a Printer on page 129.

View or Change the Status of a Printer

To view or change the status:

1. Click the **NETGEAR USB Control Center** icon .



   The Status column shows the status for each device:

   - **Available**. No print jobs are in progress. You can use the USB printer from any computer in the network.
   - **Connected**. Your computer is connected to the printer and will be released when your print job is done.
   - **Manually Connected by**. Only the connected computer can use the printer.
   - **Waiting to Connect**. Your computer is not connected to the shared printer yet.

2. To print from your computer when the status shows Manually connected by *another computer*, click the **Disconnect** button.

The printer is released from the connection and the status changes to Available.

3. To print from your computer when the status shows Waiting to Connect, do the following:
   a. Click the **Connect** button.
      The printer status changes to Manually connected by *Mycomputer*. Now only your computer can use the printer.

   b. To allow the printer to be shared, click the **Disconnect** button.
      The printer is released from the connection and the status changes to Available.

Use the Scan Feature of a Multifunction USB Printer

If your USB printer supports scanning, you can also use the USB printer for scanning. For example, the USB printer displayed in the Windows Printers and Faxes window is ready for print jobs.

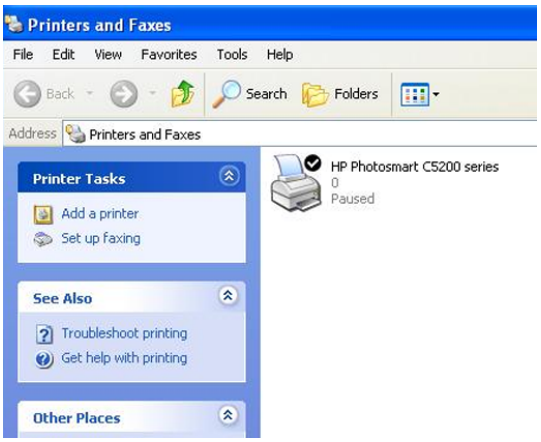
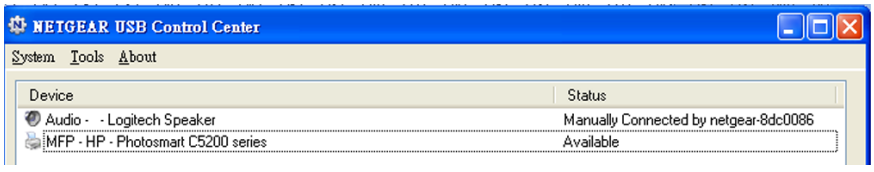


Figure 8. Printers and Faxes window

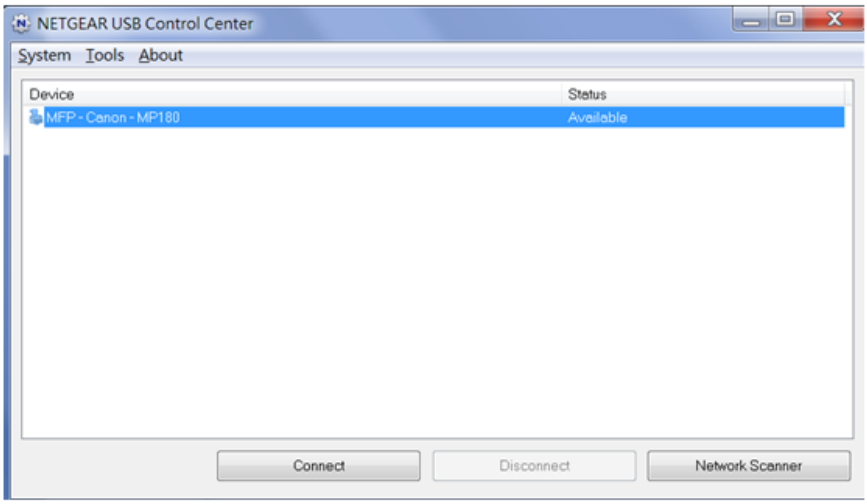
To use the scan feature of a multifunction USB printer:

1. Click the **NETGEAR USB Control Center** icon .



2. Make sure that the printer status shows as Available.

3. Click the **Network Scanner** button.



The scanner page displays so that you can use the USB printer for scanning.

Manage the NETGEAR USB Control Center Settings

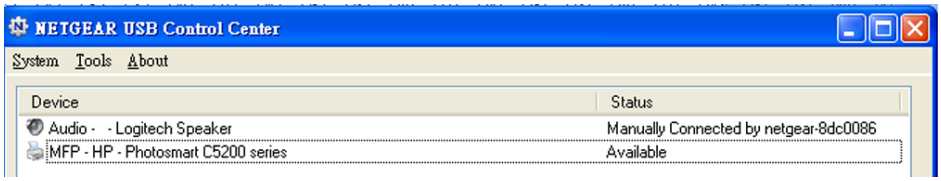
You can stop the NETGEAR USB Control Center from starting automatically when you log in to Windows. You can also change the language and specify the time-out to release the printer connection.

Turn Off Automatic Startup of the NETGEAR USB Control Center

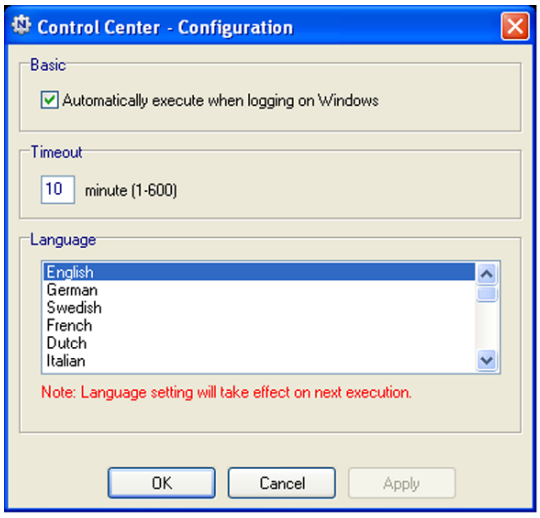
You can stop the NETGEAR USB Control Center from starting automatically when you log in to Windows.

To turn off the automatic startup of the NETGEAR USB Control Center:

1. Click the **NETGEAR USB Control Center** icon .



2. Select **Tools > Configuration**.



3. Clear the **Automatically execute when logging on Windows** check box.
4. Click the **OK** button.
   Your settings are saved.

Change the NETGEAR USB Control Center Language

To change the language:

1. Click the **NETGEAR USB Control Center** icon .
   The main page displays.
2. Select **Tools > Configuration**.
   The Control Center - Configuration page displays.
3. From the **Language** menu, select a language.
4. Click the **OK** button.
   The next time the NETGEAR USB Control Center starts, the language changes.

Specify the USB Control Center Time-Out

To specify the time-out:

1. Click the **NETGEAR USB Control Center** icon .
   The main page displays.
2. Select **Tools > Configuration**.
   The Control Center - Configuration page displays.
3. In the **Timeout** field, type the number of minutes.
   The time-out is the number of minutes that a computer holds its connection to the printer when the connection is not being used.
4. Click the **OK** button.
   Your settings are saved and the Control Center - Configuration page displays.

11

Manage the WAN and LAN Network Settings

This chapter describes how you can manage the WAN and LAN network settings of the router.

The chapter includes the following sections:

- Manage the WAN Security Settings on page 135
- Set Up a Default DMZ Server on page 135
- Manage IGMP Proxying on page 136
- Manage VPN Pass-Through on page 137
- Manage NAT Filtering on page 138
- Manage the SIP Application-Level Gateway on page 139
- Manage the LAN IP Address Settings on page 139
- Manage the Router Information Protocol Settings on page 140
- Manage the DHCP Server Address Pool on page 141
- Manage Reserved LAN IP Addresses on page 143
- Disable the Built-In DHCP Server on page 145
- Change the Router's Device Name on page 146
- Set Up and Manage Custom Static Routes on page 146
- Set Up a Bridge for a Port Group or VLAN Tag Group on page 149

Manage the WAN Security Settings

The WAN security settings include port scan protection and denial of service (DoS) protection, which can protect your LAN against attacks such as Syn flood, Smurf Attack, Ping of Death, and many others. By default, DoS protection is enabled and a port scan is rejected.

You can also enable the router to respond to a ping to its WAN (Internet) port. This feature allows your router to be discovered. Enable this feature only as a diagnostic tool or if a specific reason exists.

To change the default WAN security settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. To enable a port scan and disable DoS protection, select the **Disable Port Scan and DoS Protection** check box.
6. To enable the router to respond to a ping, select the **Respond to Ping on Internet Port** check box.
7. Click the **Apply** button.
   Your settings are saved.

Set Up a Default DMZ Server

The default DMZ server feature is helpful when you are using some online games and videoconferencing applications that are incompatible with Network Address Translation (NAT). The router is programmed to recognize some of these applications and to work correctly with them, but other applications might not function well. In some cases, one local computer can run the application correctly if the IP address for that computer is entered as the default DMZ server.

WARNING: 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 computer can be used to attack other computers on your network.

The router usually detects and discards incoming traffic from the Internet that is not a response to one of your local computers or a service or application for which you set up a port forwarding or port triggering rule. Instead of discarding this traffic, you can direct the router to forward the traffic to one computer on your network. This computer is called the default DMZ server.

To set up a default DMZ server:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. Select the **Default DMZ Server** check box.
6. Enter the IP address of the server.
7. Click the **Apply** button.
   Your settings are saved.

Manage IGMP Proxying

IGMP proxying allows a computer on the local area network (LAN) to receive the multicast traffic it is interested in from the Internet. If you do not need this feature, leave it disabled, which is the default setting.

To enable IGMP proxying:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. Clear the **Disable IGMP Proxying** check box.
   By default, the **Disable IGMP Proxying** check box is selected and IGMP proxying is disabled.
6. Click the **Apply** button.
   Your settings are saved.

Manage VPN Pass-Through

VPN pass-through allows a computer on the local area network (LAN) to receive VPN traffic from the Internet over an IPSec, PPTP, or L2TP connection. Under normal circumstances, leave VPN pass-through enabled, which is the default setting. If you disable VPN pass-through, VPN traffic is blocked.

To disable VPN pass-through:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. In the VPN Passthrough section, select one or more **Disabled** radio buttons.
   By default, the **Enabled** radio buttons are selected and VPN pass-through is enabled for IPSec, PPTP, and L2TP.

6. Click the **Apply** button.
   Your settings are saved.

Manage NAT Filtering

Network Address Translation (NAT) determines how the router processes inbound traffic. Secured NAT protects computers on the LAN from attacks from the Internet but might prevent some Internet games, point-to-point applications, or multimedia applications from working. Open NAT provides a much less secured firewall but allows almost all Internet applications to work. Secured NAT is the default setting.

To change the default NAT filtering settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. Select a NAT Filtering radio button:
   - **Secured**. Provides a secured firewall to protect the computers on the LAN from attacks from the Internet but might prevent some Internet games, point-to-point applications, or multimedia applications from functioning. By default, the **Secured** radio button is selected.
   - **Open**. Provides a much less secured firewall but allows almost all Internet applications to function.
6. Click the **Apply** button.
   Your settings are saved.

Manage the SIP Application-Level Gateway

The application-level gateway (ALG) for the Session Initiation Protocol (SIP) is enabled by default for enhanced address and port translation. However, some types of VoIP and video traffic might not work well when the SIP ALG is enabled. For this reason, the router provides the option to disable the SIP ALG.

To change the default SIP ALG setting:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
   The WAN Setup page displays.
5. To disable the SIP ALG, select the **Disable SIP ALG** check box.
   The SIP ALG is enabled by default.
6. Click the **Apply** button.
   Your settings are saved.

Manage the LAN IP Address Settings

The router is 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 as follows:

- **LAN IP address**. 192.168.1.1 (this is the same as www.routerlogin.net)
- **Subnet mask**. 255.255.255.0

These addresses are part of the designated private address range for use in private networks and are suitable for most applications. The IP address and subnet mask identify which addresses are local to a specific device and which must be reached through a gateway or router. You might want to change these settings if you need a specific IP

subnet that one or more devices on the network use, or if competing subnets use the same IP scheme.

To change the LAN IP address settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. In the **IP Address** fields, enter the LAN IP address for the router.
6. In the **IP Subnet Mask** fields, enter the LAN subnet mask for the router.
7. Click the **Apply** button.
   Your settings are saved.
   If you changed the LAN IP address of the router, you are disconnected when the changes take effect.
   To reconnect, close your browser, relaunch it, and log in to the router at its new LAN IP address.

