NETGEAR®

User Manual

4-Stream AX1800 WiFi 6 Router

Model RAX9 and Model R6700AXv3

October 2024
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1

Hardware Setup

This chapter contains the following sections:

- Unpack your router
- Front LEDs
- Back panel
- Router label
- Position your router
- Cable your router

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

Unpack your router

Your package contains the router, an Ethernet cable, and the power adapter.

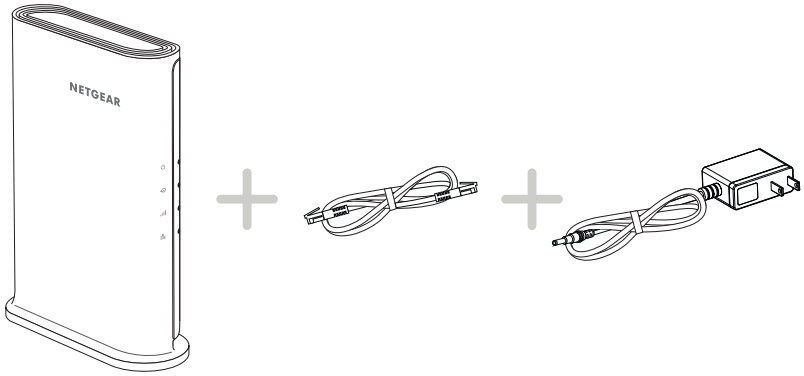

Figure 1. Package contents

Front LEDs

The status LEDs are located at the front of the router.

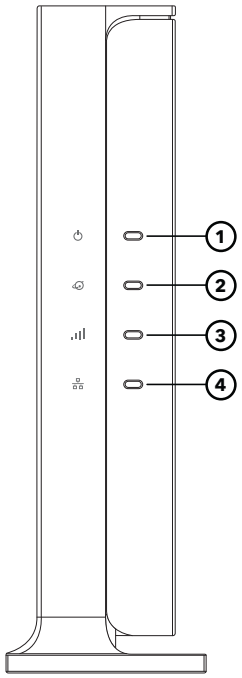

Figure 2. LEDs

The following tables describe the LEDs and buttons.

Table 1. LED descriptions

LED Icon	Description
1: Power LED	• **Solid green**: The router is ready. • **Solid amber**: The router is starting. • **Blinking amber**: The router is not ready, firmware is upgrading, or the **Reset** button was pressed. • **Off**: Power is not supplied to the router.
2: Internet LED	• **Solid green**: The Internet connection is ready. • **Blinking green**: The port is sending or receiving traffic. • **Solid amber**: An Ethernet cable is connected to the Internet port but Internet is not accessible. • **Off**: No Ethernet cable is connected between the router and the modem.

Table 1. LED descriptions (Continued)

LED Icon	Description
3: WiFi LED	• **Solid green**: The router is broadcasting a WiFi signal. You can connect to the router's WiFi network. • **Off**: The router is not broadcasting a WiFi signal. You cannot use WiFi to connect to the router.
4: Ethernet LAN LED	• **Solid green**: The router detected a 1 Gbps link with a device that is connected to one of the router's Ethernet ports. • **Solid Amber**: The router detected a 10/100 Mbps link with a device that is connected to one of the router's Ethernet ports. • **Blinking green**: One of the router's Ethernet ports is sending or receiving traffic at 1 Gbps. • **Blinking amber**: One of the router's Ethernet ports is sending or receiving traffic at 10/100 Mbps. • **Off**: No devices are connected to the router's Ethernet ports.

Back panel

The following figure shows the connectors on the back of the router.

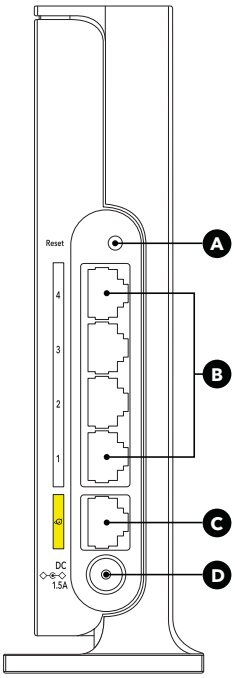

Figure 3. Back panel

The back panel contains the following components:

- **A: Reset button**: Pressing the **Reset** button resets the router. If the **Reset** button is pressed for at least 10 seconds and then released, the router returns to its factory settings.
- **B: Ethernet ports**: Four Gigabit Ethernet RJ-45 LAN ports. Use these ports to connect the router to devices that have an Ethernet LAN port.
- **C: Internet port**: One Gigabit Ethernet RJ-45 WAN port to connect the router to an Internet modem such as a cable modem or DSL modem.
- **D: DC power connector**: Connect the power adapter that came in the product package to the DC power connector.

Router label

The router label shows the login information, WiFi network name (SSID), password, serial number, and MAC address.

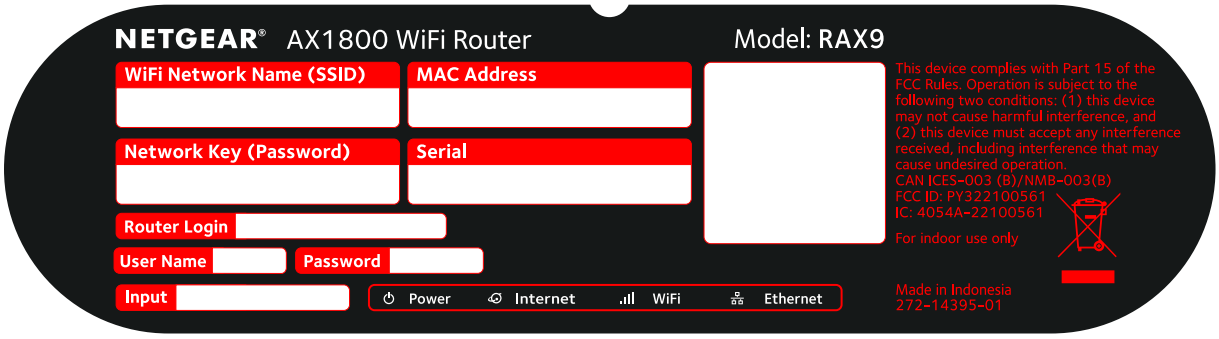

Figure 4. Router label

Position your 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 your router.
In addition, position your router according to the following guidelines:

- Place your 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 devices.
- Place the router in an elevated location, minimizing the of number walls and ceilings between the router and your other devices.
- To avoid wireless signal interference, place the router away from electrical devices such as these:
    - Ceiling fans
    - Home security systems
    - Microwaves
    - Computers

  - The base of a cordless phone
  - 2.4 GHz or 5 GHz cordless phones
- Place the router away from large metal surfaces, large glass surfaces, insulated walls, and items such as these:
  - Solid metal doors
  - Aluminum studs
  - Fish tanks
  - Mirrors
  - Brick
  - Concrete

The following factors might limit the range of your WiFi:

- The thickness and number of walls the WiFi signal passes through can limit the range.
- 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 devices that emit a WiFi signal for network access.

Cable your router

Connect your router to a modem and power on your router.

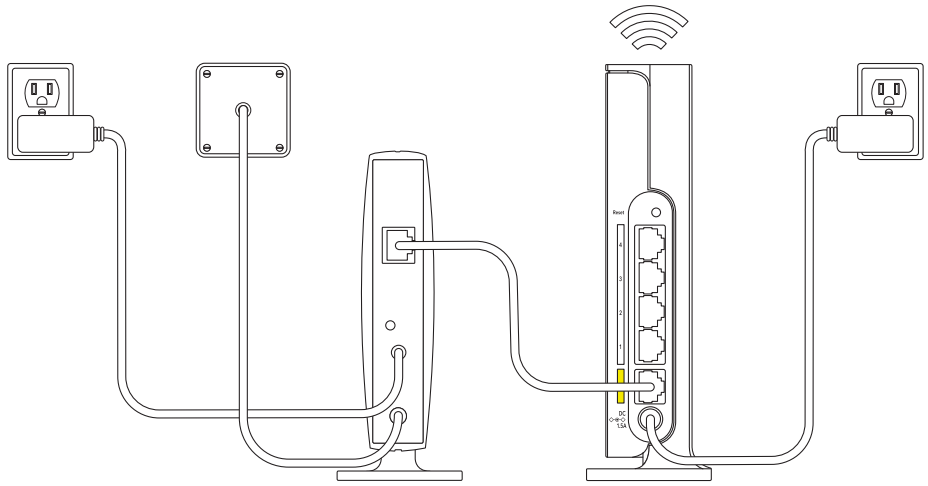

Figure 5. Cable your router

To cable your router:

1. Unplug your modem, remove and reinsert the backup battery if it uses one, and then plug the modem back in.
2. Use the Ethernet cable to connect the modem to the yellow Internet port on the router.

   NOTE: If your Internet connection does not require a modem, connect your main Ethernet cable to the yellow Internet port on the router.
3. Connect the power adapter to your router and plug the power adapter into an outlet.

   The router's Power LED lights solid green when the router is ready.

2

Connect to the Router Network and Access the Router

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

The chapter contains the following sections:

- Connect to the router network
- Types of logins
- Use a web browser to access the router
- Install and manage your router with the Nighthawk app

Connect to the router network

You can connect to the router network using a wired or WiFi connection.

NOTE: If you set up your computer to use a static IP address, change the settings so that it uses Dynamic Host Configuration Protocol (DHCP).

Connect to the router WiFi network

You can connect a WiFi-enabled computer or mobile device to the router WiFi network using the router WiFi network name (SSID) and WiFi password (network key)

To connect to the WiFi network:

1. Make sure that the router is receiving power (its Power LED is lit).
2. On your computer or mobile device, open your WiFi network management application.

   This is the application that lets you manage your WiFi connections.
3. Find and select the router WiFi network name (SSID).

   The router's default WiFi network name (SSID) is on the router label.
4. Enter the router WiFi password.

   The router's default WiFi password is on the router label. The WiFi password is also known as the network key or passphrase.

   Your computer or mobile device connects to the WiFi network.

Connect to the router using a wired connection

You can connect your computer to the router using an Ethernet cable and join the router's local area network (LAN). After setup, you can also connect other wired devices.

To connect your computer or other device 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.

   If your computer doesn't have an Ethernet port, you might be able to connect a USB to Ethernet adapter to a USB port on your computer, and then connect the Ethernet cable to the adapter's port.
3. Connect the other end of the Ethernet cable to an Ethernet LAN port on the router.

Your computer connects to the local area network (LAN).

Types of logins

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

Several types of logins are associated with the router:

- **ISP login**: The login that your Internet service provider (ISP) gave you logs you in to your Internet service. Your ISP gave you this login information in a letter or some other way. If you cannot find this login information, contact your ISP.
- **WiFi password**: Your router is preset with a unique WiFi network name (SSID) and password for WiFi access. This information is on the router label. The WiFi password is also known as the network key or passphrase.
- **NETGEAR account login**: The free NETGEAR account that you need to register your router, manage your router remotely, and manage your subscriptions. If you do not have a NETGEAR account, you can create one.
- **Router login**: The router login password that you need to log in to the router with the admin user name when you use a web browser to access and configure the router.

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. We call the router user interface the *router web interface*.

When you access the router web interface, 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 (see the information below) or manually (see Manually set up the Internet connection on page 25). In either case, you must use a web browser to access the router.

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 example, 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.

NOTE: If your Internet service is going through your TV or fiber cable, you might not need the login information.

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.

The NETGEAR installation assistant runs on any device with a web browser. Installation and basic setup takes about 15 minutes to complete.

To automatically set up your router:

1. Make sure that the router is powered on.
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** and the Configuring the Internet Connection page displays.
   - 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.

   The page that displays recommends that you use the Nighthawk app. However, the current procedure describes how you can use the router web interface.
4. If the installation process does not start and the browser does not display the page that recommends that you use the Nighthawk app, do the following:

- Make sure that the computer is connected to one of the Ethernet LAN ports on the router or over WiFi to the router.
- Make sure that the router is receiving power and that its Power LED is lit.
- 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.
- Use the **Reset** button, to reset the router to factory default settings (see Use the Reset button on page 132).

5. Scroll down and click the **If you don't have a compatible smartphone, click here** link.

   A welcome page displays.
6. Follow the onscreen instructions.

   The router detects your Internet settings.
7. Follow the onscreen instructions to complete the installation process.

If the router does not detect the Internet settings, the installation assistant cannot complete the installation process, and you must start the installation process again:

1. Before you start again, review your settings. Make sure that you select the correct options and type everything correctly.
2. If the router still does not detect the Internet settings, contact your ISP to verify that you are using the correct configuration information.
3. If problems persist, register your router and contact NETGEAR Technical Support.

Log in to the router after you set up the router

When you set up your router while the router is in factory default state, the browser automatically starts the NETGEAR installation assistant.

After you set up the router, if you want to view or change settings for the router, you can use a browser to log in to the router web interface.

To log in to the router web interface:

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 admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

Change the language

By default, the Auto setting uses your region to automatically set the language that displays when you log in to the router web interface.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

Install and manage your router with the Nighthawk app

With the Nighthawk app, you can easily install and manage your router. The app lets you update the router to the latest firmware, allows you to personalize your WiFi network, and helps you to register your router with NETGEAR. You can also manage your router remotely and use the Armor and Smart Parental Controls services.

The Nighthawk app is available for iOS and Android mobile devices.

NOTE: Your router is not connected to the Internet until you finish setting it up with the app. If you are connected to your router's WiFi network before your router is set up, you do not have Internet access and cannot download the app.

Use your cellular data or connect to your previous router's WiFi network to download the app. During router installation, the app instructs you when you need to connect to your router's WiFi.

To install your router using the Nighthawk app:

1. Visit Nighthawk-app.com to download the Nighthawk app.

   NOTE: To download the app, you need to use your cellular data or connect your mobile device to your previous router's WiFi network.

