



Orbi Whole Home WiFi System Built-in Cable Modem

User Manual

Models

CBK40

CBR40

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350 E. Plumeria Drive
San Jose, CA 95134
USA

Orbi WiFi System

Support

Thank you for purchasing this NETGEAR product. You can visit www.netgear.com/support to register your product, get help, access the latest downloads and user manuals, and join our community. We recommend that you use only official NETGEAR support resources.

Conformity

For the current EU Declaration of Conformity, visit http://kb.netgear.com/app/answers/detail/a_id/11621.

Compliance

For regulatory compliance information, visit <http://www.netgear.com/about/regulatory>.

See the regulatory compliance document before connecting the power supply.

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If you purchased the Orbi Whole Home WiFi System kit, your package comes with a router and satellite. The following instructions assume you purchase a satellite. If you did not purchase a satellite, skip the instructions about installing a satellite.

This chapter covers the following topics:

- *Orbi Cable Modem Router Model CBR40 Hardware Overview*
- *Orbi Satellite Model RBS20 Hardware Overview*
- *Orbi Cable Modem Router Model CBR40 LEDs*
- *Orbi Satellite Model RBS20 LEDs*
- *Labels*
- *System Requirements*
- *Install your Orbi Whole Home WiFi System*

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

Orbi Cable Modem Router Model CBR40 Hardware Overview

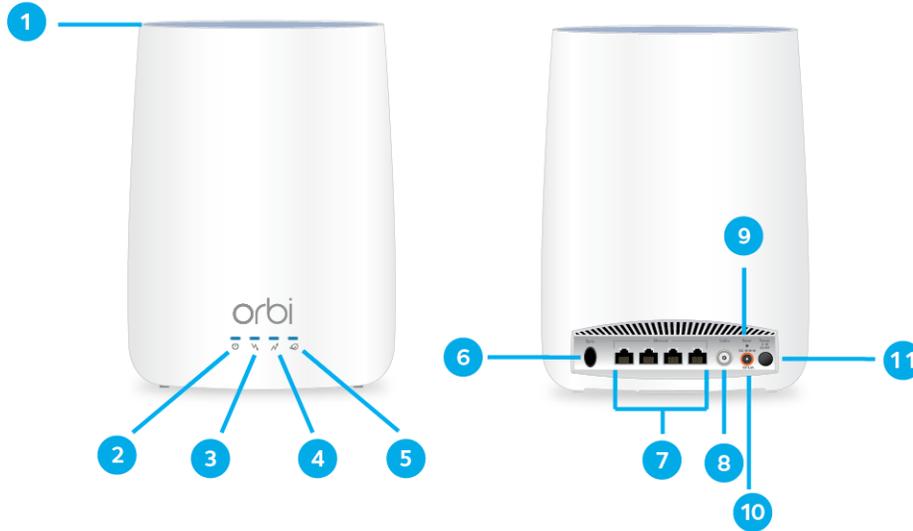


Figure 1. Orbi cable modem router model CBR40, front and back views

1. Ring LED (not shown in image)
2. Power LED
3. Downstream LED
4. Upstream LED
5. Online LED
6. Sync button (also used for WPS connection)
7. Ethernet ports
8. Cable coax connector (the satellite does not include a cable coax connector)
9. Reset button
10. DC power connector
11. Power On/Off button

Orbi Satellite Model RBS20 Hardware Overview

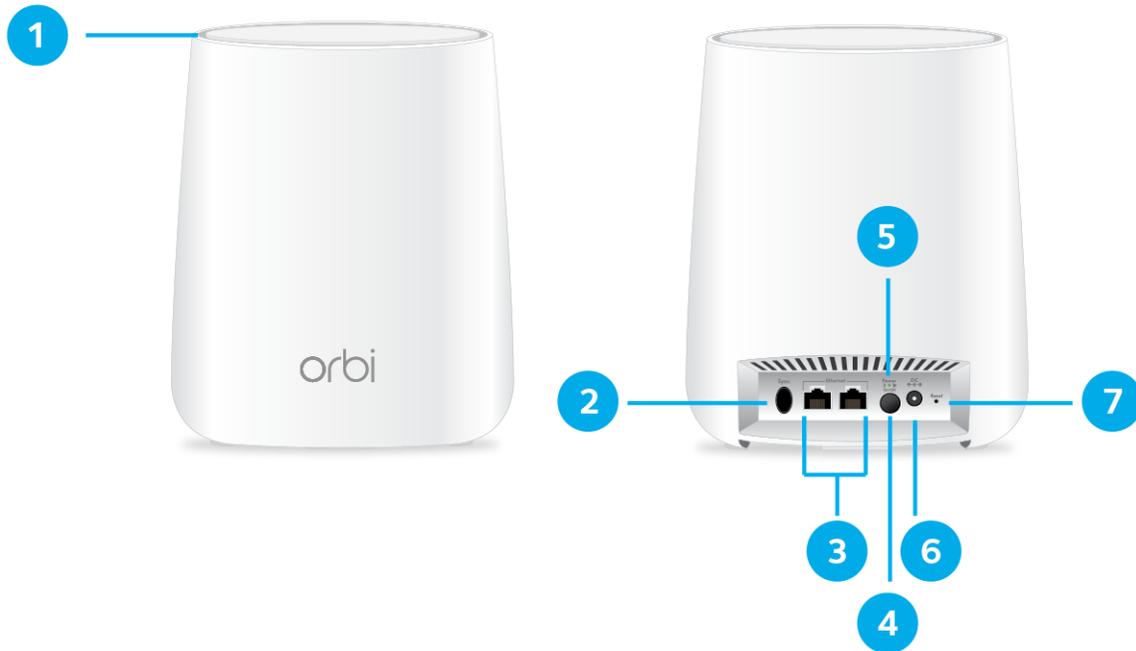


Figure 2. Orbi satellite model RBS20, front and back views

1. Ring LED (not shown in image)
2. Sync button (also used for WPS connection)
3. Ethernet ports
4. Power On/Off button
5. Power LED
6. DC power connector
7. Reset button

Orbi Cable Modem Router Model CBR40 LEDs

You can use the LEDs on the cable modem router to verify status and connections. The following table lists and describes each LED on the top panel of the cable modem router.

Table 1. LED descriptions

LED	Description
Power 	<ul style="list-style-type: none"> • Solid White. The cable modem router is receiving power and is functioning normally. • Off. The cable modem router is not receiving power. • Solid red. The cable modem router is too warm and might overheat. Power off the cable modem router, let it cool, and move it away from heat sources (such as a TV, DVD player, or speakers).
Downstream 	<ul style="list-style-type: none"> • Solid amber. One downstream channel is locked. • Solid blue. Two or more downstream channels are locked. • Blinking blue. The cable modem router is scanning for a downstream channel. • Off. No downstream channel is locked.
Upstream 	<ul style="list-style-type: none"> • Solid amber. One upstream channel is locked. • Solid blue. Two or more upstream channels are locked. • Blinking blue. The cable modem router is scanning for an upstream channel. • Off. No upstream channel is locked.
Internet 	<ul style="list-style-type: none"> • Solid blue. The cable modem router is online. • Blinking blue. The cable modem router is synchronizing with the cable provider's cable modem router termination system (CMTS). • Off. The cable modem router is offline.

You can use the ring LED located on the top of the cable modem router to determine the sync sta

Orbi Satellite Model RBS20 LEDs

The following table describes the Power LED and Ring LED behavior for an Orbi satellite.

Table 2. Orbi satellite LED descriptions

LED	LED Behavior
Power LED	<p>The Power LED is located above the Power On/Off button on the rear panel.</p> <ul style="list-style-type: none"> • Solid green. Power is on. • Solid amber. The satellite is booting. • Blinking amber. The satellite is resetting to factory default settings. • Blinking red. The firmware is corrupted. • Off. Power is not supplied.
Ring LED	<p>The ring LED is located on the top.</p> <ul style="list-style-type: none"> • White. The satellite is attempting to sync with the cable modem router. • Blue. The cable modem router and satellite successfully synced, and the connection between the cable modem router is good. • Amber. The cable modem router and satellite successfully synced, and the connection between the cable modem router and satellite is fair. Consider moving the satellite closer to the cable modem router. • Magenta. The cable modem router and satellite failed to sync. Move the satellite closer to the cable modem router and try again. • Off. The satellite synced to the cable modem router and is working normally.

Labels

The cable modem router label shows the admin login information, WiFi network name and password, serial number, and MAC address.



Figure 3. Cable modem router label

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The satellite label shows satellite's serial number and MAC address. The satellite label also shows the same WiFi network name and password that's on the cable modem router label.

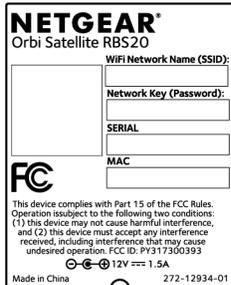


Figure 4. Cable modem router label

System Requirements

You need the following to install your modem router:

- Compatible operating system:
 - Windows® 7
 - Windows 8
 - Windows 10
 - Windows Vista®
 - Windows XP®
 - Windows 2000
 - Mac OS®
 - UNIX®
 - Linux®
- Compatible web browser:
 - Microsoft® Internet Explorer® 5.0 or higher
 - Firefox® 2.0 or higher
 - Safari® 1.4 or higher
 - Google Chrome™ 11.0 or higher
- Cable Internet service

Install your Orbi Whole Home WiFi System

Set up and activate your Orbi cable modem router and satellite using the NETGEAR Orbi app. If you do not own a smart phone, you can manually set up and activate your cable modem router and satellite without the app.

Set Up and Activate Using the NETGEAR Orbi App

You can use the NETGEAR Orbi app to set up and activate your Orbi cable modem router and satellite.

To find the app, scan a QR code or search for NETGEAR Orbi in the Apple App Store or Google Play Store. Launch the NETGEAR Orbi app on your mobile device and follow the prompts.



Figure 5. NETGEAR Orbi app

Set Up and Activate Using the Orbi Cable Modem Router Web Interface

If you do not want to use the NETGEAR Orbi app to set up and activate your Orbi cable modem router and satellite, you can use the instructions in the following sections to help you install your cable modem router and satellite.

Set Up Using the Orbi Cable Modem Router Web Interface

You can set up your Orbi cable modem router and satellite using the Orbi cable modem router web interface. We recommend that you do this using the NETGEAR Orbi app. If you do not own a smart phone or tablet, you can use the following instructions.



Figure 6. Set up your Orbi cable modem router and satellite

► To setup your cable modem router and satellite using the cable modem router web interface:

- 1. Collect your Internet service provider (ISP) account information**
Collect your ISP account information, such as your account mobile phone number, user name, password, and account number.
- 2. Turn off and disconnect existing modems and routers.**
If you are replacing a modem that is currently connected in your home, unplug the modem and plug the new cable modem router into the same outlet.
- 3. Connect a coaxial cable.**
Use a coaxial cable to connect the cable coax connector on the cable modem router to the cable wall outlet.
- 4. Connect the power adapter.**
Connect the power adapter to cable modem router and plug the power adapter into an electrical outlet.
The startup procedure takes about one minute. When it is complete, the Power LED lights solid blue.
If the Power LED does not light, make sure that the **Power On/Off** button is in the On position.
- 5. Wait for the Online LED to light solid blue.**
This process might take up to 10 minutes.

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Note When the Online LED lights, your cable modem router is still not connected to the Internet. You must activate your cable modem router with your ISP.