Manage the Router Information Protocol Settings

Router Information Protocol (RIP) lets the router exchange routing information with other routers. By default, RIP is enabled in both directions (in and out) without a particular RIP version.

To manage the RIP settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. From the **RIP Direction** menu, select the RIP direction:
   - **Both**. The router broadcasts its routing table periodically and incorporates information that it receives. This is the default setting.
   - **Out Only**. The router broadcasts its routing table periodically but does not incorporate the RIP information that it receives.
   - **In Only**. The router incorporates the RIP information that it receives but does not broadcast its routing table.
6. From the **RIP Version** menu, select the RIP version:
   - **Disabled**. The RIP version is disabled. This is the default setting.
   - **RIP-1**. This format is universally supported. It is adequate for most networks, unless you are using an unusual network setup.
   - **RIP-2**. This format carries more information. Both RIP-2B and RIP-2M send the routing data in RIP-2 format. RIP-2B uses subnet broadcasting. RIP-2M uses multicasting.
7. Click the **Apply** button.
   Your settings are saved.

Manage the DHCP Server Address Pool

By default, the router acts as a Dynamic Host Configuration Protocol (DHCP) server. The router assigns IP, DNS server, and default gateway addresses to all computers that are connected to its LAN and WiFi network. The assigned default gateway address is the LAN address of the router.

These addresses must be part of the same IP address subnet as the router's LAN IP address. The default DHCP address pool is 192.168.1.2–192.168.1.254.

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

- An IP address from the range that you define
- Subnet mask

- Gateway IP address (the router's LAN IP address)
- DNS server IP address (the router's LAN IP address)

To specify the pool of IP addresses that the router assigns:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. Make sure that the **Use Router as DHCP Server** check box is selected.
   This check box is selected by default.
6. Specify the range of IP addresses that the router assigns:
   - In the **Starting IP Address** field, enter the lowest number in the range.
     This IP address must be in the same subnet as the router. By default, the starting IP address is 192.168.1.2.
   - In the **Ending IP Address** field, enter the number at the end of the range of IP addresses.
     This IP address must be in the same subnet as the router. By default, the ending IP address is 192.168.1.254.
7. Click the **Apply** button.
   Your settings are saved.

Manage Reserved LAN IP Addresses

When you specify a reserved IP address for a computer on the LAN, that computer always receives the same IP address each time it accesses the router's DHCP server.

Reserve a LAN IP Address

You can assign a reserved IP address to a computer or server that requires permanent IP settings.

To reserve an IP address:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. In the Address Reservation section, click the **Add** button.
   The Address Reservation page displays.
6. Either select a device from the Address Reservation Table by selecting the corresponding radio button or specify the reserved IP address information:
   - In the **IP Address** field, enter the IP address to assign to the computer or device. Choose an IP address from the router's LAN subnet, such as 192.168.1.x.
   - In the **MAC Address** field, enter the MAC address of the computer or device.
   - In the **Device Name** field, enter the name of the computer or device.
7. Click the **Add** button.
   The reserved address is entered into the table on the LAN Setup page.
   The reserved address is not assigned until the next time the computer or device contacts the router's DHCP server. Reboot the computer or device, or access its IP configuration and force a DHCP release and renew.

Change a Reserved IP Address

You can change a reserved IP address entry.

To change a reserved IP address entry:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. In the Address Reservation section, select the radio button for the reserved address.
6. Click the **Edit** button.
   The Address Reservation page displays.
7. Change the settings.
8. Click the **Apply** button.
   Your settings are saved.

Remove a Reserved IP Address Entry

You can remove a reserved IP address entry.

To remove a reserved IP address entry:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.

4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. In the Address Reservation section, select the radio button for the reserved address.
6. Click the **Delete** button.
   The address entry is removed.

Disable the Built-In DHCP Server

By default, the router functions as a DHCP server. The router assigns IP, DNS server, and default gateway addresses to all devices connected to the LAN. The assigned default gateway address is the LAN address of the router.

You can use another device on your network as the DHCP server or specify the network settings of all your computers.

Note: If you disable the DHCP server and no other DHCP server is available on your network, you must set your computer IP addresses manually so that they can access the router.

To disable the built-in DHCP server:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. Clear the **Use Router as DHCP Server** check box.
6. Click the **Apply** button.
   Your settings are saved.

Change the Router's Device Name

The router's default device name is its model number.

This device name displays in a file manager when you browse your network.

To change the router's device name:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
   The LAN Setup page displays.
5. Type a new name in the **Device Name** field.
6. Click the **Apply** button.
   A pop-up window displays.
7. Click the **Yes** button.
   The router restarts.

Set Up and Manage Custom Static Routes

Static routes provide detailed routing information to your router. Typically, you do not need to add static routes. You must configure static routes only for unusual cases such as when you use multiple routers or multiple IP subnets on your network.

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

- Your primary Internet access is through an ADSL modem to an ISP.
- You use 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 address 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 forwards your request to the ISP. The ISP forwards your request to the company where you are employed, and the request is likely to be denied by the company's firewall.

In this case, you must define a static route, instructing your router that 134.177.0.0 is accessed through the ISDN router at 192.168.1.100. Here is an example:

- Through the destination IP address and IP subnet mask, specify that this static route applies to all 134.177.x.x addresses.
- Through the gateway IP address, specify that all traffic for these addresses is forwarded to the ISDN router at 192.168.1.100.
- A metric value of 1 works fine because the ISDN router is on the LAN.

Set Up a Static Route

You can add a static route to a destination IP address and specify the subnet mask, gateway IP address, and metric.

To set up a static route:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
   The Static Routes page displays.
5. Click the **Add** button.
   The page adjusts.
6. To make the route private, select the **Private** check box.
   A private static route is not reported in RIP.
7. To prevent the route from becoming active after you click the **Apply** button, clear the **Active** check box.

In some situations, you might want to set up a static route but keep it disabled until a later time. By default, the **Active** check box is selected and a route becomes active after you click the **Apply** button.

8. Enter the settings as described in the following table.

Field	Description
Destination IP Address	Enter the IP address for the final destination of the route.
IP Subnet Mask	Enter the IP subnet mask for the final destination of the route. If the destination is a single host, enter **255.255.255.255**.
Gateway IP Address	Enter the IP address of the gateway. The IP address of the gateway must be on the same LAN segment as the router.
Metric	Enter a number from 1 through 15. This value 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 the **Apply** button.
   Your settings are saved. The static route is added to the table on the Static Routes page.

Change a Static Route

You can change an existing static route.

To change a static route:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
   The Static Routes page displays.

5. In the Static Routes table, select the radio button for the route.
6. Click the **Edit** button.
   The page adjusts.
7. Change the settings for the route.
   For more information about the settings, see Set Up a Static Route on page 147.
8. Click the **Apply** button.
   The route is updated in the table on the Static Routes page.

Remove a Static Route

You can remove an existing static route that you no longer need.

To remove a static route:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
   The Static Routes page displays.
5. In the Static Routes table, select the radio button for the route.
6. Click the **Delete** button.
   The route is removed from the table on the Static Routes page.

Set Up a Bridge for a Port Group or VLAN Tag Group

Some devices, such as an IPTV, cannot function behind the router's Network Address Translation (NAT) service or firewall. Based on what your Internet service provider (ISP) requires, for the device to connect to the ISP's network directly, you can enable the

bridge between the device and the router's Internet port or add new VLAN tag groups to the bridge.

Note: If your ISP provides directions on how to set up a bridge for IPTV and Internet service, follow those directions.

Set Up a Bridge for a Port Group

If the devices that are connected to the router's Ethernet LAN port or WiFi network include an IPTV device, your ISP might require you to set up a bridge for a port group for the router's Internet interface.

A bridge with a port group prevents packets that are sent between the IPTV device and the router's Internet port from being processed through the router's Network Address Translation (NAT) service.

To configure a port group and enable the bridge:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VLAN / Bridge Settings**.
   The VLAN / Bridge Settings page displays.
5. Select the **Enable VLAN Tag** check box.
   The page expands.
6. Select the **By bridge group** radio button.
   The page adjusts.
7. Select a Wired Ports check box or a Wireless check box.
   - If your device is connected to an Ethernet port on the router, select the Wired Devices check box that corresponds to the Ethernet port on the router to which the device is connected.
   - If your device is connected to your router's WiFi network, select the Wireless check box that corresponds to the router's WiFi network to which the device is connected.

Note: You must select at least one Wired Devices or Wireless check box. You can select more than one check box.

8. Click the **Apply** button.
   Your settings are saved.

Set Up a Bridge for a VLAN Tag Group

If the devices that are connected to the router's Ethernet LAN ports or WiFi network include an IPTV device, your ISP might require you to set up a bridge for a VLAN tag group for the router's Internet interface.

If you are subscribed to IPTV service, the router might require VLAN tags to distinguish between the Internet traffic and the IPTV traffic. A bridge with a VLAN tag group prevents packets that are sent between the IPTV device and the router's Internet port from being processed through the router's Network Address Translation (NAT) service.

You can add VLAN tag groups to a bridge and assign VLAN IDs and priority values to each VLAN tag group.

To add a VLAN tag group and enable the bridge:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VLAN / Bridge Settings**.
   The VLAN / Bridge Settings page displays.
5. Select the **Enable VLAN Tag** check box.
   The page expands.
6. Select the **By VLAN tag group** radio button.
   The page adjusts.
   The router includes a default VLAN tag group with the name Internet.
7. Click the **Add** button.
   The VLAN/I{TV Setup page displays.

8. Specify the settings as described in the following table.

Field	Description
Name	Enter a name for the VLAN tag group. The name can be up to 10 characters.
VLAN ID	Enter a value from 1 to 4094.
Priority	Enter a value from 0 to 7.
Select the check box for a wired LAN port or WiFi port. If your device is connected to an Ethernet port on the router, select the LAN port check box that corresponds to the Ethernet port on the router to which the device is connected. If your device is connected to your router's WiFi network, select the WiFi check box that corresponds to the router's WiFi network to which the device is connected. You must select at least one LAN port or WiFi port. You can select more than one port.	

9. Click the **Add** button.
   The VLAN tag group is added.
10. Click the **Apply** button.
    Your settings are saved.

12

Manage the Router and Monitor the Traffic

This chapter describes how you can manage the settings for administering and maintaining your router and monitor the network.

The chapter includes the following sections:

- Update the Firmware of the Router on page 154
- Change the admin Password on page 156
- Set Up Password Recovery on page 157
- Recover the admin Password on page 158
- Manage the Configuration File of the Router on page 159
- Disable LED Blinking or Turn Off LEDs on page 160
- Return the Router to Its Factory Default Settings on page 161
- View the Status and Statistics of the Router on page 163
- Manage the Activity Log on page 166
- View Devices Currently on the Network on page 167
- Monitor and Meter Internet Traffic on page 168

Update the Firmware of the Router

The router firmware is stored in flash memory.

You can check to see if new firmware is available and update the router to the new firmware. You can also visit the NETGEAR support website, download the firmware manually, and update the router to the new firmware.

Check for New Firmware and Update the Router

For you to check for new firmware, the router must be connected to the Internet.

To check for new firmware and update your router:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Firmware Update**
   The Firmware Update page displays.
5. Click the **Check** button.
   The router detects new firmware if any is available and displays a message asking if you want to download and install it.
6. To download and install the new firmware, click the **Yes** button.
   The router locates the firmware, downloads it, and begins the update.

   WARNING: To avoid the risk of corrupting the firmware, do not interrupt the update. For example, do not close the browser, click a link, or load a new page. Do not turn off the router. Wait until the router finishes restarting and the Power LED turns solid white.

   A progress bar might show the progress of the firmware upload process. The firmware upload process takes several minutes. When the upload is complete, your router restarts.

7. Verify that the router is running the new firmware version:
   a. Launch a web browser from a computer or mobile device that is connected to the network.
   b. Enter **http://www.routerlogin.net**.
      A login window opens.
   c. Enter the router user name and password.
      The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
      The BASIC Home page displays. The firmware version is stated in the top right, under the **Logout** button.

8. Read the new firmware release notes to determine whether you must reconfigure the router after updating.

Manually Upload New Firmware and Update the Router

Downloading firmware and updating the router are two separate tasks that are combined in the following procedure.