2. Wait for the Nighthawk app to download on your mobile device.
3. Launch the Nighthawk app.
4. Follow the instructions that display in the app to install your router and connect to the Internet.

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.

After you set up your router, you can use the Setup Wizard to redetect the Internet settings, or you can manually specify your Internet settings.

This chapter contains the following sections:

- Use the Setup Wizard
- Manually set up the Internet connection
- Set an IPv6 Internet connection
- Manage the MTU size

Use the Setup Wizard

You can use the Setup Wizard to redetect your Internet settings and automatically set up your router.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.
6. Click the **Next** button.

   The Setup Wizard searches your Internet connection for servers and protocols to determine your Internet configuration.
7. Follow the onscreen instructions.

   The router detects your Internet settings.
8. Follow the onscreen instructions to complete the Setup Wizard process.

If the router does not detect the Internet settings, the Setup Wizard cannot complete its process, and you must start the Setup Wizard again:

1. Before you start again, review your settings. Make sure that you select the correct options and type everything correctly.
2. If the router still does not detect the Internet settings, contact your ISP to verify that you are using the correct configuration information.
3. If problems persist, register your router and contact NETGEAR Technical Support.

Manually set up the Internet connection

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

Set 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 set an Internet connection without a login:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Internet**.

   The Internet Setup page displays.
5. In the Does your Internet connection require a login? section, leave the **No** radio button selected.
6. If your Internet connection requires an account name or host name, do the following:
   a. In the Account Name section, click the **Edit** button.
   b. Enter the account name.

      By default, the account name is the model number of the router.
   c. Click the **Apply** button.
   d. Select **Internet**.

      The Internet Setup page displays again.
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 163.

Set a PPPoE Internet connection

You can manually set 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 set a PPPoE 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **Internet**.

   The Internet Setup page displays.

5. In the Does your Internet connection require a login? section, select the **Yes** radio button.

   The page adjusts.

6. From the **Internet Service Provider** menu, select **PPPoE** as the encapsulation method.

   This is the default selection in the menu.

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 163.

Set a PPTP or L2TP Internet connection

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 set a PPTP or L2TP 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 page adjusts again.
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 163.

Set an IPv6 Internet connection

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

Types of IPv6 Internet connections

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

- **Auto Detect**: See Use auto detect for an IPv6 Internet connection on page 31.
- **6to4 tunnel**: See Set a 6to4 tunnel IPv6 Internet connection on page 33.
- **Pass-through**: See Set a pass-through IPv6 Internet connection on page 34.
- **Fixed**: See Set a fixed IPv6 Internet connection on page 35.
- **DHCP**: See Set a DHCP IPv6 Internet connection on page 36.
- **PPPoE**: See Set a PPPoE IPv6 Internet connection on page 38.
- **Auto Config**: See Use auto config for an IPv6 Internet connection on page 40.
- **6rd**: See Set a 6rd IPv6 Internet connection on page 41.

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

- 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 31).
- If your ISP did not provide details, use the 6to4 tunnel connection type (see Set a 6to4 tunnel IPv6 Internet connection on page 33).

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 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.

Requirements for entering IPv6 addresses

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.

All of the following examples specify the *same* IPv6 address:

- 2001:db8:0000:0000:020f:24ff:febf:dbcb
- 2001:db8:0:0:20f:24ff:febf:dbcb
- 2001:db8::20f:24ff:febf:dbcb
- 2001:db8:0:0:20f:24ff:128.141.49.32

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 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.

7. Select an IP Address Assignment radio button:

   - **Use DHCP Server**: <<TBD>> 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. (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.

9. Select an IPv6 Filtering radio button:

   - **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
   - **Open**: In open mode, the router inspects UDP packets only.

10. Click the **Apply** button.

    Your settings are saved.

Set a 6to4 tunnel IPv6 Internet connection

The remote relay router is the router 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 a 6to4 tunnel 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   After you click the Apply button, 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. This option uses the DNS servers assigned by the ISP for the IPv6 connection.
   - **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**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive the IPv6 address through a DHCP server.
- **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. Select an IPv6 Filtering radio button:

    - **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
    - **Open**: In open mode, the router inspects UDP packets only.

11. Click the **Apply** button.

    Your settings are saved.

Set a pass-through IPv6 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 a pass-through 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 a fixed IPv6 Internet connection

To set 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 25.)
7. Select an IP Address Assignment radio button:

- **Use DHCP Server**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive an IPv6 address through a DHCP server.
- **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. Select an IPv6 Filtering radio button:

   - **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
   - **Open**: In open mode, the router inspects UDP packets only.

10. Click the **Apply** button.

    Your settings are saved.

Set a DHCP IPv6 Internet connection

To set a DHCP 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   After you click the Apply button, 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 **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 **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. 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**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive an IPv6 address through a DHCP server.
   - **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. Select an IPv6 Filtering radio button:

- **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
- **Open**: In open mode, the router inspects UDP packets only.

12. Click the **Apply** button.

    Your settings are saved.

Set a PPPoE IPv6 Internet connection

To set 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   After you click the Apply button, 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. Do one of the following:
   - Select the **Use the same login information as IPv4 PPPoE** check box.
   - Configure the login settings manually:

     a. In the **Login** field, enter the login information for the ISP connection.

This is usually the name that you use in your email address. 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.

b. In the **Password** field, enter the password for the ISP connection.

c. 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.

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. This option uses the DNS servers assigned by the ISP for the IPv4 connection.
- **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**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive the IPv6 address through a DHCP server.
- **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. Select an IPv6 Filtering radio button:

- **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
- **Open**: In open mode, the router inspects UDP packets only.

11. Click the **Apply** button.

Your settings are saved.

Use auto config for an IPv6 Internet connection

To set up an IPv6 Internet connection through auto configuration:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   After you click the Apply button, 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. Unless the ISP assigns DNS servers through DHCPv6, this option uses the DNS servers assigned by the ISP for the IPv4 connection.
- **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**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive the IPv6 address through a DHCP server.
   - **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. Select an IPv6 Filtering radio button:
    - **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
    - **Open**: In open mode, the router inspects UDP packets only.
12. Click the **Apply** button.

    Your settings are saved.

Set a 6rd IPv6 Internet 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 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, allowing stateless operation of 6rd.

With a 6rd tunnel configuration, the router follows the RFC5969 standard, supporting two ways to establish a 6rd tunnel IPv6 WAN connection:

- **Auto Detect mode**: In IPv6 Auto Detect mode, when the router receives option 212 from the DHCPv4 option, autodetect selects the IPv6 as 6rd tunnel setting. The router uses the 6rd option information to establish the 6rd connection. For more information, see Use auto detect for an IPv6 Internet connection on page 31.
- **Manual mode**: In 6rd mode, if the router receives option 212, the fields are automatically completed. Otherwise, you must enter the 6rd settings.

To set a 6rd 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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**.

   The page adjusts.

   After you click the Apply button, the router automatically detects the information in the following sections:

   - **6rd (IPv6 Rapid Development) Configuration**: The router detects the service provider's IPv4 network and attempts to establish an IPv6 6rd tunnel connection. If the IPv4 network returns 6rd parameters to the router, the page adjusts to display the correct settings in this section.
   - **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. If the router does not automatically detect the information in the 6rd fields, specify the following 6rd settings:
   - **6rd Prefix**: Type the IPv6 prefix that your ISP gave you.
   - **6rd Prefix Length**: Type the IPv6 prefix length that your ISP gave you.
   - **6rd IPv4 Border Relay Address**: Type the border router's IPv4 address that your ISP gave you.
   - **6rd IPv4 Address Mask Length**: Type 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. This option uses the DNS servers assigned by the ISP for the IPv4 connection.
   - **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**: Use this method if devices on the LAN cannot receive an IPv6 address through auto configuration but must receive the IPv6 address through a DHCP server.
   - **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 that you want 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. Select an IPv6 Filtering radio button:
    - **Secured**: In secured mode, which is the default mode, the router inspects both TCP and UDP packets.
    - **Open**: In open mode, the router inspects UDP packets only.
11. 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 Internet service, and the technical support of either the Internet service provider (ISP) or NETGEAR recommends changing the MTU setting.

  For example, if a secure website does not open, or displays only part of a web page, you might need to change the MTU.
- 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.

CAUTION: 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.

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 2. 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

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 616 to 1500.
6. Click the **Apply** button.

   Your settings are saved.

4

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 contains the following sections:

- NETGEAR Armor
- Activate Armor using the Nighthawk app
- Network access control list
- Block Internet sites and services
- Set up security event email notifications

NETGEAR Armor

Your router supports NETGEAR Armor.

After you start your subscription, NETGEAR Armor protects your home network from potential cyber threats and provides complete data protection, advanced threat defense, webcam protection, multilayer ransomware protection, anti-phishing, safe files, secure browsing, rescue mode, anti-fraud, and anti-theft. In addition, NETGEAR Armor provides multiple performance and privacy tools.

NETGEAR Armor includes an anti-malware application for your Windows-based computers and your Mac OS, iOS, and Android devices.

For more information about NETGEAR Armor, visit netgear.com/landings/armor/default.aspx.

You can use the Nighthawk app to view and manage NETGEAR Armor.

Activate Armor using the Nighthawk app

To activate Armor using the Nighthawk app:

1. Launch the Nighthawk app.

   The dashboard displays.
2. Tap **Security**.

   The Security page displays.

   If Armor was not yet activated, it is now activated automatically, or you are prompted to purchase Armor.

Network access control list

You can use the network access control list (ACL) on the router to block or allow access to your network and the Internet. The ACL identifies a WiFi or wired device by its MAC address. The router detects the MAC addresses of the devices on the network and either allows or denies access.

The router detects and stores the MAC addresses of devices that connect to the network, so it lists the MAC addresses both of devices that are currently connected and any that were previously connected.

If you set up a network ACL that *allows* all new devices to connect, the following applies:

- You can either select or manually enter devices that you want to *block* from connecting to the network.
- All other devices are allowed access to the network.

If you set up a network ACL that *blocks* all new devices from connecting, the following applies:

- You can either select or manually enter devices that you want to *allow* access to the network.
- Devices that are currently connected to the network or that were allowed to connect in the past are automatically placed on the network ACL as allowed devices.
- All other devices are denied access to the network.

NOTE: Each network device has a MAC address that serves as a unique identifier. The MAC address is a 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 a device. If you cannot see the label, you can display the MAC address using the network configuration utilities on your computer or mobile device.

Enable the network access control list, set the access rule, and allow or block connected devices

When you enable network access control, you must select whether new devices are automatically allowed to access the network or are blocked from accessing the network. By default, devices that are already connected to the network are added to the ACL as allowed, but you can choose to block one or more of these devices from accessing the network.

To enable and manage the network access control list for the entire network and allow or block connected 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 select 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 on the list of blocked devices.
6. Select an access rule to apply to new devices:
   - **Allow all new devices to connect**: With this setting, if you connect a new device to the network, it can access the network. You do not need to enter its MAC address on this page. This option works for most home networks. You can also block one or more devices from accessing the network. For more information, see the following step.
   - **Block all new devices from connecting**: With this setting, if you want to allow a new device to connect, you must enter its MAC address on this page. (In this situation, a new device is a device that was not previously connected to the network.) For more information about allowing one or more devices, see the following step.

     If you block all *new* devices from connecting, the device that you are currently using to connect to the router web interface, any other devices that are currently connected to the network, and all devices that were allowed to connect to the network in the past *are* still allowed access. That means that these devices are automatically added to the network ACL as allowed devices. If you want to block any of these devices, see the following step.

   NOTE: Selecting an access rule does not affect previously blocked or allowed devices. It applies only to *new* devices trying to access the network after you apply this setting.
7. To change access for devices that are connected or were connected to the network, do the following:
   - **Currently connected devices**:

     In the table that contains the ACL, the Status column shows either Allowed or Blocked for a device. To change the status, select the check box for the device, and click either the **Allow** button or the **Block** button.

NOTE: If you blocked all new devices from connecting, make sure that the computer or mobile device that you are currently using to access the router web interface shows as Allowed in the Status column.

- **Devices that were connected in the past:**
  - To manage allowed devices that are currently not connected to the network, see Manage allowed devices currently not on the network on page 50.
  - To manage blocked devices that are currently not connected to the network, see Manage blocked devices currently not on the network on page 52.

8. Click the **Apply** button.

   Your settings are saved.

Manage allowed devices currently not on the network

If you set up an access control list (ACL) that blocks all new devices from accessing the network, you can add new devices that must be allowed access to the network, remove old devices, or change whether devices that were allowed must now be blocked when they try to connect to the network.

For example, you could add a second computer or mobile device for access to the router web management interface in case the device that you are currently using needs to be removed from the network for repairs.

To manage allowed devices currently not on the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

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.

In the following steps, we refer to the list of allowed devices not currently connected to the network as *the list of allowed devices*.

6. To add a device to the list of allowed devices, 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 list of allowed devices.
7. To remove a device from the list of allowed devices, do the following:
   a. Select the check box for the device.
   b. Click the **Remove from the list** button.

      The device is removed from the list of allowed devices.
8. To change the device status by blocking access for a device on the list of allowed devices, do the following:
   a. Select the check box for the device.
   b. Click the **Edit** button.

      The Edit Device Name page displays.
   c. From the **Access Control** menu, selected **Block**.
   d. On the Edit Device Name page, click the **Apply** button.

      The device is moved to the list of blocked devices not currently connected to the network.
9. To change the device name for a device on the list of allowed devices, do the following:
   a. Select the check box for the device.
   b. Click the **Edit** button.

      The Edit Device Name page displays.
   c. In the **Device Name** field, enter a name.
   d. On the Edit Device Name page, click the **Apply** button.

      The device name is changed on the list of allowed devices.
10. Click the **Apply** button.

    Your settings are saved.

Manage blocked devices currently not on the network

If you set up an access control list (ACL) that allows all new devices to access the network, you can add new devices that must be blocked from accessing the network, remove old devices, or change whether devices that were blocked must now be allowed when they try to connect to the network.