6. Connect a computer or mobile device to the cable modem router with a WiFi or wired connection:

- **WiFi.** Use the WiFi network name and password on the cable modem router label.
- **Ethernet.** Use an Ethernet cable to connect a computer to an Ethernet port on the cable modem router.

7. Launch a web browser and setup your cable modem router.

You are automatically redirected to the cable modem router web interface. If you're not redirected, enter orbilogin.com or 192.168.1.1 in the address field of the web browser.

Follow the prompts. You will be asked to do the following:

- Agree to the Terms and Conditions
- Place and sync your satellite
- Change your router's admin credentials and set up security questions
- Set up your WiFi network name and password

8. Make sure that you can log in to the cable modem router after the setup.

In a new web browser window, enter **orbilogin.com** or **192.168.1.1** and then enter the cable modem router admin user name and password.

If the BASIC Home page displays, you are ready to activate your Internet service.

9. Activate your Internet service.

For information about how to activate your Internet service, see [Activate Your Internet Service](#) on page 15.

Activate Your Internet Service

Before you start the self-activation process, collect the following information:

- Your Internet service provider (ISP) account information
- Cable modem router model number, which is CBR40
- Cable modem router serial number
- Cable modem router MAC address

Your cable modem router's serial number and MAC address are on the cable modem router label.

The following table lists contact information for ISP's that support your cable router.

Table 3. Cable Internet provider contact information

ISP	Contact Information
CableOne	http://www.cableone.net/ 1-877-MY-CABLE (1-877-692-2253)
Cox	https://www.cox.com/activate 1-800-234-3993
Mediacom	https://maestro.mediacomcc.com/walledgarden/page/login.jsp 1-855-Mediacom (1-855-633-4226)
Optimum	https://install.optimum.com/JointInstall/ 1-877-810-6750
Spectrum	https://activate.spectrum.net/ 1-(833) 267-6094
Xfinity	https://xfinity.com/activate https://xfinity.com/Internetsetup 1-800-XFINITY (1-800-934-6489)

Note Your ISP's contact information might change. You can find the contact information in your monthly Internet service billing statement.

► **To activate your Internet service:**

1. Visit your ISP's website and follow the onscreen instructions to activate your Internet service.
2. To determine the accurate Internet speed, visit your cable Internet provider's speed test website and perform a speed test. .

If your actual speed is lower than your subscribed speed, contact your cable Internet provider.

Perform a Speed Test

To determine the accurate Internet speed, visit the speed test website of your cable Internet provider and perform a speed test.

If your actual speed is lower than your subscribed speed, contact your cable Internet provider.

Connect to the Network and Access the Cable Modem Router

2

This chapter contains the following sections:

- *Connect to the Network*
- *Types of Logins*
- *Use a Web Browser to Access the Cable Modem Router*

Connect to the Network

You can connect to the Orbi network through a wired or WiFi connection. If you set up your computer to use a static IP address, change the settings so that it uses Dynamic Host Configuration Protocol (DHCP).

Wired Connection

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

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

1. Make sure that the cable modem router is receiving power (its Power LED is lit).
2. Connect an Ethernet cable to an Ethernet port on your computer.
3. Connect the other end of the Ethernet cable to one of the cable modem router's Ethernet ports.
Your computer connects to the local area network (LAN). A message might display on your computer screen to notify you that an Ethernet cable is connected.

WiFi Connection

▶ To find and select the WiFi network:

1. Make sure that the cable modem router or satellite is receiving power (its Power LED is lit).
2. On your WiFi-enabled computer or mobile device, find and select the WiFi network.
The WiFi network name is on the cable modem router label. The WiFi network name is the same for the cable modem router and the satellite in the Orbi WiFi System.

Note If you bought the cable modem router and the satellite separately, their default WiFi network names are different.

3. Join the WiFi network and enter the WiFi password.
The password is on the cable modem router label.
Your WiFi-enabled computer or mobile device connects to the WiFi network.

WiFi Connection Using WPS

You can connect to the cable modem router's WiFi network with Wi-Fi Protected Setup (WPS) or you can find and select the WiFi network.

▶ To use WPS to connect to the WiFi network:

1. Make sure that the cable modem router is receiving power (its Power LED is lit).
2. Check the WPS instructions for your computer or WiFi device.

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3. Press the **Sync** button on the cable modem router.
4. Within two minutes, on your WiFi-enabled computer or mobile device, press its **WPS** button or follow its instructions for WPS connections.

Your computer or mobile device connects to the WiFi network.

Types of Logins

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

Types of logins:

- **Internet service login.** The login that your Internet service provider (ISP) gave you logs you in to your Internet service. Your service provider gave you this login information in a letter or some other way. If you cannot find this login information, contact your service provider.
- **WiFi network key or password.** Your cable modem router and satellite are preset with the same WiFi network name (SSID) and password for WiFi access. This information is on the cable modem router label and the satellite label.
- **Cable modem router admin login.** The cable modem admin login credentials logs you in to the cable modem router interface from a web browser as admin. The default admin user name is admin. The first time you log in to the cable modem router, you are prompted to change the admin password.

Use a Web Browser to Access the Cable Modem Router

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

Automatic Internet Setup

You can set up your cable modem router automatically, or you can use a web browser to access the cable modem router and set up your cable modem router manually. Before you start the setup process, get your ISP information and make sure that the computers and devices in the network use the settings described here.

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

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

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

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Installation and basic setup takes about 15 minutes to complete.

► To automatically set up your cable modem router:

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

Note If you want to change the cable modem 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 cable modem router before:

- The first time that you set up the Internet connection for your cable modem router, the browser goes to **orbilogin.com**, and the Orbi login page displays.
- If you already set up the Internet connection, enter **orbilogin.com** in the address field for your browser to start the installation process.

4. Follow the onscreen instructions.

The cable modem router connects to the Internet.

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

- Make sure that the computer is connected to one of the four LAN Ethernet ports or over WiFi to the cable modem router.
- Make sure that the cable modem router is receiving power, and that its Power LED is lit.
- Close and reopen the browser or clear the browser cache.
- Browse to **orbilogin.com**.
- 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 cable modem router.

6. If the cable modem router does not connect to the Internet, do the following:

- a. Review your settings.
- b. Make sure that you selected the correct options and typed everything correctly.
- c. Contact your ISP to verify that you are using the correct configuration information.
- d. Read *Troubleshooting* on page ?.

If problems persist, register your NETGEAR product and contact NETGEAR technical support.

Log In to Orbi Web Interface

When you log in to the Orbi, the browser displays the cable modem router web interface. You can use the cable modem router web interface to change the cable modem router or satellite settings.

Connect to the Network and Access the Cable Modem Router

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▶ To log in to your Orbi:

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

Specify Your Internet Settings

3

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

This chapter contains the following sections:

- *View Modem Router Initialization*
- *Manually Set Up the Internet Connection*
- *Specify an IPv6 Internet Connection*
- *Change the MTU Size*
- *Specify the Cable Connection Starting Frequency*

View Modem Router Initialization

You can track the initialization procedure of the cable modem router and get details about the downstream and upstream cable channel. The time is displayed after the cable modem router is initialized.

The cable modem router automatically goes through the following steps in the provisioning process:

1. Scans and locks the downstream frequency and then ranges the upstream channels.
2. Obtains a WAN address for the cable modem router.
3. Connects to the Internet.

► To view the status of the cable modem router initialization:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **Cable Connection**.
The Cable Connection page displays.
The Startup Procedure section displays the initialization progress. The page also displays the status of all downstream and upstream channels. (You must scroll down to view all the channels.) The number of downstream and upstream channels that are locked depends on the number of channels that your Internet provider uses.

Manually Set Up the Internet Connection

In most situations, you do not need to change these settings. We recommend that you use the default settings for DHCP because most cable Internet services provide the IP address through DHCP.

► To specify the Internet connection settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > Internet**.
The Internet Setup page displays.

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5. If your Internet connection requires an account name or host name, type it in the **Account Name (If Required)** field.
6. If your Internet connection requires a domain name, type it in the **Domain Name (If Required)** field. For the other sections in this page, the default settings usually work, but you can change them.
7. 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 cable modem router to which your cable modem router connects.
8. 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.
9. Click the **Apply** button.
Your settings are saved.

Specify an IPv6 Internet Connection

► To specify an IPv6 Internet Connection:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > IPv6**.
If your Internet provider supports IPv6, the System Delegated Prefix field displays IPv6 information.
5. Select an IP Address Assignment radio button:
 - **Use DHCP Server.** This method passes more information to LAN devices, but some IPv6 systems might not support the DHCv6 client function.
 - **Auto Config.** This is the default setting.

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

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

Change the MTU Size

The maximum transmission unit (MTU) is the largest data packet a network device transmits. 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 MTU setting than the other devices, the data packets must be split or “fragmented” to accommodate the device with the smallest MTU.

The best MTU setting for NETGEAR equipment is often the default value. In some situations, changing the value fixes one problem but causes another. Leave the MTU unchanged unless one of these situations occurs:

- You experience problems connecting to your ISP or other Internet service, and the technical support of either the ISP or NETGEAR recommends changing the MTU setting. These web-based applications might require an MTU change:
 - A secure website that does not open, or displays only part of a web page
 - Yahoo email
 - MSN portal
 - America Online’s DSL service
- 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.

Note 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.

► To change the MTU size:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**.
The WAN Setup page displays.

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5. In the **MTU Size** field, enter a value from 64 to 1500.
6. Click the **Apply** button.
Your settings are saved.

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 4. 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.
1460	Usable by AOL if you do not send or receive large email attachments, for example.

Specify the Cable Connection Starting Frequency

The starting frequency is automatically generated. For most Internet connections, you do not need to specify this information. If you must enter a starting frequency, contact your Internet provider.

► To change the starting frequency:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **Cable Connection**.
The Cable Connection page displays the status of all downstream and upstream channels.
5. Enter the starting frequency.
6. Click the **Apply** button.
Your settings are saved.

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

This chapter includes the following sections:

- *Set Up Parental Controls*
- *Allow or Block Access to Your Network*
- *Use Keywords to Block Internet Sites*
- *Block Services From the Internet*
- *Manage Network Access Control Lists*
- *Schedule When to Block Internet Sites and Services*
- *Set Up Security Event Email Notifications*

Set Up Parental Controls

You can set up NETGEAR's standard parental controls or Circle with Disney on your router. NETGEAR's standard parental controls is an OpenDNS parental control that let's you to change the web filtering level for each device on the network. To set up standard parental controls, you must download the NETGEAR genie app on your mobile device.

Circle with Disney is a parental control technology that helps you monitor your children's devices that are connected to your network. Circle offers more parental control features than NETGEAR's standard parental controls.

Enable Circle With Disney

Circle with Disney is a parental control technology that helps you monitor your children's devices that are connected to your network.

You can enable Circle using your router web interface or you can enable Circle using the Circle app.

After you enable Circle, you can do the following with the Circle app:

- Set time limits for daily Internet usage
- Set individual filter levels for each family member
- Set a bedtime for your family member's devices
- Pause the Internet
- Manage your family's mobile devices across all networks with Circle Go

For more information about Circle with Disney, visit www.netgear.com/circle.

Enable Circle With Disney On Your Router

You can enable Circle using the router web interface, but you must use the Circle app to finish setting up your Circle account.

Before enabling Circle, make sure that your router is running the latest firmware and that your router is in router mode. Your router must be in router mode to work with Circle. You can't enable Circle if your router is in bridge mode.

▶ To enable Circle with Disney:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Makes sure that your router is in router mode.
For more information, see [Enable Router Mode](#) on page 54.