To download new firmware manually and update your router:

1. Visit downloadcenter.netgear.com, locate the support page for your product, and download the new firmware.
2. Read the new firmware release notes to determine whether you must reconfigure the router after updating.
3. Launch a web browser from a computer or mobile device that is connected to the router network.
4. Enter **http://www.routerlogin.net**.
   A login window opens.
5. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
6. Select **ADVANCED > Administration > Firmware Update**.
   The Firmware Update page displays.
7. Locate and select the firmware file on your computer:
   a. Click the **Browse** (or **Choose File**) button.
   b. Navigate to the firmware file.

The file ends in `.chk`.

c. Select the firmware file.

8. Click the **Upload** button.

   WARNING: To avoid the risk of corrupting the firmware, do not interrupt the upload. For example, do not close the browser, click a link, or load a new page. Do not turn off the router. Wait until the router finishes restarting and the Power LED turns solid white.

   A progress bar might show the progress of the firmware upload process. The firmware upload process takes several minutes. When the upload is complete, your router restarts.

9. Verify that the router runs the new firmware version:
   a. Launch a web browser from a computer or mobile device that is connected to the router network.
   b. Enter **http://www.routerlogin.net**.
      A login window opens.
   c. Enter the router user name and password.
      The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
      The BASIC Home page displays. The version firmware is stated in the top right, under the **Logout** button.

Change the admin Password

You can change the default password that is used to log in to the router with the user name admin. This password is not the one that you use for WiFi access.

Note: Be sure to change the password for the user name admin to a secure password. The ideal password contains no dictionary words from any language and contains uppercase and lowercase letters, numbers, and symbols. It can be up to 30 characters.

To set the password for the user name admin:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Set Password**.
   The Set Password page displays.
5. Type the old password, and type the new password twice.
6. To be able to recover the password, select the **Enable Password Recovery** check box.
   We recommend that you enable password recovery.
7. If you enable password recovery, select two security questions and provide answers to them.
8. Click the **Apply** button.
   Your settings are saved.

Set Up Password Recovery

We recommend that you enable password recovery if you change the password for the router user name admin. Then you can recover the password if it is forgotten. This recovery process is supported in Internet Explorer, Firefox, and Chrome browsers but not in the Safari browser.

To set up password recovery:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Set Password**.
   The Set Password page displays.
5. Select the **Enable Password Recovery** check box.

6. Select two security questions and provide answers to them.
7. Click the **Apply** button.
   Your settings are saved.

Recover the admin Password

To recover your password:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Click the **Cancel** button.
   If password recovery is enabled, you are prompted to enter the serial number of the router.

   The serial number is on the router label.
4. Enter the serial number of the router.
5. Click the **Continue** button.
   A window opens requesting the answers to your security questions.
6. Enter the saved answers to your security questions.
7. Click the **Continue** button.
   A window opens and displays your recovered password.
8. Click the **Login again** button.
   A login window opens.
9. With your recovered password, log in to the router.

Manage the Configuration File of the Router

The configuration settings of the router are stored within the router in a configuration file. You can back up (save) this file to your computer or restore it.

Back Up the Settings

You can save a copy of the current configuration settings.

To back up the router's configuration settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Backup Settings**.
   The Backup Settings page displays.
5. Click the **Back Up** button.
6. Choose a location to store the file on your computer.
   The backup file ends in `.cfg`.
7. Follow the directions of your browser to save the file.

Restore the Settings

If you backed up the configuration file, you can restore the configuration from this file.

To restore configuration settings that you backed up:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.

The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Administration > Backup Settings**.
   The Backup Settings page displays.
5. Click the **Browse** button and navigate to and select the saved configuration file.
   The backup file ends in `.cfg`.
6. Click the **Restore** button.
   The configuration is uploaded to the router. When the restoration is complete, the router reboots. This process takes about two minutes.

   WARNING: To avoid the risk of corrupting the firmware, do not interrupt the restoration. For example, do not close the browser, click a link, or load a new page. Do not turn off the router. Wait until the router finishes restarting and the Power LED turns solid white.

Disable LED Blinking or Turn Off LEDs

The LEDs on the top panel of the router indicate activities and behavior. You can disable LED blinking for network communications, or turn off all LEDs except the Power LED.

To disable LED blinking or turn off the LEDs:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > LED Control Settings**.
   The LED Control Settings page displays.

   By default, the first radio button is selected, which allows standard LED behavior.

For more information about LEDs, see LEDs and Buttons on the Top Panel on page 14.

5. To disable blinking, select the **Disable blinking on Internet LED, LAN LED, Wireless LED and USB LED when data traffic is detected** radio button.
6. To turn off all LEDs except the Power LED, select the **Turn off all LEDs except Power LED** radio button.
7. Click the **Apply** button.

   Your settings are saved.

Return the Router to Its Factory Default Settings

Under some circumstances (for example, if you lost track of the changes that you made to the router settings or you move the router to a different network), you might want to erase the configuration and reset the router to factory default settings.

If you do not know the current IP address of the router, first try to use an IP scanner application to detect the IP address before you reset the router to factory default settings.

To reset the router to factory default settings, you can use either the **Reset** button on the back of the router or the Erase function. However, if you cannot find the IP address or lost the password to access the router, you must use the **Reset** button.

After you reset the router to factory default settings, the user name is admin, the password is password, the LAN IP address is 192.168.1.1 (which is the same as www.routerlogin.net), and the DHCP server is enabled. For a list of factory default settings, see Factory Settings on page 223.

Use the Reset Button

CAUTION: This process erases all settings that you configured in the router.

To reset the router to factory default settings:

1. On the back of the router, locate the **Reset** button.
2. Using a straightened paper clip, press and hold the **Reset** button for at least five seconds.
3. Release the **Reset** button.

The Power LED starts blinking amber and the configuration is reset to factory default settings. When the reset is complete, the router reboots. This process takes about two minutes.

WARNING: To avoid the risk of corrupting the firmware, do not interrupt the reset. For example, if you are connected to the router's web page, do not close the browser, click a link, or load a new page. Do not turn off the router. Wait until the router finishes restarting and the Power LED turns solid white.

Erase the Settings

CAUTION: This process erases all settings that you configured in the router.

To erase the settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Backup Settings**.
   The Backup Settings page displays.
5. Click the **Erase** button.
   The configuration is reset to factory default settings. When the reset is complete, the router reboots. This process takes about two minutes.

   WARNING: To avoid the risk of corrupting the firmware, do not interrupt the reset. For example, do not close the browser, click a link, or load a new page. Do not turn off the router. Wait until the router finishes restarting and the Power LED turns solid white.

View the Status and Statistics of the Router

You can view information about the router and its ports and the status of the Internet connection and WiFi network. In addition, you can view traffic statistics for the various ports.

View Information About the Router and the Internet and WiFi Settings

You can view router information, the Internet port status, and WiFi settings.

To view information about the router and the Internet, modem, and WiFi settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.
   The information on this page uses the following color coding:
   - A green flag indicates that the Internet connection is fine and no problems exist. For a WiFi network, the network is enabled and secured.
   - A red X indicates that configuration problems exist for the Internet connection or the connection is down. For a WiFi network, the network is disabled or down.
   - An amber exclamation mark indicates that the Internet port is configured but cannot get an Internet connection (for example, because the cable is disconnected), that a WiFi network is enabled but unprotected, or that another situation that requires your attention occurred.

Display Internet Port Statistics

To display Internet port statistics:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.
5. In the Internet Port pane, click the **Show Statistics** button.
   The Show Statistics window opens.
   The following information displays:

   - **System Up Time**. The time elapsed since the router was last restarted.
   - **Port**. The statistics for the WAN (Internet), LAN (Ethernet) ports, and WLAN (WiFi) ports. For each port, the pop-up window displays the following information:
     - **Status**. The link status of the port.
     - **TxPkts**. The number of packets transmitted on the port since reset or manual clear.
     - **RxPkts**. The number of packets received on the port since reset or manual clear.
     - **Collisions**. The number of collisions on the port since reset or manual clear.
     - **Tx B/s**. The number of Bytes per second transmitted on the port since reset or manual clear. For this information, the LAN ports are treated as a single port.
     - **Rx B/s**. The number of Bytes per second received on the port since reset or manual clear. For this information, the LAN ports are treated as a single port.
     - **Up Time**. The time elapsed since the port acquired the link.
     - **Poll Interval**. The interval at which the statistics are updated in this window.

6. To change the polling frequency, enter a time in seconds in the **Poll Interval** field and click the **Set Interval** button.
7. To stop the polling entirely, click the **Stop** button.

Check the Internet Connection Status

To check the Internet connection status:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.
5. In the Internet Port pane, click the **Connection Status** button.
6. To release (stop) the Internet connection, click the **Release** button.
7. To renew (restart) the Internet connection, click the **Renew** button.
8. To close the window, click the **Close Window** button.

Manage the Activity Log

The log is a detailed record of the websites that users on your network accessed or attempted to access and many other router actions. Up to 256 entries are stored in the log. You can manage which activities are logged.

View, Email, or Clear the Logs

In addition to viewing the logs, you can email them and clear them.

To view, email, or clear the logs:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Logs**.
   The Logs page displays the following information:
5. To refresh the log entries onscreen, click the **Refresh** button.
6. To clear the log entries, click the **Clear Log** button.
7. To email the log immediately, click the **Send Log** button.
   The router emails the logs to the address that you specified (see Set Up Security Event Email Notifications on page 74).

Specify Which Activities Are Logged

You can specify which activities are logged. These activities display in the log and are forwarded to the syslog server if you enabled the syslog server function.

To manage which activities are logged:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Logs**.
   The Logs page displays.
5. Select the check boxes that correspond to the activities that you want to be logged.
   By default, all check boxes are selected.
6. Clear the check boxes that correspond to the activities that you do not want to be logged.
7. Click the **Apply** button.
   Your settings are saved.

View Devices Currently on the Network

You can view the active wired and WiFi devices in both the network to which the router is connected and the router network. If you do not recognize a WiFi device, it might be an intruder.

To display the wired and WiFi devices:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **Attached Devices**.
   The Attached Devices page displays.
   Wired devices are connected to the router with Ethernet cables. WiFi devices are connected to the router through the WiFi network, in either the 2.4 GHz band or one of the 5 GHz bands.

The following table describes the fields that can be displayed.

Field	Description
Status	The status of the device in the network (Allowed or Blocked).
SSID	The name of the WiFi network to which the device is connected.
IP Address	The IP address that the router assigned to the device when it joined the network. This address can change when a device is disconnected and rejoins the network.
MAC Address	The unique MAC address. The MAC address does not change and is usually shown on the product label.
Device Name	The device name, if detected.
Connection Type	The type of connection for the device.

5. To refresh the information onscreen, click the **Refresh** button.
   The information onscreen is updated.

Monitor and Meter Internet Traffic

Traffic metering allows you to monitor the volume of Internet traffic that passes through the router Internet port. With the traffic meter utility, you can set limits for traffic volume, set a monthly limit, and get a live update of traffic usage.

Start the Traffic Meter Without Traffic Volume Restrictions

You can monitor the traffic volume without setting a limit.

To start or restart the traffic meter without configuring traffic volume restrictions:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Traffic Meter**.
   The Traffic Meter page displays.
5. Select the **Enable Traffic Meter** check box.
   By default, no traffic limit is specified and the traffic volume is not controlled.
6. In the Traffic Counter section, set the traffic counter to begin at a specific time and date.
7. To start the traffic counter immediately, click the **Restart Counter Now** button.
8. Click the **Apply** button.
   Your settings are saved and the router restarts.

   The Internet Traffic Statistics section helps you to monitor the data traffic. For more information, see View the Internet Traffic Volume and Statistics on page 169.

View the Internet Traffic Volume and Statistics

If you enabled the traffic meter (see Start the Traffic Meter Without Traffic Volume Restrictions on page 168), you can view the Internet traffic volume and statistics.

To view the Internet traffic volume and statistics shown by the traffic meter:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Traffic Meter**.
   The Traffic Meter page displays.
5. Scroll down to the Internet Traffic Statistics section.
   The Internet Traffic Statistics section displays when the traffic counter was started and what the traffic balance is. The table displays information about the connection time and traffic volume in MB.
6. To refresh the information onscreen, click the **Refresh** button.
   The information is updated.