To manage blocked devices currently not on the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   In the following steps, we refer to the list of blocked devices not currently connected to the network as *the list of blocked devices*.
6. To add a device to the list of blocked devices, 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 list of blocked devices.
7. To remove a device from the list of blocked devices, do the following:

   a. Select the check box for the device.

   b. Click the **Remove from the list** button.

The device is removed from the list of blocked devices.

8. To change the device status by allowing access for a device on the list of blocked devices, do the following:
   a. Select the check box for the device.
   b. Click the **Edit** button.

      The Edit Device Name page displays.
   c. From the **Access Control** menu, selected **Allow**.
   d. On the Edit Device Name page, click the **Apply** button.

      The device is moved to the list of allowed devices not currently connected to the network.
9. To change the device name for a device on the list of blocked devices, do the following:
   a. Select the check box for the device.
   b. Click the **Edit** button.

      The Edit Device Name page displays.
   c. In the **Device Name** field, enter a name.
   d. On the Edit Device Name page, click the **Apply** button.

      The device name is changed on the list of blocked devices.
10. Click the **Apply** button.

    Your settings are saved.

Block Internet sites and services

You can prevent access to specific Internet sites by defining keywords and domains (websites) that must be blocked. You can also block Internet services on your network from accessing the Internet.

Use keywords to block Internet sites

You can use keywords to block certain Internet sites from your network. You can use blocking all the time or based on a schedule.

NOTE: Keyword blocking only works for website URLs that begin with http:// only. It does not work for URLs that begin with https://.

To block Internet sites:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Select when to block keywords:
   - **Per Schedule**: Turn on keyword blocking according to a schedule that you set. For more information, see Schedule when to block Internet sites and services on page 57.
   - **Always**: Turn on keyword blocking all the time, independent of the Schedule page.
6. In the **Type keyword or domain name here** field, enter a keyword or domain that you want to block.

   For example:
   - Specify *xxx* to block http://www.badstuff.com/*xxx*.html and any site that includes *xxx*, such as http://www.bad*xxx*stuff.com and http://www.badstuff*xxx*.org.
   - Specify the domain suffix (for example, .com) if you want to block only sites with a domain suffix such as .com. In such a situation, sites with domain suffixes such as .edu and .gov are still allowed.
   - Enter a period (**.**) to block all Internet browsing access.
7. Click the **Add Keyword** button.

   The keyword is added to the keyword list. The keyword list supports up to 32 entries.
8. Click the **Apply** button.

   Your settings are saved. Keyword blocking takes effect.

Delete keywords from the blocked list

To delete keywords from the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Do one of the following:

   - To delete a single word, select it and click the **Delete Keyword** button.

     The keyword is removed from the list.
   - To delete all keywords on the list, click the **Clear List** button.

     All keywords are removed from the list.
6. Click the **Apply** button.

   Your settings are saved.

Prevent blocking on a trusted computer

You can exempt one trusted computer from blocking. The computer that you exempt must be assigned a fixed IP address. You can use the reserved IP address feature to specify the IP address. See Manage reserved LAN IP addresses on page 94.

To specify a trusted computer:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 computer.
7. Click the **Apply** button.

   Your settings are saved.

Block services from the Internet

You can block Internet services on your network based on the type of service. You can block the services all the time or based on a schedule.

NOTE: Service blocking works only for services and applications that are using Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) for communication.

To block services:

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Select when to block the services:

   - **Per Schedule**: Turn on service blocking according to a schedule that you set. For more information, see Schedule when to block Internet sites and services on page 57.
   - **Always**: Turn on service blocking all the time, independent of the Schedule page.

6. Click the **Add** button.

   The Block Services Setup page displays.

7. To add a service that is in the **Service Type** menu, select the application or service.

   The settings for this service automatically display in the fields.
8. To add a service or application that is not in the menu, select **User Defined**, and do the following:

   a. If you know that the application uses either TCP or UDP, select the appropriate protocol. Otherwise, select **TCP/UDP** (both).

   b. Enter the starting port and ending port numbers.

      If the service uses a single port number, enter that number in both fields. To find out which port numbers the service or application uses, you can contact the publisher of the application, ask user groups or newsgroups, or search on the Internet.
9. Select a filtering option:

   - **Only This IP Address**: Block services for a single computer.
   - **IP Address Range**: Block services for a range of computers with consecutive IP addresses on your network.
   - **All IP Addresses**: Block services for all computers on your network.
10. Click the **Add** button.

    Your settings are saved.

Schedule when to block Internet sites and services

When you schedule blocking, you can use the same schedule to block sites, block services, or block both. The schedule does not become active until you assign it to site blocking, service blocking, or both.

To set up a schedule for 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

The Schedule page displays.

5. Specify when the schedule is active:
   - **Days to Block**: Select the check box for each day that you want to enable blocking, or select the **Every Day** check box, which automatically selects the check boxes for all days.
   - **Time of Day to Block**: Set a start and end time in 24-hour format, or select the **All Day** check box for 24-hour blocking.
6. 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 **Primary E-mail Address** field, type the email address to which logs and alerts must be sent.

   This email address is also used for the From address. If this field is blank, log and alert messages are not sent.
7. In the **Your Outgoing Mail Server** field, type 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.

8. In the **Outgoing Mail Server Port Number** field, type a port number in the field.

   If you do not know the port number, leave the default port number.

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.

       If you select **When log is full**, **Hourly**, or **Daily**, the day setting does not apply.

    c. From the **Time** menu, select the time, and select the **am** or **pm** radio button.

       If you select **When log is full** or **Hourly** the time settings do not apply.

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.

5

Manage WiFi Settings

You can customize the router's WiFi settings.

The chapter includes the following sections:

- Change the name for a WiFi network
- Change the WiFi password or the WiFi security option
- Set up WPA/WPA2 Enterprise WiFi security
- Hide or broadcast the SSID for a WiFi network
- Enable or disable AX WiFi
- Enable or disable OFDMA
- Enable or disable Smart Connect
- Enable or disable 20/40 MHz coexistence for the 2.4 GHz radio
- Change the WiFi mode
- Change the 2.4 GHz or 5 GHz WiFi channel
- Change your country or region
- Set up a guest WiFi network
- Manage advanced WiFi settings
- Use the WPS Wizard for WiFi connections

Change the name for a WiFi network

For each WiFi network, the WiFi network name (also referred to as the SSID) is randomly generated and is on the router label. You can change the default network name. The network name can be up to 32 characters long and is case-sensitive.

NOTE: If Smart Connect is enabled, the 2.4 GHz, 5 GHz, and 6 GHz radios use the same WiFi network name (SSID). To use a different SSID for each band, disable Smart Connect.

To change the name for a WiFi 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. In the **Name (SSID)** field, enter a new name.
6. Click the **Apply** button.

   Your settings are saved.

Change the WiFi password or the WiFi security option

The WiFi password is different from the admin password that you use to log in to the router.

Your router comes with preset WPA3 security, which is printed on the router label. We recommend that you use the preset security, but you can change the settings. We also recommend that you do not disable the WiFi security.

To change the WiFi password or the WiFi security option:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. To change the 2.4 GHz or 5 GHz WiFi password, enter a new password in the **Password (Network Key)** field.
   The Password (Network Key) field displays for the following WiFi security options:
   - **WPA2-PSK [AES]**: Requires a password that contains 8 to 63 characters (or 64 hexadecimal characters).
   - **WPA-PSK [TKIP] + WPA2-PSK [AES]**: Requires a password that contains 8 to 63 characters (or 64 hexadecimal characters).
   - **WPA3-PSK**: Requires a password that contains 8 to 127 characters (or 128 hexadecimal characters).
   - **WPA-PSK2 [AES] + WPA3-PSK**: Requires a password that contains 8 to 63 characters (or 64 hexadecimal characters).

   NOTE: By default, your password is hidden. To display your password, click the icon next to the **Password** field.
6. To change the WiFi security option for the 2.4 GHz or 5 GHz WiFi network, select a **Security Options** radio button:
   - **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.
   - **WPA2-PSK [AES]**: Enables WiFi devices that support WPA2 to join the router's WiFi network. 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-Personal [TKIP] + WPA2-Personal [AES] security.
   - **WPA-PSK [TKIP] + WPA2-PSK [AES]**: Enables WiFi devices that support either WPA or WPA2 to join the router's WiFi network. However, WPA-Personal [TKIP] is less secure than WPA2-Personal [AES] and limits the speed of WiFi devices to 54 Mbps.

- **WPA/WPA2 Enterprise**: Requires that your WiFi network can access a RADIUS server. For more information, see Set up WPA/WPA2 Enterprise WiFi security on page 63.
- **WPA3-PSK**: The default setting, which enables WiFi devices that support WPA3 to join the WiFi network. WPA3 is the latest security standard, uses SAE encryption, and is more secure than WPA2. If all devices on your network support WPA3, we recommend that you keep this security option. If your network includes devices that do not support WPA3, select WPA2-PSK [TKIP] + WPA3-PSK security.

  NOTE: If you did not change the WiFi password, the default password displays. The default password is printed on the router label.
- **WPA2-PSK [AES] + WPA3-PSK**: Enables WiFi devices that support either WPA2 or WPA3 to join the router's WiFi network. However, WPA2-PSK [AES] is less secure than WPA3-PSK.

7. Click the **Apply** button.

   Your settings are saved.

Set up 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.

NOTE: If you use WPA/WPA2 Enterprise security, you cannot use Wi-Fi Protected Setup (WPS).

To set up WPA/WPA2 Enterprise 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **Wireless**.

   The Wireless Settings page displays.
5. For the 2.4 GHz or 5 GHz WiFi network, select the **WPA/WPA2 Enterprise** radio button:
6. Specify the following settings:
   - **Encryption mode**: From the **Encryption Mode** menu, select the enterprise 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.
     - **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.
   - **RADIUS server IP Address**: Enter the IPv4 address of the RADIUS server to which the WiFi network can connect.
   - **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.

Hide or broadcast the SSID for a WiFi network

By default, a WiFi network broadcasts its WiFi network name (also referred to as the SSID) so that WiFi clients can detect the SSID in their scanned network lists. For additional security, you can turn off the SSID broadcast and hide the SSID so that users must know the SSID to be able to join the WiFi network.

To hide or broadcast the network name for a WiFi 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. Select or clear the **Enable SSID Broadcast** check box.

   Selecting this check box enables broadcast of the SSID (the default setting) and clearing this check box hides the SSID.
6. Click the **Apply** button.

   Your settings are saved.

Enable or disable AX WiFi

AX WiFi improves your network's capacity, Internet upload and download speeds, and WiFi range by allowing WiFi traffic from different devices to be concurrently managed. To do this, AX WiFi can use Orthogonal Frequency-Division Multiple-Access (OFDMA), 4x4 multi-user MIMO, and intelligent scheduling.

AX WiFi is enabled by default.

To enable or disable AX WiFi:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. Select or clear the **Enable AX** check box.

   Selecting this check box enables AX WiFi (the default setting) and clearing this check box disables AX WiFi.
6. Click the **Apply** button.

Your settings are saved.

Enable or disable OFDMA

If AX WiFi is enabled (which it is by default), you can enable Orthogonal Frequency-Division Multiple-Access (OFDMA) for each radio band independently. By default, OFDMA is disabled in both radio bands, even when AX WiFi is enabled.

OFDMA allows data transmission signals to be split into smaller signals. Your router sends these small signals directly to individual devices in your network. Because multiple devices can be served in the same transmission window, your router can increase network speed and efficiency.

Note the following about OFDMA:

- Enable OFDMA if your network includes many Internet of things (IoT) devices.
- After you enable OFDMA, if you notice that some of your devices do not function as expected, disable OFDMA to see if the devices function normally.
- If your network includes many older devices, you might want to keep OFDMA disabled.

To enable or disable OFDMA:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. Select or clear the **Enable OFDMA in 2.4 GHz** check box.

   Selecting this check box turns on OFDMA in the 2.4 GHz radio band and clearing this check box turns off OFDMA in the 2.4 GHz radio band.
6. Select or clear the **Enable OFDMA in 5 GHz** check box.

   Selecting this check box turns on OFDMA in the 5 GHz radio band and clearing this check box turns off OFDMA in the 5 GHz radio band.
7. Click the **Apply** button.

Your settings are saved.

Enable or disable Smart Connect

Smart Connect selects the fastest WiFi band for your router. For Smart Connect to work, the 2.4 GHz and 5 GHz bands must use the same WiFi network name (SSID) and network key (password). That means that when you connect to the router with WiFi, you see only one SSID that connects to both bands.

NOTE: If you enable Smart Connect and the SSID and passwords for the 2.4 GHz and 5 GHz bands do not match, the WiFi settings for the 2.4 GHz band overwrite the WiFi settings for the 5 GHz band.

To enable or disable Smart Connect:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. Select or clear the **Enable Smart Connect** check box.

   Selecting this check box enables Smart Connect and clearing this check box disables Smart Connect (the default setting).
6. Click the **Apply** button.

   Your settings are saved.

Enable or disable 20/40 MHz coexistence for the 2.4 GHz radio

20/40 coexistence allows a 20 MHz and 40 MHz channel width to be supported simultaneously. By default, 20/40 MHz coexistence is enabled on the 2.4 GHz radio to

prevent interference between WiFi networks in your environment at the expense of WiFi speed. If no other WiFi networks are present in your environment, you can disable 20/40 MHz coexistence to increase the WiFi speed on the 2.4 GHz radio to the maximum supported speed for the WiFi mode.

20/40 MHz coexistence applies to the 2.4 GHz radio.

To enable or disable 20/40 MHz coexistence for the 2.4 GHz radio:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. Select or clear the **Enable 20/40 MHz Coexistence** check box.

   Selecting this check box enables coexistence (the default setting) and clearing this check box disables coexistence.
6. Click the **Apply** button.