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5. Update your router's firmware.
For more information, see [Update the Router and Satellite Firmware](#) on page 58.
The enable Circle with Disney page displays after the firmware is updated.
6. Click the **ENABLE** button.
The Parental Controls page displays.
7. Move the slider to the right to enable Circle with Disney.

Note You can only enable one parental controls service.

8. Click the **Apply** button.
The links to download the Circle app displays.
9. Download the Circle app on your mobile device.
10. Launch the Circle app and tap the **LET'S GO** button.
The Account Details page displays.
11. Complete the fields on the Account Details page and tap the **CONTINUE** button.
The Add Phone Number page displays.
12. Enter your cell phone number and tap the **SEND CODE** button.
A code is sent to the cell phone number that you provided.
13. Enter the code that was sent to your cell phone.
The Circle app verifies the code.
14. Tap the **AWESOME** button.
15. Select a subscription plan and follow the onscreen instructions to set up your preferences.
Circle with Disney is enabled on your NETGEAR router.

Enable Circle With Disney Using the Circle App

Before enabling Circle, make sure that your router is in router mode. Your router must be in router mode to work with Circle. You can't enable Circle if your router is in bridge mode. For more information, see [Enable Router Mode](#) on page 54.

If your router is not running the latest firmware, the Circle app checks your router's firmware and updates the firmware for you.

► To enable Circle with Disney using the Circle app:

1. Make sure that your mobile device is connected to your router's network.
2. Download the Circle app on your mobile device.
3. Launch the Circle app.
4. Follow the prompts to set up Circle.

Enable Standard Parental Controls

NETGEAR's standard parental controls is an OpenDNS parental control that let's you to change the web filtering level for each device on the network. To set up standard parental controls, you must download the NETGEAR genie app on your mobile device. For more information about NETGEAR's standard parental controls, visit <http://www.netgear.com/lpc>.

▶ **To enable standard parental controls:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **Parental Controls**.
The Parental Controls page displays.
5. Move the slider to the right to enable Standard Parental Controls.

Note You can only enable one parental controls service.

6. Click the **Apply** button.
7. Download the NETGEAR genie app on your mobile device.
For more information, see <http://www.netgear.com/lpc>.
8. Launch the NETGEAR genie app.
9. Tap **Parental Controls**.
Follow the prompts to setup parental controls.

Allow or Block Access to Your Network

You can use access control to block access to your network.

▶ **To set up access control:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.

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The BASIC Home page displays.

4. Select **ADVANCED > Security > Access Control**.

The Access Control page displays.

5. Select the **Turn on Access Control** check box.

You must select this check box before you can specify an access rule and use the Allow and Block buttons. When this check box is cleared, all devices are allowed to connect, even if a device is in the blocked list.

6. Select an access rule:

- **Allow all new devices to connect.** With this setting, if you buy a new device, it can access your network. You don't need to enter its MAC address on this page. We recommend that you leave this radio button selected.
- **Block all new devices from connecting.** With this setting, if you buy a new device, before it can access your network, you must enter its MAC address for an Ethernet connection and its MAC address for a WiFi connection in the allowed list.

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

7. To allow the computer or device you're currently using to continue to access the network, select the check box next to your computer or device, and click the **Allow** button.

8. To view a list of allowed or blocked devices that are not connected, click one of the following links:

- **View list of allowed devices not currently connected to the network**
- **View list of blocked devices not currently connected to the network**

The list displays.

9. Click the **Apply** button.

Your settings are saved.

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.

► To block Internet sites:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

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The BASIC Home page displays.

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

The Block Sites page displays.

5. Select a keyword blocking option:

- **Per Schedule.** Turn on keyword blocking according to a schedule that you set. (See Schedule When to Block Internet Sites and Services on page 56.)
- **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`.
- Specify .com if you want to allow only sites with domain suffixes such as .edu or .gov.
- Enter a period (.) to block all Internet browsing access.

7. Click the **Add Keyword** button.

The keyword is added to the keyword list. The keyword list supports up to 32 entries.

8. Click the **Apply** button.

Keyword blocking takes effect.

Delete Keywords

► To delete keywords from the list:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
The Block Sites page displays.
5. 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.

Avoid 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 ?.

► To specify a trusted computer:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Security > Block Sites**.
The Block Sites page displays.
5. Scroll down and select the **Allow trusted IP address to visit blocked sites** check box.

6. In the **Trusted IP Address** field, enter the IP address of the trusted 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.

► To block services:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

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

The Block Services page displays.

5. Specify when to block the services:

- To block the services all the time, select the **Always** radio button.
- To block the services based on a schedule, select the **Per Schedule** radio button.

For information about how to specify the schedule, see [Schedule When to Block Internet Sites and Services](#) on page 35.

6. Click the **Add** button.

The Block Services Setup page displays.

7. To add a service that is in the **Service Type** list, 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 the list, select **User Defined**.

- 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. To specify how to filter the services, select one of the following radio buttons:
 - **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.

Manage Network Access Control Lists

You can use access control to block or allow access to your network.

► To manage devices that are allowed or blocked:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Security > Access Control**.
The Access Control page displays.
5. Select the **Turn on Access Control** check box.
6. Click the **View list of allowed devices not currently connected to the network** link.
The list displays.
7. Select the check box for a device.
8. Use the **Add** button, **Edit** button, and **Remove from the list** button as needed.
9. Click the **Apply** button.
Your settings are saved.

Schedule When to Block Internet Sites and Services

When you schedule blocking, the same schedule is used to block sites and to block services. For information about how to specify what you want the cable modem router to block, see [Use Keywords to Block Internet Sites](#) on page 31 and [Avoid Blocking on a Trusted Computer](#) on page 33.

► To schedule blocking:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Security > Schedule**.
5. Specify when to block keywords and services:
 - **Days to Block.** Select the check box for each day that you want to block the keywords or select the Every Day check box, which automatically selects the check boxes for all days.
 - **Time of Day to Block.** Select a start and end time in 24-hour format, or select All Day for 24-hour blocking.
6. Select your time zone from the list.
7. If you live in a region that observes daylight saving time, select the **Automatically adjust for daylight savings time** check box.
8. Click the **Apply** button.
Your settings are saved.

Set Up Security Event Email Notifications

The cable modem router can email you its logs of cable modem router activity. The log records cable modem 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Security > E-mail**.
The E-mail page displays.
5. Select the **Turn Email Notification On** check box.

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6. In the **Primary E-mail Address** field, enter the email address to which logs and alerts are 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, enter the name of your ISP outgoing (SMTP) mail server (such as mail.myISP.com).
You might be able to find this information in the configuration window of your email program. If you leave this field blank, log and alert messages are not sent.
8. In the **Outgoing Mail Server Port Number** field, enter your mail server's port number.
You might be able to find this information in the configuration window of your email program.
9. If your outgoing email server requires authentication, select the **My Mail Server requires authentication** check box and do the following:
 - In the **User Name** field, type the user name for the outgoing email server.
 - In the **Password** field, type the password for the outgoing email server.
10. To send alerts immediately, 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:
 - From **Send logs according to this schedule** menu, select the schedule type.
 - From the **Day** menu, select the day.
 - From the **Time** menu, select the time, and select the **am** or **pm** radio button.
12. Click the **Apply** button.
Your settings are saved.

Logs are sent automatically. If the log fills before the specified time, it is sent. After the log is sent, it is cleared from the cable modem router memory. If the cable modem router cannot email the log and the log buffer fills, the cable modem router overwrites the log.

This chapter includes the following sections:

- *View or Change WAN Settings*
- *Dynamic DNS*
- *Set Up a Default DMZ Server*
- *Change the Router's Device Name*
- *Change the LAN TCP/IP Settings*
- *Use the Router as a DHCP Server*
- *Disable the DHCP Server Feature in the Router*
- *Manage Reserved LAN IP Addresses*
- *Custom Static Routes*
- *Specify Basic WiFi Settings*
- *Set Up a Guest WiFi Network*
- *View or Change Advanced WiFi Settings*
- *Enable Router Mode*
- *Generate a New Backhaul Password*
- *Check Your Internet Bandwidth*
- *Improve Network Connections With Universal Plug N Play*

View or Change WAN Settings

You can view or configure wide area network (WAN) settings for the Internet port. You can set up a DMZ (demilitarized zone) server, change the maximum transmit unit (MTU) size, and enable the cable modem router to respond to a ping to its WAN (Internet) port.

► **To view the WAN settings:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > WAN Setup**
The WAN Setup page displays.
5. View or change the following settings:
 - **Disable Port Scan and DoS Protection.** DoS protection protects your LAN against denial of service attacks such as Syn flood, Smurf Attack, Ping of Death, and many others. Select this check box only in special circumstances.
 - **Default DMZ Server.** This feature is sometimes helpful when you are playing online games or videoconferencing, but it makes the firewall security less effective. See [Set Up a Default DMZ Server](#) on page 42.
 - **Respond to Ping on Internet Port.** This feature allows your cable modem router to be discovered. Use this feature only as a diagnostic tool or if you have a specific reason.
 - **Disable IGMP Proxying.** IGMP proxying allows a computer on the local area network (LAN) to receive the multicast traffic it is interested in from the Internet. If you do not need this feature, select this check box to disable it.
 - **MTU Size (in bytes).** The normal MTU (maximum transmit unit) value for most Ethernet networks is 1500 bytes, or 1492 bytes for PPPoE connections. Change the MTU only if you are sure that it is necessary for your ISP connection. See [on page ?](#).
 - **NAT Filtering.** Network Address Translation (NAT) determines how the cable modem router processes inbound traffic. Secured NAT protects computers on the LAN from attacks from the Internet, but might prevent some Internet games, point-to-point applications, or multimedia applications from working. Open NAT provides a much less secured firewall, but allows almost all Internet applications to work.
6. Click the **Apply** button.
Your settings are saved.

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 cable modem router to use Dynamic DNS. Then the cable modem 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.
The Dynamic DNS page displays.
5. Select the **Use a Dynamic DNS Service** check box.
6. In the **Service Provider** list, select **NETGEAR**.
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 that you want to use for your account.
10. In the **Password (6-32 characters)** field, type the password for your account.
11. Click the **Register** button.
12. Follow the onscreen instructions to register for your NETGEAR Dynamic DNS service.
13. To check that Dynamic DNS is enabled in the cable modem router, click the **Show Status** button.
A message displays the Dynamic DNS status.

Specify a DNS Account That You Already Created

If you already own a Dynamic DNS account with NETGEAR, no-IP, or Dyn, you can set up the cable modem 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.
The Dynamic DNS page displays.
5. Select the **Use a Dynamic DNS Service** check box.
6. In the **Service Provider** list, select your provider.
7. Select the **Yes** radio button.
The page adjusts and displays to show the **Status**, **Cancel**, and **Apply** buttons.
8. In the **Host Name** field, type the host name (sometimes called the domain name) for your account.
9. For a no-IP Dyn account, in the **User Name** field, enter the user name for your account.
10. For a NETGEAR account at no-IP, in the **Email** field, type the email address for your account.
11. In the **Password (6-32 characters)** field, type the password for your DDNS account.
12. Click the **Apply** button.
Your settings are saved.
13. To verify that your Dynamic DNS service is enabled in the cable modem router, click the **Show Status** button.
A message displays the Dynamic DNS status.

Change the Dynamic DNS Settings

► **To change your settings:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Dynamic DNS**.

The Dynamic DNS page displays.

5. Change your DDNS account settings as necessary.

6. Click the **Apply** button.

Your settings are saved.

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 cable modem 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.