7. To display more information about the data traffic and to change the polling interval, click the **Traffic Status** button.

   The Traffic Status pop-up window displays.

Restrict Internet Traffic by Volume

You can record and restrict the traffic by volume in MB. This is useful when your ISP measures your traffic in volume.

To record and restrict the Internet traffic by volume:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Traffic Meter**.

   The Traffic Meter page displays.
5. Select the **Enable Traffic Meter** check box.
6. Select the **Traffic volume control by** radio button.
7. From the corresponding menu, select an option:

   - **Download only**. The restriction is applied to incoming traffic only.
   - **Both Directions**. The restriction is applied to both incoming and outgoing traffic.
8. In the **Monthly Limit** field, enter how many MBytes (MB) per month are allowed.
9. If your ISP charges you for extra data volume when you make a new connection, enter the extra data volume in MB in the **Round up data volume for each connection by** field.
10. In the Traffic Counter section, set the traffic counter to begin at a specific time and date.
11. In the Traffic Control section, enter a value in minutes to specify when the router issues a warning message before the monthly limit in hours is reached.

    This setting is optional. The router issues a warning when the balance falls below the number of minutes that you enter. By default, the value is 0 and no warning message is issued.

12. Select one or more of the following actions to occur when the limit is reached:
    - **Turn the Internet LED to flashing white/amber**. This setting is optional. When the traffic limit is reached, the Internet LED blinks alternating white and amber.
    - **Disconnect and disable the Internet connection**. This setting is optional. When the traffic limit is reached, the Internet connection is disconnected and disabled.
13. Click the **Apply** button.

    Your settings are saved and the router restarts.

    The Internet Traffic Statistics section helps you to monitor the data traffic. For more information, see View the Internet Traffic Volume and Statistics on page 169.

Restrict Internet Traffic by Connection Time

You can record and restrict the traffic by connection time. This is useful when your ISP measures your connection time.

To record and restrict the Internet traffic by connection time:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.
3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Traffic Meter**.

   The Traffic Meter page displays.
5. Select the **Enable Traffic Meter** check box.
6. Select the **Connection time control** radio button.

   Note: The router must be connected to the Internet for you to be able to select the **Connection time control** radio button.
7. In the **Monthly Limit** field, enter how many hours per month are allowed.

   Note: The router must be connected to the Internet for you to be able to enter information in the **Monthly Limit** field.

8. In the Traffic Counter section, set the traffic counter to begin at a specific time and date.
9. In the Traffic Control section, enter a value in minutes to specify when the router issues a warning message before the monthly limit in hours is reached.

   This setting is optional. The router issues a warning when the balance falls under the number of minutes that you enter. By default, the value is 0 and no warning message is issued.

10. Select one or more of the following actions to occur when the limit is reached:

    - **Turn the Internet LED to flashing white/amber**. This setting is optional. When the traffic limit is reached, the Internet LED alternates blinking white and amber.
    - **Disconnect and disable the Internet connection**. This setting is optional. When the traffic limit is reached, the Internet connection is disconnected and disabled.

11. Click the **Apply** button.

    Your settings are saved and the router restarts.

    The Internet Traffic Statistics section helps you to monitor the data traffic. For more information, see View the Internet Traffic Volume and Statistics on page 169.

Unblock the Traffic Meter After the Traffic Limit Is Reached

If you configured the traffic meter to disconnect and disable the Internet connection after the traffic limit is reached, you cannot access the Internet until you unblock the traffic meter.

CAUTION: If your ISP set a traffic limit, your ISP might charge you for the overage traffic.

To unblock the traffic meter:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window opens.

3. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Traffic Meter**.

   The Traffic Meter page displays.

5. In the Traffic Control section, clear the **Disconnect and disable the Internet connection** check box.
6. Click the **Apply** button.
   Your settings are saved and the router restarts.

13

Manage the Advanced WiFi Features

This chapter describes how you can manage the advanced WiFi features of the router. For information about the basic WiFi settings, see Manage the Basic WiFi Network Settings on page 76.

The chapter includes the following sections:

- Set Up a WiFi Schedule on page 175
- Manage the WPS Settings on page 176
- Manage Advanced WiFi Settings on page 177
- Specify How the Router Manages WiFi Clients on page 178
- Set Up a WiFi Bridge Between the Router and Another Device on page 180
- Use the Router as a WiFi Access Point Only on page 183

For information about setting up an access control list (ACL) and managing WiFi access for enhanced security, see Manage Network Access Control Lists on page 62.

Set Up a WiFi Schedule

You can use this feature to turn off the WiFi signal from your router at times when you do not need a WiFi connection. For example, you might turn it off for the weekend if you leave town. You can set up a separate WiFi schedule for each WiFi band.

Note: You can set up a WiFi schedule only if the router is connected to the Internet and synchronizes its internal clock with a time server on the Internet. For more information about whether the router synchronizes its clock, see Set Up a Schedule for Keyword Blocking and Outbound Firewall Rules on page 73.

To set up the WiFi schedule for a WiFi band:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. In the Advanced Wireless Settings section for the 2.4 GHz band or the 5 GHz band, click the **Add a new period** button.
   The When to turn off wireless signal page displays.
6. Use the menus, radio buttons, and check boxes to set up a period during which you want to turn off the WiFi signal and specify whether the schedule is recurrent.
7. Click the **Apply** button.
   The Advanced Wireless Settings page displays.
8. Select the **Turn off wireless signal by schedule** check box to activate the schedule.
9. Click the **Apply** button.
   Your settings are saved.

Manage the WPS Settings

Wi-Fi Protected Setup (WPS) lets you join the WiFi network without typing the WiFi password. You can change the WPS default settings.

To manage WPS settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. Scroll down to the WPS Settings section in the lower part of the page.
   The Router's PIN field displays the fixed PIN that you use to configure the router's WiFi settings from another platform through WPS.
6. To disable the PIN, clear the **Enable Router's PIN** check box.
   By default, the **Enable Router's PIN** check box is selected and the router's PIN is enabled. For enhanced security, you can disable the router's PIN by clearing the **Enable Router's PIN** check box. However, when you disable the router's PIN, WPS is not disabled because you can still use the physical **WPS** button.

   Note: The PIN function might temporarily be disabled automatically if the router detects suspicious attempts to break into the router's WiFi settings by using the router's PIN through WPS. You can configure the number of times a failed PIN connection is allowed before the PIN function is disabled.
7. To allow the WiFi settings to be changed automatically when you use WPS, clear one or both of the **Keep Existing Wireless Settings** check boxes.
   By default, both **Keep Existing Wireless Settings** check boxes are selected. We recommend that you leave these check boxes selected. If you clear a check box, the next time a new WiFi client uses WPS to connect to the router, the router's associated WiFi settings change to an automatically generated random SSID and passphrase.

For information about viewing this SSID and passphrase, see View or Change the Basic WiFi Settings and WiFi Security Settings on page 77.

Clear a **Keep Existing Wireless Settings** check box only if you want to allow the WPS process to change the associated SSID and passphrase for WiFi access.

WARNING: If you clear a **Keep Existing Wireless Settings** check box and use WPS to add a computer or mobile device to the router's WiFi network, the associated SSID and passphrase are automatically generated and other WiFi devices that are already connected to the router's WiFi network might be disconnected.

8. Click the **Apply** button.
   Your settings are saved.

Manage Advanced WiFi Settings

For most WiFi networks, the advanced WiFi settings work fine and you do not need to change the settings.

Tip: If you want to change the WiFi settings of the router's main network, use a wired connection to avoid being disconnected when the new WiFi settings take effect.

To manage the advanced WiFi settings:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. Enter the settings as described in the following table.
   The descriptions in the table apply to both the Wireless Network (2.4GHz b/g/n) section and the Wireless Network (5GHz a/n/ac) section.

Field	Description
Fragmentation Length (256-2346)	The fragmentation length (the default is 2346), the CTS/RTS threshold (the default is 2347), and the preamble mode (the default is Long Preamble) are reserved for WiFi testing and advanced configuration only. Do not change these settings unless directed by NETGEAR support or unless you are sure what the consequences are. Incorrect settings might disable the WiFi function of the router unexpectedly.
CTS/RTS Threshold (1-2347)	
Preamble Mode	

6. Click the **Apply** button.
   Your settings are saved.

Specify How the Router Manages WiFi Clients

A WiFi client is any computer or mobile device that connects to the router's WiFi network. The router uses airtime fairness, implicit beamforming, and MU-MIMO to manage its WiFi clients. Airtime fairness and implicit beamforming are enabled by default, but you can disable them. MU-MIMO is disabled by default, but you can enable it.

Manage Airtime Fairness

Airtime fairness ensures that all clients receive equal time on the network. Network resources are divided by time, so if five clients are connected, they each get one-fifth of the network time. The advantage of this feature is that your slowest clients do not control network responsiveness. This feature is enabled by default, but you can disable it.

To disable airtime fairness:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.

The Advanced Wireless Settings page displays.

5. Scroll to the bottom of the page and clear the **Enable AIRTIME FAIRNESS** check box.
6. Click the **Apply** button.
   Your settings are saved.

   If you connected over WiFi to the network, you are disconnected from the network and must reconnect.

Manage Implicit Beamforming

Implicit beamforming contrasts with explicit beamforming, which means that the router actively tracks clients and directs power to the router antenna closest to the client. Explicit beamforming works whether or not the client supports beamforming. Implicit beamforming means that the router can use information from client devices that support beamforming to improve the WiFi signal. This feature is enabled by default, but you can disable it.

To disable implicit beamforming:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. Scroll to the bottom of the page and clear the **Enable Implicit BEAMFORMING** check box.
6. Click the **Apply** button.
   Your settings are saved.

   If you connected over WiFi to the network, you are disconnected from the network and must reconnect.

Manage MU-MIMO

Multiuser multiple input, multiple output (MU-MIMO) improves performance when multiple MU-MIMO-capable WiFi clients transfer data at the same time. WiFi clients must support MU-MIMO, and they must be connected to a 5 GHz WiFi band. This feature is disabled by default, but you can enable it.

To enable MU-MIMO:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.
   The Advanced Wireless Settings page displays.
5. Scroll to the bottom of the page and select the **Enable MU-MIMO** check box.
6. Click the **Apply** button.
   Your settings are saved.
   If you connected over WiFi to the network, you are disconnected from the network and must reconnect.

Set Up a WiFi Bridge Between the Router and Another Device

You can use the router as a WiFi bridge and connect multiple devices with WiFi, for example, at the faster 802.11ac speed. To do this, you need another WiFi router or access point (AP) in addition to the router: One device is connected to the Internet over a DSL or cable modem and the other one functions as a WiFi bridge. You can connect the router to the Internet modem and use the router or AP as a WiFi bridge (assuming that the router or AP is capable of functioning as a WiFi bridge), or the other way around—connect the router or AP to the Internet modem, and use the router as a WiFi bridge.

Setting up a WiFi bridge with two routers offers the following benefits:

- You can take advantage of gigabit WiFi speeds on current devices.
- Use gigabit WiFi for applications such as video and gaming.
- Connect multiple devices such as a NAS, Smart TV, NeoTV, Blu-ray player, and game consoles at gigabit WiFi speeds using a WiFi link.
- Avoid the need for separate WiFi adapters for each device.

For example, you could install the first router in a room such as a home office where your Internet connection is located.

Then set up the second router as a WiFi bridge and place it in a different room such as the room where your home entertainment center is located. Cable the router that functions as a WiFi bridge to your Smart TV, DVR, game console, or Blu-ray player, and use its 802.11ac WiFi connection to the first router.

The router that is connected to the Internet modem does not require any special setup because the router that functions as a WiFi bridge connects to an existing SSID as a WiFi client, just like any other WiFi clients.

To set up the router as a WiFi bridge:

1. Make a note of the WiFi settings of the other router that is connected to the Internet modem.

   You must know the SSID, WiFi security mode, WiFi password, and operating frequency (either 2.4 GHz or 5 GHz).

2. Launch a web browser from a computer or mobile device that is connected to the network of the router that you are setting up as a WiFi bridge.
3. Enter **http://www.routerlogin.net**.

   A login window opens.

4. Enter the router user name and password.

   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.

   The BASIC Home page displays.

5. Select **ADVANCED > Advanced Setup > Advanced Wireless Settings**.

   The Advanced Wireless Settings page displays.