   Your settings are saved.

Change the WiFi mode

The WiFi mode options for the 2.4 GHz and 5 GHz WiFi networks depend on whether AX WiFi is enabled. For more information about AX WiFi , see Enable or disable AX WiFi on page 65.

Change the WiFi mode if AX WiFi is enabled

To change the WiFi mode settings if AX WiFi is enabled:

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **Wireless**.

   The Wireless Settings page displays.

5. In the Wireless Network (2.4 GHz b/g/n/ax) section, select a WiFi mode from the **Mode** menu.
   - **Up to 54 Mbps**: Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11ax and 802.11n devices to functioning at up to 54 Mbps.
   - **Up to 230 Mbps**: Allows for reduced interference with neighboring WiFi networks. Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11ax and 802.11n devices to functioning at up to 230 Mbps.
   - **Up to 460 Mbps**: Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network and allows 802.11ax and 802.11n devices to function at up to 460 Mbps. This mode is the default mode.

6. In the Wireless Network (5 GHz a/n/ac/ax) section, select a WiFi mode from the **Mode** menu.
   - **Up to 286 Mbps**: Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band but limits 802.11ax, 802.11ac, and 802.11n devices to functioning at up to 286 Mbps.
   - **Up to 572 Mbps**: Allows for reduced interference with neighboring WiFi networks. Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band but limits 802.11ax and 802.11ac devices to functioning at up to 572 Mbps.
   - **Up to 1200 Mbps**: Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band and allows 802.11ax and 802.11ac devices to function at up to 1200 Mbps. This mode is the default mode.

7. Click the **Apply** button.

   Your settings are saved.

Change the WiFi mode if AX WiFi is disabled

To change the WiFi mode settings if AX WiFi is disabled:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. In the Wireless Network (2.4 GHz b/g/n/ax) section, select a WiFi mode from the **Mode** menu.
   - **Up to 54 Mbps**: Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11ax and 802.11n devices to functioning at up to 54 Mbps.
   - **Up to 145 Mbps**: Allows for reduced interference with neighboring WiFi networks. Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network but limits 802.11ax and 802.11n devices to functioning at up to 145 Mbps.
   - **Up to 300 Mbps**: Allows 802.11ax, 802.11n, 802.11g, and 802.11b devices to join the network and allows 802.11ax and 802.11n devices to function at up to 300 Mbps. This mode is the default mode if AX WiFi is disabled.
6. In the Wireless Network (5 GHz a/n/ac/ax) section, select a WiFi mode from the **Mode** menu.
   - **Up to 173 Mbps**: Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band of the network but limits 802.11ax, 802.11ac, and 802.11n devices to functioning at up to 173 Mbps.
   - **Up to 400 Mbps**: Allows for reduced interference with neighboring WiFi networks. Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band but limits 802.11ax and 802.11ac devices to functioning at up to 400 Mbps.
   - **Up to 866 Mbps**: Allows 802.11ax, 802.11ac, 802.11n, and 802.11a devices to join the WiFi network in the 5 GHz band and allows 802.11ax and 802.11ac

devices to function at up to 866 Mbps. This mode is the default mode if AX WiFi is disabled.

7. Click the **Apply** button.

   Your settings are saved.

Change the 2.4 GHz or 5 GHz WiFi channel

You can change the 2.4 GHz or 5 GHz WiFi channel.

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 happens, experiment with different channels to see which is the best.

When you use multiple access points, it is better if adjacent access points use different channels to reduce interference. The recommended channel spacing between adjacent access points is four channels (for example, for the 2.4 GHz radio, use channels 1 and 5, or 6 and 10).

NOTE: If you change the 2.4 GHz or 5 GHz channel, the change also applies to the guest network.

To change the WiFi channel:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. To change the 2.4 GHz or 5 GHz WiFi channel, select a channel number from the **Channel** menu in the Wireless Network (2.4 GHz b/g/n/ax) section, Wireless Network (5 GHz a/n/ac/ax) section, or in both sections.
6. Click the **Apply** button.

   Your settings are saved.

Change your country or region

In some countries, the router is sold with a preconfigured country or region setting and you might not be able to change it.

To view or change your country or region:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Wireless**.

   The Wireless Settings page displays.
5. From the **Region** menu, select your region.

   In some locations, you cannot change this setting.
6. Click the **Apply** button.

   Your settings are saved.

Set up a guest WiFi network

A guest WiFi 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 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. The channel also depends on the channel selection of the main WiFi network.
The router provides two default guest WiFi networks with the following names (SSIDs):

- **2.4 GHz guest WiFi network SSID**: NETGEAR-Guest
- **5 GHz guest WiFi network SSID**: NETGEAR-5G-Guest

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

To set up a guest WiFi 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Guest Network**.

   The Guest Network Settings page displays.
5. Configure the following settings to set up a 2.4 GHz or 5 GHz guest WiFi network:
   - **Enable Guest Network**: By default, the guest WiFi network is disabled. To enable the guest WiFi network for the 2.4 GHz or 5 GHz WiFi band, select the **Enable Guest Network** check box.
   - **Enable SSID Broadcast**: By default, the router broadcasts the SSID of the 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 or 5 GHz guest WiFi network, clear the **Enable SSID Broadcast** check box.
   - **Allow guests to see each other and access my local network**: By default, WiFi clients that are connected to the 2.4 GHz or 5 GHz 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.
   - **Guest Wireless Network Name (SSID)**: The SSID is the 2.4 GHz or 5 GHz guest WiFi network name. The default 2.4 GHz SSID is NETGEAR-Guest. The default 5 GHz SSID is NETGEAR-5G-Guest.

     To change the SSID, enter a name of maximum 32 characters in the field. The SSID is case-sensitive.
6. Select a WiFi security option for the 2.4 GHz or 5 GHz guest WiFi network:
   - **None**: An open WiFi network does not provide any security. Any WiFi device can join the guest WiFi network. This is the default setting for the guest WiFi network.
   - **WPA2-PSK [AES]**: Provides a secure and fast connection but some older WiFi devices do not detect WPA2 and support only WPA. If your guest WiFi network includes these older devices, select WPA-PSK [TKIP] + WPA2-PSK [AES] security.

To use WPA2 security, in the **Password (Network Key)** field, enter a phrase of 8 to 63 characters. To join the guest WiFi network, a user must enter this password.

- **WPA-PSK [TKIP] + WPA2-PSK [AES]**: Enables WiFi devices that support either WPA or WPA2 to join 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-PSK [TKIP] + WPA2-PSK [AES] security, in the **Password (Network Key)** field, enter a phrase of 8 to 63 characters. To join the guest WiFi network, a user must enter this password.

- **WPA3-PSK**: Enables WiFi devices that support WPA3 to join the guest WiFi network. WPA3 is the latest security standard, uses SAE encryption, and is more secure than WPA2. If all devices on your guest WiFi network support WPA3, we recommend that you use this type of security.

  To use WPA3 security, in the **Password (Network Key)** field, enter a phrase of 8 to 127 characters. To join the guest WiFi network, a user must enter this password.

- **WPA2 + WPA3**: Enables WiFi devices that support either WPA2 or WPA3 to join the guest WiFi network. This type of security is also referred to as WPA2-PSK/WPA3-PSK and uses SAE and AES encryption. WPA2-PSK (which uses AES) is less secure than WPA3 (which uses SAE).

  To use WPA2 + WPA3 security, in the **Password (Network Key)** field, enter a phrase of 8 to 63 characters. To join the guest WiFi network, a user must enter this password.

7. Click the **Apply** button.

   Your settings are saved.

Manage advanced WiFi settings

CAUTION: Take extra care changing advanced WiFi settings because incorrect configuration might affect the WiFi function of the router.

Enable or disable a WiFi radio

A WiFi radio is the component inside your router that broadcasts WiFi signal. Each radio (for example, the 5 GHz) radio has its own WiFi broadcast.

You can log in to the router and enable or disable a WiFi radio. If all WiFi radios are off, you can still use an Ethernet cable for a LAN connection to the router.

To enable or disable a WiFi radio:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

   The Wireless Settings page displays.
5. Select or clear the **Enable Wireless Router Radio** check box for a radio.

   Selecting this check box turns on the radio and clearing this check box turns off the radio.

   By default, all radios are enabled.
6. Click the **Apply** button.

   Your settings are saved.

Set up a WiFi schedule

You can 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 multiple schedules, and you can set up separate schedules for the 2.4 GH and 5 GHz radios.

To set up a WiFi schedule for a radio:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

   The Wireless Settings page displays.

5. Click the **Add a new period** button for a radio.

   The Turn off wireless signal by schedule 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.
7. Click the **Apply** button.

   The Wireless Settings page displays.

   The new schedule displays in the table. (You can edit or delete the schedule.)
8. Select the **Turn off wireless signal by schedule** check box for the radio to activate the schedule.

   Selecting this check box enables all WiFi schedules for the radio radio and clearing this check box disables all WiFi schedules for the radio. By default, no WiFi schedule is set up and the check box is disabled.
9. Click the **Apply** button.

   Your settings are saved.

Enable or disable implicit beamforming

Beamforming shapes a directional WiFi signal aimed at a WiFi client based on the client's location, as opposed to radiating the signal out in all directions. This feature improves WiFi range and performance. Client devices do not need to support beamforming to benefit from implicit beamforming.

To enable or 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

   The Wireless Settings page displays.
5. Scroll down and select or clear the **Enable Implicit BEAMFORMING** check box.

   Selecting this check box enables implicit beamforming (the default setting). Clearing this check box disables implicit beamforming.
6. Click the **Apply** button.

Your settings are saved.

Enable or disable MU-MIMO

Multiuser multiple input, multiple output (MU-MIMO) improves performance when many WiFi clients that are MU-MIMO-capable transfer data at the same time. For MU-MIMO to function, WiFi clients must support MU-MIMO (some older devices do not), and they must be connected to the 5 GHz WiFi band. This feature is enabled by default, but you can disable it.

To enable or disable 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

   The Wireless Settings page displays.
5. Scroll down and select or clear the **Enable MU-MIMO** check box.

   Selecting this check box enables MU-MIMO (the default setting). Clearing this check box disables MU-MIMO.
6. Click the **Apply** button.

   Your settings are saved.

Enable or disable PMF

Protected Management Frames (PMF) is a security feature that protects unicast and multicast management frames from being intercepted and changed for malicious purposes.

PMF is not enabled by default because some older devices do not support PMF.

To enable or disable PMF:

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Wireless Settings**.

   The Wireless Settings page displays.

5. Scroll down and select or clear the **Disable PMF** check box.

   Selecting this check box *disables* PMF (the default setting). Clearing this check box enables PMF.

   CAUTION: If you enable PMF, devices that do not support PMF cannot connect to the WiFi network.

6. Click the **Apply** button.

   Your settings are saved.

Enable or disable airtime fairness

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

To enable or 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Wireless Settings**.

   The Wireless Settings page displays.

5. Scroll down and select or clear the **Enable AIRTIME FAIRNESS** check box.

Selecting this check box enables airtime fairness (the default setting). Clearing this check box disables airtime fairness.

6. Click the **Apply** button.

   Your settings are saved.

Change the CTS/RTS threshold or preamble mode for a radio

For most WiFi networks, the CTS/RTS threshold and preamble mode work fine and we recommend that you do not change the settings. (In general, these settings are intended for WiFi testing.)

CAUTION: We recommend that you 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 a radio unexpectedly.

NOTE: If the Smart Connect feature is enabled, the CTS/RTS threshold and preamble mode apply to all radios. That means that you cannot change the CTS/RTS threshold and preamble mode for each radio individually.

To change the CTS/RTS threshold or preamble mode for a radio:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

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

   The Advanced Wireless Settings page displays.
5. In the **CTS/RTS threshold (1-2347)** field for a radio, enter a value from 1 to 2437.

   The default value is 2347.
6. From the **Preamble Mode** menu for a radio, select the preamble mode:
   - **Long Preamble**: A long transmit preamble might provide a more reliable connection or a slightly longer range.
   - **Short Preamble**: A short transmit preamble might give better performance.

CAUTION: Incorrect settings might disable the radio's WiFi broadcast unexpectedly.

7. Click the **Apply** button.

   Your settings are saved.

Use the WPS Wizard for WiFi connections

WPS (Wi-Fi Protected Setup) lets you connect a WPS-enabled device to your WiFi network without typing the WiFi password. Instead, you push a software button in the router web interface or enter a PIN to connect.

If you use the push button method, the 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 device that you are trying to connect.

NOTE: You cannot use the WPS Wizard to connect a device to a guest network.

NOTE: You cannot use WPS to connect devices if you are using WPA/WPA2 Enterprise WiFi security.

Use the WPS Wizard with the push button

To use the push button method to connect a WiFi device to your WiFi network, the device must have either a physical button or a software button.

To use the WPS Wizard with the push button:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > WPS Wizard**.

A note explaining WPS displays.

5. Click the **Next** button.

   The Add WPS Client page displays.

   By default, the **Push Button (recommended)** radio button is selected.

6. Click the green **WPS** software button on the page.
7. Within two minutes, go to the WPS-enabled device and use its WPS software to connect to the WiFi network.

   The WPS process automatically sets up the WPS-enabled device with the network password when it connects. The router web interface displays a confirmation message.

Use the WPS Wizard with a PIN

To use a PIN to connect a WiFi device to your WiFi network, you must know the PIN of the device.

To use the WPS Wizard with a PIN:

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

4. Select **ADVANCED > WPS Wizard**.

   A note explaining WPS displays.

5. Click the **Next** button.

   The Add WPS Client page displays.

   By default, the **Push Button (recommended)** radio button is selected.

6. Select the **PIN Number** radio button.
7. In the **Enter Clients' PIN** field, enter the PIN of the device.
8. Click the **Next** button.

   For four minutes, the router attempts to find the WiFi device.

9. Within four minutes, go to the WiFi device and use its WPS software to join the network without entering a password.

The WPS process automatically sets up the WPS-enabled device with the network password when it connects. The router web interface displays a confirmation message.