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 cable modem router usually detects and discards incoming traffic from the Internet that is not a response to one of your local computers or a service that you configured in the Port Forwarding/Port Triggering page. Instead of discarding this traffic, you can specify that the cable modem 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 your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **ADVANCED > Setup > WAN Setup**.

The WAN Setup page displays.

5. Select the Default DMZ Server check box.

6. Type the IP address.

7. Click the **Apply** button.

Your settings are saved.

Change the Router's Device Name

The cable modem router's device name is its model number. This device name displays in a file manager when you browse your network.

► To change the cable modem router's device name:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > Device Name**.
The Device Name page displays.
5. In the **Device Name** field, type a new name.
6. Click the **Apply** button.
Your settings are saved.

Change the LAN TCP/IP Settings

The cable modem router is preconfigured to use private IP addresses on the LAN side and to act as a DHCP server. The cable modem 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 uses, or if you use competing subnets with the same IP scheme.

► To change the LAN TCP/IP settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

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The BASIC Home page displays.

4. Select **ADVANCED > Setup > LAN Setup**.

The LAN Setup page displays.

5. In the **IP Address** field, type the IP address.

6. In the **IP Subnet Mask**, type the subnet mask of the cable modem router.

The IP address and subnet mask identifies which addresses are local to a specific device and which must be reached through a gateway or cable modem router.

7. Change the RIP settings.

Router Information Protocol (RIP) allows a cable modem router to exchange routing information with other cable modem routers.

- a. Select the RIP direction:

- **Both.** The cable modem router broadcasts its routing table periodically and incorporates information that it receives.
- **Out Only.** The cable modem router broadcasts its routing table periodically.
- **In Only.** The cable modem router 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.

8. Click the **Apply** button.

Your settings are saved.

If you changed the LAN IP address of the cable modem router, you are disconnected when this change takes effect.

9. To reconnect, close your browser, relaunch it, and log in to the cable modem router.

Use the Router as a DHCP Server

By default, the cable modem router acts as a Dynamic Host Configuration Protocol (DHCP) server. The cable modem 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 cable modem router.

These addresses must be part of the same IP address subnet as the cable modem 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 use the cable modem router as a DHCP server and specify the pool of IP addresses that the router assigns:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
The LAN Setup page displays.
5. If you previously disabled the DHCP server feature, select the **Use Router as DHCP Server** check box.
6. Specify the range of IP addresses that the cable modem router assigns:
 - a. In the **Starting IP Address** field, enter the lowest number in the range.
This IP address must be in the same subnet as the cable modem router. The default starting IP address is 192.168.1.2.
 - b. In the **Ending IP Address** field, enter the number at the end of the range of IP addresses.
This IP address must be in the same subnet as the cable modem router. The default ending IP address is 192.168.1.254.
7. Click the **Apply** button.
Your settings are saved.
The cable modem router delivers the following parameters to any LAN device that requests DHCP:
 - An IP address from the range that you defined
 - Subnet mask
 - Gateway IP address (the cable modem router's LAN IP address)
 - DNS server IP address (the cable modem router's LAN IP address)

Disable the DHCP Server Feature in the Router

By default, the cable modem router acts as a DHCP server. The cable modem 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 cable modem router.

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

► To disable the DHCP server feature in the cable modem router:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
The LAN Setup page displays.
5. Clear the **Use Router as DHCP Server** check box.
6. Click the **Apply** button.
7. (Optional) If this service is disabled and no other DHCP server is on your network, set your computer IP addresses manually so that they can access the cable modem router.

Manage Reserved LAN IP Addresses

When you specify a reserved IP address for a computer on the LAN, that computer always receives the same IP address each time it accesses the cable modem router's DHCP server. Assign reserved IP addresses to computers 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
The LAN Setup page displays.
5. In the **Address Reservation** section of the page, click the **Add** button.
6. In the **IP Address** field, type the IP address to assign to the computer or server.
The page adjusts.
7. Choose an IP address from the cable modem router's LAN subnet, such as 192.168.1.x.

8. Type the MAC address of the computer or server.

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

9. Click the **Apply** button.

The reserved address is entered into the table.

The reserved address is not assigned until the next time the computer contacts the cable modem router's DHCP server. Reboot the computer, or access its IP configuration and force a DHCP release and renew.

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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Setup > LAN Setup**.
The LAN Setup page displays.
5. Select the radio button next to the reserved address.
6. Click the **Edit** button.
The Address Reservation page displays.
7. Change the settings.
8. Click the **Apply** button.
Your settings are saved.

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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **ADVANCED > Setup > LAN Setup**.

The LAN Setup page displays.

5. Select the radio button next to the reserved address.

6. Click the **Delete** button.

The address is removed.

Custom Static Routes

Typically, you do not need to add static routes unless you use multiple cable modem routers 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 an ISP.
- Your home network includes an ISDN cable modem router for connecting to the company where you are employed. This cable modem router's address on your LAN is 192.168.1.100.
- Your company's network address is 134.177.0.0.

When you set up your cable modem router, two implicit static routes were created. A default route was created with your ISP as the gateway, and a second static route was created to your local network for all 192.168.1.x addresses. With this configuration, if you try to access a device on the 134.177.0.0 network, your cable modem router forwards your request to the ISP. The ISP forwards your request to the company where you are employed, and the company firewall is likely to deny the request.

In this case you must define a static route, telling your cable modem router to access 134.177.0.0 through the ISDN cable modem router at 192.168.1.100. Here is an example:

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

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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.

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3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
The Static Routes page displays.
5. Click the **Add** button.
The page adjusts.
6. 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 Private is selected, the static route is not reported in RIP.
8. Select the **Active** check box to make this route take effect.
9. Type the IP address of the final destination.
10. Type the IP subnet mask for this destination.
If the destination is a single host, type **255.255.255.255**.
11. Type the gateway IP address.
This address must be on the same LAN segment as the cable modem router.
12. Type a number from 1 through 15 as the metric value.
This value represents the number of cable modem routers between your network and the destination.
Usually, a setting of 2 or 3 works, but if this is a direct connection, set it to 1.
13. Click the **Apply** button.
The static route is added.

Edit a Static Route

► To edit a static route:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
The Static Routes page displays.

5. In the table, select the radio button for the route.
6. Click the **Edit** button.
The Static Routes page adjusts.
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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Static Routes**.
The Static Routes page displays.
5. In the table, select the radio button for the route.
6. Click the **Delete** button.
The route is removed from the table.

Specify Basic WiFi Settings

The cable modem router and satellite come preset with the same WiFi network name (SSID) and the same WiFi security. You can find the SSID and password on the cable modem router label and on the satellite label. If you log in to the cable modem router and change the WiFi settings, the cable modem router automatically sends the new settings to the satellite.

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

If your computer or mobile device is using a WiFi connection when you change the network name (SSID) or other WiFi security settings, you are disconnected when you click the **Apply** button. To avoid this problem, use a computer with a wired connection to access the cable modem router.

► To specify basic WiFi settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.

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3. Enter the Orbi admin user name and password.

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

The BASIC Home page displays.

4. Select **Wireless**.

The Wireless Settings page displays.

5. To change the network name (SSID), type a new name in the **Name (SSID)** field.

The name can be up to 32 characters long and it is case-sensitive. The default SSID is randomly generated and is on the cable modem router's label. If you change the name, make sure to write down the new name and keep it in a safe place.

6. To change the WiFi channel, select a number in the **Channel** list.

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, use Channels 1 and 5, or 6 and 10).

7. Click the **Apply** button.

Your settings are saved. The cable modem router sends the new settings to the satellite.

If you are using a WiFi connection and you changed the SSID, you are disconnected from the network.

8. Make sure that you can connect to the WiFi network with its new settings.

If you cannot connect using WiFi, check the following:

- Is your WiFi-enabled computer or mobile device connected to another WiFi network in your area? Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
- Is your computer or WiFi device trying to connect to your network with its old settings (before you changed the settings)? If so, update the WiFi network selection in your computer or WiFi device to match the current settings for your network.

Change the WiFi Password or Security Level

The cable modem router and satellite come preset with the same WiFi network name (SSID) and the same WiFi security. You can find the SSID and password on the cable modem router label and on the satellite label. If you log in to the cable modem router and change the WiFi settings, the cable modem router automatically sends the new settings to the satellite. We recommend that you do not disable security.

► To change the WPA settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **Wireless**.
The Wireless Settings page displays.
5. Under Security Options, select a WPA option:
 - WPA2-PSK [AES]
 - WPA-PSK [TKIP] + WPA2-PSK [AES]

The WPA2 option uses the newest standard for the strongest security, but some older computers and WiFi devices cannot use WPA2. If your network includes old computers and WiFi devices, select the **WPA-PSK [TKIP] + WPA2-PSK [AES]** radio button.

The **Password (Network Key) field** displays.

6. In the **Password (Network Key)** field, enter the network key (password) that you want to use. It is a text string from 8 to 63 characters.
7. Write down the new password and keep it in a secure place for future reference.
8. Click the **Apply** button.
Your settings are saved.

Set Up a Guest WiFi Network

► To set up a guest WiFi network:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.

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

The BASIC Home page displays.

4. Select **Guest Network**.

The Guest Network Settings page displays.

5. Select the **Enable Guest Network** check box.

6. Leave the **Enable SSID Broadcast** check box selected.

Allowing the cable modem router to broadcast its WiFi network name (SSID) makes it easier to find your network and connect to it. If you clear this check box, that creates a hidden network.

7. To change the network name, type a new name in the **Guest Wireless Network Name (SSID)** field.

The name can be up to 32 characters long and it is case-sensitive. If you change the name, make sure to write down the new name and keep it in a safe place.

8. Select or clear the **Allow guests to see each other and access my local network** check box.

To protect your privacy, this check box is cleared by default. That means your guests can use your Internet connection but they cannot access computers or devices that are connected to your Orbi network.

9. Select a security option.

The WPA2 options use the newest standard for the strongest security. WPA2 is the default setting.

10. Click the **Apply** button.

Your settings are saved. The cable modem router sends the new settings to the satellite.

View or Change Advanced WiFi Settings

► To view or change advanced WiFi settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

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

The Advanced Wireless Settings page displays.

Note The backhaul password is a security key that is used in WiFi communication between the cable modem router and the satellite. For information about generating a new backhaul password, see [Generate a New Backhaul Password](#) on page 54.

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5. In the **Region** list,- select your region.
In some locations, you cannot change this setting.
6. To control the SSID broadcast, select or clear the **Enable SSID Broadcast** check box.
When this check box is selected, the cable modem router broadcasts its network name (SSID) so that it displays when you scan for local WiFi networks on your computer or WiFi device.
7. Click the **Apply** button.
Your settings are saved.

Enable Router Mode

► To enable router mode:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Router / Bridge Mode**.
The Router / Bridge Mode page displays.
5. Select the **Router Mode** radio button.
6. Click the **Apply** button.
Your settings are saved.

Generate a New Backhaul Password

The backhaul password is a security key that is used in WiFi communication between the cable modem router and the satellite. You can generate a new backhaul password. After you generate a new backhaul password, you must use the **Sync** button to build a new backhaul connection so that the cable modem router and satellite can communicate with each other using WiFi.

► To generate a new backhaul password:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.

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The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Wireless Settings**.
The Advanced Wireless Settings page displays.
5. In the **Backhaul Password** section, click the **GENERATE** button.
The cable modem router generates a new backhaul password.

Check Your Internet Bandwidth

You can use Ookla Speedtest to detect your Internet bandwidth.