6. Scroll to the very bottom and select the **Use other operation mode** check box.
7. Select the **Enable Bridge mode** radio button.

   The bridge mode settings displays on the page.

8. Click the **setup bridge mode wireless settings** button.

The Wireless Settings page displays.

9. Enter the WiFi settings of the router that is connected to the Internet modem (that is, the *other* router):
   a. From the **Choose a Wireless Network** menu, select the WiFi band that the other router.
      For 802.11ac mode, both routers must use the same 5 GHz band.
   b. In the **Name (SSID)** field, enter the WiFi network name (SSID) that the other router is using.
   c. In the Security Options section, select the radio button for the WiFi security that the other router is using.
   d. If prompted, type the passphrase (the WiFi password that you must use to connect with WiFi to the other router).

10. Click the **Apply** button.
    Your settings are saved and the pop-up window closes.

11. To change the name of the router, enter a new name in the **Device Name** field.
    By default, the device name is the router model. If you set up the router as a WiFi bridge and you want to distinguish it from the name of the router that is connected to the Internet modem, you could, for example, change the name to *WiFi bridge* or something similar.

12. To let the router that functions as the WiFi bridge get an IP address and DNS addresses dynamically from the router that is connected to the Internet modem, leave the **Get IP Address Dynamically** and **Get DNS Server Address Dynamically** check boxes selected.
    We recommend that you leave the **Get IP Address Dynamically** and **Get DNS Server Address Dynamically** check boxes selected. However, if you are sure that you must use a static IP address, us an IP address from the LAN IP address pool of the router that is connected to the Internet modem. To specify a static IP address for the router that functions as the WiFi bridge, do the following:
    a. Clear the **Get IP Address Dynamically** check box.
       The **Get DNS Server Address Dynamically** check box is automatically cleared.
    b. Enter all static IP address information and, if applicable, static DNS address information.

13. Click the **Apply** button.
    Your settings are saved. The router restarts with a new IP address.

14. To reconnect, close your browser, relaunch it, and log in to the router by entering **http://www.routerlogin.net**.

    When the router functions as a WiFi bridge, you cannot change its WiFi settings, that is, the settings on the Wireless Network page (**BASIC > Wireless**) are masked out. However, if you want to reverse the configuration, you can disable the WiFi bridge option (that is, clear the **use other operation mode** check box) on the Advanced Wireless Settings page (**ADVANCED > Advanced Setup > Advanced Wireless Settings**).

Use the Router as a WiFi Access Point Only

By default, the router functions as both a router and a WiFi access point (AP). You can set up the router to function as an access point only and let it operate in the same local network as another router. When the router functions as an access point only, many of its router-related features are disabled.

Tip: If you want to change the router's function, use a wired connection to avoid being disconnected when the new function takes effect.

To change the router to access point mode only:

1. Use an Ethernet cable to connect the yellow Internet port on the rear panel of the router to a LAN port on the other router.
2. Launch a web browser from a computer or mobile device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.

   A login window opens.
4. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
5. Select **ADVANCED > Advanced Setup > Wireless Access Point**.

   The Wireless Access Point page displays.
6. Select the **Enable Access Point Mode** check box.

   The page expands.
7. Scroll down and select the radio button for the IP address setting that you want to use:

- **Get dynamically from existing router**. The other router on the network assigns an IP address to the router while the router functions in access point mode. This is the default setting.
- **Use fixed IP Address (not recommended)**. Use this setting if you want to manually assign a specific IP address to the router while it functions in access point mode. Using this option effectively requires network experience.

Note: To avoid interference with other routers or gateways on your network, we recommend that you use different WiFi settings on each router. You can also turn off the WiFi radio on the other router or gateway and use the router only for WiFi client access.

8. Click the **Apply** button.
   The IP address of the router changes, and you are disconnected.
9. To reconnect, close and restart your web browser and enter **http://www.routerlogin.net**.

14

Use VPN to Access Your Network

You can use OpenVPN software to remotely access your router using virtual private networking (VPN). This chapter explains how to set up and use VPN access.

The chapter includes the following sections:

- Set Up a VPN Connection on page 186
- Use a VPN Tunnel on a Windows-Based Computer on page 193
- Use VPN to Access the Router's USB Device and Media From a Windows-Based Computer on page 195
- Use a VPN Tunnel to Access Your Internet Service at Home on page 197

Set Up a VPN Connection

A virtual private network (VPN) lets you use the Internet to securely access your network when you aren't home.

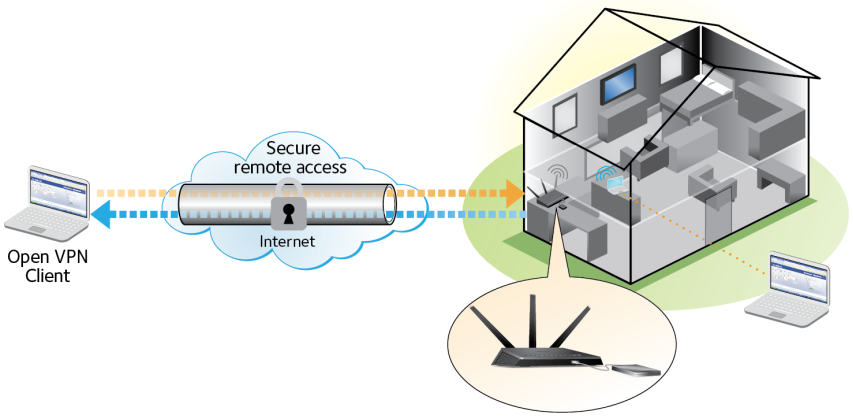


Figure 9. VPN provides a secure tunnel between your home network and a remote computer

This type of VPN access is called a client-to-gateway tunnel. The computer is the client, and the router is the gateway. To use the VPN feature, you must log in to the router and enable VPN, and you must install and run VPN client software on the computer.

VPN uses DDNS or a static IP address to connect with your router.

To use a DDNS service, register for an account with a host name (sometimes called a domain name). You use the host name to access your network. The router supports these accounts: NETGEAR, No-IP, and Dyn.

If your Internet service provider (ISP) assigned a static WAN IP address (such as 50.196.x.x or 10.x.x.x) that never changes to your Internet account, the VPN can use that IP address to connect to your home network.

Specify VPN Service in the Router

You must specify the VPN service settings in the router before you can use a VPN connection.

To specify the VPN service:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.

The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN page displays.
5. Select the **Enable VPN Service** check box.
6. To change the TUN mode service type, select the **UCP** or **TCP** radio button.
7. To change the TUN mode service port, type the port number that you want to use in the field.
   The default port number is 12973.
8. To change the TAP mode service type, select the **UCP** or **TCP** radio button.
9. To change the TAP mode service port, type the port number that you want to use in the field.
   The default port number is 12974.
10. Click the **Apply** button.
    Your settings are saved. VPN is enabled in the router, but you must install and set up OpenVPN software on your computer or mobile device before you can use a VPN connection.

Install OpenVPN Software on a Windows-Based Computer

You must install OpenVPN software on each computer that you plan to use for VPN connections to your router.

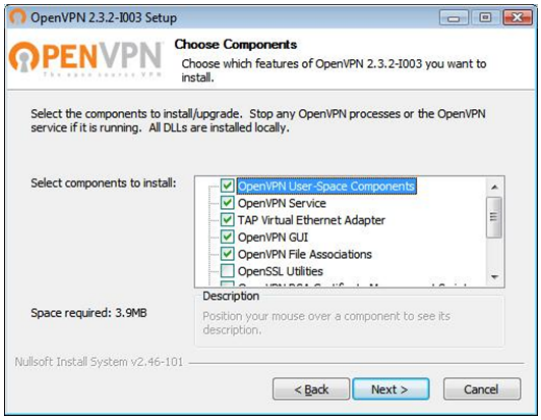
To install VPN client software on a Windows-based computer:

1. Launch a web browser from a computer or mobile device device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN Service page displays.

5. Make sure that the **Enable VPN Service** check box is selected.
   For more information, see Specify VPN Service in the Router on page 186.
6. Click the **For Windows** button to download the OpenVPN configuration files.
   Step 17 provides information about what to do with the downloaded OpenVPN configuration files.
7. To download the OpenVPN client utility, visit openvpn.net/index.php/download/community-downloads.html.
8. In the Windows Installer section of the page, double-click the **openVPN-install-xxx.exe** link.
9. Download the file.
10. To install the OpenVPN client utility on your computer, click the **openVPN-install-xxx.exe** file.

11. Click the **Next** button.
12. Read the License Agreement and click the **I Agree** button.

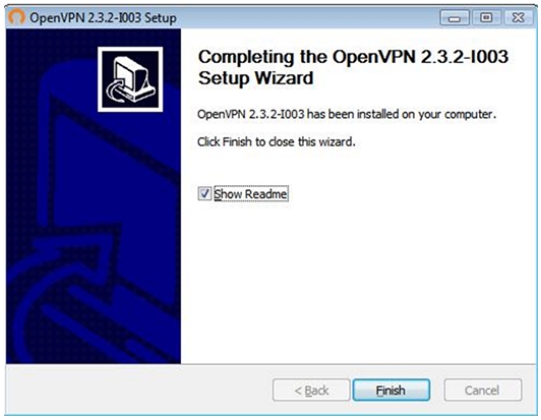


13. Leave the check boxes selected as shown in the previous figure, and click the **Next** button.

14. To specify the destination folder, click the **Browse** button, select a destination folder, and click the **Next** button.

15. Click the **Install** button.

    The window displays the progress of the installation and then displays the final installation window.



16. Click the **Finish** button.
17. Unzip the configuration files that you downloaded in Step 6 and copy them to the folder in which the OpenVPN client utility is installed on your computer.

    If your device is a Windows 64-bit system, the OpenVPN client utility is installed by default in the `C:\Program files\OpenVPN\config\` folder.

18. Modify the VPN interface name to **NETGEAR-VPN**:
    a. In Windows, select **Start > Control Panel > Network and Internet > Network Connections** (or **Network and Sharing Center**).

       The network information displays.

    b. In the local area connection list, find the local area connection with the device name **TAP-Windows Adapter**.
    c. Select the local area connection and change its name (not its device name) to **NETGEAR-VPN**.

    If you do not change the VPN interface name, the VPN tunnel connection will fail.

For more information about using OpenVPN on a Windows-based computer, visit openvpn.net/index.php/open-source/documentation/howto.html#quick.

Install OpenVPN Software on a Mac Computer

You must install Open VPN software on each computer that you plan to use for VPN connections to your router.

To install VPN client software on a Mac computer:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN Service page displays.
5. Make sure that the **Enable VPN Service** check box is selected.
   For more information, see Specify VPN Service in the Router on page 186.
6. Click the **For non-Windows** button to download the OpenVPN configuration files.
   Step 9 provides information about what to do with the downloaded OpenVPN configuration files.
7. To download the OpenVPN client utility for Mac OS X, visit https://tunnelblick.net/.
8. Download and install the file.
9. Unzip the configuration files that you downloaded in Step 6 and copy them to the folder in which the OpenVPN client utility is installed on your computer.
   The client utility must be installed by a user with administrative privileges.

For more information about using OpenVPN on a Mac computer, visit openvpn.net/index.php/access-server/docs/admin-guides/183-how-to-connect-to-access-server-from-a-mac.html.

Install OpenVPN Software on an iOS Device

You must install this software on each iOS device that you plan to use for VPN connections to your router.

To install VPN client software on an iOS device:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN Service page displays.
5. Make sure that the **Enable VPN Service** check box is selected.
6. Specify any VPN service settings on the page.
   For more information, see Specify VPN Service in the Router on page 186.
7. Click the **For Smart Phone** button to download the OpenVPN configuration files.
8. On your iOS device, download and install the OpenVPN Connect app from the Apple app store.
9. On your computer, unzip the configuration files that you downloaded and send the files to your iOS device.
   Note that when you open the `.ovpn` file, a list of apps displays. Select the OpenVPN Connect app to open the `.ovpn` file.
   For more information about using OpenVPN on your iOS device, visit http://www.vpngate.net/en/howto_openvpn.aspx#ios.

Install OpenVPN Software on an Android Device

You must install this software on each Android device that you plan to use for VPN connections to your router.