6

Manage the WAN and LAN Network Settings

You can customize the router's wide area network (WAN) settings for the Internet port and local area network (LAN) settings for local devices. We recommend that you install the router and connect it to the Internet before you change its network settings.

This chapter contains the following sections:

- Manage the WAN settings
- Change the LAN IP address settings or RIP settings
- Set the IP addresses that the router assigns
- Disable the DHCP server feature in the router
- Set up and manage Dynamic DNS
- Manage reserved LAN IP addresses
- Manage custom static routes
- Set up an IPTV port or a bridge for a port group or VLAN tag group

Manage the WAN settings

You can change security and other settings that determine how the router interacts with the Internet, also known as the wide area network (WAN).

Change the WAN security settings

The wide area network (WAN) security settings include port scan protection and denial of service (DoS) protection, which can protect your local area network (LAN) against many common cyber attacks. 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 Internet port. This feature allows your router to be discovered from the Internet. We recommend that you 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 protection for port scans and DoS attacks, select the **Disable Port Scan and DoS Protection** check box.
6. To enable the router to respond to a ping request from the Internet, 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 is not accessing a service that you configured on the Port Forwarding/Port Triggering page. Instead of discarding this traffic, you can specify that the router forwards 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Type the IP address.

   This must be a static IP address. For more information, see Manage reserved LAN IP addresses on page 94.
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 (such as video streaming) 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   Clearing the **Disable IGMP Proxying** check box enables IGMP proxying and selecting the **Disable IGMP Proxying** check box disables IGMP proxying. By default, IGMP proxying is disabled.
6. Click the **Apply** button.

   Your settings are saved.

Manage NAT filtering

Network Address Translation (NAT) filtering determines how the router processes inbound traffic. Secured NAT filtering blocks more unsolicited traffic from the Internet but might prevent some online games, point-to-point applications, or multimedia applications from working. Open NAT filtering provides a less secured firewall but allows almost all Internet applications to work. Secured NAT filtering 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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. 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**: Blocks more unsolicited traffic from the Internet but might prevent some Internet games, point-to-point applications, or multimedia applications from functioning. This is the default setting.
   - **Open**: Provides a 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 voice over IP (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 disable the SIP ALG:

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 **Disable SIP ALG** check box.

   Selecting the **Disable SIP ALG** check box disables the SIP ALG and clearing the **Disable SIP ALG** check box enables the SIP ALG. By default, the SIP ALG is enabled.

6. Click the **Apply** button.

Your settings are saved.

Change the LAN IP address settings or RIP settings

The router is preconfigured to use private IP addresses on the local area network (LAN) side and to act as a Dynamic Host Configuration Protocol (DHCP) server. We also refer to the LAN IP address settings as the LAN TCP/IP settings.
The router's default LAN IP configuration is as follows:

- **LAN IP address**: 192.168.1.1
- **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. If your network requires a different IP addressing scheme, you can change these settings.

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 you use competing subnets with the same IP scheme.

Router Information Protocol (RIP) allows a router to exchange routing information with other routers on the same network.

To change the LAN IP address settings or 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. To change the LAN IP address settings, do the following:
   a. In the **IP Address** field, type the IP address.
   b. In the **IP Subnet Mask** field, type the subnet mask of the router.

The IP address and subnet mask specify the IP address range that the devices on your network can use.

6. To change the RIP settings, do the following:
   a. Select the RIP direction:
      - **Both**: The router broadcasts its routing table periodically and incorporates information that it receives.
      - **Out Only**: The router only broadcasts its routing table periodically.
      - **In Only**: The router only incorporates the RIP information that it receives.
   b. Select the RIP version:
      - **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.

   If you changed the LAN IP address of the router, you are disconnected when this change takes effect.
8. To reconnect, close your browser, relaunch it, and log in to the router.

Set the IP addresses that the router assigns

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 connected to the LAN. 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. Using the default addressing scheme, define a range between 192.168.1.2 and 192.168.1.254, although you can save part of the range for devices with fixed addresses.

To set 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.
6. Specify the range of IP addresses that the router assigns:

   a. In the **Starting IP Address** field, type the lowest number in the range.

   b. In the **Ending IP Address** field, type the number at the end of the range of IP addresses.
7. Click the **Apply** button.

   Your settings are saved.

The router delivers the following address information to any LAN device that requests a DHCP address:

- 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)

Disable the DHCP server feature in the router

By default, the router acts 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 manually specify the network settings of all your devices.

To disable the DHCP server feature in 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**.

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

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.
7. (Optional) If this service is disabled and no other DHCP server is on your network, set your device IP addresses manually so that the devices can access the router and the Internet.

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 don’t know what their IP addresses are or when this number 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.

Set up a new 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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**.

   You can select another service provider.
7. Select the **No** radio button.
8. In the **Host Name** field, type 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, specify *MyName*.mynetgear.com.
9. In the **Email** field, type the email address for your account.
10. In the **Password (6~32 characters)** field, type the password for your account.
11. Select the check box to agree with the terms of service and privacy policy, and click the **Register** button.
12. Follow the onscreen instructions to register for your NETGEAR Dynamic DNS service.

Use a DNS account that you already created

If you already created a Dynamic DNS account with NETGEAR, No-IP, or DynDNS, 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   The page adjusts and displays the **Show Status**, **Cancel**, and **Apply** buttons.

8. In the **Host Name** field, type the host name (sometimes called the domain name) for your account.
9. Depending on the type of service, specify either the user name or the email address:
   - **No-IP account or DynDNS account**: In the **User Name** field, type the user name for your account.
   - **NETGEAR account**: In the **Email** field, type the email address for your account.
10. In the **Password (6-32 characters)** field, type 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 Dynamic DNS account settings as necessary.
6. Click the **Apply** button.

   Your settings are saved.

Manage reserved LAN IP addresses

When you specify a reserved IP address for a device on the LAN, that device always receives the same IP address each time it requests an IP address from the router's DHCP server (for example, when the device restarts). Assign reserved IP addresses to devices or servers that require permanent IP settings.

Reserve an IP address

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. To reserve the IP address for a device that the router detects automatically, in the Address Reservation Table, select the radio button for the device.
7. To manually reserve an IP address for a device, do the following:

   a. In the **IP Address** field, type the IP address to assign to the device.

Choose an IP address from the router's LAN subnet, such as 192.168.1.x. (In a typical LAN subnet, IP addresses 192.168.1.0, 192.168.1.1, and 192.168.1.255 are reserved and cannot be used. 192.168.1.0 and 192.168.1.255 are not used by any devices.)

b. In the **MAC Address** field, type the MAC address of the device.

c. In the **Device Name** field, type a name for the device.

8. Click the **Add** button.

   Your settings are saved. The reserved address is entered into the Address Reservation table on the LAN Setup page.

The reserved address is not assigned until the next time the device requests an IP address from the router's DHCP server. Restart the device to force the device to request an IP address from the router.

Edit a reserved IP address

To edit a reserved 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Select the radio button next to the reserved address that you want to edit.
6. Click the **Edit** button.

   The Address Reservation page displays.
7. Change the settings.
8. Click the **Apply** button.

   Your settings are saved.

Delete a reserved IP address entry

To delete a reserved 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Select the radio button next to the reserved address that you want to delete.
6. Click the **Delete** button.

   The address is removed.

Manage custom static routes

For almost all Internet traffic, routes are automatically and dynamically selected. You can also set up a fixed, static route. Typically, you only need to add static routes when you have more than one router or multiple IP subnets on your network.

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

- Your main Internet access is through a cable modem to your ISP. The cable modem is connected to your router.
- Your network also includes an ADSL router that you use to access a remote office site. This ADSL router is connected to a DSL modem, which is used on-demand only.
- Your LAN subnet is 192.168.1.0, and the ADSL router’s address on your LAN is 192.168.1.100.
- The public IP address range at the remote office site is 134.177.0.0.

When you set up your router, two implicit static routes were created:

1. A default route was created between your router and your ISP's gateway.
2. A second static route was created between your router and your LAN for all 192.168.1.0 addresses.

With this configuration, if you try to access a device on the 134.177.0.0 network at the remote office site, your router forwards your request to your ISP. In turn, the ISP forwards your request to the remote office site, where the firewall will deny the request.

In this situation, you must define a static route, telling your router to access 134.177.x.x addresses through your ADSL router at its LAN address of 192.168.1.100.

Here is an example static route setting for this configuration:

- **Destination IP address and subnet mask settings**: The route applies to all addresses at the remote site, so set the destination IP address to 134.177.0.0 and the subnet mask to 255.255.0.0.
- **Gateway IP address**: Traffic for addresses in the 134.177.x.x network must be forwarded to the ADSL router, so set the gateway IP address to 192.168.1.100 (the ADSL router's address on your LAN).
- **Private route**: Make the static route private as a security precaution in case Routing Information Protocol (RIP) is activated. A private route is not reported in RIP messages.
- **Active**: Select the Active check box to ensure the route is active.
- **Metric**: Set a low value for the metric (for example, 2).

Set up a static route

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   Static route configuration options display.
6. In the **Route Name** field, type a name for this static route (for identification purposes only).
7. To limit access to the LAN only, select the **Private** check box.

   If the **Private** check box is selected, the static route is not reported in RIP.

8. To prevent the route from becoming active, 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.
9. Enter the following settings:
   - **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 for routing the traffic to the final destination or host.

     The IP address of the gateway must be on the same LAN segment as the router.
   - **Metric**: Enter a number from 2 through 15.

     This value represents the number of routers between your network and the destination. Usually, a setting of 2 or 3 works.
10. Click the **Apply** button.

    Your settings are saved. The static route is added to the table on the Static Routes page.

Edit a static route

To edit 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 table, select the radio button for the route.
6. Click the **Edit** button.

   Static route configuration options display.

7. Edit the route information.
8. Click the **Apply** button.

   Your settings are saved.

Delete a static route

To delete 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 table, select the radio button for the route.
6. Click the **Delete** button.

   The route is removed from the table.

Set up an IPTV port or a bridge for a port group or VLAN tag group

If you subscribe to an Internet Protocol television (IPTV) service (a TV streaming service) and your IPTV service requires an intranet address, you can set up an IPTV port.

Some devices, such as an IPTV, cannot function behind the router's network address translation (NAT) service or firewall. For example, an IPTV port might require an IP address within the Internet service provider's (ISP's) network (also called an ISP intranet address).

The way you set up an IPTV port is by creating a bridge connection from the router's Internet port to the LAN port to which the IPTV device is connected. When IPTV is connected through WiFi, the router must also support a bridge connection from the

Internet port to the WiFi network. The designated LAN port or WiFi network effectively becomes an IPTV port with direct access to the WAN without going through NAT.

Based on what your ISP requires for the device to connect to the ISP's network directly, you can enable the bridge between the IPTV device and the router's Internet port with or without a VLAN tag.

NOTE: If your ISP provides instructions for how to set up a bridge for IPTV and Internet service, follow those instruction.

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 the IPTV device and the router's Internet interface without a virtual local area network (VLAN) tag.

A bridge with a port group does not use VLAN tags and 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 / Bridge group** check box.

   The page expands.
6. Select the **By bridge group** radio button.
7. Select a Wired Ports check box or a Wireless check box:

- **Wired Ports**: If your device is connected to an Ethernet LAN port on the router, select the Wired Ports check box that corresponds to the Ethernet LAN port on the router to which the device is connected.
- **Wireless**: 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 Ports or Wireless check box. You can select more than one check box. Depending on your configuration, other devices connected to the specified ports or WiFi networks might not be able to access the public Internet.

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 the IPTV device and the router's Internet interface with a virtual local area network (VLAN) tag.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 / Bridge group** check box.

The page expands.

6. Select the **Enable VLAN Tag** radio button.

   The page expands.

   The table includes a default VLAN enabled for normal Internet access. The VLAN's ID is 10 and has all Ethernet LAN ports and WiFi networks as members.

7. Click the **Add** button.

   The Add VLAN Rule page displays.

8. Specify the following settings for the VLAN tag group:
   - **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 (lowest priority) to 7 (highest priority).

9. Select the check box for a wired Ethernet LAN port or wireless network.

   If your device is connected to an Ethernet LAN port on the router, select the wired Ethernet LAN port check box that corresponds to the Ethernet LAN 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 Ethernet LAN port or WiFi network. You can select more than one port or WiFi network. Depending on your configuration, other devices connected to the specified ports or WiFi networks might not be able to access the public Internet.

10. Click the **Add** button.

    Your settings are saved.

    The VLAN tag group is added and automatically enabled. The VLAN / Bridge Settings page displays again.

7

Optimize Performance

You can set up the router to optimize performance.

This chapter contains the following sections:

- Set the Internet bandwidth for your router
- Improve network connections with Universal Plug and Play

Set the Internet bandwidth for your router

You can let a speed test automatically set the Internet bandwidth for your router, or you can do so manually.

NOTE: A speed test does not increase your total Internet bandwidth or WiFi throughput.

To set the Internet bandwidth for 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Speed Test**.

   The Speed Test page displays.
5. Select the **Enable Speed Test** check box.
6. Select how the Internet bandwidth is set for the router:

   - **Let Speedtest detect my Internet bandwidth**: We recommend that you use the speed test to detect your Internet bandwidth.

     To use the speed test, do the following:

     a. For more accurate speed test results, make sure that no other devices are accessing the Internet.

     b. Select the **Let Speedtest detect my Internet bandwidth** radio button.

     c. Click the **Take a Speedtest** button.

     The speed test determines your Internet bandwidth and sets it for the router.
   - **I want to define my Internet Bandwidth**: If you know what your download and upload speed are, select this radio button and enter your download and upload speeds in the fields.
7. Click the **Apply** button.

   Your settings are saved.