► To check your Internet bandwidth using Speedtest:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **Speedtest**.
The Speedtest page displays.
5. Click the **Take a Speedtest** button.
Your Internet's download and upload speeds display.

Improve Network Connections With Universal Plug N Play

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

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

► To enable Universal Plug and Play:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.

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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 the **Turn UPnP On check box** is cleared, the cable modem router does not allow any device to automatically control cable modem router resources, such as port forwarding.

6. Type the advertisement period in minutes.

The advertisement period specifies how often the cable modem 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. 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 cable modem routers. The number of hops can range from 1 to 255. The default value for the advertisement time to live is 4 hops, which should be fine for most home networks. If you notice that some devices are not being updated or reached correctly, it might be necessary to increase this value.

8. Click the **Apply** button.

The UPnP Portmap Table displays the IP address of each UPnP device that is accessing the cable modem 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.

This chapter describes the cable modem router settings for administering and maintaining your cable modem router and home network.

The chapter includes the following sections:

- *Update the Router and Satellite Firmware*
- *Change the admin Password*
- *Set Up Password Recovery*
- *Recover the admin Password*
- *View Router Status*
- *View Satellite Status*
- *View and Manage Logs of Router Activity*
- *View Devices Connected to the Network*
- *View Satellites Connected to the Network*
- *Monitor Internet Traffic*
- *Manage the Router Configuration File*
- *Set Up Remote Management*
- *Use Remote Access*
- *Remotely Access Your Router Using the NETGEAR Orbi App*

Update the Router and Satellite Firmware

You can use the cable modem router web interface to check if new firmware is available and update your cable modem router and satellite, or you can manually update the firmware for your cable modem router and satellite.

Check for Firmware Updates

► **To check for new firmware and update your cable modem router and satellite:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Firmware Update**.
The Firmware Update page displays.
5. Click the **Check** button.
The cable modem router checks to see if new firmware is available for the cable modem router and satellite.
6. If new firmware is available, click the **Update All** button.
The cable modem router locates and downloads the firmware for the cable modem router and satellite and begins the update.

Note To avoid the risk of corrupting the firmware, do not interrupt the upgrade. For example, do not close the browser, click a link, or load a new page. Do not turn off the cable modem router or satellite.

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

Manually Update Firmware

If a satellite is connected to your cable modem router, you can log in to the cable modem router to manually upload the firmware on your satellite.



WARNING:

We recommend that you always update the firmware on your satellite first, and then update your cable modem router. Also, do not update the firmware on your cable modem router and satellite at the same time.

► To manually update the firmware on your Orbi cable modem router and satellite, follow these high level steps:

1. Visit netgear.com/support and download the firmware for both your Orbi cable modem router and satellite.
2. Update the firmware on your Orbi satellite.
For more information, see [Manually Update Satellite Firmware](#) on page 59.
3. Update the firmware on your Orbi cable modem router.
For more information, see [Manually Update the Cable Modem Router Firmware](#) on page 60.

Manually Update Satellite Firmware

► To manually update your satellite's firmware:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Firmware Update > Manual Update**.
The Firmware Update page displays.
5. Select the check box next to your satellite's model name.
6. Click the **Update** button.
The Orbi satellite Firmware Update window opens.
7. If the browser ask you for the admin password, enter the same password that you entered for the cable modem router.
8. Click the **BROWSE** button.
9. Locate and select the satellite firmware file that you downloaded.
The firmware file name ends in `.img` or `.chk`.
10. Click the **UPLOAD** button.
It takes a few minutes to complete the process.
11. After Orbi satellite finishes updating, select **Status** and double-check the firmware version on the Status page.

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The firmware on your Orbi satellite is updated.

Manually Update the Cable Modem Router Firmware

We recommend that you update your satellite's firmware before updating the cable modem router's firmware.

► To manually update your cable modem router's firmware:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Firmware Update > Manual Update**.
The Firmware Update page displays.
5. Click the **Browse** button.
6. Locate and select the cable modem router firmware file you downloaded.
The firmware file name ends in .img.
7. Click the **Upload** button.
The firmware is updated.

Change the admin Password

This feature let you change the default password that is used to log in to the cable modem router with the user name admin. This password is not the one that you use for WiFi access. The cable modem router label shows your unique WiFi network name (SSID) and password for WiFi access.

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

► To set the password for the user name admin:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **ADVANCED > Administration > Set Password**.

The Set Password page displays.

5. Type the old password, and type the new password twice.
6. To be able to recover the password, select the **Enable Password Recovery** check box.
We recommend that you enable password recovery.
7. Click the **Apply** button.
Your settings are saved.

Set Up Password Recovery

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

► To set up password recovery:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the Orbi admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Set Password**.
The Set Password page displays.
5. Select the **Enable Password Recovery** check box.
6. Select two security questions and provide answers to them.
7. Click the **Apply** button.
Your settings are saved.

Recover the admin Password

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

▶ To recover your password:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Click the **Cancel** button.
If password recovery is enabled, you are prompted to answer two security questions.
4. Enter the saved answers to the security questions.
5. Enter the serial number of your cable modem router.
The serial number is on the cable modem router label.
6. Click the **Continue** button.
A window opens and displays your recovered password.
7. Click the Login again button.
A login window opens.
8. With your recovered password, log in to the cable modem router.

View Router Status

▶ To view cable modem router status and usage information:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Click the **ADVANCED** tab.
The ADVANCED Home page displays the router status.

Display Internet Port Statistics

► To display Internet port statistics:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Click the **ADVANCED** tab.
5. In the Internet Port pane, click the **Show Statistics** button.
The Show Statistics window opens and displays following information:
 - **System Up Time**. The time elapsed since the cable modem router was last restarted.
 - **Port**. The statistics for the WAN (Internet) and LAN (Ethernet) ports. For each port, the page displays the following information:
 - **Status**. The link status of the port.
 - **TxPkts**. The number of packets transmitted on this port since reset or manual clear.
 - **RxPkts**. The number of packets received on this port since reset or manual clear.
 - **Collisions**. The number of collisions on this port since reset or manual clear.
 - **Tx B/s**. The current transmission (outbound) bandwidth used on the WAN and LAN ports.
 - **Rx B/s**. The current reception (inbound) bandwidth used on the WAN and LAN ports.
 - **Up Time**. The time elapsed since this port acquired the link.
 - **Poll Interval**. The interval at which the statistics are updated in 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.

Check the Internet Connection Status

► To check the Internet connection status:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Click the **ADVANCED** tab.

5. In the Internet Port pane, click the **Connection Status** button.

The Connection Status window opens and displays the following information

- **IP Address.** The IP address that is assigned to the cable modem router.
- **Subnet Mask.** The subnet mask that is assigned to the cable modem router.
- **Default Gateway.** The IP address for the default gateway that the cable modem 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 cable modem router.
- **DNS Server.** The IP address of the Domain Name Service server that provides translation of network names to IP addresses.
- **Lease Obtained.** The date and time when the lease was obtained.
- **Lease Expires.** The date and time that the lease expires.

6. To return the status of all items to 0, click the **Release** button.

7. To refresh the page, click the **Renew** button.

8. To exit the page, click the **Close Window** button.

View Satellite Status

To view your satellite's status, it must be connected to your Orbi network.

► To view your satellite's status:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

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 the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **Attached Devices**.

The Attached Devices page displays.

5. In the Connected Satellites section, find your satellite's IP address.

6. Enter your satellite's IP address in your web browser's address bar.

A login window opens.

7. Enter the same admin user name and password that you entered for the cable modem router.
The satellite's status displays.

View and Manage Logs of Router Activity

The log is a detailed record of the websites you accessed or attempted to access and other cable modem router actions. 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Logs**.
The Logs page displays the following information:
 - **Date and time**. The date and time the log entry was recorded.
 - **Source IP**. The IP address of the initiating device for this log entry.
 - **Target address**. The name or IP address of the website or news group visited or to which access was attempted.
 - **Action**. The action that occurred, such as whether Internet access was blocked or allowed.
5. To refresh the log page, click the **Refresh** button.
6. To clear the log entries, click the **Clear Log** button.
7. To email the log immediately, click the **Send Log** button.

View Devices Connected to the Network

You can view all computers or devices that are currently connected to your Orbi network.

► To view devices connected to your network:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **Attached Devices**.

The Attached Devices page displays devices that are connected to the cable modem router and satellite through Ethernet (using a wired connection) or connected to a WiFi band in the WiFi network.

The IP address for devices can change because the cable modem router assigns an IP address to each device when it joins the network. The unique MAC address for each device does not change.

5. To update this page, click the **Refresh** button.

View Satellites Connected to the Network

You can view the satellites that are connected to your Orbi network.

► **To view satellites connected to your network:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

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 the first time that you logged in. The user name and password are case-sensitive.

The BASIC Home page displays.

4. Select **Attached Devices**.

The Attached Devices page displays the following information in the Connected Satellites section:

- **Device Name.** This section displays the satellite model, name, and IP address.
- **IP Address.** This section displays the satellite IP address. The satellite's IP address can change because the router assigns an IP address to each satellite when it joins the network.
- **MAC Address.** This section displays the satellite MAC address. The unique MAC address for each satellite does not change.
- **Connection Type.** This section displays how the satellite is connected to the Orbi network through a wired Ethernet connection or 2G or 5G WiFi connection.
- **Connected Orbi.** This section displays the Orbi router or satellite that the satellite is connected to. The Orbi router's or satellite's MAC address also displays.
- **Backhaul Status.** This section displays the backhaul connection status between the satellite and router or another satellite.

5. To update this page, click the **Refresh** button.

Monitor Internet Traffic

Traffic metering allows you to monitor the volume of Internet traffic that passes through the cable modem router Internet port. You can set limits for traffic volume.

► To monitor Internet traffic:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Traffic Meter**.
The Traffic Meter page displays.
5. Select the **Enable Traffic Meter** check box.
6. To control the volume of Internet traffic, use either the traffic volume control feature or the connection time control feature:
 - Select the **Traffic volume control by** radio button and then select one of the following options:
 - **No Limit**. No restriction is applied when the traffic limit is reached.
 - **Download only**. The restriction is applied to incoming traffic only.
 - **Both Directions**. The restriction is applied to both incoming and outgoing traffic.
 - Select the **Connection time control** radio button and enter the allowed hours in the **Monthly limit** field.
7. If your ISP charges for extra data volume when you make a new connection, enter the extra data volume in MB in the **Round up data volume for each connection by** field.
8. In the Traffic Counter section, set the traffic counter to begin at a specific time and date.
To start the traffic counter immediately, click the **Restart Counter Now** button.
9. If you want the cable modem router to issue a warning message before the monthly limit of Mbytes or hours is reached, in the Traffic Control section, enter a numeric value.
By default, the value is 0 and no warning message is issued.
10. To stop the Internet connection when the limit is attained, select the **Disconnect and disable the Internet connection** check box.
11. Click the **Apply** button.
The Internet Traffic Statistics section helps you to monitor the data traffic.

12. To update the Internet Traffic Statistics section, click the **Refresh** button.
13. To display more information about the data traffic on your cable modem router and to change the poll interval, click the **Internet Traffic Status** button.

Manage the Router Configuration File

The configuration settings of the cable modem router are stored within the cable modem 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 Settings

► To back up the cable modem router's configuration settings:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Administration > Backup Settings**.
The Backup Settings page displays.
5. Click the **BACK UP** button.
6. Specify a location on your network.
A copy of the current settings is saved in the location you specified.