To install VPN client software on an Android device:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN Service page displays.
5. Make sure that the **Enable VPN Service** check box is selected.
6. Specify any VPN service settings on the page.
   For more information, see Specify VPN Service in the Router on page 186.
7. Click the **For Smart Phone** button to download the OpenVPN configuration files.
8. On your Android device, download and install the OpenVPN Connect app from the Google Play Store.
9. On your computer, unzip the configuration files that you downloaded and send the files to your Android device.
10. Open the files on your Android device.
11. Open the .ovpn file using the OpenVPN Connect app.
    For more information about using OpenVPN on your Android device, visit http://www.vpngate.net/en/howto_openvpn.aspx#android.

Use a VPN Tunnel on a Windows-Based Computer

After you set up the router to use VPN and install the OpenVPN application on your computer, you can open a VPN tunnel from your computer to your router over the Internet.

For the VPN tunnel to work, the local LAN IP address of the remote router must use a different LAN IP scheme from that of the local LAN where your VPN client computer is connected. If both networks use the same LAN IP scheme, when the VPN tunnel is established, you cannot access your home router or your home network with the OpenVPN software.

The default LAN IP address scheme for the router is 192.x.x.x. The most common IP schemes are 192.x.x.x, 172.x.x.x, and 10.x.x.x. If you experience a conflict, change the IP scheme either for your home network or for the network with the client VPN computer. For information about changing these settings, see Manage the LAN IP Address Settings on page 139.

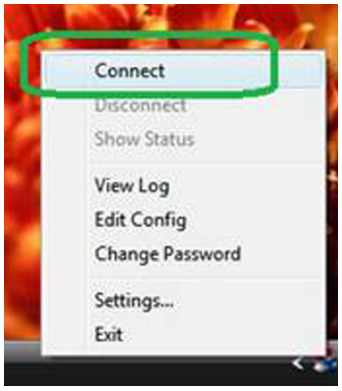
To open a VPN tunnel:

1. Launch the OpenVPN application with administrator privileges.

   The **OpenVPN** icon displays in the Windows taskbar.

   Tip: You can create a shortcut to the VPN program, then use the shortcut to access the settings and select the **run as administrator** check box. Then every time you use this shortcut, OpenVPN automatically runs with administrator privileges.

2. Right-click the **OpenVPN** icon.



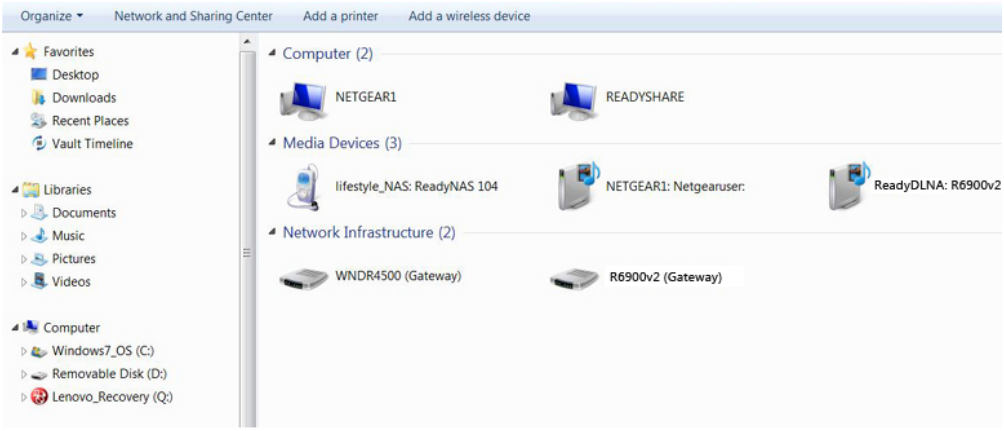
3. Select **Connect**.
   The VPN connection is established. You can do the following:

   - Launch a web browser and log in to your router.
   - Use Windows file manager to access the router's USB device and download files.

Use VPN to Access the Router's USB Device and Media From a Windows-Based Computer

To access a USB device and download files:

1. In Windows file manager, select the **Network** folder.



   The network resources display. The **ReadySHARE** icon is in the Computer section and the remote **ReadyDLNA: R6900v2** icon is in the Media Devices section (if DLNA is enabled in the router).

2. If the icons do not display, click the **Refresh** button to update the page.

   If the local LAN and the remote LAN are using the same IP scheme, the remote **ReadyDLNA: R6900v2** icon does not display in the Media Devices section and the **R6900v2 (Gateway)** icon does not display in the Network Infrastructure section.

3. To access the USB device, click the **ReadySHARE** icon.
4. To access media on the router's network, click the **ReadyDLNA: R6900v2** icon.

Use VPN to Access Your Internet Service at Home

When you are away from home and you access the Internet, you usually use a local Internet service provider. For example, at a coffee shop you might be given a code that lets you use the coffee shop's Internet service account to surf the web.

The router lets you use a VPN connection to access your own Internet service when you are away from home. You might want to do this if you travel to a geographic location that does not support all the Internet services that you use at home. For example, your Netflix account might work at home but not in a different country.

Set Up VPN Client Internet Access in the Router

By default, the router is set up to allow VPN connections only to your home network, but you can change the settings to allow Internet access. Accessing the Internet remotely through a VPN might be slower than accessing the Internet directly.

To allow VPN clients to use your home Internet service:

1. Launch a web browser from a computer or mobile device device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VPN page displays.
5. Make sure that the **Enable VPN Service** radio button is selected.
   For information about configuring the TUN and TAP mode options, see Specify VPN Service in the Router on page 186.
6. Scroll down to the Clients will use this VPN connection to access section, and select the **All sites on the Internet & Home Network** radio button.
   When you access the Internet with the VPN connection, instead of using a local Internet service, you use the Internet service from your home network.

   Note: By default, the **Auto** radio button is selected, which lets the router use an automatic detection system that enables VPN access only for necessary services and sites and might not include full Internet access.
7. Click the **Apply** button.
   Your settings are saved.

Block VPN Client Internet Access in the Router

By default, the router is set up to allow VPN connections only to your home network, not to the Internet service for your home network. If you changed this setting to allow Internet access, you can change it back.

To allow VPN clients to access only your home network:

1. Launch a web browser from a computer or mobile device device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
   The VNP page displays.
5. Make sure that the **Enable VPN Service** radio button is selected.
6. Scroll down to the Clients will use this VPN connection to access section, and select the **Home Network only** radio button.
7. Click the **Apply** button.
   Your settings are saved.

Use a VPN Tunnel to Access Your Internet Service at Home

To access your Internet service:

1. Set up the router to allow VPN access to your Internet service.
   For more information, see Set Up VPN Client Internet Access in the Router on page 196.
2. On your computer, launch the OpenVPN application.
   For more information, see Specify VPN Service in the Router on page 186.
   The **OpenVPN** icon displays in the Windows taskbar.
3. Right-click the icon and select **Connect**.
4. When the VPN connection is established, launch your web browser.

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Manage Port Forwarding and Port Triggering

You can use port forwarding and port triggering to set up rules for Internet traffic for services and applications. You need networking knowledge to set up these features.

This chapter includes the following sections:

- Manage Port Forwarding to a Local Server for Services and Applications on page 199
- Manage Port Triggering for Services and Applications on page 204

Manage Port Forwarding to a Local Server for Services and Applications

If a server is part of your network, you can allow certain types of incoming traffic to reach the server. For example, you might want to make a local web server, FTP server, or game server visible and available to the Internet.

The router can forward incoming traffic with specific protocols to computers on your local network. You can specify the servers for applications and you can also specify a default DMZ server to which the router forwards all other incoming protocols (see Set Up a Default DMZ Server on page 135).

Forward Incoming Traffic for a Default Service or Application

You can forward traffic for a default service or application to a computer on your network.

To forward incoming traffic for a default service or application:

1. Decide which type of service, application, or game you want to provide.
2. Find the local IP address of the computer on your network that will provide the service.

   The server computer must always receive the same IP address. To specify this setting, use the reserved IP address feature. See Manage Reserved LAN IP Addresses on page 143.
3. Launch a web browser from a computer or mobile device that is connected to the router network.
4. Enter **http://www.routerlogin.net**.

   A login window opens.
5. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
6. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.

   The Port Forwarding / Port Triggering page displays.
7. Make sure that the **Port Forwarding** radio button is selected.
8. From the **Service Name** menu, select the service or application.

If the service or application that you want to add is not in the list, create a port forwarding rule with a custom service or application (see Add a Port Forwarding Rule With a Custom Service or Application on page 200).

9. In the **Internal IP Address** field, enter the IP address of the computer that must provide the service or that runs the application.
10. Click the **Add** button.

    Your settings are saved and the rule is added to the table.

Add a Port Forwarding Rule With a Custom Service or Application

The router lists default services and applications that you can use in port forwarding rules. If the service or application is not predefined, you can add a port forwarding rule with a custom service or application.

To add a port forwarding rule with a custom service or application:

1. Find out which port number or range of numbers the service or application uses.

   You can usually find this information by contacting the publisher of the service or application or through user groups or news groups.

2. Launch a web browser from a computer or mobile device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.

   A login window opens.

4. Enter the router user name and password.

   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.

5. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.

   The Port Forwarding / Port Triggering page displays.

6. Make sure that the **Port Forwarding** radio button is selected.
7. Click the **Add Custom Service** button.

   The Ports - Custom Services page displays.

8. Specify a new port forwarding rule with a custom service or application as described in the following table.

Field	Description
Service Name	Enter the name of the custom service or application.
Service Type	Select the protocol (**TCP** or **UDP**) that is associated with the service or application. If you are unsure, select **TCP/UDP**.
External port range	If the service or application uses a single port, enter the port number in the **External port range** field. If the service or application uses a range or ranges of ports, specify the range in the **External port range** field. Specify one range by using a dash between the port numbers. Specify multiple ranges by separating the ranges with commas.
Internal port range	Specify the internal port or ports by one of these methods: • If the external and internal port or ports are identical, leave the **Use the same port range for Internal port** check box selected. • If the service or application uses a single port, enter the port number in the **Internal port range** field. • If the service or application uses a range or ranges of ports, specify the range in the **Internal port range** field. Specify one range by using a dash between the port numbers. Specify multiple ranges by separating the ranges with commas.
Internal IP address	Either enter an IP address in the **Internal IP address** field or select the radio button for an attached device that is listed in the table.

9. Click the **Apply** button.
   Your settings are saved. The rule is added to the table on the Port Forwarding / Port Triggering page.

Change a Port Forwarding Rule

You can change an existing port forwarding rule.

To change a port forwarding rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Make sure that the **Port Forwarding** radio button is selected.
6. In the table, select the radio button for the service or application name.
7. Click the **Edit Service** button.
   The Ports - Custom Services page displays.
8. Change the settings.
   For information about the settings, see Add a Port Forwarding Rule With a Custom Service or Application on page 200.
9. Click the **Apply** button.
   Your settings are saved. The changed rule displays in the table on the Port Forwarding / Port Triggering page.

Remove a Port Forwarding Rule

You can remove a port forwarding rule that you no longer need.

To remove a port forwarding rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Make sure that the **Port Forwarding** radio button is selected.
6. In the table, select the radio button for the service or application name.
7. Click the **Delete Service** button.
   The rule is removed from the table.

Application Example: Make a Local Web Server Public

If you host a web server on your local network, you can use port forwarding to allow web requests from anyone on the Internet to reach your web server.

To make a local web server public:

1. Assign your web server either a fixed IP address or a dynamic IP address using DHCP address reservation.

   In this example, your router always gives your web server an IP address of 192.168.1.33.

2. On the Port Forwarding / Port Triggering page, configure the router to forward the HTTP service to the local address of your web server at **192.168.1.33**.

   HTTP (port 80) is the standard protocol for web servers.

3. (Optional) Register a host name with a Dynamic DNS service, and specify that name on the Dynamic DNS page of the router.

   Dynamic DNS makes it much easier to access a server from the Internet because you can enter the name in the web browser. Otherwise, you must know the IP address that the ISP assigned, which typically changes.

How the Router Implements the Port Forwarding Rule

The following sequence shows the effects of a port forwarding rule:

1. When you enter the URL www.example.com in your browser, the browser sends a web page request message with the following destination information:

   - **Destination address**. The IP address of www.example.com, which is the address of your router.
   - **Destination port number**. 80, which is the standard port number for a web server process.

2. The router receives the message and finds your port forwarding rule for incoming port 80 traffic.
3. The router changes the destination IP address in the message to 192.168.1.123 and sends the message to that computer.
4. Your web server at IP address 192.168.1.123 receives the request and sends a reply message to your router.

5. Your router performs Network Address Translation (NAT) on the source IP address and sends the reply through the Internet to the computer or mobile device device that sent the web page request.

Manage Port Triggering for Services and Applications

Port triggering is a dynamic extension of port forwarding that is useful in these cases:

- An application must use port forwarding to more than one local computer (but not simultaneously).
- An application must open incoming ports that are different from the outgoing port.

With port triggering, the router monitors traffic to the Internet from an outbound "trigger" port that you specify. For outbound traffic from that port, the router saves the IP address of the computer that sent the traffic. The router temporarily opens the incoming port or ports that you specify in your rule and forwards that incoming traffic to that destination.

Port forwarding creates a static mapping of a port number or range of ports to a single local computer. Port triggering can dynamically open ports to any computer when needed and close the ports when they are no longer needed.

Note: If you use applications such as multiplayer gaming, peer-to-peer connections, real-time communications such as instant messaging, or remote assistance, enable Universal Plug-N-Play (UPnP). See Improve Network Connections With Universal Plug-N-Play on page 56.

Add a Port Triggering Rule

The router does not provide default services and applications for port triggering rules. You must define a custom service or application for each port triggering rule.

To add a port triggering rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Select the **Port Triggering** radio button.
   The port triggering settings display.
6. Click the **Add Service** button.
   The Port Triggering Rule page displays.
7. Specify a new port triggering rule with a custom service or application as described in the following table.

Field	Description
Service	
Service Name	Enter the name of the custom service or application.
Service User	From the **Service User** menu, select **Any**, or select **Single address** and enter the IP address of one computer: • **Any**. This is the default setting and allows any computer on the Internet to use this service. • **Single address**. Restricts the service to a particular computer. Enter the IP address in the field that becomes available with this selection from the menu.
Service Type	Select the protocol (**TCP** or **UDP**) that is associated with the service or application.
Triggering Port	Enter the number of the outbound traffic port that must open the inbound ports.
Required Inbound Connection	
Service Type	Select the protocol (**TCP** or **UDP**) that is associated with the inbound connection. If you are unsure, select **TCP/UDP**.
Starting Port	Enter the start port number for the inbound connection.
Ending Port	Enter the end port number for the inbound connection.

8. Click the **Apply** button.
   Your settings are saved and the rule is added to the Port Triggering Portmap Table on the Port Forwarding / Port Triggering page.

Change a Port Triggering Rule

You can change an existing port triggering rule.

To change a port triggering rule:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Select the **Port Triggering** radio button.
   The port triggering settings display.
6. In the Port Triggering Portmap Table, select the radio button for the service or application name.
7. Click the **Edit Service** button.
   The Port Triggering Rule page displays.
8. Change the settings.
   For information about the settings, see Add a Port Triggering Rule on page 204.
9. Click the **Apply** button.
   Your settings are saved. The changed rule displays in the Port Triggering Portmap Table on the Port Forwarding / Port Triggering page.

Remove a Port Triggering Rule

You can remove a port triggering rule that you no longer need.

To remove a port triggering rule:

1. Launch a web browser from a computer or mobile that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.

3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Select the **Port Triggering** radio button.
   The port triggering settings display.
6. In the Port Triggering Portmap Table, select the radio button for the service or application name.
7. Click the **Delete Service** button.
   The rule is removed from the Port Triggering Portmap Table.

Specify the Time-Out for Port Triggering

The time-out period for port triggering controls how long the inbound ports stay open when the router detects no activity. A time-out period is required because the router cannot detect when the service or application terminates.

To specify the time-out for port triggering:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Select the **Port Triggering** radio button.
   The port triggering settings display.
6. In the **Port Triggering Time-out** field, enter a value up to 9999 minutes.
   The default setting is 20 minutes.

7. Click the **Apply** button.
   Your settings are saved.

Disable Port Triggering

By default, port triggering is enabled. You can disable port triggering temporarily without removing any port triggering rules.

To disable port triggering:

1. Launch a web browser from a computer or mobile device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.
   The Port Forwarding / Port Triggering page displays.
5. Select the **Port Triggering** radio button.
   The port triggering settings display.
6. Select the **Disable Port Triggering** check box.
   If this check box is selected, the router does not apply port triggering rules even if you specified them.
7. Click the **Apply** button.
   Your settings are saved.

Application Example: Port Triggering for Internet Relay Chat

Some application servers, such as FTP and IRC servers, send replies to multiple port numbers. Using port triggering, you can tell the router to open more incoming ports when a particular outgoing port starts a session.

An example is Internet Relay Chat (IRC). Your computer connects to an IRC server at destination port 6667. The IRC server not only responds to your originating source port but also sends an "identify" message to your computer on port 113. Using port triggering,

you can tell the router, "When you initiate a session with destination port 6667, you must also allow incoming traffic on port 113 to reach the originating computer."

The following sequence shows the effects of this port triggering rule:

1. You open an IRC client program to start a chat session on your computer.
2. Your IRC client composes a request message to an IRC server using a destination port number of 6667, the standard port number for an IRC server process. Your computer then sends this request message to your router.
3. Your router creates an entry in its internal session table describing this communication session between your computer and the IRC server. Your router stores the original information, performs Network Address Translation (NAT) on the source address and port, and sends this request message through the Internet to the IRC server.
4. Noting your port triggering rule and observing the destination port number of 6667, your router creates another session entry to send any incoming port 113 traffic to your computer.
5. The IRC server sends a return message to your router using the NAT-assigned source port (for example, port 33333) as the destination port and also sends an "identify" message to your router with destination port 113.
6. When your router receives the incoming message to destination port 33333, it checks its session table to see if a session is active for port number 33333. Finding an active session, the router restores the original address information replaced by NAT and sends this reply message to your computer.
7. When your router receives the incoming message to destination port 113, it checks its session table and finds an active session for port 113 associated with your computer. The router replaces the message's destination IP address with your computer's IP address and forwards the message to your computer.
8. When you finish your chat session, your router eventually senses a period of inactivity in the communications. The router then removes the session information from its session table, and incoming traffic is no longer accepted on port numbers 33333 or 113.

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Troubleshooting

This chapter provides information to help you diagnose and solve problems you might experience with your router. If you do not find the solution here, check the NETGEAR support site at netgear.com/support for product and contact information.

The chapter contains the following sections:

- Reboot the Router From Its Web Page on page 211
- Quick Tips on page 211
- Troubleshoot With the LEDs on page 212
- You Cannot Log In to the Router on page 214
- You Cannot Access the Internet on page 215
- Changes Are Not Saved on page 218
- Troubleshoot WiFi Connectivity on page 218
- Troubleshoot Your Network Using the Ping Utility on page 219

Reboot the Router From Its Web Page

You or NETGEAR technical support can reboot the router from its web page, either locally or remotely, for example, when the router seems to be unstable or is not operating normally.

To reboot the router from its web page:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.
5. In the Router Information pane, click the **Reboot** button.
   A confirmation pop-up window displays.
6. Click the **OK** button.
   The router reboots.

Quick Tips

This section describes tips for troubleshooting some common problems.

Sequence to Restart Your Network

If you must restart your network, follow this sequence:

1. Turn off and unplug the modem.
2. Turn off the router.
3. Plug in the modem and turn it on. Wait two minutes.
4. Turn on the router and wait two minutes.

Check Ethernet Cable Connections

If your device does not power on, make sure that the Ethernet cables are securely plugged in. The Internet LED on the router is lit if the Ethernet cable connecting the router and the modem is plugged in securely and the modem and router are turned on. If one or more powered-on devices are connected to the router by an Ethernet cable, the corresponding numbered router LAN port LEDs light.

WiFi Settings

Make sure that the WiFi settings in the computer or mobile device and router match exactly. The WiFi network name (SSID) and WiFi security settings of the router and computer or mobile device must match exactly.

If you set up an access control list, you must add the MAC address of each computer or mobile device to the router's access control list (see Allow or Block Access to Your Network on page 61).

Network Settings

Make sure that the network settings of the computer are correct. Wired computers and computers or mobile devices that are connected over WiFi must use network IP addresses on the same network as the router. The simplest way to do this is to configure each computer to obtain an IP address automatically using DHCP.

Some service providers require you to use the MAC address of the computer initially registered on the account, but this is an uncommon situation. You can view the MAC address on the Attached Devices page (see View Devices Currently on the Network on page 167).

Troubleshoot With the LEDs

By default, the router is set with standard LED settings. If you turned off the LEDs except the Power LED, you must return the LEDs to their standard settings for troubleshooting. For information about controlling the LED settings, see Disable LED Blinking or Turn Off LEDs on page 160.

Standard LED Behavior When the Router Is Powered On

After you turn on power to the router, verify that the following sequence of events occurs:

1. When power is first applied, verify that the Power LED is lit.
2. After about two minutes, verify the following:

- The Power LED is solid white.
- The Internet LED is lit.
- The WiFi LED is lit unless you turned off the WiFi radios.

You can use the LEDs on the front panel of the router for troubleshooting.

Power LED Is Off or Blinking

This could occur for a number of reasons. Check the following:

- Make sure that the power adapter is securely connected to your router and securely connected to a working power outlet.
- Make sure that you are using the power adapter that NETGEAR supplied for this product.
- If the Power LED blinks slowly and continuously, the router firmware might be corrupted. This can happen if a firmware upgrade is interrupted, or if the router detects a problem with the firmware. If the error persists, it is likely that a hardware problem exists. For recovery instructions or help with a hardware problem, contact technical support at netgear.com/support.

Power LED Stays Amber

When the router is turned on, the Power LED turns amber for up to two minutes and then turns white. If the LED does not turn white, this indicates a problem with the router.

If the Power LED is still amber three minutes after you turn on power to the router, do the following:

- Reboot the router to see if the router recovers.
- If the router does not recover, press and hold the **Reset** button to return the router to its factory default settings. For more information, see Use the Reset Button on page 161.

If the error persists, a hardware problem might be the cause. Contact technical support at netgear.com/support.

Internet or Ethernet LEDs Are Off

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

- Make sure that the Ethernet cable connection is secure at the router and at the modem that is connected to the WAN port.
- Make sure that the Ethernet cable connections are secure at the router and at the devices that are connected to the Ethernet ports.
- Make sure that power is turned on to the connected modem and connected devices.
- Be sure that you are using the correct cables.

When you connect the router's WAN port to a modem, use the cable that was supplied with the modem. This cable can be a standard straight-through Ethernet cable or an Ethernet crossover cable.

WiFi LED Is Off

If the WiFi LED stays off, check to see if someone pressed the **WiFi On/Off** button on the router. This button turns the WiFi radios in the router on and off. The WiFi LED is lit when the WiFi radios are turned on.

You Cannot Log In to the Router

If you are unable to log in to the router from a computer on your local network and use the router's web pages, check the following:

- If you are using an Ethernet-connected computer, check the Ethernet connection between the computer and the router.
- Make sure that the IP address of your computer is on the same subnet as the router. If you are using the recommended addressing scheme, your computer's address is in the range of 192.168.1.2 to 192.168.1.254.
- Make sure that your computer can reach the router's DHCP server. Recent versions of Windows and Mac OS generate and assign an IP address if the computer cannot reach a DHCP server. These autogenerated 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 was changed and you do not know the current IP address, use an IP scanner application to detect the IP address. If you still cannot find the IP address, clear the router's configuration to factory defaults. This sets the router's IP

address to 192.168.1.1. For more information, see Return the Router to Its Factory Default Settings on page 161 and Factory Settings on page 223.

- Make sure that Java, JavaScript, or ActiveX is enabled in your browser. If you are using Internet Explorer, click the **Refresh** button to be sure that the Java applet is loaded.
- Try quitting the browser and launching it again.
- Make sure that you are using the correct login information. The user name is **admin**, and the default password is **password**. Make sure that Caps Lock is off when you enter this information.
- If you are attempting to set up your router behind an existing router in your network, use the router as a WiFi bridge (see Set Up a WiFi Bridge Between the Router and Another Device on page 180) or set up the router as a WiFi access point (see Use the Router as a WiFi Access Point Only on page 183).
- If you are attempting to set up your router as a replacement for an ADSL gateway in your network, the router cannot perform many gateway services. For example, the router cannot convert DSL or cable data into Ethernet networking information. NETGEAR does not support such a configuration.

You Cannot Access the Internet

If you can access your router but not the Internet, check to see if the router can obtain an IP address from your Internet service provider (ISP).

Check the WAN IP Address

Unless your ISP provides a fixed IP address, your router requests an IP address from the ISP. You can determine whether the request was successful using the ADVANCED Home page.

To check the WAN IP address:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Select an external site such as netgear.com.
3. Enter **http://www.routerlogin.net**.
   A login window opens.
4. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.

The BASIC Home page displays.

5. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.

6. Check to see that an IP address is shown for the Internet port.
   If 0.0.0.0 is shown, your router did not obtain an IP address from your ISP.

If your router cannot obtain an IP address from the ISP, you might need to force your modem to recognize your new router by restarting your network. For more information, see Sequence to Restart Your Network on page 211.

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

- Your Internet service provider (ISP) might 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, the login name and password might be set incorrectly.
- Your ISP might check for your computer's host name. Assign the computer host name of your ISP account as the account name on the Internet Setup page.
- If your ISP allows only one Ethernet MAC address to connect to Internet and checks for your computer's MAC address, do one of the following:
  - Inform your ISP that you bought a new network device and ask them to use the router's MAC address.
  - Configure your router to clone your computer's MAC address.

If your router obtained an IP address, but your computer is does not load any web pages from the Internet, it might be for one or more of the following reasons:

- Your computer might 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 provides 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. You can configure your computer manually with DNS addresses, as explained in your operating system documentation.
- The router might not be configured as the TCP/IP gateway on your computer.
  If your computer obtains its information from the router by DHCP, reboot the computer and verify the gateway address.
- You might be running login software that is no longer needed.
  If your ISP provided a program to log you in to the Internet (such as WinPoET), you no longer need to run that software after installing your router. You might need to

go to Internet Explorer and select **Tools > Internet Options**, click the **Connections** tab, and select **Never dial a connection**. Other browsers provide similar options.

Troubleshoot PPPoE

If you are using PPPoE, try troubleshooting your Internet connection.

To troubleshoot a PPPoE connection:

1. Launch a web browser from a computer or mobile device that is connected to the network.
2. Enter **http://www.routerlogin.net**.
   A login window opens.
3. Enter the router user name and password.
   The user name is **admin**. The default password is **password**. The user name and password are case-sensitive.
   The BASIC Home page displays.
4. Click the **ADVANCED** tab.
   The ADVANCED Home page displays.
5. In the Internet Port pane, click the **Connection Status** button.
   The Connection Status pop-up window opens.
6. Check the information in the Connection Status pop-up window to see if your PPPoE connection is up and working.
   If the router is not connected, click the **Connect** button.
   The router continues to attempt to connect indefinitely.
7. If you cannot connect after several minutes, the router might be set up with an incorrect service name, user name, or password, or your ISP might be experiencing a provisioning problem.

Unless you connect manually, the router does not authenticate using PPPoE until data is transmitted to the network.

Troubleshoot Internet Browsing

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

- The traffic meter is enabled, and the limit was reached.

By configuring the traffic meter not to block Internet access when the traffic limit is reached, you can resume Internet access (see Unblock the Traffic Meter After the Traffic Limit Is Reached on page 172). If your ISP sets a usage limit, they might charge you for the overage.

- Your computer might 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 provides the addresses of one or two DNS servers for your use. If you entered a DNS address during the router's configuration, restart your computer. Alternatively, you can configure your computer manually with a DNS address, as explained in the documentation for your computer.
- The router might not be configured as the default gateway on your computer. Reboot the computer and verify that the router address (www.routerlogin.net) is listed by your computer as the default gateway address.
- You might be running login software that is no longer needed. If your ISP provided a program to log you in to the Internet (such as WinPoET), you no longer need to run that software after installing your router. You might need to go to Internet Explorer and select **Tools > Internet Options**, click the **Connections** tab, and select the **Never dial a connection**. Other browsers provide similar options.

Changes Are Not Saved

If the router does not save the changes that you make on the router web pages, do the following:

- When entering configuration settings, always click the **Apply** button before moving to another page or tab, or your changes are lost.
- Click the **Refresh** or **Reload** button in the web browser. It is possible that the changes occurred, but the old settings might be in the web browser's cache.

Troubleshoot WiFi Connectivity

If you are experiencing trouble connecting over WiFi to the router, try to isolate the problem:

- Does the computer or mobile device that you are using find your WiFi network? If not, check the WiFi LED on the front of the router. If it is off, you can press the **WiFi On/Off** button on the router to turn the router WiFi radios back on.

If you disabled the router's SSID broadcast, then your WiFi network is hidden and does not display in your WiFi client's scanning list. (By default, SSID broadcast is enabled.)

- Does your computer or mobile device support the security that you are using for your WiFi network (WPA or WPA2)?
- If you want to view the WiFi settings for the router, use an Ethernet cable to connect a computer to a LAN port on the router. Then log in to the router, and select **BASIC > Wireless**.

Note: Be sure to click the **Apply** button if you change settings.

If your computer or mobile device finds your network but the signal strength is weak, check these conditions:

- Is your router too far from your device or too close? Place your device near the router but at least 6 feet (1.8 meters) away and see whether the signal strength improves.
- Are objects between the router and your computer or mobile device blocking the WiFi signal?

Troubleshoot Your Network Using the Ping Utility

Most network 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. You can easily troubleshoot a network using the ping utility in your computer or workstation.

Test 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 Windows-based computer:

1. From the Windows toolbar, click 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 www.routerlogin.net

3. Click the **OK** button.

   You 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, one of the following problems might be present:

- Wrong physical connections
  For a wired connection, make sure that the numbered LAN port LED is lit for the port to which you are connected.
  Check to see that the appropriate LEDs are lit for your network devices. If your router and computer are connected to a separate Ethernet switch, make sure that the link LEDs are lit for the switch ports that are connected to your computer and router.
- Wrong network configuration
  Verify that the Ethernet card driver software and TCP/IP software are both installed and configured on your computer.
  Verify that the IP address for your router and your computer are correct and that the addresses are on the same subnet.

Test the Path From Your Computer to a Remote Device

To test the path from your computer to a remote device:

1. From the Windows toolbar, click the **Start** button and select **Run**.
2. In the Windows Run window, type
   ping -n 10 *<IP address>*

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

   If the path is functioning correctly, messages display that are similar to those shown in Test the LAN Path to Your Router on page 219.
3. If you do not receive replies, check the following:
   - Check to see that IP address of your router is listed as the default gateway for your computer. If DHCP assigns the IP configuration of your computers, this information is not visible in your computer Network Control Panel. Verify that the IP address of the router is listed as the default gateway.
   - Check to see that the network address of your computer (the portion of the IP address specified by the subnet mask) is different from the network address of the remote device.
   - Check to see 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 on the Internet Setup page.
- Your ISP might be rejecting the Ethernet MAC addresses of all but one of your computers.

Many broadband ISPs restrict access by allowing traffic only from the MAC address of your broadband modem. Some ISPs additionally restrict access to the MAC address of a single computer connected to that modem. If your ISP does this, configure your router to “clone” or “spoof” the MAC address from the authorized computer.

A

Supplemental Information

This appendix includes technical information about your router.

The appendix covers the following topics:

- Factory Settings on page 223
- Technical Specifications on page 226

Factory Settings

You can reset the router to the factory default settings that are shown in the following table.

For more information about resetting the router to its factory settings, see Return the Router to Its Factory Default Settings on page 161.

The following table shows the factory default settings for model R6900v2.

Table 4. Router factory default settings

Feature	Default Settings
Router login	
User login URL	www.routerlogin.net (or www.routerlogin.com or 192.168.1.1)
User name (case-sensitive)	admin
Login password (case-sensitive)	password
Internet connection	
WAN MAC address	Use default hardware address
WAN MTU size	Determined by the protocol that is used for the Internet connection (see Manage the MTU Size on page 45)
Port speed	AutoSensing
Local network (LAN)	
LAN IP address	192.168.1.1
Subnet mask	255.255.255.0
DHCP server	Enabled
DHCP range	192.168.1.2 to 192.168.1.254
DHCP starting IP address	192.168.1.2
DHCP ending IP address	192.168.1.254
DMZ	Disabled
Time zone	North America: Pacific Standard Time Europe: GMT Other continents: Varies by region
Time adjusted for daylight saving time	Disabled

Table 4. Router factory default settings (Continued)

Feature	Default Settings
Firewall and WAN security	
Inbound (communications coming in from the Internet)	Disabled (except traffic on port 80, the HTTP port)
Outbound (communications going out to the Internet)	Enabled (all)
Source MAC filtering	Disabled
Port scan and DoS protection	Enabled
Respond to ping on Internet port	Disabled
IGMP proxying	Disabled
VPN pass-through	Enabled
SIP ALG	Enabled
NAT filtering	Secured
Main WiFi network	
WiFi communication	Enabled
SSID name	See the router label
Security	WPA2-PSK (AES)
WiFi passphrase	See the router label
Country/region	North America: United States Europe: Europe Other continents: Varies by region
RF channel	The available channels depend on the region.
Transmission speed	Auto Note that throughput can vary: Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, affect the data throughput rate.
Operating mode	Up to 600 Mbps at 2.4 GHz Up to 1300 Mbps at 5 GHz
Transmit power	100%, nonconfigurable
Guest WiFi network	
WiFi communication	Disabled

Table 4. Router factory default settings (Continued)

Feature	Default Settings
SSID name	2.4 GHz band: NETGEAR_Guest 5 GHz band: NETGEAR-5G_Guest
Security	None (open network)
Allow guests to access main network	Disabled
General WiFi settings	
Radio transmission power	100%, nonconfigurable
20/40 MHz coexistence	Enabled
Fragmentation length	2346
CTS/RTS threshold	2347
Preamble mode	Long Preamble
WPS	
WPS capability	Enabled
Router's PIN	Enabled. See the router's web page (select **ADVANCED > Advanced Setup > Advanced Wireless Settings**)
Keep existing wireless settings	Enabled

Technical Specifications

The following table shows the technical specifications for model R6900v2.

Table 5. Router specifications

Feature	Description
Data and routing protocols	TCP/IP, RIP-1, RIP-2, DHCP, PPPoE, Dynamic DNS, UPnP, and SMB
Power adapter	North America: 120V, 60 Hz, input All regions: 12V @ 3.5A output
Dimensions	Dimensions: 285 x 182 x 52 mm (11.22 x 7.17 x 2.05 in.)
Weight	Weight: 662 g (1.46 lb)
Operating temperature	0° to 40°C (32° to 104°F)
Operating humidity	90% maximum relative humidity, noncondensing
Electromagnetic emissions	FCC Part 15 Class B
LAN	Four RJ-45 ports supporting 10BASE-T, 100BASE-TX, and 1000BASE-T
WAN	One RJ-45 port supporting 10BASE-T, 100BASE-TX, and 1000BASE-T
WiFi	Maximum WiFi signal rate complies with the IEEE 802.11 standard. Note that NETGEAR makes no express or implied representations or warranties about this product's compatibility with any future WiFi standards. 802.11ac 1300 Mbps is approximately 2x faster than 802.11n 600 Mbps. Up to 1300 Mbps WiFi speeds achieved when connecting to other 802.11ac 1300 Mbps devices.
USB	One USB 3.0 port
Radio data rates	Auto-rate sensing
Data encoding standards	IEEE 802.11 b/g/n 2.4 GHz IEEE 802.11 a/n/ac 5.0 GHz
Maximum computers per WiFi network	Limited by the amount of WiFi network traffic generated by each node (typically 50–70 nodes)

Table 5. Router specifications (Continued)

Feature	Description
Operating frequency range	2.4 GHz band • US: 2.412–2.462 GHz • Europe: 2.412–2.472 GHz • Australia: 2.412–2.472 GHz • Japan: 2.412–2.472 GHz 5 GHz band • US: 5.18–5.24 + 5.745–5.825 GHz • Europe: 5.18–5.24 GHz • Australia: 5.18–5.24 + 5.745–5.825 GHz • Japan: 5.18–5.24 GHz
802.11 security	WPA2-PSK, WPA-PSK, WPA/WPA2 (mixed mode), WPA/WPA2 Enterprise, and WEP