Improve network connections with Universal Plug and Play

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

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

To enable or disable Universal Plug and 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. UPnP for automatic device configuration can be enabled or disabled. If you clear the **Turn UPnP On** check box, the router does not allow any device to automatically control router resources, such as port forwarding.
6. In the **Advertisement Period** field, type 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 receive 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. In the **Advertisement Time to Live** field, type 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, you might need 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.

8

Manage and Monitor Your Router

This chapter describes the router settings for administering, maintaining, and monitoring your router and home network.

This chapter contains the following sections:

- Update the router firmware
- Change the admin password
- Enable admin password reset
- Reset the admin password
- Use HTTPS to access the router
- Change the router's device name
- Manage the router configuration file
- Monitor the router and network
- Monitor, meter, and control Internet traffic
- Set the NTP server
- Set your time zone and daylight saving time
- Set up the router as a WiFi access point
- Return the router to router mode
- Manage LED blinking or turn off LEDs
- Connect to your router with Anywhere Access
- Return the router to its factory default settings

Update the router firmware

You can log in to the router and check if new firmware is available, or you can manually install a specific firmware version on your router.

Check for new firmware and update the router

The router firmware (routing software) is stored in flash memory. You might see a message at the top of the router pages when new firmware is available. You can respond to that message to update the firmware or you can check to see if new firmware is available and update your product.

NOTE: We recommend that you connect a computer to the router using an Ethernet connection to update the firmware.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Router Update**.

   The Router Update page displays.
5. Click the **Check** button.

   The router finds new firmware information if any is available and displays a message asking if you want to download and install it.
6. Click the **Update** button.

   The router locates and downloads the firmware 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.

When the update is complete, your router restarts. The update process typically takes about one minute. Read the new firmware release notes to find out if you must reconfigure the router after updating.

Manually upload firmware to the router

If you want to upload a specific firmware version, or your router fails to update its firmware automatically, follow these instructions.

NOTE: We recommend that you connect a computer to the router using an Ethernet connection to upload the firmware.

To manually upload a firmware file to your router:

1. Download the firmware for your router from the NETGEAR Download Center, save it to your desktop, and unzip the file if needed.

   NOTE: The correct firmware file uses an `.img` or `.chk` extension.

2. If available, read the firmware release notes to find out if you must reconfigure the router after uploading.
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 displays.
5. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
6. Select **ADVANCED > Administration > Router Update**.

   The Router Update page displays.
7. Select the **Manual Update** tab.

   The Manual Update page displays.
8. Click the **Browse** button.
9. Find and select the firmware file on your computer.
10. Click the **Upload** button.

    The router begins the upload.

    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.

When the upload is complete, your router restarts. The upload process typically takes about one minute.

Manage the firmware update settings

You can set the router to automatically update to future firmware versions as they become available.

To manage automatic updates for future firmware versions:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Router Update**.

   The Router Update page displays.
5. In the Router Auto Firmware Update section, select one of the following radio buttons.
   - **Enable**: The router automatically updates to future firmware versions as they become available. This is the default setting. We recommend that you keep this setting so that you get the latest security and feature updates as soon as they are available.
   - **Disable**: The router does not automatically update to future firmware versions. You must manually update to future firmware versions.
6. Click the **Apply** button.

   Your settings are saved.

Change the admin password

The admin password is also called the router login password. It is the password that you need to log in to the router with the admin user name when you use a web browser to access the router.

The first time that you logged in to the router, you set the admin password. You can change this password.

NOTE: 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 change the password for the admin user 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 in the **Old Password** field.
6. Type the new password in the **Set Password** and **Repeat New Password** fields.
7. Click the **Apply** button.

   Your settings are saved.

Enable admin password reset

The router admin password is used to log in to your router web interface. We recommend that you enable password reset so that you can reset the password if you forget it. This reset process is supported in Chrome, Safari, Firefox, Edge, and Internet Explorer.

To enable password reset:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 Reset** check box.
6. Select two security questions and provide answers to them.
7. Click the **Apply** button.

   Your settings are saved.

Reset the admin password

If you set up the password reset feature (see Enable admin password reset on page 111), you can reset your router admin password if you forgot it. This reset process is supported in Chrome, Safari, Firefox, Edge, and Internet Explorer.

To reset your router admin 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 displays.
3. Click the **Cancel** button.

   If password reset 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.

   The Router Password Reset page displays.
6. Enter the answers to your security questions.
7. Click the **Continue** button.

   New password fields display.
8. Type a new admin password, confirm your new password, and set new security questions and answers.
9. Click the **Next** button.

   The page displays a confirmation.
10. Click the **Login** button.

    A login window opens.
11. With your new password, log in to the router.

Use HTTPS to access the router

You can configure the router to always require secure HTTP (HTTPS) connections between your web browser and the router web interface, for example, "https://www.routerlogin.net". When you enable the HTTPS requirement, connection requests to the router web interface that specify HTTP are automatically converted to HTTPS.

NOTE: After you enable the HTTPS requirement, when you enter **http://www.routerlogin.net**, your browser might display a security warning because of the self-signed certificate on the router. This is expected behavior. You can proceed, or add an exception for the security warning. For more information, visit kb.netgear.com/000062980/what-to-do-incase-of-security-message.

To require HTTPS connections:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Web Services Management**.

   The Web Services Management page displays.
5. Select the **Always Use HTTPS to Access Router** check box.
6. Click the **Apply** button.

   Your settings are saved.

Change the router's device name

The router's default device name is based on its model number. This device name displays in the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Setup > Device Name**.

   The Device Name page displays.
5. In the **Device Name** field, type a new name.

   Type up to 32 alphanumerical characters.
6. Click the **Apply** button.

   Your settings are saved.

Manage the router configuration file

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, restore it, or reset it to the factory default settings.

Back up the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Follow the direction of your browser to save the `.cfg` file.

   A copy of the current settings is saved in the location that you specify.

   NOTE: Because .cfg files downloaded from the public Internet can contain malicious data, some web browsers might display a warning message that asks if you want to keep the backup settings .cfg file from your router. The .cfg file that your router generates is safe. You can clear any warning messages that your browser might display before downloading.

Restore the settings

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 to find and select the `.cfg` file.
6. Click the **Restore** button.

   The file is uploaded to the router and the router restarts.

   WARNING: Do not interrupt the restoration process.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 restarts. 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.

Monitor the router and network

You can view information about the router and the Internet and WiFi settings, view devices on the network, view and manage logs of router activity, and view packet statistics.

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 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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED**.

   The ADVANCED Home page displays.

   The page displays panes for the router, Internet port, WiFi networks, and guest WiFi networks.

   The information on this page uses the following color coding:

   - **Green icon**: The Internet connection is fine and no problems exist. For a WiFi network, the network is enabled and secured.
   - **Red icon**: Configuration problems exist for the Internet connection. For a WiFi network, the network is disabled or down.
   - **Amber icon**: The Internet port is configured but cannot get an Internet connection (for example, because the cable is disconnected), a WiFi network is enabled but unprotected, or another situation requires your attention.

View devices currently on the network

You can view all devices that are currently connected to your network. If you are using VPN, you can also view the remote devices that are connected to your router through VPN.

To view devices on the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **Attached Devices**.

   The following information is displayed:

   - **Status**: Displays only if network access control (see Network access control list on page 47) is enabled. The field displays if a device is allowed or blocked.
   - **Connection Type**: Either wired or the WiFi band for the connection
   - **Device Name**: The device name, if known

- **IP Address**: The IP address that the router assigned to this device when it joined the network. This address can change if a device is disconnected and rejoins the network.
- **MAC Address**: The unique MAC address for each device. The MAC address is typically shown on the product label of the device.

  NOTE: Some iOS and Android devices display a private or randomized MAC address when connecting to WiFi. If a device does not connect to your WiFi network for a while, it might connect with a different MAC address next time. You can disable this setting on your iOS or Android device.

If you configured VPN (see Use OpenVPN to Access Your Network on page 134) and any VPN client devices are connected to the router, the following information is displayed in a separate table:

- **Device Name**: The device name, if known
- **Remote IP Address**: The device IP address at the remote location
- **Local IP Address**: The device IP address at the router network
- **Connection Time**: The time that the VPN connection is active

5. To edit the detected device type, model, or name that displays on the page, do the following:
   a. Select the check box for the device.
   b. Click the **Edit** button.

      The Edit Device page displays.
   c. From the **Device Type** menu, select another type than the detected type.
   d. In the **Device Model** field, type another model than the detected model.
   e. In the **Device Name** field, type another name than the detected name.
   f. Click the **Apply** button.

      You changes are saved. These changes apply only to how the device is displayed on the Attached Device page. (The device itself is not changed.)
6. To update this page, click the **Refresh** button.

View and manage logs of router activity

The logs are a detailed record of numerous router actions. When the Block Sites function is enabled, the logs also show access attempts to websites. Up to 256 entries are stored in the log.

To view and manage 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Administration > Logs**.

   The Logs page displays and shows information such as the following:

   - **Action**: The action that occurred, such as whether Internet access was blocked or allowed.
   - **Source IP**: The IP address of the initiating device for the log entry.
   - **Target address**: When the Block Sites function is enabled, the name or IP address of the website or news group visited or to which access was attempted.
   - **Date and time**: The date and time the log entry was recorded.

   Other information might be displayed.
5. To customize the logs, scroll down and clear or select the check boxes in the Include in Log section.
6. If you make changes, click the **Apply** button.

   Your settings are saved.
7. To refresh the log screen, click the **Refresh** button.
8. To email the log immediately, click the **Send Log** button.

   You must set up email notifications in order to receive the logs. The router emails the logs to the address that you specified when you set up email notifications. For more information, see Set up security event email notifications on page 58.
9. To clear the log entries, click the **Clear Log** button.

View the Internet connection status or renew the connection

You can view the Internet connection status and, if necessary, manually restart the connection.

The information in this section applies to Internet connections that do not require you to log in to your ISP, L2TP connections, and PPTP connections.

To view the Internet connection status or renew the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED**.

   The ADVANCED Home page displays.
5. In the Internet Port pane, click the **Connection Status** button.

   The Connection Status pop-up window displays. The information that is shown depends on the type of Internet connection.

   For example, if your Internet connection does not require a login and the router receives an IP address automatically, the window displays the following information:

   - **IP Address**: The IP address that is assigned to the router
   - **Subnet Mask**: The subnet mask that is assigned to the router
   - **Default Gateway**: The IP address for the default gateway that the router communicates with
   - **DHCP Server**: The IP address for the Dynamic Host Configuration Protocol server that provides the TCP/IP configuration for all the computers that are connected to the router
   - **DNS Server**: The IP address of the Domain Name Service server that provides translation of network names to IP addresses
   - **Lease Obtained**: The length of time that the IP address lease is effective
   - **Lease Expires**: The remaining time before the IP address lease expires
6. To release (stop) the Internet connection, click the **Release** button.

   If you are using a PPTP or L2TP connection, the name of the button might be different.
7. To renew (restart) the Internet connection, click the **Renew** button.

   If you are using a PPTP or L2TP connection, the name of the button might be different.

View the PPPoE Internet connection status or renew the connection

If your router is set up to use a PPPoE Internet connection, you can view the PPPoE connection status and, if necessary, manually restart the connection.

To view the PPPoE Internet connection status or renew the 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 displays. The information that is shown is specific to a PPPoE connection.
6. To renew (restart) the PPPoE connection, click the **Connect** button.

   The router continues to attempt to connect. If the router does not 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.

View the packet statistics of the Internet and LAN ports and WiFi networks

To view the packet statistics of the Internet and LAN ports and WiFi networks:

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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED**.

   The ADVANCED Home page displays.

5. In the Internet Port pane, click the **Show Statistics** button.

   The Show Statistics pop-up window displays and shows the following information:

   - **System Up Time**: The time elapsed since the router was last restarted.
   - **Port**: The statistics for the WAN (Internet) port, LAN (Ethernet) ports, and WLANs (WiFi networks). For each port, the window displays the following information:
     - **Status**: The link status of the port.
     - **TxPkts**: The number of packets transmitted on this port since the router was last started.
     - **RxPkts**: The number of packets received on this port since the router was last started.
     - **Collisions**: The number of collisions on this port since the router was last started.
     - **Tx B/s**: The average (outbound) bandwidth used on the WAN and LAN ports since startup, in bytes per second.
     - **Rx B/s**: The average reception (inbound) bandwidth used on the WAN and LAN ports since startup, in bytes per second.
     - **Up Time**: The time elapsed since this port acquired the link.
   - **Poll Interval**: The interval at which the statistics are updated on this page.

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.

Monitor, meter, and control 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   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 126.

Restrict Internet traffic by volume

You can record and restrict 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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 you use a session-based connection type and want to round up the measured data volume to a particular amount for each connection even when you use less, enter the 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 MB to specify when the router issues a warning message before the monthly limit in volume is reached.

    This setting is optional. The router issues a warning when the balance falls below the volume 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 green/amber**: This setting is optional. When the traffic limit is reached, the Internet LED blinks alternating green 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.

    The Internet Traffic Statistics section helps you to monitor data traffic. For more information, see View the Internet traffic volume and statistics on page 126.

Restrict Internet traffic by connection time

If you connect to the Internet with a session-based connection type, you can record and restrict 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.
7. In the **Monthly limit** field, enter how many hours per month are allowed.
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 green/amber**: This setting is optional. When the traffic limit is reached, the Internet LED blinks alternating green 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.

    The Internet Traffic Statistics section helps you to monitor data traffic. For more information, see View the Internet traffic volume and statistics on page 126.

View the Internet traffic volume and statistics

If you enabled the traffic meter (see Start the traffic meter without traffic volume restrictions on page 123), 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

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.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

Set the NTP server

By default, the router uses the NETGEAR Network Time Protocol (NTP) server to sync the network time. You can change the NTP server to your preferred NTP server.

To set the NTP 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Administration > NTP Settings**.