Erase the Current Configuration Settings

You can erase the current configuration and restore the factory default settings. You might want to do this if you move the cable modem router to a different network.

► To erase the configuration settings:

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

4. Select **ADVANCED > Administration > Backup Settings**.

The Backup Settings page displays.

5. Click the **ERASE** button.

The factory default settings are restored. The user name is admin, the password is password, and the LAN IP address is 192.168.1.1. DHCP is enabled.

Restore Configuration Settings

► To restore configuration settings that you backed up:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **ADVANCED > Administration > Backup Settings**.

The Backup Settings page displays.

5. Click the **Browse** button to find and select the **.cfg** file.

6. Click the **RESTORE** button.

The file is uploaded to the cable modem router and the cable modem router reboots.



WARNING:

Do not interrupt the reboot process.

Set Up Remote Management

You can access your cable modem router over the Internet to view or change its settings. You must know the cable modem router's WAN IP address to use this feature. For information about Dynamic DNS, see [Dynamic DNS](#) on page ?.

Note Be sure to change the password for the user name admin to a secure password. The ideal password contains no dictionary words from any language and contains uppercase and lowercase letters, numbers, and symbols. It can be up to 30 characters. See [Change the admin Password](#) on page 60.

► To set up remote management:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Remote Management**.
The Remote Management page displays.
5. Select the **Turn Remote Management On** check box.
6. In the Allow Remote Access By section, specify the external IP addresses to be allowed to access the cable modem router's remote management.

Note For enhanced security, restrict access to as few external IP addresses as is practical.

Select one of the following:

- To allow access from a single IP address on the Internet, select the **Only This Computer** radio button. Enter the IP address to be allowed access.
 - To allow access from a range of IP addresses on the Internet, select the **IP Address Range** radio button. Enter a beginning and ending IP address to define the allowed range.
 - To allow access from any IP address on the Internet, select the **Everyone** radio button.
7. Specify the port number for accessing the cable modem router.
Normal web browser access uses the standard HTTP service port 80. For greater security, enter a custom port number for the remote cable modem router access. Choose a number from 1024 to 65535, but do not use the number of any common service port. The default is 8080, which is a common alternate for HTTP.
 8. Click the **Apply** button.
Your settings are saved.

Use Remote Access

► To use remote access:

1. Launch a web browser on a computer that is not on your home network.
2. Type your cable modem router's WAN IP address into your browser's address or location field followed by a colon (:) and the custom port number.

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For example, if your external address is 134.177.0.123 and you use port number 8080, enter **http://134.177.0.123:8080** in your browser.

Remotely Access Your Router Using the NETGEAR Orbi App

You can use the NETGEAR Orbi app to remotely access your cable modem router and change its settings. Before you can use remote access with the NETGEAR Orbi app, you must update your cable modem router's firmware and download the latest NETGEAR Orbi app for your mobile device.

For more information about how to update your cable modem router's firmware, see [Update the Router and Satellite Firmware](#) on page 58.

Customize Internet Traffic Rules for Ports 7

You can use port forwarding and port triggering to set up rules for Internet traffic. You need networking knowledge to set up these features.

This chapter includes the following sections:

- *Port Forwarding to a Local Server*
- *Port Triggering*

Port Forwarding to a Local Server

If your home network includes a server, 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 cable modem 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 cable modem router forwards all other incoming protocols.

Set Up Port Forwarding to a Local Server

► **To forward specific incoming protocols:**

1. Decide which type of service, application, or game you want to provide.
2. Find the local IP address of the computer on your network that will provide the service.
The server computer must always use the same IP address. To specify this setting, use the reserved IP address feature. See [Manage Reserved LAN IP Addresses](#) on page ?.
3. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
4. Enter **orbilogin.com**.
A login window opens.
5. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
6. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
The Port Forwarding/Port Triggering page displays.
7. Leave the **Port Forwarding** radio button selected as the service type.
8. In the **Service Name** menu, select the service name.
If the service that you want to add is not in the list, create a custom service. See [Add a Custom Port Forwarding Service](#) on page 74.
9. In the **Server IP Address** field, enter the IP address of the computer that will provide the service.
10. Click the **Add** button.
The service displays in the list.

Add a Custom Port Forwarding Service

► To add a custom service:

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 your Orbi network.
3. Enter **orbilogin.com**.
A login window opens.
4. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
5. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
The Port Forwarding/Port Triggering page displays.
6. 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. In the **Protocol** menu, select the protocol.
If you are unsure, select **TCP/UDP**.
10. In the **External Port range** field, enter the port numbers.
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 port range** field.
12. Type the IP address in the **Internal IP address** fields or select the radio button for an attached device listed in the table.
13. Click the **Apply** button.
The service is now in the list on the Port Forwarding/Port Triggering page.

Edit a Port Forwarding Service

► To edit a port forwarding entry:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.

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A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.

The Port Forwarding/Port Triggering page displays.

5. Leave the **Port Forwarding** radio button selected as the service type.

6. In the table, select the radio button next to the service name.

7. Click the **Edit Service** button.

The Ports - Custom Services page displays.

8. Specify changes to any of the following settings:

- **Service Name.** Type the service name.
- **Protocol.** If you are unsure, select TCP/UDP.
- **External port range.**
- For the internal ports, leave the **Use the same port range for Internal port** check box selected or enter the ports in the **Internal port range** field.
- **Internal IP address.** Type the IP address in the **Internal IP address** fields, or select the radio button for an attached device listed in the table.

9. Click the **Apply** button.

Your settings are saved.

Delete a Port Forwarding Entry

► To delete a port forwarding entry:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

4. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.

The Port Forwarding/Port Triggering page displays.

5. Select the **Port Forwarding** radio button as the service type.

6. In the table, select the radio button next to the service name.
7. Click the **Delete Service** button.

Application Example: Make a Local Web Server Public

If you host a web server on your local network, you can use port forwarding to allow web requests from anyone on the Internet to reach your web server.

► To make a local web server public:

1. Assign your web server either a fixed IP address or a dynamic IP address using DHCP address reservation.
In this example, your cable modem router always gives your web server an IP address of 192.168.1.33.
2. In the **Port Forwarding/Port Triggering** page, configure the cable modem 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 cable modem router.
Dynamic DNS makes it much easier to access a server from the Internet because you can type the name in the Internet browser. Otherwise, you must know the IP address that the ISP assigned, which typically changes.

How the Router Implements the Port Forwarding Rule

The following sequence shows the effects of a port forwarding rule:

1. When you type 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 cable modem router.
 - **Destination port number.** 80, which is the standard port number for a web server process.
2. Your cable modem router receives the message and finds your port forwarding rule for incoming port 80 traffic.
3. The cable modem router changes the destination in the message to IP address 192.168.1.123 and sends the message to that computer.
4. Your web server at IP address 192.168.1.123 receives the request and sends a reply message to your cable modem router.
5. Your cable modem router performs Network Address Translation (NAT) on the source IP address, and sends the reply through the Internet to the computer or WiFi device that sent the web page request.

Port Triggering

Port triggering is a dynamic extension of port forwarding that is useful in these cases:

Customize Internet Traffic Rules for Ports

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- 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 cable modem router monitors traffic to the Internet from an outbound “trigger” port that you specify. For outbound traffic from that port, the cable modem router saves the IP address of the computer that sent the traffic. The cable modem 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.

Add a Port Triggering Service

► To add a port triggering service:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
The Port Forwarding/Port Triggering page displays.
5. Select the **Port Triggering** radio button.
The page adjusts.
6. Click the **Add Service** button.
The Port Triggering - Services page displays.
7. In the **Service Name** field, type a descriptive service name.
8. In the **Service User** menu, select **Any**, or select **Single address** and enter the IP address of one computer:
 - **Any** (the default) allows any computer on the Internet to use this service.
 - **Single address** restricts the service to a particular computer.
9. Select the service type, either TCP or UDP or TCP/UDP (both).
If you are not sure, select **TCP/UDP**.
10. In the **Triggering Port** field, enter the number of the outbound traffic port that will open the inbound ports.

11. Enter the inbound connection port information in the **Connection Type**, **Starting Port**, and **Ending Port** fields.
12. Click the **Apply** button.
The service is now in the Portmap Table. You must enable port triggering before the cable modem router used port triggering for the service that you added. See *Enable Port Triggering* on page 78.

Enable Port Triggering

► To enable port triggering:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > Port Forwarding/Port Triggering**.
The Port Forwarding/Port Triggering page displays.
5. Select the **Port Triggering** radio button.
The page adjusts.
6. Clear the **Disable Port Triggering** check box.
If this check box is selected, the cable modem router does not use port triggering even if you specified port triggering settings.
7. In the **Port Triggering Timeout** field, enter a value up to 9999 minutes.
This value controls how long the inbound ports stay open when the cable modem router detects no activity. This value is required because the cable modem router cannot detect when the application terminates.

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 cable modem 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 cable modem 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 the port triggering rule you define:

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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 cable modem router.
3. Your cable modem router creates an entry in its internal session table describing this communication session between your computer and the IRC server. Your cable modem 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 cable modem 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 cable modem router using the NAT-assigned source port (for example, port 33333) as the destination port. The IRC server also sends an “identify” message to your cable modem router with destination port 113.
6. When your cable modem 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 cable modem router restores the original address information replaced by NAT and sends this reply message to your computer.
7. When your cable modem 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 cable modem 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 cable modem router eventually senses a period of inactivity in the communications. The cable modem router then removes the session information from its session table, and incoming traffic is no longer accepted on port numbers 33333 or 113.

Use VPN to Access Your Network

8

You can use OpenVPN software to remotely access your cable modem router using virtual private networking (VPN). This chapter explains how to set up and use VPN access.

This chapter includes the following sections:

- *Set Up a VPN Connection*
- *Specify VPN Service in the Router*
- *Install OpenVPN Software*
- *Use a VPN Tunnel on Your Windows Computer*
- *Use VPN to Access Your Internet Service at Home*
- *Block VPN Client Internet Access in the Router*
- *Use a VPN Tunnel to Access Your Internet Service at Home*

Set Up a VPN Connection

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

This type of VPN access is called a client-to-gateway tunnel. The computer is the client, and the cable modem router is the gateway. To use the VPN feature, you must log in to the cable modem router and enable VPN, and you must install and run VPN client software on the computer.

VPN uses DDNS or a static IP address to connect with your cable modem router.

To use a DDNS service, register for an account with a host name (sometimes called a domain name). You use the host name to access your network. The cable modem router supports these accounts: NETGEAR, No-IP, and Dyn.

If your Internet service provider (ISP) assigned a static WAN IP address (such as 50.196.x.x or 10.x.x.x) that never changes to your Internet account, the VPN can use that IP address to connect to your home network.

Specify VPN Service in the Router

You must specify the VPN service settings in the cable modem router before you can use a VPN connection.

► To specify the VPN service:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
The VPN Service page displays.
5. Select the **Enable VPN Service** check box.
By default, the VPN uses the UDP service type and uses port 12974. If you want to customize the service type and port, we recommend that you change these settings before you install the OpenVPN software.
6. To change the service type, scroll down and select the **TCP** radio button.
7. To change the port, scroll down to the **Service Port** field, and type the port number that you want to use.
8. Click the **Apply** button.
Your settings are saved. VPN is enabled in the cable modem router, but you must install and set up OpenVPN software on your computer before you can use a VPN connection.

Install OpenVPN Software

You must install this software on each Windows computer, Mac computer, iOS device, or Android device that you plan to use for VPN connections to your cable modem router.

Install OpenVPN Software on Your Windows Computer

You must install this software on each Windows computer that you plan to use for VPN connections to your cable modem router.

► **To install VPN client software on your Windows computer:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in.
The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
The VPN Service page displays.
5. Make sure that the **Enable VPN Service** check box is selected.
6. Specify any VPN service settings on the page.
For more information, see *Specify VPN Service in the Router* on page 81.
7. Click the **For Windows** button to download the OpenVPN configuration files.
8. Visit **openvpn.net/index.php/download/community-downloads.html** to download the OpenVPN client utility.
9. In the Windows Installer section of the page, double-click the **openVPN-install-xxx.exe** link.
10. Download and install the Open VPN software on your computer, click the **openVPN-install-xxx.exe** file.

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11. Click the **Next** button.
12. When prompted, read the License Agreement and click the **I Agree** button.



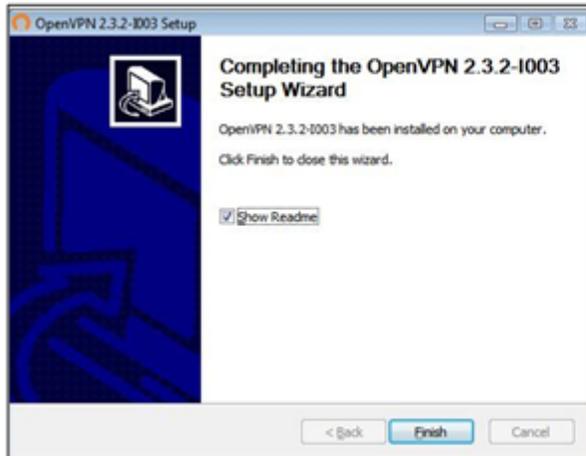
13. Leave the check boxes selected, and click the **Next** button.
14. To specify the destination folder, click the **Browse** button and select a destination folder.



Figure 7. A Windows Security window opens.

15. Click the **Install** button.

The window displays the progress of the installation and then displays the final installation page.



16. Click the **Finish** button.
17. Unzip the configuration files that you downloaded and copy them to the folder where the VPN client is installed on your device.
For a client device with Windows 64-bit system, the VPN client is installed at C:\Programfiles\OpenVPN\config\ by default.
18. For a client device with Windows, modify the VPN interface name to **NETGEAR-VPN**:
 - a. On your computer, go to the Networks page. If you are using Windows 10, select **Control Panel > Network and Sharing Center > Change 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.
For more information about using OpenVPN on your Windows computer, visit <https://openvpn.net/index.php/open-source/documentation/howto.html#quick>.

Install OpenVPN Software on Your Mac Computer

You must install this software on each Mac computer that you plan to use for VPN connections to your cable modem router.

► To install VPN client software on your Mac computer:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.

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

The BASIC Home page displays.

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

The VPN Service page displays.

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

6. Specify any VPN service settings on the page.

For more information, see *Specify VPN Service in the Router* on page 81.

7. Click the **FOR MAC OS** button to download the OpenVPN configuration files.

8. Visit <https://tunnelblick.net/index.html> to download the OpenVPN client utility for Mac OS X.

9. Download and install the file.

10. Unzip the configuration files that you downloaded and copy them to the folder where the VPN client is installed on your device.

The client utility must be installed by a user with administrative privileges.

For more information about using OpenVPN on your Mac computer, visit

<https://openvpn.net/index.php/access-server/docs/admin-guides/183-how-to-connect-to-access-server-from-a-mac.html>.

Install OpenVPN Software on an iOS Device

You must install this software on each iOS device that you plan to use for VPN connections to your cable modem router.

► **To install VPN client software on an iOS device:**

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.

2. Enter **orbilogin.com**.

A login window opens.

3. Enter the admin user name and password.

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

The BASIC Home page displays.

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

The VPN Service page displays.

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

6. Specify any VPN service settings on the page.

For more information, see *Specify VPN Service in the Router* on page 81.

7. Click the **FOR SMART PHONE** button to download the OpenVPN configuration files.

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8. On your iOS device, download and install the OpenVPN Connect app from the Apple app store.
9. On your computer, unzip the configuration files that you downloaded and send the files to your iOS device.

Note that when you open the .ovpn file, a list of apps displays. Select the OpenVPN Connect app to open the .ovpn file.

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

Install OpenVPN Software on an Android Device

You must install this software on each Android device that you plan to use for VPN connections to your cable modem router.

► To install VPN client software on an Android device:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
The VPN Service page displays.
5. Make sure that the **Enable VPN Service** check box is selected.
6. Specify any VPN service settings on the page.
For more information, see *Specify VPN Service in the Router* on page 81.
7. Click the **FOR SMART PHONE** button to download the OpenVPN configuration files.
8. On your Android device, download and install the OpenVPN Connect app from the Google Play Store.
9. On your computer, unzip the configuration files that you downloaded and send the files to your Android device.
10. Open the files on your Android device.
11. Open the .ovpn file using the OpenVPN Connect app.
For more information about using OpenVPN on your Android device, visit http://www.vpngate.net/en/howto_openvpn.aspx#android.

Use a VPN Tunnel on Your Windows Computer

After you set up the cable modem router to use VPN and install the OpenVPN application on your computer, you can open a VPN tunnel from your computer to your cable modem router over the Internet.

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For the VPN tunnel to work, the local LAN IP address of the remote cable modem router must use a different LAN IP scheme from that of the local LAN where your VPN client computer is connected. If both networks use the same LAN IP scheme, when the VPN tunnel is established, you cannot access your home cable modem router or your home network with the OpenVPN software.

The default LAN IP address scheme for the cable modem router is 192.x.x.x. The most common IP schemes are 192.x.x.x, 172.x.x.x, and 10.x.x.x. If you experience a conflict, change the IP scheme either for your home network or for the network with the client VPN computer. For information about changing these settings, see [Change the LAN TCP/IP Settings](#) on page ?.

▶ To open a VPN tunnel:

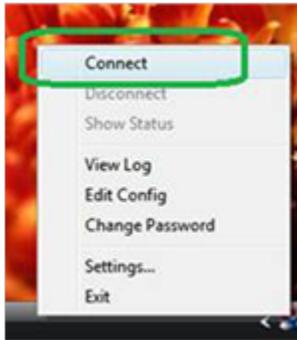
1. Launch the OpenVPN application with administrator privileges.



Figure 8. The OpenVPN icon displays in the Windows taskbar.

TIP: You can create a shortcut to the VPN program, then use the shortcut to access the settings and select the **run as administrator** check box. Then every time you use this shortcut, OpenVPN automatically runs with administrator privileges.

2. Right-click the **OpenVPN** icon.



3. Select **Connect**.

The VPN connection is established. You can launch a web browser and log in to your cable modem router.

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.

Orbi Pro lets you use a VPN connection to access your own Internet service when you're away from home. You might want to do this 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.

Set Up VPN Client Internet Access in the Router

By default, the cable modem 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 your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
The VPN Service page displays.
5. Select the **Enable VPN Service** radio button.
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.
8. Click the **FOR WINDOWS** or **FOR MACOSX** button and download the configuration files for your VPN clients.
9. Unzip the configuration files and copy them to the folder where the VPN client is installed on your device. For a client device with Windows 64-bit system, the VPN client is installed at C:\Programfiles\OpenVPN\config\ by default.

Block VPN Client Internet Access in the Router

By default, the cable modem router is set up to allow VPN connections only to your home network, not to the Internet service for your home network. If you changed this setting to allow Internet access, you can change it back.

► To allow VPN clients to access only your home network:

1. Launch a web browser from a computer or mobile device that is connected to your Orbi network.
2. Enter **orbilogin.com**.
A login window opens.
3. Enter the admin user name and password.
The user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.
The BASIC Home page displays.
4. Select **ADVANCED > Advanced Setup > VPN Service**.
The VPN Service page displays.
5. Select the **Enable VPN Service** radio button.
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.
8. Click the **FOR WINDOWS** or **FOR MAC0SX** button and download the configuration files for your VPN clients.
9. Unzip the configuration files and copy them to the folder where the VPN client is installed on your device.
For a client device with Windows 64-bit system, the VPN client is installed at C:\Programfiles\OpenVPN\config\ by default.

Use a VPN Tunnel to Access Your Internet Service at Home

► To access your Internet service:

1. Set up the cable modem router to allow VPN access to your Internet service.
See *Specify VPN Service in the Router* on page 81.
2. On your computer, launch the OpenVPN application.
The OpenVPN icon displays in the Windows taskbar.
3. Right-click the icon and select **Connect**.
4. When the VPN connection is established, launch your Internet browser.

This chapter provides information to help you diagnose and solve problems you might experience with your Orbi router or satellite. If you do not find the solution here, check the NETGEAR support site at support.netgear.com for product and contact information.

This chapter includes the following sections:

- *Troubleshoot With the LEDs*
- *Troubleshoot the Cable Internet Connection*
- *Cannot Log In to the Cable Modem Router*
- *Changes Not Saved*
- *WiFi Connectivity*
- *Troubleshoot Your Network Using the Ping Utility*

Troubleshoot With the LEDs

You can use the LEDs on the front panel of the cable modem router for troubleshooting.

Power LED Is Off

- Make sure that the power adapter is securely connected to your cable modem router and securely connected to a working power outlet.
- Check that you are using the power adapter that NETGEAR supplied for this product.
- If the problem persists, contact technical support for help at

LEDs Never Turn Off

When the cable modem router is turned on, the LEDs light for about 10 seconds and then turn off. If all the LEDs stay on, this indicates a fault within the cable modem router.

If all LEDs are still lit one minute after power-up, do the following:

- Cycle the power to see if the cable modem router recovers.
- Press and hold the Reset button to return the cable modem router to its factory settings. For more information, see .

If the error persists, a hardware problem might be the cause. Contact technical support at .

Internet LED Is Off

If the Internet LED is off and the cable modem router is connected to the cable television cable, try the following:

- Make sure that the coaxial cable connections are secure at the cable modem router and at the wall jack.
- Make sure that your cable Internet provider provisioned your cable Internet service. Your provider can verify that the signal quality is good enough for cable modem router service.
- Remove any excessive splitters that are on your cable line.

Troubleshoot the Cable Internet Connection

When your cable modem router cannot access the Internet and your Internet LED is on, register the cable MAC address or device MAC address of your cable modem router with your cable Internet provider.

Additionally, make sure that the cable modem router is specified as the TCP/IP gateway for your computer. If your computer obtains its information from the cable modem router by DHCP, reboot the computer and verify the gateway address.

Cannot Log In to the Cable Modem Router

If you are unable to log in to the cable modem router from a computer or mobile device on your local network, check the following:

1. Make sure that you are connected to the cable modem router's wired or WiFi network.
 - For a wired Ethernet connection, make sure that the Ethernet connection is secure and the cable modem router is powered on (its Power LED is lit).
 - For a WiFi connection, make sure that you selected the correct network. If you cannot find the WiFi network, make sure that the cable modem router is powered on (its Power LED is lit). If the cable modem router is powered on, it is possible that someone turned off the SSID broadcast or turned off the WiFi radios.
2. If you are connected to the cable modem router network, but the web browser does not display the login window, check the following:
 - Make sure that Java, JavaScript, or ActiveX is enabled in your browser. If you are using Internet Explorer, click the **Refresh** button to be sure that the Java applet is loaded.
 - Try quitting the browser and launching it again.
3. If the browser displays the login window, but you cannot access the cable modem router, make sure that you are using the correct login information.