   The NTP Settings page displays.
5. Select an NTP server radio button:

- **Use the default NETGEAR NTP server**: Use the preset NETGEAR NTP server.
- **Set your preferred NTP server**: Enter the name or IP address of your preferred server.

6. If you select the **Set your preferred NTP server** radio button, enter the NTP server domain name or IP address in the field below the radio button.
7. Click the **Apply** button.

   Your settings are saved.

Set your time zone and daylight saving time

To set your time zone and daylight saving 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Administration > NTP Settings**.

   The NTP Settings page displays.
5. Select your time zone from the menu.
6. If you live in a region that observes daylight saving time, select the **Automatically adjust for daylight savings time** check box.
7. Click the **Apply** button.

   Your settings are saved.

Set up the router as a WiFi access point

You can set up the router to run as an access point (AP) on the same local network as another router. When you set up the router as an AP, some of its router features are disabled so that they do not interfere with the router features of the other router.

NOTE: To use AP mode and keep the ability to access to the router web interface, connect using an Ethernet cable from your router's Internet port to a LAN port on your existing network.

To set up the router as an AP:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Router / AP Mode**.

   The Router / AP Mode page displays.
5. Select the **AP Mode** radio button.

   The page adjusts.
6. Select an IP address setting:

   - **Get dynamically from existing router**: The other router on the network assigns an IP address to this router while it is in AP mode.
   - **Use fixed IP address (not recommended)**: Use this setting if you want to manually assign a specific IP address to this router while it is in AP mode. Using this option effectively requires advanced network experience.
7. Click the **Apply** button.

   The IP address of the router changes, and you are disconnected.
8. To reconnect, close and restart your browser and type **http://www.routerlogin.net**.

Return the router to router mode

By default, your router is set to router mode. If you changed the mode to access point mode (AP mode), you can change the mode back to router mode.

To return the router to router mode:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Router / AP Mode**.

   The Router / AP Mode page displays.
5. Select the **Router Mode** radio button.

   The page adjusts.
6. Click the **Apply** button.

   The IP address of the router changes, and you are disconnected.
7. To reconnect, close and restart your browser and type **http://www.routerlogin.net**.

Manage LED blinking or turn off LEDs

You can disable or enable LED blinking. You can also turn off the LEDs.

To manage 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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. 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.

5. Select a radio button:
   - **Enable blinking on Internet LED, and LAN LED when data traffic is detected**: Allows standard LED behavior. This setting is enabled by default.
   - **Disable blinking on Internet LED, and LAN LED when data traffic is detected**: Blinking is disabled when data traffic is detected.
   - **Turn off all LEDs except Power LED**: All the LEDs, except the Power LED, are turned off.
6. Click the **Apply** button.

   Your settings are saved.

Connect to your router with Anywhere Access

The Anywhere Access feature on the Nighthawk app allows you to connect to your router when you're away from home and change its settings. Before you can use the Anywhere Access feature on the Nighthawk app, you must update your router's firmware and download the latest Nighthawk app for your mobile device.

For more information about how to update your router's firmware, see Update the router firmware on page 108.

To download the latest Nighthawk app for your mobile device, visit netgear.com/home/apps-services/nighthawk-app.

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 current configuration and 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 in the router web interface.

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.

NOTE: If the router is in access point mode and you do not know the IP address that is assigned to it, first try to use an IP scanner application to detect the IP address. (IP scanner applications are available online free of charge.) If you can detect the IP address, you don't need to reset the router to factory default settings.

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 10 seconds.
3. Release the **Reset** button.

   The Power LED starts blinking. When the reset is complete, the router restarts. 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 web interface, 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.

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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. 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 restarts. 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.

9

Use OpenVPN to Access Your Network

You can use OpenVPN software to remotely access your router with virtual private networking (VPN). This chapter explains how to install and use OpenVPN software to set up a VPN tunnel.

The chapter contains the following sections:

- About VPN connections
- LAN IP addressing in VPN networks
- Enable OpenVPN service on the router
- Install OpenVPN software on a VPN client
- Use VPN to access your Internet service at home

About VPN connections

A virtual private network (VPN) lets you use the Internet to securely access your network when you aren't home.

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 do the following:

- Log in to the router to enable and configure OpenVPN (see Enable OpenVPN service on the router on page 136).
- Install OpenVPN client software and configuration files on your device from which you want to use VPN (see Install OpenVPN software on a VPN client on page 137).
- Run the OpenVPN client software on your device when you want to use a VPN connection.

Enabling OpenVPN on your router allows VPN connections between the router and a client, for example your laptop when you are away from home. The router provides the VPN service and the laptop is the VPN client. Traffic between the router and the laptop is encrypted.

NOTE: The router itself does not function as a VPN client to an external VPN service provider, so it does not encrypt traffic passing between your home network and the Internet.

VPN can use either Dynamic DNS (DDNS) or a static IP address to connect with your router:

- To use a DDNS service, register for a DDNS account with a host name. You use the host name to access your network. The router supports these DDNS accounts: NETGEAR, No-IP, and Dyn. For more information, see Set up and manage Dynamic DNS on page 91.
- If your Internet service provider (ISP) assigned a static WAN IP address that never changes, the VPN can use that IP address to connect to your home network.

LAN IP addressing in VPN networks

For the VPN connection to work, your computer or device (the VPN client) must be connected to a network that uses a different LAN IP address scheme than your router.

The default LAN IP address scheme for the router is 192.168.1.x. (The most common IP schemes are 192.168.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 where your VPN client device 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.

For information about changing the LAN settings on the router, see Change the LAN IP address settings or RIP settings on page 88.

Enable OpenVPN service on the router

You must enable the OpenVPN service settings on the router before you can use a VPN connection.

To enable OpenVPN service:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.

   NOTE: The OpenVPN configuration software packages that you can download on the page are for the VPN client devices (see Install OpenVPN software on a VPN client on page 137).
5. Select the **Enable VPN Service** check box.

   We recommend that you use the default TUN mode and TAP mode settings. (These settings determine how VPN information is transferred.) If you know that you need other settings, you can change the TUN mode and TAP mode settings, but you must do so *before* you download and install the OpenVPN configuration software packages on client devices (see Install OpenVPN software on a VPN client on page 137).
6. To change the TUN mode settings, do the following:
   - To change the TUN mode service type, select the **UDP** or **TCP** radio button.

The default protocol for TUN mode is UDP.

- To change the TUN mode service port, type the port number that you want to use in the field.

  The default port number for TUN mode is 12973. The TUN port number is used in the `.ovpn` file of the OpenVPN configuration software package for Mac and non-Windows clients.

7. To change the TAP mode settings, do the following:
   - To change the TAP mode service type, select the **UDP** or **TCP** radio button.

     The default protocol for TAP mode is UDP.
   - To change the TAP mode service port, type the port number that you want to use in the field.

     The default port number for TAP mode is 12974. The TAP port number is used in the `.ovpn` file of the OpenVPN configuration software package for Windows clients.
8. Click the **Apply** button.

   Your changes are saved. VPN is enabled on the router, but you must install and set up OpenVPN software on your device before you can use a VPN connection.

Install OpenVPN software on a VPN client

You must install OpenVPN software on each Windows-based computer, Mac computer, iOS device, and Android device that you plan to use for VPN connections to your router. Each computer or device is called a VPN client.

The software consists of the application software and the configuration files:

- Download and install the application software from the link that is provided in each client-specific section.
- Download and install the configuration files from the router as described in each client-specific section. The configuration files provide the correct router configuration information for the client utility. You must download the configuration files *after* you enable and configure OpenVPN service on the router (see Enable OpenVPN service on the router on page 136).

NOTE: If you later change the OpenVPN configuration for the router (for example, you change the TUN or TAP port number), you must download and install the `.ovpn` configuration file again on each client, depending on its operating system. If you change the TUN port number for the router, the `.ovpn` configuration file for Mac and non-Windows clients changes. If you change the TAP port number for the router, the `.ovpn` configuration file for Windows clients changes.

Install OpenVPN software on a Windows-based computer

You must install both the OpenVPN client utility and OpenVPN configuration files on each Windows-based computer where you want to use a VPN connection to your router.

To download and install the OpenVPN client utility and OpenVPN configuration files on a Windows-based computer:

1. To download the OpenVPN client utility on your Windows-based computer, visit openvpn.net/community-downloads/.
2. Select the Windows package with the installer files.

   In most situations, you can download the Windows 32-bit or Windows 64-bit installer files, depending on your Windows operating system.
3. Download and install the OpenVPN client utility on your computer.

   You need to have administrative privileges.
4. Launch a web browser from the computer, which must be connected to the router network.
5. Enter **http://www.routerlogin.net**.

   A login window displays.
6. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
7. Select **ADVANCED > Advanced Setup > VPN Service**.

   The VPN Service page displays.
8. Make sure that the **Enable VPN Service** check box is selected.

   For more information about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.

9. Click the **For Windows** button to download the router's OpenVPN configuration files to your Windows-based computer.
10. Unzip the OpenVPN configuration files and copy them to the **config** sub-folder in your OpenVPN client utility installation folder.

    You can also import the unzipped `.ovpn` configuration file from the OpenVPN client user interface.
11. Modify the VPN interface name to **NETGEAR-VPN**:

    a. If your computer is running Windows 10 or newer, select **Start > Settings > Network & Internet > Change adapter options**.

       If your computer is running another Windows version, find the page that lets you change the adapter settings.

    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.

You can now open a VPN tunnel to the router.

For more information about installing and using OpenVPN on your Windows-based computer, visit https://openvpn.net/community-resources/how-to/#quick.

Install OpenVPN software on a Mac

You must install both the OpenVPN Connect utility and OpenVPN configuration files on each Mac where you want to use a VPN connection to your router.

To download and install the OpenVPN Connect utility and OpenVPN configuration files on a Mac:

1. To download the OpenVPN Connect utility on your Mac, visit https://openvpn.net/client-connect-vpn-for-mac-os/.
2. Download and install the OpenVPN Connect utility on your Mac.

   You need to have administrative privileges.
3. Launch a web browser from the Mac, which must be connected to the router network.
4. Enter **http://www.routerlogin.net**.

   A login window displays.
5. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

The BASIC Home page displays.

6. Select **ADVANCED > Advanced Setup > VPN Service**.

   The VPN Service page displays.

7. Make sure that the **Enable VPN Service** check box is selected.

   For more information about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.

8. Click the **For Mac OS X** button to download the router's OpenVPN configuration files to your Mac.
9. Unzip the OpenVPN configuration file and import the unzipped `.ovpn` file from the OpenVPN client user interface.

You can now open a VPN tunnel to the router.

For more information about installing and using OpenVPN on your Mac, visit https://openvpn.net/vpn-server-resources/installation-guide-for-openvpn-connect-client-on-macos/.

Install OpenVPN software on an iOS device

You must install both the OpenVPN Connect app and OpenVPN configuration files on each iOS device where you want to use a VPN connection to your router.

To download and install the OpenVPN Connect app and OpenVPN configuration files on an iOS device:

1. On your iOS device, download and install the OpenVPN Connect app from the Apple app store.
2. Launch a web browser from a computer or your iOS device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.

   A login window displays.

4. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

5. Select **ADVANCED > Advanced Setup > VPN Service**.

   The VPN Service page displays.

6. Make sure that the **Enable VPN Service** check box is selected.

   For more information about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.

7. Click the **For Smart Phone** button to download the router's OpenVPN configuration file to your computer or iOS device.

   If you download the configuration file to your computer, unzip the `.ovpn` file, and send it to your iOS device.

8. On your iOS device, do the following:
   a. Open the OpenVPN Connect app.
   b. Import the `.ovpn` configuration file.

      NOTE: If you sent the configuration file from a computer, you should see the file listed. If you downloaded the file directly to your iOS device, locate the download folder and share the unzipped `.ovpn` configuration file with the OpenVPN Connect app.

You can now open a VPN tunnel to the router.

For more information about installing and using OpenVPN on your iOS device, visit https://www.vpngate.net/en/howto_openvpn.aspx#ios.

Install OpenVPN software on an Android device

You must install both the OpenVPN Connect app and OpenVPN configuration files on each Android device where you want to use a VPN connection to your router.

To download and install the OpenVPN Connect app and OpenVPN configuration files on an Android device:

1. On your Android device, download and install the OpenVPN Connect app from the Google Play Store.
2. Launch a web browser from a computer or your Android device that is connected to the router network.
3. Enter **http://www.routerlogin.net**.

   A login window displays.

4. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.

5. Select **ADVANCED > Advanced Setup > VPN Service**.

   The VPN Service page displays.

6. Make sure that the **Enable VPN Service** check box is selected.

For more information about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.

7. Click the **For Smart Phone** button to download the router's OpenVPN configuration file to your computer or Android device.

   If you download the configuration file to your Android device, unzip the file. If you download the configuration files to your computer, unzip the files, and send them to your Android device.

8. On your Android device, open the OpenVPN Connect app and import the `.ovpn` file.

You can now open a VPN tunnel to the router.

For more information about using OpenVPN on your Android device, visit https://www.vpngate.net/en/howto_openvpn.aspx#android.

Use VPN to access your Internet service at home

When you're 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.

Your router lets you use a VPN connection to access your own Internet service when you're away from home. You might want to do this to encrypt the data to and from your device so that any data intercepted by a third party cannot read the data. You might also want to use a VPN connection if you travel to a geographic location that doesn't 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.

NOTE: The data sent between your device and your router is encrypted by the VPN, but the data exchanged between your router and the public Internet is not protected by the VPN service.

Allow 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 that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

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

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.
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.
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 and block them from using the Internet service for your home 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 about the VPN configuration for the router, see Enable OpenVPN service on the router on page 136.

6. Scroll down to the Clients will use this VPN connection to access section, and select the **Home Network only** radio button.

   This is the default setting. The VPN connection is only to your home network, not to the Internet service for your home network.

7. Click the **Apply** button.

   Your settings are saved.

10

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
- Manage port triggering

Manage port forwarding to a local server

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 85).

Forward incoming traffic to a local server

You can forward traffic for a default service or application to a server 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 must provide the service.

   The server computer must always receive the same IP address.
3. Assign the server computer a reserved IP address.

   See Manage reserved LAN IP addresses on page 94.
4. Launch a web browser from a computer or mobile device that is connected to the router network.
5. Enter **http://www.routerlogin.net**.

   A login window displays.
6. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
7. Select **ADVANCED > Advanced Setup > Port Forwarding / Port Triggering**.

   The Port Forwarding / Port Triggering page displays.
8. Leave the **Port Forwarding** radio button selected as the service type.
9. 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 custom port forwarding service or application on page 147).

10. In the **Server IP Address** field, enter the IP address of the computer that must provide the service or that runs the application.
11. Click the **Add** button.

    Your settings are saved. The rule is added to the table.

Add a custom port forwarding 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 custom service or application that you can then select for a port forwarding rule.

To add a custom service or application:

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

   You can usually find this information by contacting the publisher of the application or 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 displays.
4. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Leave the **Port Forwarding** radio button selected as the service type.
7. Click the **Add Custom Service** button.

   The Ports - Custom Services page displays.
8. In the **Service Name** field, enter a descriptive name.
9. From the **Protocol** menu, select the protocol.

   If you are unsure, select **TCP/UDP**.
10. In the **External Port Range** field, enter the port range.

You can specify ports and port ranges divided by commas, for example: 30, 50–60, 65500–65510.

11. Specify the internal ports by one of these methods:
    - Leave the **Use the same port range for Internal port** check box selected.
    - Type the port numbers in the **Internal Starting Port** field and the **Internal Ending Port** field.

      You can enter a port range and fixed ports in one rule, for example: external (30–50, 78, 100–102), internal (40–60, 99, 200–202). With this rule, external ports 30–50 are forwarded to internal ports 40–60.
12. In the **Internal IP address** field, type the IP address or select the radio button for an attached device listed in the table.
13. Click the **Apply** button.

    Your settings are saved. The service or application is now in the list 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Leave the **Port Forwarding** radio button selected as the service type.
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 custom port forwarding service or application on page 147.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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. Leave the **Port Forwarding** radio button selected as the service type.
6. In the table, select the radio button for the service or application name.
7. Click the **Delete Service** button.

   Your settings are saved. 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 a fixed 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 in which your router always gives your web server an IP address of 192.168.1.33:

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 192.168.1.33 and sends the message to that computer.
4. Your web server at IP address 192.168.1.33 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 that sent the web page request.

Manage port triggering

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 through 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 and Play on page 105.

Add a port triggering rule

The router does not include a predefined list of default services and applications for port triggering rules. You must define a custom service or application for each port triggering rule. After you add the rule, it is automatically enabled.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 Services page displays.

7. Specify the following settings:
   - **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 or application.
     - **Single address**: Restricts the service or application to a particular computer. Enter the IP address in the fields, which become 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 will trigger opening of the inbound ports when traffic is sensed.
   - **Connection 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 service or application is added to the Port Triggering Portmap Table on the Port Forwarding / Port Triggering page.

   By default, the rule for the new service or application is enabled.

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 rule.
7. Click the **Edit Service** button.

   The Port Triggering Services page displays.

8. Change the settings.

   For information about the settings, see Add a port triggering rule on page 151.

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 device that is connected to the router network.
2. Enter **http://www.routerlogin.net**.

   A login window displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 rule.
7. Click the **Delete Service** button.

   Your settings are saved. The rule is removed from the Port Triggering Portmap Table.

Set the time-out period 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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 an individual port triggering rule

By default, port triggering is enabled. You can disable port triggering temporarily without removing any port triggering rules (see Disable port triggering on page 155). You can also keep port triggering enabled and disable an individual port triggering rule.

To disable an individual 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 displays.
3. Enter the router admin user name and password.

The user name is **admin**. The password is the one that you specified when you set up your router. 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, clear the check box for the rule that you want to disable.
7. Click the **Apply** button.

   Your settings are saved. The router does not apply the rule that you disabled.

Disable port triggering

By default, port triggering is enabled. You can disable port triggering temporarily without removing any port triggering rules. For information about disabling an individual port triggering rule, see Disable an individual port triggering rule on page 154.

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 displays.

3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. 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.
7. Click the **Apply** button.

   Your settings are saved. The router does not apply port triggering rules even if you specified them.

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 reaches its port triggering time-out period due to 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.

11

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:

- Quick tips
- Reboot the router from its router web interface
- Troubleshoot with the LEDs
- You cannot log in to the router
- You cannot access the Internet
- Troubleshoot Internet browsing
- Changes are not saved
- Troubleshoot WiFi connectivity
- Troubleshoot your network using the ping utility

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. Disconnect all devices from the modem.
3. Turn off the router.
4. Plug in the modem and turn it on.
5. Wait two minutes.
6. Reconnect the router to the modem.

   Do not connect any other devices to the modem.
7. Turn on the router.
8. Wait two minutes.

   When your network is back up, you can reconnect other devices to the modem.

Check the power adapter and Ethernet cable connections

If the router does not start, make sure that the power adapter cable is securely plugged in.

If the Internet connection or LAN connections do not function, 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 computers are connected to the router by an Ethernet cable, the Ethernet LAN LED lights.

Check the WiFi settings

Make sure that the WiFi settings on the WiFi-enabled computer or mobile device and the router match exactly. The WiFi network name (SSID) and WiFi security settings of

the router and the computer or mobile device must match exactly. WiFi passwords are case sensitive.

If you set up an access control list that blocks all new devices from connecting, you must add the MAC address of each computer and mobile device to the router's access control list.

Check the network settings

If your computer or mobile device cannot connect to the router, make sure that the network settings of the computer or mobile device are correct. Computers and mobile devices must use network IP addresses on the same network as the router. By default, almost all computers and mobile devices are set up to obtain an IP address automatically using DHCP.

Some Internet service providers require you to use the MAC address of the computer initially registered on the account, but this is an unusual situation. You can view the MAC address of connected computers and other devices on the Attached Devices page of the router web interface.

Reboot the router from its router web interface

You or NETGEAR technical support can reboot the router from its router web interface, either locally or remotely, for example, when the router seems to be unstable or is not operating normally.

To reboot the router from its router web interface:

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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED**.

   The ADVANCED Home page displays.

5. Click the **Reboot** button.
   A confirmation pop-up window displays.
6. Click the **OK** button.
   The router reboots.

Troubleshoot with the LEDs

By default, the router uses standard LED settings.

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 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

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.

Power LED stays solid amber or blinking amber

When the router is turned on, the Power LED lights solid amber during the boot up, and then turns solid green when the startup is done. If the Power LED stays solid amber or blinking amber, or no other LEDs are lit, this indicates a fault within the router.

NOTE: The Power LED is blinking amber temporarily when the firmware is upgrading, or the Reset button was pressed. This is expected behavior.

If the Power LED stays solid amber or blinking amber for more than three minutes *after powering up*, try the following:

- Cycle the power to see if the router recovers.
- Turn off the router, press and hold the **Reset** button, power on the router, and then release the **Reset** button to return the router to its factory settings.

If the Power LED continues to stay amber, the router firmware might be corrupted. This can happen if a firmware update 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.

Internet or Ethernet LAN port LEDs are off

If the Internet LED or Ethernet LAN port LEDs do not light when an Ethernet connection is made, check the following:

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

When you connect the router's Internet 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

A WiFi radio is the component inside your router that broadcasts WiFi signal. Each radio (for example, the 5 GHz radio) has its own WiFi broadcast.

If the WiFi LED stays off, check to see if someone disabled the WiFi radios from the router web interface. 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 or mobile device on your local network, check the following:

- If you are using an Ethernet-connected computer, check the cable connection between the computer and the router.
- If you are using a WiFi-enabled computer or mobile device, check the WiFi connection between the computer or mobile device and the router. Make sure that your computer or mobile device is not connected to a different router or gateway's WiFi network that uses the same network name.
- Make sure that you are using the correct login information. The user name is **admin**. The password is the one thatyou specified when you set up your router. (The default password is **password**.) The user name and password are case-sensitive. Make sure that Caps Lock is off when you enter this information.
- Try quitting the browser and launching it again.
- Make sure that JavaScript is enabled in your browser.
- Make sure that the IP address of your computer or mobile device is in the same subnet as the router. If you are using the recommended addressing scheme, the IP address of your computer or mobile device is in the range of 192.168.1.2 to 192.168.1.254.
- If the IP address of your computer or mobile device is shown as 169.254.x.x, the computer or mobile device could not reach the router's DHCP server and the Windows or Mac operating system generated an IP address itself. Such an autogenerated IP address is in the range of 169.254.x.x. If your IP address is in this range, check the connection from the computer or mobile device to the router, and restart your computer or mobile device.
- If your router's IP address was changed and you do not know the current IP address, clear the router's configuration to factory defaults and disconnect the Ethernet cable from the Internet port. This sets the router's IP address to 192.168.1.1.

  NOTE: If the router is in access point mode and you do not know the IP address that is assigned to it, first try to use an IP scanner application to detect the IP address. (IP scanner applications are available online free of charge.) If you can detect the IP address, you don't need to reset the router to factory default settings. You can also connect the router in access point mode to your existing network using the Internet port, then connect to the access point router and access the router web interface from **http://www.routerlogin.net/**.

- If you are attempting to set up your NETGEAR router as a replacement for an ADSL gateway in your network, the router cannot perform many gateway services. For example, the router cannot convert ADSL or cable data into Ethernet networking information. Your NETGEAR router does not support such a configuration. You need a modem to connect to your cable, satellite, or xDSL service, and can connect your router to that modem via Ethernet.

NOTE: If you use high-speed fiber Internet service, you might not need a separate modem. Contact your Internet service provider (ISP) for more information.

You cannot access the Internet

If you can access your router but not the Internet, check to see if the router can obtain a Internet IP address from your Internet service provider (ISP). 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 router web interface.

To check the Internet 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 displays.
3. Enter the router admin user name and password.

   The user name is **admin**. The password is the one that you specified when you set up your router. The user name and password are case-sensitive.

   The BASIC Home page displays.
4. Select **ADVANCED**.

   The ADVANCED Home page displays.
5. In the Internet Port pane, 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.
6. If your router did not obtain an IP address from your ISP, click **Connection Status**.

   The Connection Status window displays.
7. Click **Release**.

   Your router releases its DHCP lease.
8. Click **Renew**.

   Your router attempts to get 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 158.

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 be experiencing an outage. Try connecting a computer directly to your modem's Ethernet port and accessing the internet. If your computer still can't access the Internet, contact your ISP to troubleshoot your connection.
- Your 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 the 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 use your computer's MAC address (see Manually set up the Internet connection on page 25).

If your router obtained an IP address, but your computer does not load any web pages from the Internet, it might be for one or more of the following reasons:

- Your computer or mobile device might not recognize any DNS server addresses.

  Typically, your ISP provides the addresses of one or two DNS servers for your use. If you entered DNS addresses during the router's configuration, restart your computer or mobile device and verify the DNS addresses. You can also try removing the DNS addresses that you entered, which lets the router try to get DNS server addresses automatically from your ISP. Make sure that your computer or mobile device is configured to receive DNS server addresses automatically and that you did not manually specify any DNS server addresses in your computer or mobile device.
- The router might not be configured as the TCP/IP gateway on your computer or mobile device.

  Make sure that your computer or mobile device is configured as a DHCP client (for most devices, this is the default setting) so that the computer or mobile device can automatically receive an IP address from the router. If you need to enable the DHCP client on your computer or mobile device, restart the computer or mobile device, and then 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, you no longer need to run that software after installing your router

Troubleshoot Internet browsing

If your router can obtain an IP address but your computer is unable to load any web pages from the Internet, it might be for the following reasons:

- 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. If your Internet service provider (ISP) sets a usage limit, they might charge you for the overage.
- Your computer or mobile device might not recognize any DNS server addresses.

  Typically, your ISP provides the addresses of one or two DNS servers for your use. If you entered DNS addresses during the router's configuration, restart your computer or mobile device, and verify the DNS addresses. Make sure that your computer or mobile device is configured to receive DNS server addresses automatically and that you did not manually specify any DNS server addresses in your computer or mobile device.
- The router might not be configured as the default gateway on your computer or mobile device.

  Make sure that your computer or mobile device is configured as a DHCP client (for most devices, this is the default setting) so that the computer or mobile device can automatically receive an IP address from the router. If you need to enable the DHCP client on your computer or mobile device, restart the computer or mobile device, and then verify the gateway address.

Changes are not saved

If the router does not save the changes that you make in the router web interface, 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 WiFi device that you are using find your WiFi network?

  If not, check the WiFi LED on the router. If it is off, log in to the router web interface and check if the WiFi radio is enabled or disabled.

  If you disabled the router's SSID broadcast, then your WiFi network is hidden and does not display in your WiFi device's scanning list. (By default, SSID broadcast is enabled.)
- Is there another WiFi router, gateway, access point, or extender broadcasting the same network name as your router?

  Make sure that any other WiFi broadcast devices are either turned off or using a different WiFi network name.
- Does your WiFi device support the security that you are using for your WiFi network (WPA3, WPA2, or WPA)?
- 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**. (Be sure to click the **Apply** button if you change settings.)

If your WiFi device finds your network but the signal strength is weak, check these conditions:

- Is your router too far from your WiFi device or too close? Place your WiFi 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 WiFi device blocking the WiFi signal? Install your router as close to the center of your home as possible. Avoid installing the router in your kitchen, basement, or under stairs. Kitchen appliances and obstructions like walls or floors can create interference that impacts your WiFi performance.

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 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 occurring:

- 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 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 a Windows-based computer to a remote device

To test the path from a Windows-based 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 166.

3. If you do not receive replies, check the following:
   - Check to see that the 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 use the authorized computer's MAC address (see Manually set up the Internet connection on page 25).