The user name is **admin**, and the default password is **password**. Both are case-sensitive. Make sure that Caps Lock is off when you enter this information.
4. If you customized advanced home network settings such as the IP address scheme, check the following:
 - Make sure that the IP address of your computer is on the same subnet as the cable modem router. If you are using the recommended addressing scheme, your computer's address is in the range of 192.168.0.2 to 192.168.0.254.
 - If your computer's IP address is shown as 169.254.x.x, recent versions of Windows and Mac OS generate and assign an IP address if the computer cannot reach a DHCP server. These autogenerated addresses are in the range of 169.254.x.x. If your IP address is in this range, check the connection from the computer to the cable modem router, and reboot your computer.
 - If your cable modem router's IP address was changed and you do not know the current IP address, clear the cable modem router's configuration to factory defaults. This sets the cable modem router's IP address to 192.168.0.1.

Changes Not Saved

If the cable modem router does not save the changes you that make in the cable modem router interface, check the following:

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- When entering configuration settings, always click the **>Apply** button before moving to another page or tab, or your settings are lost.
- Click the **Refresh** or **Reload** button in the web browser. The changes might be saved, but the old settings might be in the web browser's cache.

WiFi Connectivity

If you are having trouble connecting to the cable modem router with WiFi, try to isolate the problem:

- The computer or WiFi device that you are using does not find the WiFi network. This can happen for the following reasons:
 - Someone pressed the WiFi On/Off button on the cable modem router, which turned off the Wradios. Check the 2.4 GHz and 5 GHz LEDs on the front of the cable modem router. If they are off, press the WiFi On/Off button to turn the WiFi radios back on.
 - Someone logged in to the cable modem router and disabled its WiFi radios or set up a WiFi schedule. In this case, pressing the WiFi button does not turn the WiFi radios back on. You must log in to enable the WiFi radios. Use an Ethernet cable for a wired connection to the cable modem router. Then log in and change the settings.
 - Someone logged in to the cable modem router and disabled its SSID broadcast. Your WiFi network is hidden and does not display in your WiFi client's scanning list. (By default, SSID broadcast is enabled.) To connect with WiFi, you must type the network SSID and password..
- You can find the WiFi network, but you can't connect. Check the following:
 - Make sure that your computer or device supports the security that you are using for your WiFi network (WPA or WPA2).
 - You are not sure what the WiFi password is. The preset WiFi password is on the cable modem router label. If you changed it and do not remember the new password, you can use a wired Ethernet connection to log in to the cable modem router and view or change the WiFi password..
 - The WiFi signal strength is weak in your location. Is your cable modem router too far from your computer, or too close? Place your computer near the cable modem router, but at least 6 feet (1.8 meters) away, and see if the signal strength improves. Check for sources of WiFi interference that might block the signal.

Troubleshoot Your Network Using the Ping Utility

Most network devices and routers contain a ping utility that sends an echo request packet to the designated device. The device then responds with an echo reply. You can easily troubleshoot a network using the ping utility in your computer or workstation.

Test the LAN Path to Your Cable Modem Router

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

► To ping the cable modem router from a Windows-based computer:

1. From the Windows toolbar, click **Start** and select **Run**.
2. In the field provided, type **ping** followed by the IP address of the cable modem router, as in this example:
ping www.orbilogn.com

3. Click the **OK** button.

You should see a message like this one:

Pinging <IP address > with 32 bytes of data

If the path is working, you see this message:

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

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

Request timed out

If the path is not functioning correctly, you might be experiencing one of the following problems:

- 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 that the appropriate LEDs are on for your network devices. If your cable modem 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 cable modem router.
- Wrong network configuration
Verify that the Ethernet card driver software and TCP/IP software are both installed and configured on your computer.
Verify that the IP address for your cable modem router and your computer are correct and that the addresses are on the same subnet.

Test the Path From Your Computer to a Remote Device

After verifying that the LAN path works correctly, test the path from your computer to a remote device.

1. From the Windows toolbar, click the **Start** button and select **Run**.
2. In the Windows Run window, type:
ping -n 10 <IP address>

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

If the path is functioning correctly, messages like those shown in *Test the LAN Path to Your Cable Modem Router* on page 94 display.

If you do not receive replies, check the following:

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- Check to see that the IP address of your cable modem router is listed as the default gateway on 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 cable modem 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. If your ISP additionally restricts access to the MAC address of a single computer connected to that modem, configure your cable modem router to “clone” or “spoof” the MAC address from the authorized computer.

This appendix covers the following topics:

- *Factory Settings*
- *Technical Specifications*

Factory Settings

You can return the cable modem router and satellite to its factory settings. Use the end of a paper clip or a similar object to press and hold the **Reset** button on the back of the cable modem router or satellite for at least seven seconds. The cable modem router or satellite resets, and returns to the factory settings.

Factory Settings for Orbi Cable Modem Router

The following table shows the factory default settings for the cable modem router.

Table 5. Factory default settings for the cable modem router

Feature		Default Setting
Router login	User login URL	orbilogin.com
	User name (case-sensitive)	admin
	Login password (case-sensitive)	password
Internet connection	WAN MAC address	Use default hardware address
	WAN MTU size	1500
	Port speed	AutoSensing
Local network (LAN)	LAN IP	192.168.1.1
	Subnet mask	255.255.255.0
	DHCP server	Enabled
	DHCP range	192.168.1.2 to 192.168.1.254
	DHCP starting IP address	192.168.1.2
	DHCP ending IP address	192.168.1.254
	DMZ	Disabled
	Time zone	GMT for WW except NA and GR, GMT+1 for GR, GMT-8 for NA
	Time zone adjusted for daylight saving time	Disabled
SNMP	Disabled	
Firewall	Inbound (communications coming in from the Internet)	Disabled (except traffic on port 80, the HTTP port)
	Outbound (communications going out to the Internet)	Enabled (all)
	Source MAC filtering	Disabled

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Table 5. Factory default settings for the cable modem router (Continued)

Feature		Default Setting
WiFi	WiFi communication	Enabled
	SSID name	See cable modem router label
	Security	WPA2-PSK (AES)
	Broadcast SSID	Enabled
	Transmission speed	Auto ¹
	Country/region	United States in the US
	RF channel	2.4GHz front and back haul: Auto 5 GHz front haul: Channel 48 5 GHz back haul: Channel 157

¹Maximum wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput can vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

Factory Settings for Orbi Satellite Model RBS20

The following table shows the factory default settings for the satellite.

Table 6. Factory default settings for the satellite

Feature		Default Setting
Router login	User login URL	orbilogin.com
	User name (case-sensitive)	admin
	Login password (case-sensitive)	password
Internet connection	WAN MAC address	Use default hardware address
	WAN MTU size	1500
	Port speed	AutoSensing
Local network (LAN)	LAN IP	192.168.1.250
	Subnet mask	255.255.255.0
	DHCP server	Enabled
	DHCP range	192.168.1.2 to 192.168.1.254
	DHCP starting IP address	192.168.1.2
	DHCP ending IP address	192.168.1.254
	DMZ	Disabled
	Time zone	GMT for WW except NA and GR, GMT+1 for GR, GMT-8 for NA
	Time zone adjusted for daylight saving time	Disabled
SNMP	Disabled	

Supplemental Information

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Table 6. Factory default settings for the satellite (Continued)

Feature		Default Setting
Firewall	Inbound (communications coming in from the Internet)	Disabled (except traffic on port 80, the HTTP port)
	Outbound (communications going out to the Internet)	Enabled (all)
	Source MAC filtering	Disabled
WiFi	WiFi communication	Enabled
	SSID name	See satellite label
	Security	WPA2-PSK (AES)
	Broadcast SSID	Enabled
	Transmission speed	Auto ²
	Country/region	United States in the US
	RF channel	2.4 GHz front and back haul: Auto 5 GHz front haul: Channel 48 5 GHz back haul: Channel 157

²Maximum wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput can vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.

Technical Specifications

The following are the technical specifications for Orbi cable modem router and satellite.

Technical Specifications for Orbi Cable Modem Router

The following table shows the technical specifications for the cable modem router.

Table 7. Cable modem router specifications

Feature	Description
Data and routing protocols	TCP/IP, DHCP, Dynamic DNS, and UPnP
Power adapter	120V, 60 Hz, input
Dimensions	6.7 x 3.1 x 8.89 in. (170.3 x 78.9 x 225.8 mm) each
Weight	2.15 lb (975.2 g)
Operating temperature	0° to 40°C (32° to 104°F)
Operating humidity	90% maximum relative humidity, noncondensing

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Table 7. Cable modem router specifications (Continued)

Feature	Description
Electromagnetic emissions	FCC Part 15 Class B VCCI Class B EN 55 022 (CISPR 22), Class B C-Tick N10947
LAN	10BASE-T or 100BASE-TX or 1000BASE-T, RJ-45
WAN	24 x 8 DOCSIS 3.0 WAN Interface
WiFi	Maximum wireless signal rate complies with the IEEE 802.11 standard. ³
Radio data rates	2.4 GHz: Max. 400 Mbps 5 GHz Front haul: Max. 866 Mbps 5 GHz Back haul: Max. 866 Mbps
Data encoding standards	IEEE 802.11b/g/n 2.4 GHz–256 QAM support IEEE 802.11a/n/ac 5GHz-256 QAM support
Maximum number of computers per wireless network	Limited by the amount of WiFi network traffic generated by each node (typically 50–70 nodes) 2.4 GHz: 127 5 GHz (front haul): 127
Operating frequency range	2.4 GHz: 2.412–2.462 GHz 5 GHz: 5.18 GHz–5.24 GHz and 5.745 GHz–5.825 GHz
802.11 security	WPA-PSK [TKIP], WPA2-PSK [AES]

³ *Maximum wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput can vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.*

Technical Specifications for Orbi Router Model RBS20

The following table shows the technical specifications for the satellite.

Table 8. Technical specifications for the satellite

Feature	Description
Data and routing protocols	TCP/IP, DHCP, Dynamic DNS, and UPnP
Power adapter	120V, 60 Hz, input
Dimensions	6.4 x 3.1 x 8.0 in. (163 x 78 x 203 mm)
Weight	1.65 lb (748 g)
Operating temperature	0° to 40°C (32° to 104°F)

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Table 8. Technical specifications for the satellite (Continued)

Feature	Description
Operating humidity	90% maximum relative humidity, noncondensing
Electromagnetic emissions	FCC Part 15 Class B VCCI Class B EN 55 022 (CISPR 22), Class B C-Tick N10947
LAN	10BASE-T or 100BASE-TX or 1000BASE-T, RJ-45
WAN	10BASE-T or 100BASE-TX or 1000BASE-T, RJ-45
WiFi	Maximum wireless signal rate complies with the IEEE 802.11 standard. ⁴
Radio data rates	2.4 GHz: Max 400 Mbps 5 GHz Front haul: Max 866 Mbps 5 GHz Back haul: Max 866 Mbps
Data encoding standards	IEEE 802.11b/g/n 2.4 GHz–256 QAM support IEEE 802.11 a/n/ac 5 GHz–256 QAM support
Maximum number of computers per wireless network	Limited by the amount of WiFi network traffic generated by each node (typically 50–70 nodes). 2.4 GHz: 127 5 GHz (front haul): 127
Operating frequency range	2.4 GHz: 2.412–2.462 GHz 5 GHz: 5.18 GHz–5.24 GHz and 5.745 GHz–5.825 GHz
802.11 security	WPA-PSK [TKIP], WPA2-PSK [AES]

⁴Maximum wireless signal rate derived from IEEE Standard 802.11 specifications. Actual throughput can vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate.