

**NETGEAR®**

# User Manual

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Insight Managed Smart Cloud  
Wireless Access Point  
AC3000 802.11ac Wave 2 Tri Radio

Model WAC540

March 2019  
202-11795-01

**NETGEAR, Inc.**  
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## Support

Thank you for purchasing this NETGEAR product. You can visit <https://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.

## Compliance and Conformity

For regulatory compliance information including the EU Declaration of Conformity, visit <https://www.netgear.com/about/regulatory/>.

See the regulatory compliance document before connecting the power supply.

Do not use this device outdoors. If you connect cables or devices that are outdoors to this device, see <http://kb.netgear.com/000057103> for safety and warranty information.

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# 1

## Hardware Overview

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The NETGEAR Insight Managed Smart Cloud Wireless Access Point (WAC540) AC3000 802.11ac Wave 2 Tri Radio, in this manual referred to as the access point, supports three radios with tri-band concurrent operation at 2.4 GHz, 5 GHz low band, and 5 GHz high band.

The access point can provide a combined throughput of 3000 Mbps (400 Mbps at 2.4 GHz, 867 Mbps at 5 GHz low band, and 1733 Mbps at 5 GHz high band). The access point can function as a Power over Ethernet plus (PoE+) powered device (PD) so that you can connect it to a PoE+ switch in an existing network and let it operate without a power adapter. With a power adapter, you can connect the access point to a regular switch. A second Ethernet LAN port supports a link aggregation (LAG) connection.

This chapter contains the following sections:

- [About NETGEAR Insight](#)
- [Related documentation](#)
- [Unpack the access point](#)
- [Top panel with LEDs](#)
- [Back panel](#)
- [Product label](#)
- [Safety instructions and warnings](#)

**Note:** For more information about the topics that are covered in this manual, visit the support website at [netgear.com/support/](http://netgear.com/support/).

**Note:** Firmware updates with new features and bug fixes are made available from time to time at [netgear.com/support/download/](http://netgear.com/support/download/). You can check for and download new firmware manually. If the features or behavior of your product does not match what is described in this manual, you might need to update the firmware.

**Note:** In this user manual, *WiFi network* means the same as SSID (service set identifier or WiFi network name) or VAP (virtual access point). That is, in this user manual, when we refer to a WiFi network we mean an individual SSID or VAP.

# About NETGEAR Insight

The access point supports the NETGEAR Insight mobile app, which lets you set up and manage the access point from your iOS or Android mobile device and connects to the Insight cloud-based management platform. For Insight Premium or Insight Pro subscribers, the access point also supports the Insight Cloud Portal, which is the website that provides access to the Insight cloud-based management platform. However, this user manual describes the local browser-based management interface, in this manual referred to as the local browser interface. For more information about NETGEAR Insight, visit [insight.netgear.com](https://insight.netgear.com) and see the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](https://netgear.com/support/product/insight.aspx).

If you install the access point as a NETGEAR Insight managed device, the settings for features that you can manage through the Insight mobile app and Insight Cloud Portal are masked out in the local browser interface. However, using the local browser interface, you can still manage the settings for certain features that are not yet supported in Insight. For more information, visit the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](https://netgear.com/support/product/insight.aspx) and search for *What is Hybrid Management Mode*.

## Related documentation

The following related documentation is available at [netgear.com/support/download/](https://netgear.com/support/download/):

- Installation guide
- Ceiling and wall-mount guide
- Data sheet

For information about the NETGEAR Insight mobile app and the Insight Cloud Portal, visit [insight.netgear.com](https://insight.netgear.com) and see the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](https://netgear.com/support/product/insight.aspx).

## Unpack the access point

The package includes the following items:

- Access point model WAC540 or WAC540PA
- Ceiling and wall-mount kit
- Installation guide



- Ceiling and wall-mount guide
- DC power adapter (model WAC540PA only, sold separately for model WAC540)

Other than a power adapter, model WAC540 and model WAC540PA are identical. Each model can function as a PoE+ PD connected to a PoE+ switch so that you can use the access point without a power adapter.

## Top panel with LEDs

The LEDs that provide the status of the access point are located on the top panel of the access point.



Figure 1. Top panel with LEDs

Table 1. LED descriptions







LED	Description
 Power/Cloud LED	<p><b>Off.</b> No power is supplied to the access point.</p> <p><b>Solid green.</b> The access point functions either as a standalone access point or as an Insight discovered access point that is <i>not</i> connected to the Insight cloud-based management platform.</p> <p><b>Solid blue.</b> The access point functions in Insight mode and is connected to the Insight cloud-based management platform.</p> <p><b>Solid amber.</b> During startup, the Power/Cloud LED lights solid amber. If after five minutes the amber light remains, either a boot error occurred, or, if the access point functions as a PoE+ PD device, it might not be receiving power at the required 802.3at (PoE+) level.</p> <p><b>Blinking amber quickly, temporarily.</b> The access point is upgrading firmware.</p> <p><b>Blinking amber slowly, continuously.</b> The access point did not receive an IP address from a DHCP server.</p>
 LAN 1 LED	<p><b>Off.</b> Either no powered-on Ethernet device is connected to the LAN port, or, if a powered-on Ethernet device is connected, no Ethernet link is detected.</p> <p><b>Solid green.</b> A 1000 Mbps Ethernet link is detected on the LAN port.</p> <p><b>Blinking green.</b> 1000 Mbps traffic activity is detected on the LAN port.</p> <p><b>Solid amber.</b> A 10 or 100 Mbps Ethernet link is detected on the LAN port.</p> <p><b>Blinking amber.</b> 10 or 100 Mbps traffic activity is detected on the LAN port.</p>

Table 1. LED descriptions (Continued)

LED	Description
	<p><b>Off.</b> Either no powered-on Ethernet device is connected to the LAN port, or, if a powered-on Ethernet device is connected, no Ethernet link is detected.</p> <p><b>Solid green.</b> A 1000 Mbps Ethernet link is detected on the LAN port.</p> <p><b>Blinking green.</b> 1000 Mbps traffic activity is detected on the LAN port.</p> <p><b>Solid amber.</b> A 10 or 100 Mbps Ethernet link is detected on the LAN port.</p> <p><b>Blinking amber.</b> 10 or 100 Mbps traffic activity is detected on the LAN port.</p>
	<p><b>Off.</b> The 2.4 GHz WiFi radio is off.</p> <p><b>Solid green.</b> The 2.4 GHz WiFi radio is on.</p> <p><b>Solid blue.</b> One or more WLAN clients are connected to the 2.4 GHz WiFi radio.</p> <p><b>Blinking blue.</b> Traffic is detected on the 2.4 GHz WiFi radio.</p>
	<p><b>Off.</b> The 5 GHz high band WiFi radio is off.</p> <p><b>Solid green.</b> The 5 GHz high band WiFi radio is on.</p> <p><b>Solid blue.</b> One or more WLAN clients are connected to the 5 GHz high band WiFi radio.</p> <p><b>Blinking blue.</b> Traffic is detected on the 5 GHz high band WiFi radio.</p>
	<p><b>Off.</b> The 5 GHz low band WiFi radio is off.</p> <p><b>Solid green.</b> The 5 GHz low band WiFi radio is on.</p> <p><b>Solid blue.</b> One or more WLAN clients are connected to the 5 GHz low band WiFi radio.</p> <p><b>Blinking blue.</b> Traffic is detected on the 5 GHz low band WiFi radio.</p>

**Note:** For information about troubleshooting with the LEDs, see [Troubleshoot with the LEDs](#) on page 170.

# Back panel

The back panel of the access point provides a DC power connector, two LAN ports, and a **Reset** button.

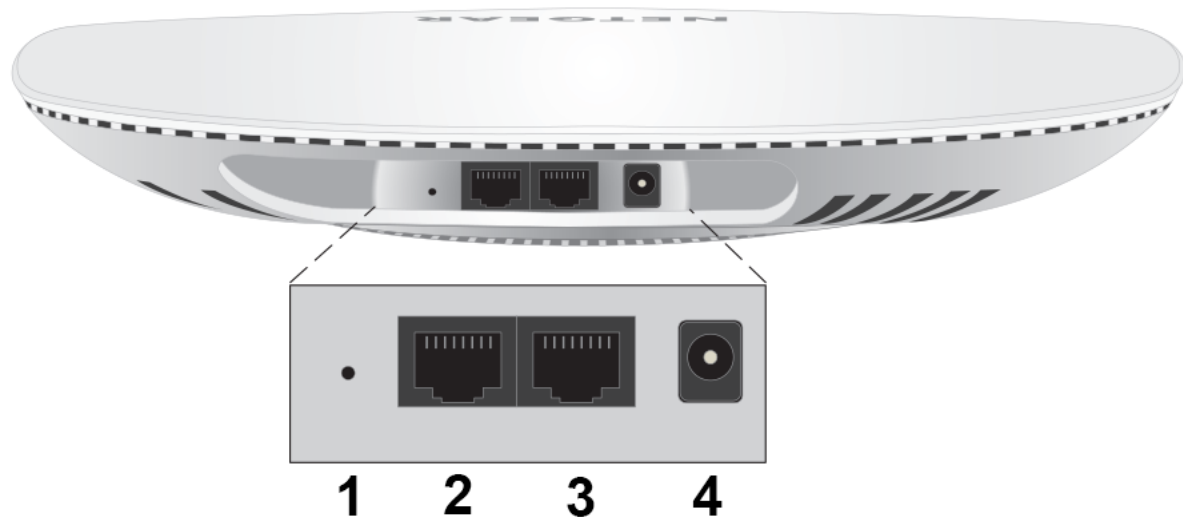


Figure 2. Access point back panel

Viewed from left to right, the back panel contains the following components:

1. **Reset button.** Press the **Reset** button for about 2 seconds to reboot the access point or for more than 10 seconds to reset the access point to factory default settings. If you added the access point to a NETGEAR Insight network location, you must first use the Insight mobile app or Insight Cloud Portal to remove the access point from your Insight network location before the factory default settings function of the **Reset** button is available. For more information, see [Use the Reset button](#) on page 136.
2. **LAN 2 port.** One Gigabit Ethernet RJ-45 LAN port. Use the LAN 2 port to connect the access point to the same switch as the LAN 1 port for a link aggregation (LAG) connection. The switch must be capable of supporting a LAG connection, which you must configure on the switch. By default, *LAG capability* is supported on the access point. If you manually disable LAG capability, the LAN 2 port is also disabled. For more information, see [Manage the link aggregation capability](#) on page 117.

**Note:** If you want to connect a switch to the LAN 2 port *instead* of the LAN 1 port, use a power adapter, do not use a LAG connection, and do not manually disable the LAG capability. However, if you connect a switch to the LAN 1 port, you can use the LAN 2 port *only* for a LAG connection, not for any other type of connection.

3. **LAN 1 port.** One Gigabit Ethernet RJ-45 LAN port that can accept PoE+ power. Use the LAN 1 port to connect the access point to a switch or PoE+ switch that is connected to a network router with an Internet connection. You can also use the LAN 1 port to connect the access point to a computer for initial configuration. If you use PoE power, the access point requires 802.3at (PoE+) input. For optimal functioning, make sure that you use an 802.3at (PoE+) switch and not an 802.3af (PoE) switch.

**Note:** The LAN 1 port is a PoE+ PD port that you can connect to a PoE+ switch or non-PoE switch. The LAN 2 port is a non-PoE port that you can connect to a non-PoE switch. You must connect either the LAN 1 port or, if you use a power adapter, the LAN 2 port to a switch for a network connection.

4. **DC power connector.** If you do not use a PoE connection, connect a power adapter to the DC power connector. The access point requires 12V, 2.5A input. Model WAC540 comes without a power adapter but you can order a power adapter as an option. Model WAC540PA comes with a power adapter.

For more information about the LAN port connection, see [Set up and connect the access point to your network](#) on page 18.

## Product label

The product label on the bottom panel of the access point shows the serial number, MAC address, default WiFi network name (SSID), network key (password), and default login information of the access point.

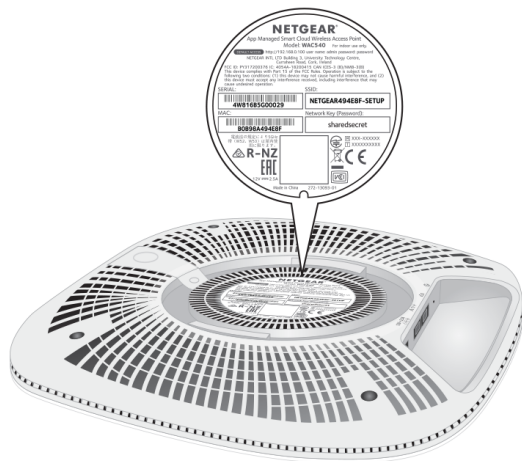


Figure 3. Product label

# Safety instructions and warnings

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage.

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions:

- This product is designed for indoor use only in a temperature-controlled and humidity-controlled environment. For more information, see the environmental specifications in the appendix or the data sheet.  
Any device that is located outdoors and connected to this product must be properly grounded and surge protected.  
Failure to follow these guidelines can result in damage to your NETGEAR product, which might not be covered by NETGEAR's warranty, to the extent permissible by applicable law.
- Observe and follow service markings:
  - Do not service any product except as explained in your system documentation. Some devices should never be opened.
  - If applicable to your device, opening or removing covers that are marked with the triangular symbol with a lightning bolt can expose you to electrical shock. We recommend that only a trained technician services components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
  - Depending on your device, the power adapter, power adapter cable, power cable, extension cable, or plug is damaged.
  - An object fell into the product.
  - The product was exposed to water.
  - The product was dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide, or contact your trained service provider.

- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
  - Use the product only with approved equipment.
  - If applicable to your device, allow the product to cool before removing covers or touching internal components.
  - Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.
  - To avoid damaging your system, if your device uses a power supply with a voltage selector, be sure that the selector is set to match the power at your location:
    - 115V, 60 Hz in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
    - 100V, 50 Hz in eastern Japan and 100V, 60 Hz in western Japan
    - 230V, 50 Hz in most of Europe, the Middle East, and the Far East
  - Be sure that attached devices are electrically rated to operate with the power available in your location.
  - Depending on your device, use only a supplied power adapter or approved power cable:  
If your device uses a power adapter:
    - If you were not provided with a power adapter, contact your local NETGEAR reseller.
    - The power adapter must be rated for the product and for the voltage and current marked on the product electrical ratings label.  
If your device uses a power cable:
    - If you were not provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable approved for your country.
    - The power cable must be rated for the product and for the voltage and current marked on the product electrical ratings label. The voltage and current rating of the cable must be greater than the ratings marked on the product.
  - To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets.
  - If applicable to your device, the peripheral power cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
-

- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables, power adapter cables, or power cables carefully. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power adapters, power adapter cables, power cables or plugs. Consult a licensed electrician or your power company for site modifications.
- Always follow your local and national wiring rules.

# 2

## Install the Access Point in Your Network and Access It for Initial Configuration

---

This chapter describes how you can install and access the access point in your network.

The chapter contains the following sections:

- [Position your access point](#)
- [Set up and connect the access point to your network](#)
- [Connect to the access point for initial configuration](#)
- [Log in to the access point after initial setup to view or change settings](#)



# Position your access point

Before you install your access point as described in the mounting installation guide, consider how you will position the access point.

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

Additionally, other WiFi access points in and around your home might affect your access point's signal. WiFi access points can be routers, repeaters, WiFi range extenders, and any other devices that emit WiFi signals for network access.

Position your access point according to the following guidelines:

- Place your access point near the center of the area where your computers and other devices operate and within line of sight to your WiFi devices.
- If you use a power adapter, make sure that the access point is within reach of an AC power outlet.
- Place the access point in an elevated location, minimizing the number walls and ceilings between the access point and your other devices.
- Place the access point away from electrical devices such as these:
  - Ceiling fans
  - Home security systems
  - Microwaves
  - Computers
  - Base of a cordless phone
  - 2.4 GHz and 5.8 GHz cordless phones
- Place the access point away from large metal surfaces, large glass surfaces, insulated walls, and items such as these:
  - Solid metal door
  - Aluminum studs
  - Fish tanks
  - Mirrors
  - Brick
  - Concrete

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

## Set up and connect the access point to your network

The access point is intended to function as a WiFi access point in your existing network. The following sections describe how you can connect the access point to your network:

- [Set up the access point with a PoE network connection](#) on page 18
- [Set up the access point with a non-PoE network connection](#) on page 19

To set up your access point, follow the procedure in *one* of these sections.

### Set up the access point with a PoE network connection

You can connect the access point to a Power over Ethernet plus (PoE+) switch in your network. The switch must be connected to a network router that is connected to the Internet. If you use a PoE+ connection, the access point does not require a power adapter.

WiFi clients can connect to the access point and access your network and the Internet.



Figure 4. Set up the access point with a PoE+ connection to your network

### To set up the access point with a PoE connection to your network:

1. Connect an Ethernet cable to the LAN 1 port on the access point.  
This is the LAN port next to the DC power connector.
2. Connect the other end of the Ethernet cable to a PoE+ port on a PoE+ switch that is connected to your network and to the Internet.  
The access point requires 802.3at (PoE+) input. For optimal functioning, make sure that you use an 802.3at (PoE+) switch and not an 802.3af (PoE) switch.  
The Power/Cloud LED lights solid amber. After about one minute, if the access point is connected to a DHCP server, the Power/Cloud LED turns solid green and the access point is ready for you to perform the initial configuration.

For information about accessing the access point for initial configuration, see [Connect to the access point for initial configuration](#) on page 20.

### Set up the access point with a non-PoE network connection

You can connect the access point to a regular switch, that is, a non-Power over Ethernet switch in your network. The switch must be connected to a network router that is connected to the Internet. If you use a regular switch, the access point requires a power adapter, which is an option that you can purchase for model WAC540. (Model WAC540PA comes with a A DC power adapter.)

WiFi clients can connect to the access point and access your network and the Internet.



Figure 5. Set up the access point with a connection to your network

### To set up the access point with a non-PoE connection to your network:

1. Connect an Ethernet cable to the LAN 1 port on the access point.
2. Connect the other end of the Ethernet cable to a switch that is connected to your network and to the Internet.

3. Connect the power adapter to the access point and plug it into an electrical outlet. The Power/Cloud LED lights solid amber. After about one minute, if the access point is connected to a DHCP server, the Power/Cloud LED turns solid green and the access point is ready for you to perform the initial configuration.

For information about accessing the access point for initial configuration, see [Connect to the access point for initial configuration](#) on page 20.

## Connect to the access point for initial configuration

After you set up the access point, you can use several methods to connect to it for initial configuration.

You can connect to the access point by using the NETGEAR Insight mobile app on an iOS or Android mobile device, by accessing the Insight Cloud Portal, or by using the local browser interface. You cannot use Insight access with the local browser interface. These types of access are mutually exclusive.

The Insight mobile app and the Insight Cloud Portal provide ease of access and let you configure most features that are available on the access point. The local browser interface lets you configure all features that are available on the access point.

If you use the Insight mobile app or the Insight Cloud Portal to connect to the access point, see one of the following sections:

- [Connect over WiFi using the NETGEAR Insight Mobile App on an iOS or Android mobile device](#) on page 21
- [Connect over the Internet using the NETGEAR Insight Cloud Portal](#) on page 21

If you use the local browser interface to connect to the access point, follow the procedure in one of these sections:

- [Connect over WiFi using a WiFi-enabled computer or mobile device](#) on page 22
- [Connect over Ethernet using a computer connected to the same network](#) on page 26
- [Connect over Ethernet using a directly connected computer](#) on page 29

**Note:** If your network does not include a DHCP server (or a router that functions as a DHCP server) and you do not perform the initial configuration of the access point as described in one of these sections, you can connect only two clients to the access point and the access point can provide an IP address to only two clients. To prevent this situation, make sure that you perform the initial configuration of the access point.

## Connect over WiFi using the NETGEAR Insight Mobile App on an iOS or Android mobile device

You can install the NETGEAR Insight mobile app on an iOS or Android mobile device and set up the access point (and perform many other tasks as well).

For more information about the Insight mobile app, visit [insight.netgear.com](http://insight.netgear.com) and see the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](http://netgear.com/support/product/insight.aspx).

### To connect to the access point over WiFi using an iOS or Android mobile device:

1. On your mobile device, go to the app store, search for NETGEAR Insight, and download the app.



2. Open the Insight mobile app and log in to your NETGEAR account or create a new account to log in with.
3. Follow the prompts in the Insight mobile app to discover and register the access point on the network so that you can configure and manage the access point.

**Note:** If the access point is connected to the Internet, you can use the Insight mobile app to configure the access point by connecting to its default SSID. The default SSID is on the access point label on the bottom of the access point and is shown in the format NETGEARxxxxxx-SETUP, where xxxxxx is the last six hexadecimal digits of the access point's MAC address. The default password is **sharedsecret**.

## Connect over the Internet using the NETGEAR Insight Cloud Portal

The Insight Cloud Portal is available for Insight Premium or Insight Pro subscribers. To use the NETGEAR Insight Cloud Portal to configure and manage the access point, the access point must already be connected to the Internet.

For more information about the Insight Cloud Portal and the configuration and management options that are available through the Insight Cloud Portal, visit [insight.netgear.com](http://insight.netgear.com) and see the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](http://netgear.com/support/product/insight.aspx).

## To connect to the access point over the Internet through the Insight Cloud Portal:

1. Visit [insight.netgear.com](http://insight.netgear.com).  
The NETGEAR Account Login page displays.
2. Enter your Insight email address and password.  
If you do not own an Insight account, you can create one.
3. Click the **NETGEAR LOG IN** button.  
You can now add the access point to an Insight network location so that you configure and manage the access point.

## Connect over WiFi using a WiFi-enabled computer or mobile device

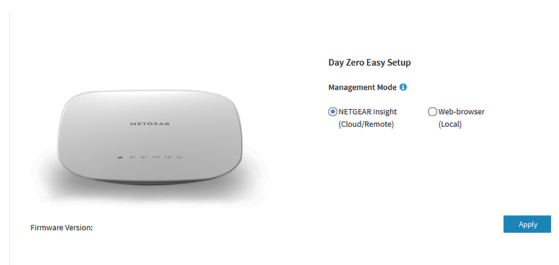
This section describes how to connect to the access point for the first time over WiFi using a WiFi-enabled computer or mobile device (without using the NETGEAR Insight mobile app).

### To connect to the access point over WiFi using a WiFi-enabled computer or mobile device:

1. From your computer or mobile device, connect over WiFi to the access point's default WiFi network.  
The default SSID is on the access point label on the bottom of the access point and is shown in the format NETGEARxxxxxx-SETUP, where xxxxxx is the last six hexadecimal digits of the access point's MAC address. The default password is **sharedsecret**.
2. On the computer or mobile device, open a web browser and, in the address bar, enter **www.routerlogin.net** (or **www.aplogin.net**).

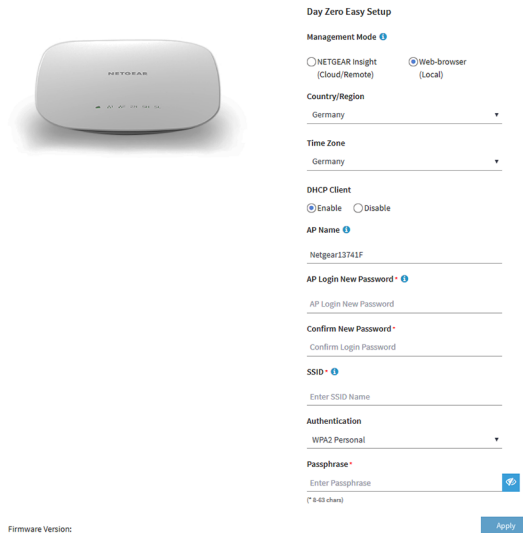
**Note:** You can use [www.routerlogin.net](http://www.routerlogin.net) (and [www.aplogin.net](http://www.aplogin.net)) only during initial setup of the access point.

The Day Zero Easy Setup page displays.



In the address bar, [www.routerlogin.net](http://www.routerlogin.net) (or [www.aplogin.net](http://www.aplogin.net)) is replaced by the IP address that is assigned to the access point by the DHCP server in your network.

3. Write down the IP address of the access point.
4. Select the **Web-browser** radio button.



**Note:** After you save the basic settings that are shown on the page, the Day Zero Easy Setup page no longer displays when you log in. Instead, a login window opens. After you log in, the Dashboard page displays.

5. Enter the settings that are described in the following table.

Setting	Description
Country/Region	From the menu, select the country and region in which the access point is operating.  <b>Note:</b> Make sure that the country is set to the location where the device is operating. You are responsible for complying with the local, regional, and national regulations that are set for channels, power levels, and frequency ranges.  <b>Note:</b> It might not be legal to operate the access point in a region other than the regions listed in the menu. If your country or region is not listed, check with your local government agency.
Time Zone	From the menu, select the time zone for the country and region in which the access point is operating.

(Continued)

Setting	Description
DHCP Client	<p>By default, the DHCP client of the access point allows the access point to receive an IP address from a DHCP server (or router that functions as a DHCP server) in your network. To set up the access point with a static (fixed) IP address, do the following:</p> <ol style="list-style-type: none"> <li>Select the <b>Disable</b> radio button. Additional fields display.</li> <li>Specify the IP address, IP subnet mask, IP address of the default gateway, and IP address of the DNS server.</li> </ol>
AP Name	<p>As an option, enter a new system name for the access point. The name must contain alphanumeric characters, must contain at least one alphabetical character, cannot be longer than 15 characters, and can contain hyphens but cannot start or end with a hyphen. By default, the system name is Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address.</p>
AP Login New Password	<p>The admin password is the password that you use to log in to the access point's local browser interface. (It is <i>not</i> the password that you use for WiFi access.) Enter a new admin password with a minimum of 6 characters and a maximum of 32 characters. The ideal password contains no English dictionary words and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks (") in the password. Write down and save the password for future use.</p>
Confirm New Password	<p>Enter exactly the same password that you entered in the <b>AP Login New Password</b> field.</p>
SSID	<p>You cannot use the default SSID for regular operation (the default SSID is for setup only). Enter a new name with a maximum of 32 characters. You can use a combination of alphanumeric and special characters, except for quotation marks (") and a backslash (\).</p>



(Continued)

Setting	Description
Authentication Type	<p>From the menu, select one of the following authentication types for the WiFi network:</p> <ul style="list-style-type: none"> <li>• <b>Open.</b> Authentication is not required and data encryption is not supported. This setting does not provide any security and is not appropriate for most situations.</li> <li>• <b>WPA2 Personal.</b> This option allows only WiFi clients that support WPA2 to connect to the SSID. Select this option if all WiFi clients are capable of supporting WPA2. This option uses AES encryption.</li> <li>• <b>WPA2 Personal Mixed.</b> This option allows both WPA and WPA2 WiFi clients to connect to the SSID. This option uses TKIP and AES encryption. Broadcast packets use TKIP. For unicast (that is, point-to-point) transmissions, WPA clients use TKIP and WPA2 clients use AES.</li> </ul> <p>After you complete the setup process, you can set up WPA2 Enterprise security with RADIUS servers. For more information, see <a href="#">Set up an open or secure WiFi network</a> on page 36.</p>
Passphrase	<p>Unless you select <b>Open</b> from the <b>Authentication Type</b> menu, enter a new passphrase (network key or WiFi password) for the WiFi network.</p>

6. Click the **Apply** button.  
Your settings are saved and you are disconnected from the access point.  
If you changed the default country, the access point restarts.
7. Reconnect over WiFi to the access point's WiFi network using the new SSID and passphrase that you just defined on the Day Zero Easy Setup page.
8. In the web browser, enter the access point IP address that you wrote down in [Step 3](#).  
If you assigned a static IP address to the access point, enter that IP address.  
A login window opens.
9. Enter the access point user name and password.  
The default user name is **admin**. The password is the one that you just defined on the Day Zero Easy Setup page. The user name and password are case-sensitive.  
The Dashboard page displays. You can now customize the access point settings for your network environment.

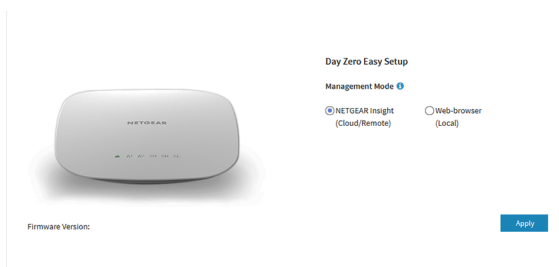
## Connect over Ethernet using a computer connected to the same network

The following procedure assumes that your network includes a DHCP server (or router that functions as a DHCP server) and that the access point and the computer are on the same network. By default, the access point functions as a DHCP client. If you want to set up the access point with a static (fixed) IP address, see [Connect over Ethernet using a directly connected computer](#) on page 29.

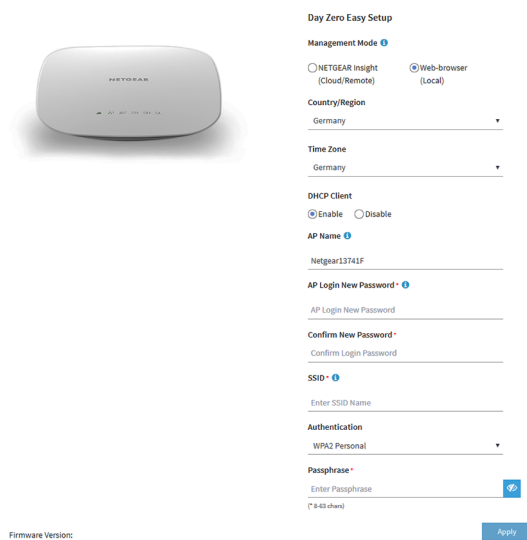
### To connect to the access point using a computer that is connected to the same network as the access point:

1. To determine the IP address that the DHCP server assigned to the access point, access the DHCP server or use an IP network scanner.
2. On the computer, open a web browser and, in the address bar, enter the IP address that is assigned to the access point.

The Day Zero Easy Setup page displays.



3. Select the **Web-browser** radio button.



**Note:** After you save the basic settings that are shown on the page, the Day Zero Easy Setup page no longer displays when you log in. Instead, a login window opens. After you log in, the Dashboard page displays.

#### 4. Enter the settings that are described in the following table.

Setting	Description
Country/Region	<p>From the menu, select the country and region in which the access point is operating.</p> <p><b>Note:</b> Make sure that the country is set to the location where the device is operating. You are responsible for complying with the local, regional, and national regulations that are set for channels, power levels, and frequency ranges.</p> <p><b>Note:</b> It might not be legal to operate the access point in a region other than the regions listed in the menu. If your country or region is not listed, check with your local government agency.</p>
Time Zone	<p>From the menu, select the time zone for the country and region in which the access point is operating.</p>
DHCP Client	<p>By default, the DHCP client of the access point allows the access point to receive an IP address from a DHCP server (or router that functions as a DHCP server) in your network. To set up the access point with a static (fixed) IP address, do the following:</p> <ol style="list-style-type: none"> <li>Select the <b>Disable</b> radio button. Additional fields display.</li> <li>Specify the IP address, IP subnet mask, IP address of the default gateway, and IP address of the DNS server.</li> </ol>
AP Name	<p>As an option, enter a new system name for the access point. The name must contain alphanumeric characters, must contain at least one alphabetical character, cannot be longer than 15 characters, and can contain hyphens but cannot start or end with a hyphen. By default, the system name is Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address.</p>
AP Login New Password	<p>The admin password is the password that you use to log in to the access point's local browser interface. (It is not the password that you use for WiFi access.) Enter a new admin password with a minimum of 6 characters and a maximum of 32 characters. The ideal password contains no English dictionary words and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks (") in the password.</p> <p>Write down and save the password for future use.</p>

(Continued)

Setting	Description
Confirm New Password	Enter exactly the same password that you entered in the <b>AP Login New Password</b> field.
SSID	You cannot use the default SSID for regular operation (the default SSID is for setup only). Enter a new name with a maximum of 32 characters. You can use a combination of alphanumeric and special characters, except for quotation marks (") and a backslash (\).
Authentication Type	<p>From the menu, select one of the following authentication types for the WiFi network:</p> <ul style="list-style-type: none"> <li>• <b>Open.</b> Authentication is not required and data encryption is not supported. This setting does not provide any security and is not appropriate for most situations.</li> <li>• <b>WPA2 Personal.</b> This option allows only WiFi clients that support WPA2 to connect to the SSID. Select this option if all WiFi clients are capable of supporting WPA2. This option uses AES encryption.</li> <li>• <b>WPA2 Personal Mixed.</b> This option allows both WPA and WPA2 WiFi clients to connect to the SSID. This option uses TKIP and AES encryption. Broadcast packets use TKIP. For unicast (that is, point-to-point) transmissions, WPA clients use TKIP and WPA2 clients use AES.</li> </ul> <p>After you complete the setup process, you can set up WPA2 Enterprise security with RADIUS servers. For more information, see <a href="#">Set up an open or secure WiFi network</a> on page 36.</p>
Passphrase	Unless you select <b>Open</b> from the <b>Authentication Type</b> menu, enter a new passphrase (network key or WiFi password) for the WiFi network.

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

If you changed the default country, the access point restarts.

**Note:** Do not close the page!

After a short period, the Dashboard page displays automatically. If the Dashboard page does not display, for example, because you assigned a static IP address, see the next step.

You can now customize the access point settings for your network environment.

6. If the Dashboard does not display automatically, do the following:
  - a. Take one of the following actions:
    - If you assigned a static IP address to the access point, enter that IP address in the address bar of the web browser.
    - If you did not assign a static IP address, reenter the IP address that is displayed in the address bar of the web browser. If that does not work, write down the IP address, close the web browser, reopen the web browser, and then reenter the IP address in the address bar of the web browser.
    - If you did not assign a static IP address and you closed the page so that you cannot see the IP address of the access point, use an IP scanner tool, use a network discovery tool, or access the DHCP server to discover the IP address of the access point in your network. Then, open a browser and enter the IP address in the address bar of the web browser.

A login window opens.
  - b. Enter the access point user name and password.

The default user name is **admin**. The password is the one that you just defined on the Day Zero Easy Setup page. The user name and password are case-sensitive. The Dashboard page displays. You can now customize the access point settings for your network environment.

## Connect over Ethernet using a directly connected computer

If your network does not include a DHCP server (or router that functions as a DHCP server), you can use a computer that is connected through an Ethernet cable to the LAN port of the access point.

### **To connect to the access point using a computer that is connected to the LAN port of the access point:**

1. Record the IP address and subnet mask of your computer so that you can reinstate these IP address settings later.
2. Temporarily change the IP address on your computer to 192.168.0.210 with 255.255.255.0 as the subnet mask.

(You can actually use any IP address in the 192.168.0.2-192.168.0.254 range, with the exception of IP address 192.168.0.100, which is the default IP address of the access point.)

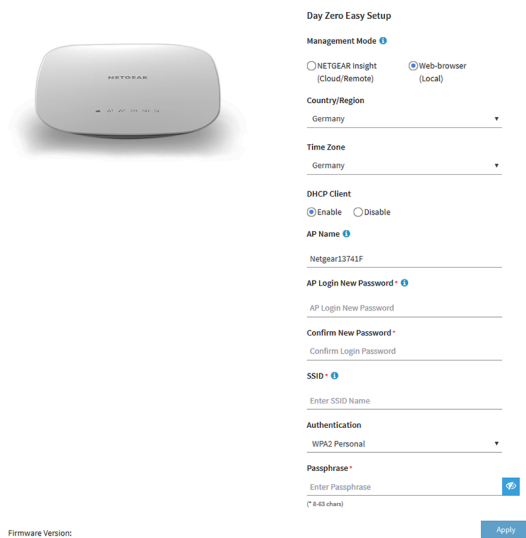
For more information about changing the IP address on your computer, see the help or documentation for your computer.
3. Use an Ethernet cable to connect your computer to the LAN port on the access point.

4. On the computer, open a web browser and enter **192.168.0.100** in the address bar.

The Day Zero Easy Setup page displays.



5. Select the **Web-browser** radio button.



**Note:** After you save the basic settings that are shown on the page, the Day Zero Easy Setup page no longer displays when you log in. Instead, a login window opens. After you log in, the Dashboard page displays.

6. Enter the settings that are described in the following table.

Setting	Description
Country/Region	<p>From the menu, select the country and region in which the access point is operating.</p> <p><b>Note:</b> Make sure that the country is set to the location where the device is operating. You are responsible for complying with the local, regional, and national regulations that are set for channels, power levels, and frequency ranges.</p> <p><b>Note:</b> It might not be legal to operate the access point in a region other than the regions listed in the menu. If your country or region is not listed, check with your local government agency.</p>
Time Zone	<p>From the menu, select the time zone for the country and region in which the access point is operating.</p>
DHCP Client	<p>By default, the DHCP client of the access point allows the access point to receive an IP address from a DHCP server (or router that functions as a DHCP server) in your network. To set up the access point with a static (fixed) IP address, do the following:</p> <ol style="list-style-type: none"> <li>Select the <b>Disable</b> radio button. Additional fields display.</li> <li>Specify the IP address, IP subnet mask, IP address of the default gateway, and IP address of the DNS server.</li> </ol>
AP Name	<p>As an option, enter a new system name for the access point. The name must contain alphanumeric characters, must contain at least one alphabetical character, cannot be longer than 15 characters, and can contain hyphens but cannot start or end with a hyphen. By default, the system name is Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address.</p>
AP Login New Password	<p>The admin password is the password that you use to log in to the access point's local browser interface. (It is <i>not</i> the password that you use for WiFi access.) Enter a new admin password with a minimum of 6 characters and a maximum of 32 characters. The ideal password contains no English dictionary words and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks (") in the password. Write down and save the password for future use.</p>
Confirm New Password	<p>Enter exactly the same password that you entered in the <b>AP Login New Password</b> field.</p>
SSID	<p>You cannot use the default SSID for regular operation (the default SSID is for setup only). Enter a new name with a maximum of 32 characters. You can use a combination of alphanumeric and special characters, except for quotation marks (") and a backslash (\).</p>

(Continued)

Setting	Description
Authentication Type	<p>From the menu, select one of the following authentication types for the WiFi network:</p> <ul style="list-style-type: none"> <li>• <b>Open.</b> Authentication is not required and data encryption is not supported. This setting does not provide any security and is not appropriate for most situations.</li> <li>• <b>WPA2 Personal.</b> This option allows only WiFi clients that support WPA2 to connect to the SSID. Select this option if all WiFi clients are capable of supporting WPA2. This option uses AES encryption.</li> <li>• <b>WPA2 Personal Mixed.</b> This option allows both WPA and WPA2 WiFi clients to connect to the SSID. This option uses TKIP and AES encryption. Broadcast packets use TKIP. For unicast (that is, point-to-point) transmissions, WPA clients use TKIP and WPA2 clients use AES.</li> </ul> <p>After you complete the setup process, you can set up WPA2 Enterprise security with RADIUS servers. For more information, see <a href="#">Set up an open or secure WiFi network</a> on page 36.</p>
Passphrase	<p>Unless you select <b>Open</b> from the <b>Authentication Type</b> menu, enter a new passphrase (network key or WiFi password) for the WiFi network.</p>

- Click the **Apply** button.  
Your settings are saved and you are disconnected from the access point.  
If you changed the default country, the access point restarts.
- After a few minutes, if the login window does not open automatically, enter **192.168.0.100** in the address bar of your browser.  
If you changed the IP address (that is, you specified a static IP address), enter the new IP address.  
A login window opens.
- Enter the access point user name and password.  
The default user name is **admin**. The password is the one that you just defined on the Day Zero Easy Setup page. The user name and password are case-sensitive.  
The Dashboard page displays. You can now customize the access point settings for your network environment.
- After you complete the setup process, or both the setup and customization process, you can change the computer back to its original IP address settings.



# Log in to the access point after initial setup to view or change settings

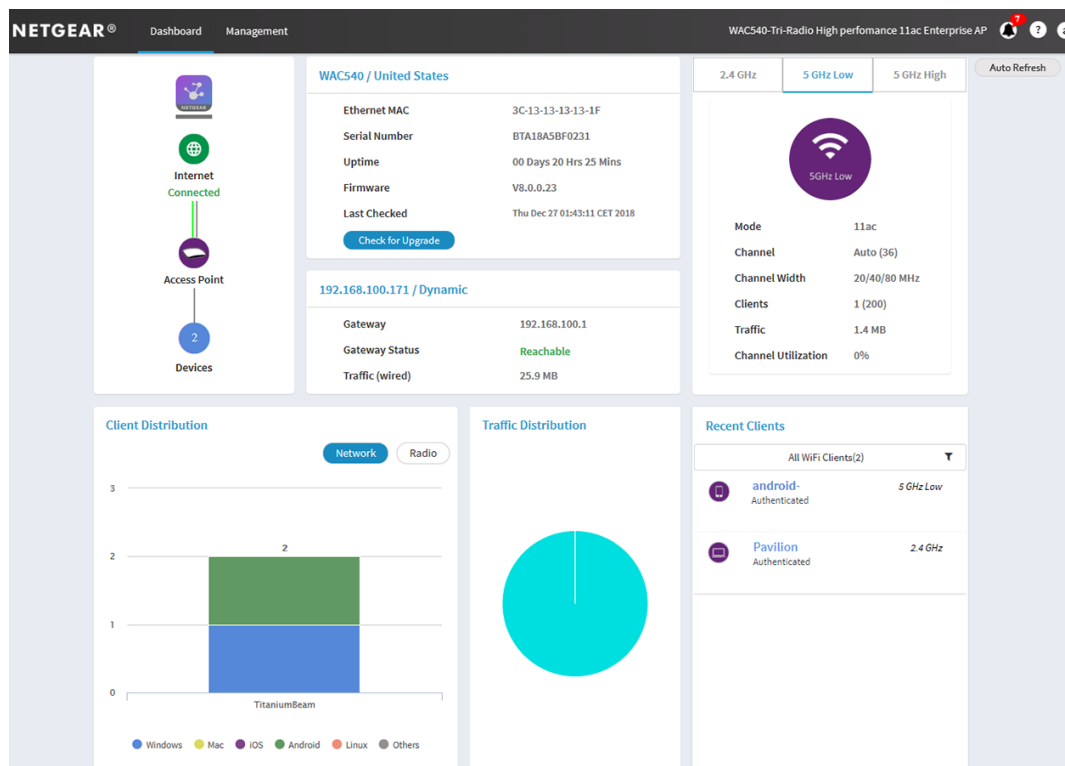
After you set up the access point, you can view or change the settings for the access point.

## To log in to the access point's local browser interface:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.

The default 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 Dashboard page displays. The following figure shows part of the Dashboard page.



The Dashboard page displays various panes that let you see the status of your access point at a glance. For more information about the Dashboard page and its various panes, see [Monitor the Access Point and the Network](#) on page 142.

# 3

## Manage the Basic WiFi and Radio Features

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This chapter describes how you can manage the basic WiFi and radio settings of the access point. For information about the advanced WiFi and radio settings, see [Manage the Advanced WiFi and Radio Features](#) on page 72.

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

The chapter includes the following sections:

- [Set up and manage WiFi networks](#)
- [Manage the basic radio features](#)

# Set up and manage WiFi networks

The access point supports eight WiFi networks (four in the 2.4 GHz radio band and four in the 5 GHz radio band), each with its own unique WiFi settings. The following sections describe how you can set up and manage WiFi networks on the access point:

- [Set up an open or secure WiFi network](#)
- [View or change the settings of a WiFi network](#)
- [Disable or enable a WiFi network or set up a WiFi activity schedule](#)
- [Remove a WiFi network](#)
- [Enable or disable client isolation for a WiFi network](#)
- [Hide or broadcast the SSID for a WiFi network](#)
- [Enable or disable band steering with 802.11k RRM and 802.11v WiFi network management](#)
- [Change the VLAN ID for a WiFi network](#)
- [Enable or disable PMF for a WiFi network](#)
- [Enable or disable URL tracking for a WiFi network](#)
- [Select a MAC ACL for a WiFi network](#)
- [Set bandwidth rate limits for a WiFi network](#)
- [Register and configure Facebook Wi-Fi for the access point](#)
- [Set up a captive portal for a WiFi network](#)
- [Unregister the access point from Facebook Wi-Fi](#)

## Set up an open or secure WiFi network

The access point provides one default SSID that is enabled by default and that broadcasts on the 2.4 GHz band and both 5 GHz bands. This is the SSID that you were required to rename when you logged in to the access point for the first time. You can add more SSIDs: The access point supports four SSIDs in the 2.4 GHz radio band and another four SSIDs in the combined 5 GHz low and 5 GHz high radio bands for a total of eight SSIDs. (In this configuration, both 5 GHz radio bands are treated as a single 5 GHz radio band.) If you enable four SSIDs in the 2.4 GHz radio band and another four in the combined 5 GHz radio band, the maximum number of SSIDs is reached.

SSID stands for service set identifier, which is the WiFi network name. When you create a new SSID, you are defining the settings for a new virtual access point (VAP). That means that the access point supports up to eight VAPs.

The access point can simultaneously support the 2.4 GHz band for 802.11b/g/n WiFi devices and the combined 5 GHz low and 5 GHz high bands for 802.11a/n/ac WiFi devices.

If you plan to use WPA2 Enterprise security for your WiFi network, first set up RADIUS servers (see [Set up RADIUS servers](#) on page 106).

**To set up a WiFi network:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select and add an SSID.
5. Click the **+** button to the left of Add SSID.

The screenshot shows a configuration form with the following fields and options:

- Wireless Network Name (SSID):** NETGEAR-2
- Broadcast SSID:**  Yes  No
- VLAN ID:** 1
- Authentication:** WPA2 Personal
- Passphrase:** [masked]
- 802.11w (PMF):**  Enable  Disable
- Schedule:**  Always ON  Always OFF  Custom
- Band:**  2.4 GHz  5 GHz  Both
- Band Steering / 802.11 k/v:**  Enable  Disable
- > Advanced** (expandable section)
- Buttons:** Cancel, Apply

6. Specify the WiFi network name (SSID), select whether the SSID is broadcast, and specify the VLAN ID as described in the following table.

Setting	Description
Wireless Network Name (SSID)	The SSID is the WiFi network name of the VAP. Enter a name for the SSID with a maximum of 32 characters. You can use a combination of alphanumeric and special characters, except for quotation marks (") and a backslash (\). For a WiFi device to be able to connect to the VAP, the SSID on the WiFi device must match the SSID of the VAP.
Broadcast SSID	By default, the VAP broadcasts its SSID so that WiFi clients can detect the SSID in their scanned network lists. To turn off the SSID broadcast, select the <b>No</b> radio button. Turning off the SSID broadcast provides additional WiFi security, but users must know the SSID to be able to join the VAP.
VLAN ID	You can enter the VLAN ID that must be associated with the VAP. By default, the VLAN ID is 1. This VLAN ID is not the same as the 802.1Q VLAN ID that is used for the wired network (see <a href="#">Set the 802.1Q VLAN and management VLAN</a> on page 111).

- Specify the WiFi security by selecting an option from the **Authentication** menu and, if applicable, by specifying a passphrase in the **Passphrase** field or selecting an option from the **Encryption** menu, as described in the following table.

Setting	Description
<b>Open</b>	An open WiFi network does not provide any security. Any WiFi device can join the network. We recommend that you do <i>not</i> use an open WiFi network but configure WiFi security. However, an open network might be appropriate for a WiFi hotspot.
<b>WPA2 Personal</b>	This option, which is the same as WPA2-PSK, is the default setting and uses AES encryption. This type of security enables only WiFi devices that support WPA2 to join the VAP. If you did not change the passphrase, the default passphrase displays. The default passphrase is sharedsecret. WPA2 provides a secure connection but some legacy WiFi devices do not detect WPA2 and support only WPA. If your network includes such older devices, select the mixed mode security, <b>WPA2 Personal Mixed</b> . In the <b>Passphrase</b> field, enter a phrase of 8 to 63 characters. To join the VAP, a user must enter this passphrase. To view the passphrase in clear text, click the eye icon.

(Continued)

Setting	Description
<b>WPA2 Personal Mixed</b>	<p>This mixed mode security, which is the same as WPA-PSK / WPA2-PSK, enables WiFi devices that support either WPA or WPA2 to join the VAP. This option uses TKIP and AES encryption.</p> <p>WPA-PSK (which uses TKIP) is less secure than WPA2-PSK (which uses AES) and limits the speed of WiFi devices to 54 Mbps.</p> <p>In the <b>Passphrase</b> field, enter a phrase of 8 to 63 characters. To join the VAP, a user must enter this passphrase. To view the passphrase in clear text, click the eye icon.</p>
<b>WPA2 Enterprise</b>	<p>This enterprise-level security uses RADIUS for centralized Authentication, Authorization, and Accounting (AAA) management. For WPA2 Enterprise security to function, you must set up RADIUS servers (see <a href="#">Set up RADIUS servers</a> on page 106).</p> <p>From the <b>Data Encryption</b> menu, select the data encryption mode:</p> <ul style="list-style-type: none"> <li>• <b>TKIP + AES.</b> This type of data encryption enables WiFi devices that support either WPA or WPA2 to join the access point's WiFi network. This is the default mode.</li> <li>• <b>AES.</b> This type of data encryption provides a secure connection but some older WiFi devices do not detect WPA2 and support only WPA. Therefore, if your network includes such older devices, select <b>TKIP + AES</b> security.</li> </ul>

- Optionally, disable the WiFi broadcast or set up a WiFi activity schedule by selecting one of the following radio buttons:
  - **Always ON.** When you set up an SSID, you are creating a new virtual access point (VAP). By default, the new VAP is enabled and the **Always ON** radio button is selected.
  - **Always OFF.** Select this radio button to set up the SSID but temporarily disable the VAP.
  - **Custom.** Select this radio button to set up a broadcast schedule. An icon displays to the right of the radio button. Do the following:
    - Click the icon next to the radio button.  
A pop-up window opens.
    - Either select a predefined time from the **Preset** menu or select custom time blocks by clicking the time blocks.  
A blue color for a time block indicates that the VAP will be enabled (on). A gray color for a time block indicates that the VAP will be disabled (off).
    - Click the **Done** button.  
The pop-up window closes.

For each SSID and each day (from 12:00 a.m. to 11:59 p.m.), you can create three schedules to disable the VAP.

- Optionally, enable 802.11w Protected Management Frames (PMF), select a single radio band only, enable band steering with 802.11k radio resource management (RRM) and 802.11v WiFi network management, or do all of this, as described in the following table.

Setting	Description
802.11w (PMF)	Protected Management Frames (PMF), according to the 802.11w standard, is a security feature that protects unicast and multicast management frames from being intercepted and changed for malicious purposes. This feature is disabled by default, but you can enable it.
Band	Select a radio button for a single band ( <b>2.4 GHz</b> or <b>5 GHz</b> ) or keep the default selection, which is the <b>Both</b> radio button, to enable the VAP to broadcast on both bands. (In this configuration, both 5 GHz radio bands are treated as a single 5 GHz radio band.)
Band Steering / 802.11 k/v	<p>By default, band steering with 802.11k RRM and 802.11v WiFi network management is disabled for the VAP.</p> <p>To enable band steering with 802.11k RRM and 802.11v WiFi network management, select the <b>Enable</b> radio button. Doing so allows the access point, under certain channel conditions, to steer WiFi devices that are dual-band capable to the 2.4 GHz or 5 GHz band of the VAP. Compared to the 2.4 GHz band, generally more channels and bandwidth are available in the 5 GHz band, causing less interference and allowing for a better user experience.</p> <p>802.11k RRM and 802.11v WiFi network management affect the network in the following ways:</p> <ul style="list-style-type: none"> <li>• <b>802.11k RRM.</b> This feature lets the access point and 802.11k-aware clients dynamically measure the available radio resources. In an 802.11k-enabled network, access points and clients can send neighbor reports, beacon reports, and link measurement reports to each other, allowing 802.11k-aware clients to automatically select the best access point for initial connection or for roaming.</li> <li>• <b>802.11v WiFi network management.</b> This feature lets the access point steer its WiFi clients to the 2.4 GHz or 5 GHz band, based on the access point's channel load.</li> </ul> <p>The access point sets the received signal strength indicator (RSSI) threshold automatically. (That is, you cannot configure the RSSI threshold manually.)</p>

- Optionally, to configure client isolation, URL tracking, or both for the WiFi network, click the **> Advanced** tab.



▼ Advanced

**Client Isolation**

Enable  Disable

**URL Tracking** ⓘ

Enable  Disable

---

Captive Portal

---

MAC ACL ⓘ

---

Rate Limit

---

Cancel
Apply

11. Configure the client isolation and URL tracking settings as described in the following table.

Setting	Description
Client Isolation	By default, client isolation is disabled for the VAP. To block communication between WiFi clients that are associated with the same SSID or different SSIDs on the access point, select the <b>Enable</b> radio button.
URL Tracking	By default, URL tracking is disabled, and the <b>Disable</b> radio button is selected. To enable URL tracking for all URLs that are requested by WiFi clients that are connected to the SSID, select the <b>Enable</b> radio button. For information about how to view the tracked URLs per SSID or per WiFi client, see <a href="#">View or download tracked URLs</a> on page 156.

Although you could also configure a captive portal, a MAC ACL, and bandwidth rate limits while you set up a WiFi network, these features are described separately and in detail in the following sections:

- [Manage local MAC access control lists](#) on page 91 and [Select a MAC ACL for a WiFi network](#) on page 50
- [Set bandwidth rate limits for a WiFi network](#) on page 52
- [Set up a captive portal for a WiFi network](#) on page 55

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

13. Make sure that you can connect to the new WiFi network.  
If you cannot connect to the new WiFi network, check the following:

- If your WiFi-enabled computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the access point provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
- If your WiFi-enabled computer or mobile device is trying to connect to your network with its old settings (before you changed the settings), update the WiFi network selection in your WiFi-enabled computer or mobile device to match the current settings for your network.
- Does your WiFi device display as a connected client? (See [View client distribution, connected clients, and client trends](#) on page 150.) If it does, it is connected to the network.
- Are you using the correct WiFi network name (SSID) and password?

## View or change the settings of a WiFi network

You can view or change the settings of the default WiFi network (SSID or VAP) or any custom WiFi network.

### To view or change the settings of a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Change the settings of the WiFi network as needed.  
For detailed descriptions of the settings, see [Set up an open or secure WiFi network](#) on page 36.
7. If you made changes, click the **Apply** button.  
Your settings are saved.

8. If you made changes, make sure that you can reconnect over WiFi to the network with its new settings.

If you cannot connect over WiFi, check the following:

- If your WiFi-enabled computer or mobile device is already connected to another WiFi network in your area, disconnect it from that WiFi network and connect it to the WiFi network that the access point provides. Some WiFi devices automatically connect to the first open network without WiFi security that they discover.
- If your WiFi-enabled computer or mobile device is trying to connect to your network with its old settings (before you changed the settings), update the WiFi network selection in your WiFi-enabled computer or mobile device to match the current settings for your network.
- Does your WiFi device display as a connected client? (See [View client distribution, connected clients, and client trends](#) on page 150.) If it does, it is connected to the network.
- Are you using the correct WiFi network name (SSID) and password?

## Disable or enable a WiFi network or set up a WiFi activity schedule

You can temporarily disable a WiFi network (SSID or VAP), you can reenble the WiFi network, or you can set up a schedule that specifies when the WiFi network is active.

Scheduling a WiFi network to be turned off is a green feature that allows you to turn off the WiFi network during scheduled vacations, office shutdowns, on evenings, or on weekends.

For each WiFi network and each day (from 12:00 a.m. to 11:59 p.m.), you can create three schedules.

### **To disable or enable a WiFi network or set up a WiFi activity schedule:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.

The page that displays lets you select an SSID.

5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Under Schedule, select one of the following radio buttons:
  - **Always ON.** The WiFi network is enabled.
  - **Always OFF.** The WiFi network is disabled.
  - **Custom.** The WiFi network is enabled or disabled according to a schedule that you must set up.  
An icon displays to the right of the radio button.
7. If you select **Custom** in the previous step, do the following:
  - a. Click the icon next to the radio button.  
A pop-up window opens.
  - b. Either select a predefined time from the **Preset** menu or select custom time blocks by clicking the time blocks.  
A blue color for a time block indicates that the WiFi network will be enabled (on).  
A gray color for a time block indicates that the WiFi network will be disabled (off).
  - c. Click the **Done** button.  
The pop-up window closes.
8. Click the **Apply** button.  
Your settings are saved.

## Remove a WiFi network

You can remove a custom WiFi network (SSID or VAP) that you no longer need. You cannot remove the default WiFi network.

### To remove a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Basic**.

The page that displays lets you select an SSID.

5. Click the trash can icon to the right of the SSID.

A pop-up warning window opens.

6. Click the **Delete** button.

The pop-window closes and the WiFi network is removed.

## Enable or disable client isolation for a WiFi network

By default, client isolation is disabled for a WiFi network (SSID or VAP), allowing communication between WiFi clients that are associated with the same or different WiFi networks on the access point. For additional security, you can enable client isolation so that clients that are associated with the same or different WiFi networks *cannot* communicate with each other, except for communication over the Internet, which remains possible.

### To enable or disable client isolation for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.

2. Enter the IP address that is assigned to the access point.

A login window opens.

3. Enter the access point user name and password.

The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Basic**.

The page that displays lets you select an SSID.

5. Click the ► button to the left the SSID.

The settings for the selected SSID display.

6. Click the ► **Advanced** tab.

The page expands.

7. Under Client Isolation, select one of the following radio buttons:
  - **Enable.** Client isolation is enabled for the WiFi network.
  - **Disable.** Client isolation is disabled for the WiFi network.
8. Click the **Apply** button.  
Your settings are saved.

## Hide or broadcast the SSID for a WiFi network

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

**Note:** If you set up a wireless distribution system (WDS; see [Set up a WiFi bridge between access points](#) on page 84), you must keep the SSID broadcast enabled.

### To hide or broadcast the network name for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Under Broadcast SSID, select one of the following radio buttons:
  - **No.** The SSID is hidden for the WiFi network.
  - **Yes.** The SSID is broadcast for the WiFi network.
7. Click the **Apply** button.

Your settings are saved.

## Enable or disable band steering with 802.11k RRM and 802.11v WiFi network management

Band steering lets the access point identify the WiFi devices that are dual-band capable and steer those devices to the 2.4 GHz or 5 GHz band of a WiFi network (SSID or VAP). Compared to the 2.4 GHz band, generally more channels and bandwidth are available in the 5 GHz band, causing less interference and allowing for a better user experience. Band steering includes 802.11k radio resource management (RRM) and 802.11v WiFi network management. By default, band steering is disabled.

802.11k RRM and 802.11v WiFi network management affect the network in the following ways:

- **802.11k RRM.** This feature lets the access point and 802.11k-aware clients dynamically measure the available radio resources. In an 802.11k-enabled network, access points and clients can send neighbor reports, beacon reports, and link measurement reports to each other, allowing 802.11k-aware clients to automatically select the best access point for initial connection or for roaming.
- **802.11v WiFi network management.** This feature lets the access point steer its WiFi clients to the 2.4 GHz or 5 GHz band, based on the access point's channel load. In an environment with multiple access points, 802.11v WiFi network management helps WiFi clients that are roaming to select the best access point.

The access point sets the received signal strength indicator (RSSI) threshold automatically. (That is, you cannot configure the RSSI threshold manually.)

### To enable or disable band steering with 802.11k RRM and 802.11v WiFi network management for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.

5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Under Band Steering / 802.11 k/v, select one of the following radio buttons:
  - **Disable.** Band steering is disabled for the VAP. This is the default setting.
  - **Enabled.** Under certain channel conditions, the access point steers WiFi devices that are dual-band capable to the 2.4 GHz or 5 GHz band of the VAP.
7. Click the **Apply** button.  
Your settings are saved.

## Change the VLAN ID for a WiFi network

This VLAN ID is not the same as the 802.1Q VLAN ID that is used for the wired network (see [Set the 802.1Q VLAN and management VLAN](#) on page 111).

**CAUTION:** Before you change the VLAN ID, be sure that the VLAN is configured on the network switch and the DHCP server and that the access point and its clients can get IP addresses over the new VLAN.

### To change the VLAN ID for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. In the **VLAN ID** field, enter a ID (that is, a number).  
By default, the VLAN ID for a WiFi network is 1.



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

## Enable or disable PMF for a WiFi network

Protected Management Frames (PMF), according to the 802.11w standard, is a security feature that protects unicast and multicast management frames from being intercepted and changed for malicious purposes. This feature is disabled by default, but you can enable it.

### To enable or disable PMF for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Under 802.11w (PMF), select one of the following radio buttons:
  - **Enable**. PMF is enabled for the WiFi network.
  - **Disable**. PMF is disabled for the WiFi network.
7. Click the **Apply** button.  
Your settings are saved.

## Enable or disable URL tracking for a WiFi network

You can enable the access point to track all URLs that are requested by WiFi clients that are connected to a WiFi network (SSID or VAP). This feature is disabled by default, but you can enable it.

For information about how to view the tracked URLs per SSID or per WiFi client, see [View or download tracked URLs](#) on page 156.

### To enable or disable URL tracking for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Click the ► **Advanced** tab.  
The page expands.
7. Under URL Tracking, select one of the following radio buttons:
  - **Enable**. URL Tracking is enabled for the WiFi network.
  - **Disable**. URL Tracking is disabled for the WiFi network.
8. Click the **Apply** button.  
Your settings are saved.

## Select a MAC ACL for a WiFi network

After you set up one or more local MAC access control lists (ACLs, also referred to as access lists; see [Manage local MAC access control lists](#) on page 91), you can select an ACL for use with an SSID.

You can also set up a RADIUS server (see [Set up RADIUS servers](#) on page 106) and select the RADIUS MAC ACL. You must define the ACL on the RADIUS server, using the following format for client MAC addresses in the RADIUS server: If the client MAC address is 00:0a:95:9d:68:16, specify it as 000a959d6816 in the RADIUS server.

**Note:** A RADIUS MAC ACL cannot function if the WiFi security is WPA2 Enterprise. If you want to use a RADIUS MAC ACL, select a different type of WiFi security for the WiFi network (see [Set up an open or secure WiFi network](#) on page 36).

When selected, the MAC ACL blocks WiFi access to the SSID for WiFi devices that are not in the selected access list. The blockage applies only to the SSID for which you enable the MAC ACL. Only WiFi devices that are in the selected access list can connect to the SSID.

**To select a MAC ACL for a WiFi network:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the **>** button to the left the SSID.  
The settings for the selected SSID display.
6. Click the **> Advanced** tab.  
The page expands.
7. Select the **MAC ACL** check box.
8. Do one of the following:
  - Select the **Local MAC ACL** radio button, and from the **Select Group** menu, select the MAC ACL that you defined earlier.  
To change the MAC ACL policy, MAC addresses in the ACL, or both, click the link next to the group. For more information, see [Manage local MAC access control lists](#) on page 91.
  - Select the **Radius MAC ACL** radio button.  
This option functions only if you set up a RADIUS server (see [Set up RADIUS servers](#) on page 106).
9. Click the **Apply** button.

Your settings are saved. Only WiFi devices for which the MAC address is on the MAC ACL can connect to the access point through this SSID. (These devices might be able to connect to the access point through another SSID if you did not set up MAC ACL security for that SSID.)

## Set bandwidth rate limits for a WiFi network

You can set rate limits for the upload and download bandwidths for devices that are connected to a WiFi network. The minimum bandwidth rate is 64 Kbps, the maximum bandwidth rate is 1024 Mbps. You can set one rate for the upload bandwidth and another rate for the download bandwidth.

**Note:** Before you set bandwidth rate limits, check the Internet speed of the access point (see [Check the Internet speed](#) on page 168).

### To set bandwidth rate limits for devices that are connected to a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the ► button to the left the SSID.  
The settings for the selected SSID display.
6. Click the ► **Advanced** tab.  
The page expands.
7. Select the **Rate Limit** check box.
8. Specify the values:
  - **Upload.** For the upload bandwidth limitation, enter a value from 64 to 1024 and select **Kbps** or **Mbps** from the menu.

- **Download.** For the download bandwidth limitation, enter a value from 64 to 1024 and select **Kbps** or **Mbps** from the menu.
9. Click the **Apply** button.  
Your settings are saved.

## Register and configure Facebook Wi-Fi for the access point

Before you can set up Facebook Wi-Fi on the access point so that you can provide customers WiFi access by letting them check in to an existing Facebook business page (see [Set up a captive portal for a WiFi network](#) on page 55), you must register the access point with Facebook. By default, the capability to register is disabled.

### To register and configure Facebook Wi-Fi for the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Facebook Wi-Fi**.  
The Facebook Wi-Fi page displays.
5. Select the Register with Facebook Wi-Fi **Yes** radio button.  
The capability to register is enabled. By default, this capability is disabled.
6. Click the **Apply** button.  
Your settings are saved and the **Add Page** button displays.
7. Click the **Add Page** button.  
A new browser page opens and displays the Facebook Login page.

8. Log in to the Facebook account with which the Facebook business page is associated.

**Facebook Wi-Fi Configuration**

---

**Facebook Page**  
To use Facebook Wi-Fi you need to be the admin of a local business Page that has a valid location associated with it.

Select a Page ▾

**Bypass Mode**  
Your customers always have the option to skip checking in. They can do this by clicking on a link that lets them skip check-in, or by entering a Wi-Fi code that you provide to them.

Skip check-in link [?]  
 Require Wi-Fi code [?]

**Session Length**  
Select the length of time your customers will have Wi-Fi for after they check in.

Five hours ▾

**Terms of Service**  
 Optional: Add your own Terms of Service [?]

Visit Help Center Save Settings

9. From the **Select a Page** menu, select the Facebook business page.
10. Select one of the following bypass mode options:
  - To allow customers to skip check-in, select the **Skip check-in link** radio button. If you enable this option, users can either check in to the selected Facebook business page or skip the check-in.
  - To require users to enter a WiFi code before they can gain WiFi access, select the **Require Wi-Fi code** radio button and type a WiFi code in the field that displays. If you enable this option, users can either check in to the selected Facebook business page or skip the check-in by using the WiFi code.
11. From the **Session Length** menu, select the period after which users are automatically logged out.
12. To add terms of service to the Facebook check-in page, select the **Terms of Service** check box and type or copy the terms of service.
13. Click the **Save Settings** button.

The Facebook Wi-Fi settings are saved.

The name of the selected Facebook business page displays on the Facebook Wi-Fi configuration page, along with the **Change Page** button, which lets you replace the selected Facebook business page with another one.
14. To allow clients that are connected to the Facebook captive portal to establish a secure HTTP (HTTPS) session *before* the captive portal authentication occurs, select the Allow HTTPS **Enable** radio button.

By default, the Allow HTTPS **Disable** radio button is selected and clients that are connected to the Facebook captive portal cannot establish an HTTPS session until after the captive portal authentication occurs.

15. Click the **Apply** button.

Your settings are saved.

## Set up a captive portal for a WiFi network

Use a captive portal to welcome or instruct WiFi users and limit their sessions. You can require users to agree to an end user license agreement (EULA) and redirect them a specific website. A captive portal is specific to an SSID.

If you want to provide customers WiFi access by letting them check in to a Facebook business page, first register the access point with Facebook Wi-Fi (see [Register and configure Facebook Wi-Fi for the access point](#) on page 53).

### To set up a captive portal for a WiFi network:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic**.  
The page that displays lets you select an SSID.
5. Click the **>** button to the left the SSID.  
The settings for the selected SSID display.
6. Click the **> Advanced** tab.  
The page expands.

## 7. Select the **Captive Portal** check box.

Captive Portal

Click Through     Social Login

Session Timeout (in min)

Redirect URL

**Title**

**Message**

**JPEG/JPG Image (Max 500KB)**

No file

**EULA (Max 1KB)**

This usage agreement governs your use of the Internet services provided. The use of this hotspot is voluntarily given and may be rescinded without advanced notice. The user is not entitled to any compensation for damages, real or imagined, incurred while using the hotspot. The user agrees not to:

- 1) Transmit or participate in the transmission of materials in violation of local or national laws and regulations.
- 2) Send large quantities of unsolicited email (spam).
- 3) Restrict or hinder the free usage of this hotspot by other users.
- 4) Attack another user, website or service provider with a denial of service attack or otherwise.

## 8. Specify the type of captive portal by selecting one of the following radio buttons:

- **Click Through.** You must specify the captive portal settings as described in [Step 9](#).
- **Social Login.** Customers receive WiFi access by checking in to a Facebook business page. To use this option, first register the access point with Facebook Wi-Fi (see [Register and configure Facebook Wi-Fi for the access point](#) on page 53).  
If you select his option, you can skip [Step 9](#).

## 9. Specify the settings as described in the following table.

Setting	Description
Session Timeout (in min)	Enter the time after which a WiFi session is terminated and a user must log in again. The period is in the range from 1 to 1440 minutes. The default is 60 minutes.
Redirect URL	To redirect a user to a specific website after login, select the <b>Redirect URL</b> check box and enter the URL to which the user must be directed. If the <b>Redirect URL</b> check box is cleared, a user is directed to a default web page.
Title	Enter the title that is displayed on the captive portal login page. If you do not customize the title, the default title displays on the captive portal login page.



(Continued)

Setting	Description
Message	Enter a message to the user. This message is displayed on the captive portal login page. If you do not customize the message, the default message displays on the captive portal login page.
JPEG/JPG Image (Max 500KB)	To customize the image that is displayed on the captive portal login page, click the <b>Browse</b> button and navigate to and select an image. If you do not customize the image, the default image displays on the captive portal login page.
EULA (Max 1KB)	The field includes a default end user license agreement (EULA). You can enter or copy custom text into the field. To show the EULA on the captive portal login page, select the <b>EULA</b> check box.

10. To preview the captive portal login page, click the **Preview** button.

The following figure shows an example (that is, the figure does not show the default captive portal but a customized one).



11. Click the **Apply** button.

Your settings are saved. WiFi clients attempting to connect to the SSID are presented with the captive portal login page.

**Note:** When you set up a captive portal with a social login (Facebook Wi-Fi), you can configure the option to allow clients that are connected to the Facebook captive portal to establish a secure HTTP (HTTPS) session *before* the captive portal authentication occurs (see [Register and configure Facebook Wi-Fi for the access point](#) on page 53). This option is not available when you set up a captive portal with a click-through login (that is, a local login), so an HTTPS session is blocked until after the captive portal authentication occurs.

## Unregister the access point from Facebook Wi-Fi

If the access point is registered with Facebook Wi-Fi but you no longer want to use that option for a captive portal or you want to use another Facebook account, you can unregister the access point from Facebook Wi-Fi and remove the access point's entry.

### **To unregister the access point from Facebook Wi-Fi and remove the access point's entry:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Facebook Wi-Fi**.  
The Facebook Wi-Fi page displays.
5. Select the **No** radio button.  
The capability to register is disabled. However, the access point's entry on the Facebook business page is not yet removed.
6. Click the **Apply** button.  
Your settings are saved.
7. Go to the Facebook business page and log in to your account.
8. Select the check box for the access point's entry.
9. Click the **Delete** button.  
The access point's entry is removed.

# Manage the basic radio features

You can manage the basic radio features that are described in the following sections:

- [Manage the basic settings for the radios](#)
- [Turn a radio on or off](#)
- [Change the WiFi mode for a radio](#)
- [Change the MCS index and data rate for a radio](#)
- [Change the channel width for a radio](#)
- [Change the output power for a radio](#)
- [Change the guard interval for a radio](#)
- [Change the channel for a radio](#)
- [Manage Quality of Service for a WiFi radio](#)

For information about the advanced radio features, see [Manage the advanced radio features](#) on page 73.

## Manage the basic settings for the radios

The basic WiFi settings for the radios apply to all WiFi networks (VAPs or SSIDs). You can specify the radio settings individually for the 2.4 GHz radio, 5 GHz low band radio (referred to as 5 GHz Low), and 5 GHz high band radio (referred to as 5GHz High). For information about the advanced radio settings, see [Manage the advanced WiFi settings for the radios](#) on page 73.

### To manage the basic WiFi settings for the radios:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

- Select **Management > Configuration > Wireless > Basic > Wireless Settings**.

### 2.4 GHz

Turn Radio ON

<p>Wireless Mode</p> <p><input type="radio"/> 11b   <input type="radio"/> 11bg</p> <p><input checked="" type="radio"/> 11ng</p>	<p>MCS Index / Data Rate</p> <p>Best ▼</p>	<p>Channel Width</p> <p>Dynamic 20 / 40 MHz ▼</p>
<p>Output Power</p> <p>100%(Max) ▼</p>	<p>Guard Interval</p> <p>Auto ▼</p>	<p>Channel</p> <p>Auto ▼</p>

### 5 GHz Low

Turn Radio ON

<p>Wireless Mode</p> <p><input type="radio"/> 11a   <input type="radio"/> 11na</p> <p><input checked="" type="radio"/> 11ac</p>	<p>MCS Index / Data Rate</p> <p>Best ▼</p>	<p>Channel Width</p> <p>Dynamic 20 / 40 / 80 M ▼</p>
<p>Output Power</p> <p>100%(Max) ▼</p>	<p>Guard Interval</p> <p>Auto ▼</p>	<p>Channel</p> <p>Auto ▼</p>

### 5 GHz High

Turn Radio ON

<p>Wireless Mode</p> <p><input type="radio"/> 11a   <input type="radio"/> 11na</p> <p><input checked="" type="radio"/> 11ac</p>	<p>MCS Index / Data Rate</p> <p>Best ▼</p>	<p>Channel Width</p> <p>Dynamic 20 / 40 / 80 M ▼</p>
<p>Output Power</p> <p>100%(Max) ▼</p>	<p>Guard Interval</p> <p>Auto ▼</p>	<p>Channel</p> <p>Auto ▼</p>

Cancel
Apply

- Configure the settings as described in the following table.  
The descriptions in the table apply to all radios, but you can specify the radio settings for the 2.4 GHz, 5 GHz Low, and 5 GHz High radios individually.

Setting	Description
Turn Radio On	By default, the <b>Turn Radio On</b> check box is selected and the radio broadcasts. Turning off a radio disables WiFi access for the band, which can be helpful during configuration, network tuning, or troubleshooting.
Wireless Mode	<p>Select one of the following WiFi modes for the 2.4 GHz radio:</p> <ul style="list-style-type: none"> <li>• <b>11b.</b> 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. However, the speed of 802.11n and 802.11g clients is limited to the maximum speed that is supported by 802.11b (about 11 Mbps).</li> <li>• <b>11bg.</b> 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. However, the speed of 802.11n clients is limited to the maximum speed that is supported by 802.11g (about 54 Mbps).</li> <li>• <b>11ng.</b> 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. This is the default setting.</li> </ul> <p>Select one of the following WiFi modes for a 5 GHz radio (you can select a different mode each 5 GHz radio):</p> <ul style="list-style-type: none"> <li>• <b>11a.</b> 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. However, the speed of 802.11ac and 802.11na clients is limited to the maximum speed that is supported by 802.11a (about 54 Mbps).</li> <li>• <b>11na.</b> 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. However, the speed of 802.11ac clients is limited to the maximum speed that is supported by 802.11n (generally, ranging from about 300 Mbps to about 450 Mbps).</li> <li>• <b>11ac.</b> 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. This is the default setting.</li> </ul>
MCS Index / Data Rate	From the menu, select the modulation and coding scheme (MCS) index and data transmit rate for the radio. The default is Best. For most networks, the default settings work fine. The available settings also depend on the selection from the <b>Channel Width</b> menu and the selection from the <b>Guard Interval</b> menu.

(Continued)

Setting	Description
Channel Width	<p>From the menu, select the channel width for the radio. Use the following guidelines:</p> <ul style="list-style-type: none"> <li>• A wider channel improves the performance.</li> <li>• The 802.11n specification allows a 40 MHz-wide channel in addition to the legacy 20 MHz channel that is available with other modes.</li> <li>• The 802.11ac specification allows an 80 MHz-wide channel in addition to the 20 MHz and 40 MHz channels that are available with other modes.</li> <li>• The 40 MHz and 80 MHz channels enable higher data rates but leaves fewer channels available for use.</li> </ul> <p>The channel width and guard interval determine the available MCS index and data transmit rates.</p>
Output Power	<p>From the menu, select the transmission power of the radio. You can select <b>100%(Max), 50%, 25%, 12.5%, or 4%(Min)</b>. The default is 100%(Max).</p> <p><b>Note:</b> If two or more access points are operating in the same area and on the same channel, interference can occur. In such a situation, you might want to decrease the output power for an access point. Make sure that you comply with the regulatory requirements for total radio frequency (RF) output power in your country.</p>
Guard Interval	<p>From the menu, select the value that protects radio transmissions from interference. An Auto guard interval (which is the default) improves performance, but some legacy devices can operate only with a long -800ns guard interval.</p> <p>The guard interval and channel width determine the available MCS index and data transmit rates.</p>
Channel	<p>From the menu, select the WiFi channel for the radio. The available WiFi channels and frequencies depend on the country and the radio. (The channels in the 5 GHz band are divided between the low band and high band radios.) The default is Auto, which enables the radio to automatically select the most suitable channel.</p> <p><b>Note:</b> You do not need to change the WiFi channel unless you experience interference (which is indicated by lost connections).</p> <p><b>Note:</b> If you use multiple WiFi access points (APs), reduce interference by selecting different channels for adjacent APs. We recommend a channel spacing of four channels between adjacent APs (for example, use Channels 1 and 5, or 6 and 10).</p>

6. Click the **Apply** button.  
A pop-up warning window opens.

7. Click the **OK** button.

The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Turn a radio on or off

By default, the 2.4 GHz radio and both 5 GHz radios broadcast. Turning off a radio disables WiFi access for the associated band, which affects all VAPs (or SSIDs) in that band. Turning off a radio can be helpful during configuration, network tuning, or troubleshooting.

### To turn a radio on or off:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.  
The Wireless Settings page displays.
5. Take one of the following actions:
  - **Turn a radio on.** Select the **Turn Radio ON** check box for the radio.
  - **Turn a radio off.** Clear the **Turn Radio ON** check box for the radio.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the WiFi mode for a radio

By default, all types of WiFi clients can access a WiFi network on the access point, that is, the WiFi modes on the access point support 802.11n, 802.11g, 802.11b, 802.11ac,

802.11na, and 802.11a clients. You can change the modes to limit access to certain types of clients.

**To change the WiFi mode for a radio:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.

2. Enter the IP address that is assigned to the access point.  
A login window opens.

3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.

The Wireless Settings page displays.

5. Select the WiFi mode for the radio:

- **2.4 GHz radio.** Select one of the following WiFi modes for the 2.4 GHz radio:
  - **11b.** 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. However, the speed of 802.11n and 802.11g clients is limited to the maximum speed that is supported by 802.11b (about 11 Mbps).
  - **11bg.** 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. However, the speed of 802.11n clients is limited. However, the speed of 802.11n clients is limited to the maximum speed that is supported by 802.11g (about 54 Mbps).
  - **11ng.** 802.11n, 802.11g, and 802.11b WiFi clients can connect to the access point. This is the default setting.
- **5 GHz radio.** Select one of the following WiFi modes for a 5 GHz radio (you can select a different mode each 5 GHz radio):
  - **11a.** 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. However, the speed of 802.11ac and 802.11na clients is limited to the maximum speed that is supported by 802.11a (about 54 Mbps).
  - **11na.** 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. However, the speed of 802.11ac clients is limited to the maximum



speed that is supported by 802.11n (generally, ranging from about 300 Mbps to about 450 Mbps).

- **11ac.** 802.11ac, 802.11na, and 802.11a WiFi clients can connect to the access point. This is the default setting.

6. Click the **Apply** button.

A pop-up warning window opens.

7. Click the **OK** button.

The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the MCS index and data rate for a radio

You can change the modulation and coding scheme (MCS) index and data transmit rate for a radio. By default, the setting is Best. The settings that are available also depend on the selected channel width (see [Change the channel width for a radio](#) on page 66) and selected guard interval (see [Change the guard interval for a radio](#) on page 68).

### To change the MCS index and data rate for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.

2. Enter the IP address that is assigned to the access point.

A login window opens.

3. Enter the access point user name and password.

The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.

The Wireless Settings page displays.

5. From the **MCS Index / Data Rate** menu, select a setting.

By default, the setting is Best.

6. Click the **Apply** button.

A pop-up warning window opens.

7. Click the **OK** button.

The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the channel width for a radio

Use the following guidelines when you determine the channel width for a radio:

- A wider channel improves the performance.
- The 802.11n specification allows a 40 MHz-wide channel in addition to the legacy 20 MHz channel that is available with other modes.
- The 802.11ac specification allows an 80 MHz-wide channel in addition to the 20 MHz and 40 MHz channels that are available with other modes.
- The 40 MHz and 80 MHz channels enable higher data rates but leave fewer channels available for use.

The channel width and guard interval determine the available MCS index and data transmit rates.

### To change the channel width for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.  
The Wireless Settings page displays.
5. From the **Channel Width** menu, select one of the following settings.
  - **20 MHz**.
  - **40 MHz**.
  - **80 MHz**. This selection is available only for the 5 GHz radios.
  - **Dynamic 20 / 40 MHz**. This selection is available only for the 2.4 GHz radio and is the default setting for that radio.

- **Dynamic 20 / 40 / 80 MHz.** This selection is available only for the 5 GHz radios and is the default setting for these radios.
6. Click the **Apply** button.  
A pop-up warning window opens.
  7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the output power for a radio

By default, the output power of the access point is set at the maximum. If two or more access points are operating in the same area and on the same channel, interference can occur. In such a situation, you might want to decrease the output power for an access point. Make sure that you comply with the regulatory requirements for total radio frequency (RF) output power in your country.

### To change the output power for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.  
The Wireless Settings page displays.
5. From the **Output Power** menu, select **100%(Max)**, **50%**, **25%**, **12.5%**, or **4%(Min)**.  
The default is 100%(Max).
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the guard interval for a radio

The guard interval protects radio transmissions from interference. An automatic guard interval (which is the default) improves performance, but some legacy devices can operate only with a long -800ns guard interval.

The guard interval and channel width determine the available MCS index and data transmit rates.

### To change the guard interval for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.  
The Wireless Settings page displays.
5. From the **Guard Interval** menu, select one of the following settings:
  - **Auto**. This is the default setting.
  - **Long-800 ns**.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Change the channel for a radio

The available WiFi channels and frequencies depend on the country and the radio. The default is Auto, which enables the radio to automatically select the most suitable channel.

**Note:** You do not need to change the WiFi channel unless you experience interference (which is indicated by lost connections).

**Note:** If you use multiple WiFi access points (APs), reduce interference by selecting different channels for adjacent APs. We recommend a channel spacing of four channels between adjacent APs (for example, use Channels 1 and 5, or 6 and 10).

### To change the channel for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > Wireless Settings**.  
The Wireless Settings page displays.
5. From the **Channel** menu, select a channel.  
The default is Auto. When you select a particular channel, the channel selection becomes static.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Manage Quality of Service for a WiFi radio

You can specify the Quality of Service (QoS) setting separately for the 2.4 GHz radio and for each 5 GHz radio. These settings are enabled by default for all radios. Disabling

QoS for a radio might impact the throughput and speed of WiFi traffic on the access point.

### To manage the QoS settings for a WiFi radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Basic > QoS Settings**.

The screenshot shows the QoS Settings configuration page. It is organized into three sections based on frequency bands: 2.4 GHz, 5 GHz Low, and 5 GHz High. Each section contains two columns of settings. The first column is labeled 'Wi-Fi Multimedia (WMM)' and the second is 'WMM Powersave'. In each section, the 'Enable' radio button is selected. At the bottom of the page, there are two buttons: 'Cancel' and 'Apply'.

5. Enable or disable the following features for a radio by selecting the applicable **Enable** or **Disable** radio buttons:
  - **Wi-Fi Multimedia (WMM)**. WiFi Multimedia (WMM) is a subset of the 802.11e standard. Time-dependent information such as video or audio is given higher priority than normal traffic. For WMM to function correctly, WiFi clients must also support WMM. By enabling WMM, you allow WMM to control upstream traffic flowing from WiFi devices to the access point and downstream traffic flowing

from the access point to WiFi devices. WMM defines the following four queues in decreasing order of priority:

- **Voice.** The highest priority queue with minimum delay, which makes it very suitable for applications such as VoIP and streaming media.
  - **Video.** The second highest priority queue with low delay. Video applications are routed to this queue.
  - **Best effort.** The medium priority queue with medium delay. Most standard IP applications use this queue.
  - **Background.** The low priority queue with high throughput. Applications such as FTP that are not time-sensitive but require high throughput can use this queue.
- **WMM Powersave.** Enabling the WMM Powersave feature saves power for battery-powered devices and fine-tunes power consumption.
6. Click the **Apply** button.  
A pop-up warning window opens.
  7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

# 4

## Manage the Advanced WiFi and Radio Features

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This chapter describes how you can manage the advanced WiFi and radio features of the access point. For information about the basic WiFi and radio settings, see [Manage the Basic WiFi and Radio Features](#) on page 35.

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

The chapter includes the following sections:

- [Manage the advanced radio features](#)
- [Set a data volume limit for the access point](#)
- [Set up a WiFi bridge between access points](#)



# Manage the advanced radio features

You can manage the advanced radio features that are described in the following sections:

- [Manage the advanced WiFi settings for the radios](#)
- [Manage the maximum number of clients for a radio](#)
- [Manage the broadcast and multicast settings for a radio](#)
- [Manage load balancing for the radios](#)
- [Manage Airtime Fairness for the radios](#)

For information about the basic radio features, see [Manage the basic radio features](#) on page 59.

## Manage the advanced WiFi settings for the radios

The advanced WiFi settings for the radios apply to all WiFi networks (VAPs or SSIDs). You can specify the radio settings individually for the 2.4 GHz radio, 5 GHz low band radio (referred to as 5 GHz Low), and 5 GHz high band radio (referred to as 5GHz High). For information about the basic radio settings, see [Manage the basic settings for the radios](#) on page 59.

A radio must be turned on for you to specify the settings. For more information about turning a radio on, see [Turn a radio on or off](#) on page 63.

### **To manage the advanced WiFi settings for the radios:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Advanced**.

The screenshot displays the 'Advanced' configuration page for the wireless network, organized into three frequency band sections: 2.4 GHz, 5 GHz Low, and 5 GHz High. Each section contains a grid of settings for Max. Wireless Clients, RTS Threshold, Beacon Interval, Broadcast/Multicast Rate Limiting, Fixed Multicast Rate, and DTIM Interval. The 2.4 GHz section includes the 802.11n 256 QAM feature. The 5 GHz sections include MU-MIMO and 802.11h features. At the bottom, there are 'Cancel' and 'Apply' buttons.

Band	Max. Wireless Clients	RTS Threshold (256-2346)	Beacon Interval (100-300)	Broadcast/Multicast Rate Limiting	Fixed Multicast Rate	DTIM Interval (1-255)	Special Features
2.4 GHz	200	2346	100	Enabled	Auto	2	802.11n 256 QAM
5 GHz Low	200	2346	100	Enabled	Auto	2	MU-MIMO (Disabled), 802.11h (Disabled)
5 GHz High	200	2346	100	Enabled	Auto	2	MU-MIMO (Enabled), 802.11h (Disabled)

5. Configure the settings as described in the following table.

The descriptions in the table apply to all radios, but you can specify the radio settings for the 2.4 GHz, 5 GHz Low, and 5 GHz High radios individually. However, the 802.11n 256 QAM feature applies to the 2.4 GHz radio only and the MU-MIMO and 802.11h features apply to the 5 GHz radios only.

Setting	Description
Max. Wireless Clients	Enter the maximum number of WiFi clients that can simultaneously associate with the radio. The range is from 1 to 200. The default is 200 WiFi clients.
RTS Threshold (256-2346)	<p>Enter the Request to Send (RTS) threshold. The range is from 256 to 2346. The default is 2346.</p> <p>If the packet size is equal to or less than the RTS threshold, the radio uses the Carrier Sense Multiple Access with Collision Detection (CSMA/CD) mechanism and the data frame is transmitted immediately after the silence period. If the packet size is larger than the RTS threshold, the system uses the CSMA with Collision Avoidance (CSMA/CA) mechanism. In this situation, the transmitting device sends the RTS packet to the receiving device and waits for the receiving device to return a Clear to Send (CTS) packet before sending the actual packet data.</p>
Beacon Interval (100-300)	Enter an interval between 100 ms and 300 ms for each beacon transmission, which allows the radio to synchronize the WiFi network. The default is 100 ms.
802.11n 256 QAM	<p>Select the <b>802.11n 256 QAM</b> check box to enable the 2.4 GHz radio to function over 256-quadrature amplitude modulation (QAM), which can increase the 2.4 GHz radio throughput for clients that are capable of supporting 256 QAM. By default, 256 QAM is disabled for the 2.4 GHz radio, that is, the check box is cleared.</p> <p>By default, 256-QAM is enabled for the 5 GHz radios and you cannot disable it (the page does not provide check boxes for the 5 GHz radios).</p>
Fixed Multicast Rate	From the menu, select the multicast traffic transmission rate for the radio. The default is Auto, which lets the access point automatically adjust the multicast traffic transmission rate.
DTIM Interval (1-255)	Move the slider to specify the delivery traffic indication message (DTIM) interval or the data beacon rate, which indicates the beacon delivery traffic indication message period in multiples of beacon intervals. This value must be between 1 and 255. The default is 2.
Broadcast/Multicast Rate Limiting	Multicast and broadcast rate limiting is enabled by default to improve the overall network performance by limiting the number of packets that are transmitted across the network. By default, the setting is 50 (the maximum possible value), which specifies a maximum rate limit of 50 packets per second. To change the setting, move the slider. To disable multicast and broadcast rate limiting, clear the small check box.

(Continued)

Setting	Description
MU-MIMO	<p>By default, the MU-MIMO <b>Enable</b> radio button is selected and multiuser MIMO (MU-MIMO) is enabled. To disable MU-MIMO, select the MU-MIMO <b>Disable</b> radio button.</p> <p>802.11ac Wave 2 supports MU-MIMO, which enables multiple users to receive data from the access point simultaneously using the same channel. With MU-MIMO, the access point can transmit to multiple clients simultaneously using the same channel. MU-MIMO is used in the downstream direction and requires both the access point and the WiFi clients to be capable of 802.11ac Wave 2.</p> <p>You can enable or disable MU-MIMO for the 5 GHz radios but not for the 2.4 GHz radio.</p>
802.11h	<p>Select the 802.11h <b>Enable</b> radio button to enable 802.11h-capable WiFi clients to automatically switch to a new channel without disconnecting from the access point and without losing any data when the access point changes to another channel. By default, the 802.11h <b>Disable</b> radio button is selected and 802.11h is disabled.</p> <p>You can enable or disable 802.11h for the 5 GHz radios but not for the 2.4 GHz radio.</p>

6. Click the **Apply** button.

A pop-up warning window opens.

7. Click the **OK** button.

The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Manage the maximum number of clients for a radio

The number of clients that are allowed to associate with a radio affects the reliability and throughput of the WiFi connection. A smaller number can increase the reliability and throughput and a large number can decrease the reliability and throughput.

By default, one radio allows up to 200 client associations. You can specify a lower number of clients. If the number of associated clients exceeds the maximum number that you specify, the radio rejects new client associations until the number drops below that maximum number.

### To manage the maximum number of clients for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.

A login window opens.

3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Advanced**.  
The Wireless Settings page displays.
5. In the **Max.Wireless Clients** field, enter the maximum number of WiFi clients that can simultaneously associate with the radio.  
The range is from 1 to 200 for the radio. The default is 200 WiFi clients for the radio.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Manage the broadcast and multicast settings for a radio

Because multicast and broadcast traffic can adversely affect the throughput and latency of a WiFi network, you can change the multicast and broadcast rate limiting settings and the fixed multicast traffic transmission rate for a radio.

By default, multicast and broadcast rate limiting is enabled to improve the overall network performance by limiting the number of packets that are transmitted across the network. By default, the setting is 50 (the maximum possible value), which specifies a maximum rate limit of 50 packets per second. You can lower this number.

The multicast traffic transmission rate for the radio is Auto, which lets the access point automatically adjust the multicast traffic transmission rate. You can specify a fixed transmission rate.

### To manage the broadcast and multicast settings for a radio:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.

The default 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 Dashboard page displays.

4. Select **Management > Configuration > Wireless > Advanced**.

The Wireless Settings page displays.

5. To change the multicast and broadcast rate limiting settings for a radio, under Broadcast/Multicast Rate Limiting, take one of the following actions in:
  - To change the rate limiting setting, move the slider. By default, the setting is 50 (the maximum possible value), which specifies a maximum rate limit of 50 packets per second.
  - To disable or enable multicast and broadcast rate limiting, clear or select the small check box.
6. To change the multicast traffic transmission rate for a radio, from the **Fixed Multicast Rate** menu, select a transmission rate.

The default is Auto.
7. Click the **Apply** button.

A pop-up warning window opens.
8. Click the **OK** button.

The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Manage load balancing for the radios

You can configure the radio utilization thresholds to enable each radio to maintain the speed and performance of the WiFi network as clients associate with and disassociate from the WiFi network.

Client associations depend on the percentage of network bandwidth utilization that you specify and the WLAN utilization for each radio, which you can view in the Current Trend pane on the Dashboard page. New client associations are allowed if a radio's WLAN utilization is less than the percentage of network bandwidth utilization for the radio. New client associations are not allowed if a radio's WLAN utilization exceeds the percentage of network bandwidth utilization for the radio.

### To manage load balancing for the radios:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Advanced > Load Balancing**.



The screenshot shows a configuration window titled "Load Balancing Mode". At the top, there are two radio buttons: "Enable" and "Disable", with "Disable" selected. Below this, the section "Channel Load (%)" contains three horizontal sliders. The first slider is for "2.4 GHz", the second for "5 GHz Low", and the third for "5 GHz High". Each slider has a scale from 0 to 100, and the current value for each is marked as 90. At the bottom of the window, there are two buttons: "Cancel" and "Apply".

5. To enable load balancing for the radios, select the Load Balancing Mode **Enable** radio button.  
By default, load balancing is disabled.  
The page provides a slider for each radio.
6. For each radio, move the associated slider to specify the percentage of network bandwidth utilization that is allowed on the radio before it stops accepting new client associations.  
The default is 90%, which specifies that all new associations are allowed up to 90 percent of the utilization rate of the radio.
7. Click the **Apply** button.  
A pop-up warning window opens.
8. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radio or radios restart and WiFi clients might need to reconnect.

## Manage Airtime Fairness for the radios

You can configure the Airtime Fairness to enable all radios to provide better WiFi performance in an environment with legacy and non-legacy clients.

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

**Note:** On each radio, Airtime Fairness is supported for the first 50 clients. If the radio supports more than 50 clients, the remaining clients must share the unreserved network time on the radio, that is, Airtime Fairness does not apply to those clients.

### To manage Airtime Fairness for all radios:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Advanced > Air Time Fairness**.  
The Air Time Fairness page displays.
5. To enable Airtime Fairness for all radios, select the **Enable** radio button.  
By default, Airtime Fairness is disabled for all radios.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The radios restart and WiFi clients might need to reconnect.



# Set a data volume limit for the access point

You can set a total monthly data volume limit that applies to all WiFi networks that you configure on the access point, that is, it applies to all SSIDs (or VAPs) collectively. A typical use of this feature is to restrict guest user data consumption.

For each SSID, you can define a percentage of the monthly data volume limit, in which case must allocate a data volume in MB to each WiFi client of that SSID. In relation to settings percentages for SSIDs, note the following:

- To make sure that each SSID receives its exact share of the total monthly data volume limit, make sure that the percentages for all SSIDs together do not exceed 100 percent.
- To set a less restrictive policy, the percentages for all SSIDs together do not need to add up to 100 percent. For example, if you set 60 percent for one SSID and 60 percent for another SSIDs, you are providing an equal chance to each SSID to consume 60 percent of the total monthly data volume limit. If one SSID actually consumes 60 percent, only 40 percent is available for the other SSID.
- If you do not set a data volume limit for any SSIDs, all SSIDs are allowed 100 percent of the total monthly data volume limit, and data is consumed on a *first come, first served* basis, up to the total monthly data volume limit.

You can specify when the monthly counter resets or manually reset the counter.

If the consumed data reaches a definable percentage of the profile data volume limit for an SSID, either the data is dropped for all WiFi clients of the SSID or those WiFi clients are disconnected.

## To set a data volume limit for the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless > Advanced > Data Volume Limit**.  
The Data Volume Limit page displays.

5. Select the **Data Volume Limit** check box.

Data Volume Limit

Data Volume Limit Setup

Monthly limit  (in MB)

Data limit control by

Reset data limit counters at  on the  day of the month

---

SSID Profiles

Name	No Data Volume Limit	Profile Data Volume Limit(%)	Per Client
NetgearABCDEF	<input checked="" type="checkbox"/>		
NETGEAR-2	<input type="checkbox"/>	<input type="range" value="0"/>	<input type="text" value=""/> MB

---

Data Volume Limit Policy on SSID Profile

Pop-up a warning message  % MB before the profile limit is reached

When SSID profile limit is reached

Drop data for all wireless clients

Disconnect all wireless clients

6. In the Data Volume Limit Setup section, specify the following settings, which apply to SSIDs collectively, whether or not you set a data volume limit for an SSID in [Step 7](#):

- a. **Monthly limit.** Enter the total monthly data volume limit in MB for the access point, that is, for all SSIDs collectively.  
For example, if you enter 500000, a data volume limit of 500 GB applies to all SSIDs collectively.  
The default value is 1024 MB (1 GB). The maximum that you can enter is 100 TB (100000 GB).
- b. **Data limit control by.** From the menu, select if the data volume limit applies to downloaded data, to uploaded data, or to both combined.
- c. **Reset data limit counters.** Specify the day and time of the month when the counter is reset and the data volume usage for all SSIDs is reset to zero.  
To immediately reset the counter to zero, click the **Reset Counter** button and confirm your action by clicking the **OK** button.

7. In the SSID Profiles section, specify the following settings for any individual SSID for which you want to set a percentage of the total monthly data volume limit:
  - a. **No Data Volume Limit.** To specify that the data volume limit applies to the SSID, clear the **No Data Volume Limit** check box for the SSID.  
If you leave the check box selected, no data volume limit applies to the SSID, which means that the SSID is assigned 100 percent. (If you do not set a data volume limit for any SSID, each SSID is assigned 100 percent.)
  - b. **Profile Data Volume Limit (%).** To set a percentage of the monthly data volume limit that you specified in [Step 6](#), move the slider to the percentage that you want to set.  
For example, if the monthly data volume limit is 500000 MB and you move the slider to 60 percent, the volume limit for the SSID is 300000 MB (300 GB). That means that the SSID cannot consume more data than 300 GB. However, the actual available data volume for the SSID might be less than 300 GB if the data consumption on other SSIDs causes the total monthly data volume limit to be reached before the SSID consumes 300 GB.
  - c. **Per Client.** If you set a percentage for an SSID, set a monthly data volume limit that applies to each WiFi client of the SSID by entering the monthly data volume limit in MB per WiFi client.  
Take the total monthly data volume limit and the percentage that you set for the SSID into account. For example, if the total monthly data volume limit is 500000 MB, the percentage for the SSID is 60 percent, and you expect about 30 clients to connect to the SSID, you could set a data volume of 10000 MB (10 GB) per WiFi client of the SSID.

**Note:** When the remaining data volume reaches 10 percent of the monthly data volume limit for a WiFi client, the data rate for that WiFi client is restricted to 256 Kbps. However, the WiFi client can continue to consume data as long as the volume limit for the SSID is not yet reached.

8. In the Data Volume Limit Policy on SSID Profile section, specify the following settings that apply to each individual SSID for which you set a profile data volume limit in [Step 7](#):
  - a. **Pop-up a warning message.** Specify the percentage of the profile data volume limit for an SSID that, if exceeded, causes a pop-up message to be displayed. By default, if 10 percent of the remaining profile data volume limit for an SSID is exceeded, a pop-up warning message is displayed on the Data Volume Limit page.
  - b. **When SSID profile limit is reached.** Select one of the following radio buttons to specify the action that occurs if the profile data volume limit for an SSID is exceeded:
    - **Drop data for all wireless clients.** The data for all WiFi clients of the SSID is dropped but the WiFi clients are not disconnected from the SSID.
    - **Disconnect all wireless clients.** All WiFi clients are disconnected from the SSID.
9. Click the **Apply** button.

Your settings are saved.

For information about monitoring the consumed data volume for each SSID for which you enabled a data volume limit, see [View the data volume consumption](#) on page 160.

## Set up a WiFi bridge between access points

You can configure a wireless distribution system (WDS) that consists of point-to-point WiFi bridge connections between two access points. Each WiFi bridge connection requires a WDS profile for which the settings must match on the access points that make up the bridge.

If the access point is connected to the Internet over a wired connection, the access point can function as the WiFi base station for up to four other access points that function as WiFi repeaters. The access point itself can also function as a WiFi repeater if it is connected to another access point that functions as a WiFi base station.

A WiFi base station connects to the Internet, wired and WiFi clients can connect to the base station, and the base station sends its WiFi signal to one or more access points that function as WiFi repeaters. Wired and WiFi clients can also connect to a WiFi repeater, but the repeater connects to the Internet through the WiFi base station.

The following figure shows a WiFi repeating scenario with a WiFi base station on the left side and a single WiFi repeater on the right side.

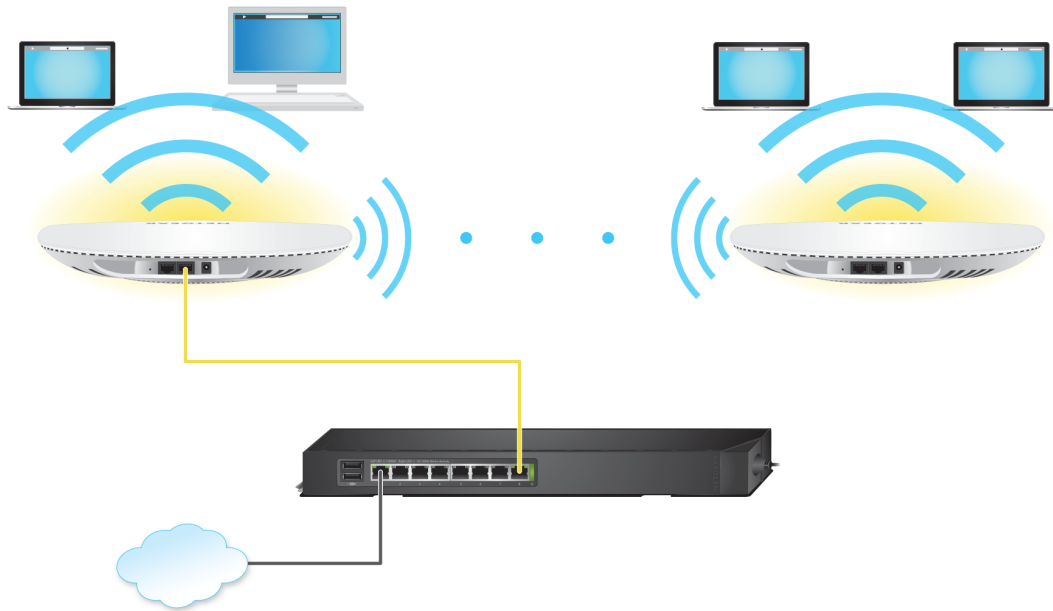


Figure 6. WiFi bridge configuration between two access points

To use a WiFi bridge, you cannot use the auto channel feature for the access point and the SSID broadcast must be enabled.

For a WiFi bridge, you must set up a WiFi base station (the master) and a WiFi repeater (the slave):

- **WiFi base station.** The access point functions as the master that bridges traffic to and from the repeater access point (the slave). The base station also handles local WiFi and wired traffic. To configure this mode, you must know the MAC address of the repeater access point. The MAC address is listed on the product label or on the WiFi bridge configuration page of the local browser interface.
- **WiFi repeater.** The access point functions as the slave and sends all traffic from its local WiFi or wired computers to the WiFi base station (the master). To configure this mode, you must know the MAC address of the base station.

By default, the access point functions in dual-band concurrent mode. If you enable the WiFi repeater in either radio band, the WiFi base station or WiFi repeater cannot be enabled in the other radio band. However, if you enable the WiFi base station in either radio band and use the other radio band for either client access or as a WiFi base station, dual-band concurrent mode is not affected.

Before you can set up a WiFi network with WDS, your configuration must meet the following conditions:

- Both access points must use the same WiFi channel and WiFi security settings.
- Both access points must be on the same LAN IP subnet. That is, all of the access point LAN IP addresses are in the same network.

- All LAN devices (wired and WiFi computers) are configured to operate in the same LAN network address range as the access points.

**Note:** If you are using the access point as the base station with a non-NETGEAR access point as a repeater, you might need to change more configuration settings. In particular, you might need to disable the DHCP server function on the non-NETGEAR access point that is the repeater.

**CAUTION:** Before you set up a WiFi bridge between two access points, enable STP on the access points (see [Enable or disable Spanning Tree Protocol](#) on page 113) and on the switches to which the access points are connected. If your switches do not support STP, after the WiFi bridge is established, disconnect one of the access points from its switch to prevent a network loop and connectivity problems. If you used a PoE+ switch for that access point, you now must use a power adapter.

### To set up a WiFi bridge between two access points:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Wireless Bridge**.  
The page that displays lets you select a WDS profile (WDS 1, WDS 2, WDS 3, or WDS 4).
5. Click the ► button to the left of a WDS profile.  
The WDS profile page displays.
6. Select the Band **2.4 GHz, 5 GHz Low, or 5 GHz High** radio button.  
Your selection determines the radio band on which the WDS is established. For countries that do not support dual-band operation, you cannot select the radio.
7. Select the VAP **Enable** radio button.

By default, a WDS profile is disabled.

The screenshot shows a configuration form with the following fields and values:

- Band:** Radio buttons for 2.4 GHz (selected), 5 GHz Low, and 5 GHz High.
- VAP:** Radio buttons for Enable and Disable (selected).
- Wireless Network Name (SSID):** Text input field containing "Netgear-WDS-1".
- Local MAC Address:** Text input field containing "3C-37-86-13-74-15".
- Remote MAC Address:** Text input field containing "00-00-00-00-00-00".
- Authentication:** A dropdown menu currently set to "Open".
- Buttons:** "Cancel" and "Apply" buttons at the bottom.

8. Configure the WDS profile settings as described in the following table.

Setting	Description
Wireless Network Name (SSID)	The WiFi network name on which the WDS is established. The default name is Netgear-WDS-x, in which x is the number of the WDS (1, 2, 3, or 4).
Local MAC Address	The MAC address of the local WDS radio interface, that is, the MAC address of the local radio on which the WDS is established. You cannot change this MAC address on this page. The MAC address is displayed for your information. Enter this MAC address on the remote access point of the WDS connection.
Remote MAC Address	The MAC address of the remote WDS radio interface, that is, the MAC address of the remote radio on which the WDS is established.
Network Authentication, Data Encryption, and Passphrase	By default, the selection from the menu is Open, in which case authentication and data encryption are not applicable. To secure the WDS connection, select <b>WPA2 Personal</b> and specify the following settings: <ul style="list-style-type: none"> <li>• <b>Encryption.</b> The data encryption is AES and you cannot change this setting.</li> <li>• <b>Passphrase.</b> The passphrase for the WDS connection. For you to enable the WDS connection, the passphrase on the remote access point must match the passphrase that you define in this field.</li> </ul>

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

10. Configure the WiFi bridge settings on the access point at the other end of the WiFi bridge and restart that access point.

If the access point at the other end of the WiFi bridge is a model WAC505, WAC510, or WAC540 access point, you do not need to restart it.

The WiFi bridge is established.

11. Verify connectivity across the LANs of both access points.

If the configuration is set up correctly, a computer on any WiFi or wired LAN segment of the access point that functions as the WiFi repeater can connect to the Internet or share files and printers with any other computer or server connected to the access point that functions as the WiFi base station.



# 5

## Manage Access and Security

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This chapter describes how you can manage access and security features and user accounts.

The chapter includes the following sections:

- [Block specific URLs and keywords for Internet access](#)
- [Manage local MAC access control lists](#)
- [Manage user accounts](#)
- [Manage neighbor AP detection](#)
- [Set up RADIUS servers](#)

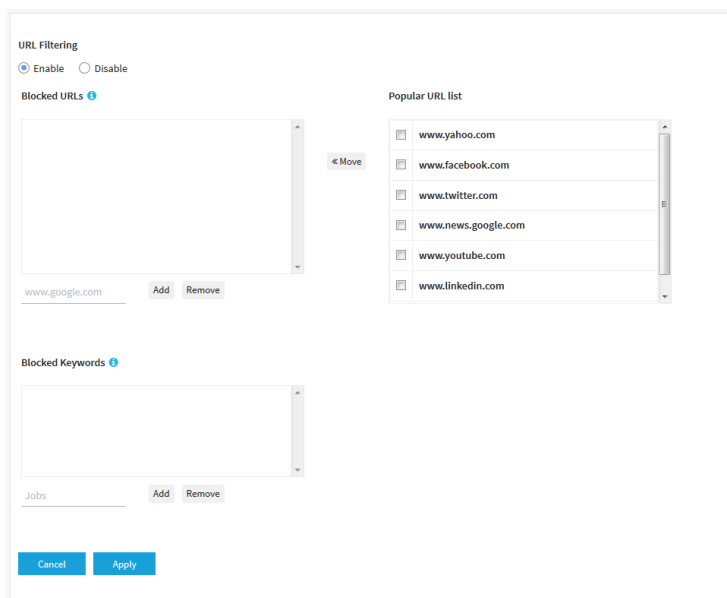
**Note:** For information about essential WiFi security (network authentication and encryption), see [Set up an open or secure WiFi network](#) on page 36.

# Block specific URLs and keywords for Internet access

You can set up a blacklist by specifying URLs (web addresses) for which Internet access must be blocked. You can also specify keywords that cause the access point to reject URLs that contain those keywords.

## To set up a blacklist with URLs and keywords for which Internet access must be blocked:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Security > URL Filtering**.  
The URL Filtering page displays.
5. Select the **Enable** radio button.



6. Compose the blacklist in the following ways:
  - **Blocked URLs.** To add a URL to the blacklist, type or copy the URL in the upper field (to the left of the upper **Add** button) and click the upper **Add** button. You can also select one or more URLs from the Popular URL list by selecting the check boxes for the URLs and clicking the **<< Move** button.  
To remove a URL from the blacklist, select the check box for the URL and click the upper left **Remove** button.  
When you block a URL, the domain and all URLs in the domain are blocked. For example, if you enter and add www.google.com, all web pages in the www.google.com domain are blocked, including, for example, www.google.com/finance.
  - **Blocked Keywords.** To add a keyword entry to the blacklist, enter the keyword in the lower field (to the left of the lower **Add** button) and click the lower **Add** button.  
To remove a keyword entry from the blacklist, select the check box for the entry and click the lower **Remove** button.  
All URLs that contain the keyword are blocked. For example, if you enter and add Jobs, all URLs that contains Jobs (or jobs) are blocked.
7. Click the **Apply** button.  
Your settings are saved.

## Manage local MAC access control lists

The access point supports eight local access control lists (ACLs) that are based on MAC addresses. Each local MAC ACL can contain a total number of 256 MAC addresses.

If you set up an ACL with a policy that allows access and you apply that ACL to a WiFi network (that is, to an SSID), the ACL functions as follows:

- A WiFi device for which you place the MAC address in the ACL is allowed access to the WiFi network.
- All other WiFi devices are denied access to the WiFi network.

If you set up an ACL with a policy that denies access and you apply that ACL to a WiFi network (that is, to an SSID), the ACL functions as follows:

- A WiFi device for which you place the MAC address in the ACL is denied access to the WiFi network.
- All other WiFi devices are allowed access to the WiFi network.

An ACL takes effect only after you apply it to a WiFi network. For information about applying an ACL to a WiFi network, see [Select a MAC ACL for a WiFi network](#) on page 50. You can apply a MAC ACL to more than one WiFi network.

The following sections describe how you can manage MAC ACLs:

- [Manually set up a MAC access control List](#)
- [Import an existing MAC access control list](#)

## Manually set up a MAC access control List

You can compose up to eight access control lists (ACLs) that are each based on up to 256 MAC addresses. The access point includes MAC ACLs with the following default group names and settings, which you can change:

- **Management.** If enabled, allows access to trusted stations by default.
- **Guest.** If enabled, allows access to trusted stations by default.
- **Guest1.** If enabled, denies access to untrusted stations by default.
- **Custom.** If enabled, denies access to untrusted stations by default.
- **Custom 1.** If enabled, allows access to trusted stations by default.
- **Custom 2.** If enabled, allows access to trusted stations by default.
- **Custom 3.** If enabled, allows access to trusted stations by default.
- **Custom 4.** If enabled, allows access to trusted stations by default.

By default, these MAC ACLs are disabled and do not include any stations. You can manually add devices, import devices (see [Import an existing MAC access control list](#) on page 95), or do both.

You can use a MAC ACL to control which WiFi devices (stations) can access a WiFi network. You can apply one MAC ACL to more than one WiFi network.

### To manually set up a MAC ACL:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > Security > MAC ACL**.
5. Click the group name for the MAC ACL that you want to set up.

Management

---

Group Name ?

Import MAC Address List ?  Replace  Merge

No MAC list file chosen

[Download Sample](#)

ACL Policy  Allow  Deny

Trusted Stations

Select-all

No Station Found

« Move

Available Stations ↻

<input type="checkbox"/>	Select-all <input type="text" value="Search.."/>	
<input type="checkbox"/>	50-6A-03-80-51-01	Connected
<input type="checkbox"/>	50-6A-03-80-51-02	Connected
<input type="checkbox"/>	50-6A-03-80-51-03	Connected

00-00-00-00-00-00

---

> Guest

---

> Guest1

---

> Custom

The previous figure shows some examples. Devices in the Available Stations table are automatically detected by the access point and are common to all MAC ACLs, which allows you to add a device to more than one MAC ACL. A neighboring station displays as Neighbor and a connected station displays as connected.

6. To change the group name, enter a new name in the **Group Name** field.  
The default group names for the eight MAC ACLs are Management, Guest, Guest1, Custom, Custom 1, Custom 2, Custom 3, and Custom 4.
7. Select the ACL Policy **Allow** or **Deny** radio button.  
If you select the **Allow** radio button, a WiFi device for which you place the MAC address in the ACL is allowed access to the WiFi network, but all other WiFi devices are denied access to the WiFi network.  
If you select the **Deny** radio button, a WiFi device for which you place the MAC address in the ACL is denied access to the WiFi network, but all other WiFi devices are allowed access to the WiFi network.

8. Compose the ACL in the following way:

- For an ACL for which you selected the **Allow** radio button in [Step 7](#), do the following:
  - To manually add a device to the Trusted Stations table, enter the MAC address in the format 00-00-00-00-00-00 in the field below the Trusted Stations table, and click the **Add** button.  
The device is added to the Trusted Stations table.
  - To move a device from the Available Stations table to the Trusted Stations table, select the check box for the device and click the **<< Move** button.  
You can search the Available Stations table. You can also filter devices in the Available Stations table by clicking the **filter** icon.
  - To remove a device from the Trusted Stations table, select the check box for the device and click the **Remove** button.  
You can search the Trusted Stations table.  
When you remove a device from the Trusted Stations table, after the access point redetects the device, the device is once again placed in the Available Stations table.
- For an ACL for which you selected the **Deny** radio button in [Step 7](#), do the following:
  - To manually add a device to the Untrusted Stations table, enter the MAC address in the format 00-00-00-00-00-00 in the field below the Untrusted Stations table, and click the **Add** button.  
The device is added to the Untrusted Stations table.
  - To move a device from the Available Stations table to the Untrusted Stations table, select the check box for the device and click the **<< Move** button.  
You can search the Available Stations table. You can also filter devices in the Available Stations table by clicking the **filter** icon.
  - To remove a device from the Untrusted Stations table, select the check box for the device and click the **Remove** button.  
You can search the Untrusted Stations table.  
When you remove a device from the Untrusted Stations table, after the access point redetects the device, the device is once again placed in the Available Stations table.

9. Click the **Apply** button.

Your settings are saved.

For more information about applying an ACL to a WiFi network, see [Select a MAC ACL for a WiFi network](#) on page 50.

WiFi devices in the Trusted Stations table can access the WiFi network to which you apply the ACL. WiFi devices in the Untrusted Stations table cannot access the WiFi network to which you apply the ACL.

## Import an existing MAC access control list

You can import an existing access control list (ACL) that is based on up to 256 MAC addresses. You can import the list into any MAC ACL, but the MAC addresses on the list are available only for the MAC ACL into which you import the list. That is, if you want to use the same list in another MAC ACL, you must also import the list into that MAC ACL.

The file with MAC addresses must be in the following format:

- Entries in the file must be MAC addresses only in hexadecimal format with each octet separated by a hyphen, for example 00-11-22-33-44-55.
- You must separate entries with a comma.
- The file must be in text format (that is, with a .txt or .cfg extension).

You can use a MAC ACL to control which WiFi devices can access a WiFi network. You can apply a MAC ACL to more than one WiFi network.

### To import an existing MAC ACL:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Security > MAC ACL**.

- Click the group name for the MAC ACL that you want to set up.

Management

---

Group Name Management

Import MAC Address List Replace Merge

Browse File No MAC list file chosen

[Download Sample](#)

ACL Policy Allow Deny

Trusted Stations

Select-all

No Station Found

00-00-00-00-00-00 Add Remove

Cancel Apply

« Move

Available Stations Refresh

Select-all

<input type="checkbox"/>	50-6A-03-80-51-01	Connected
<input type="checkbox"/>	50-6A-03-80-51-02	Connected
<input type="checkbox"/>	50-6A-03-80-51-03	Connected

---

> Guest

> Guest1

> Custom

The previous figure shows some examples. Devices in the Available Stations table are automatically detected by the access point and are common to all MAC ACLs, which allows you to add a device to more than one MAC ACL. A neighboring station displays as Neighbor and a connected station displays as connected.

- To change the group name, enter a new name in the **Group Name** field.  
The default group names for the eight MAC ACLs are Management, Guest, Guest1, Custom, Custom 1, Custom 2, Custom 3, and Custom 4.
- Select the ACL Policy **Allow** or **Deny** radio button.  
If you select the **Allow** radio button, a WiFi device for which you import the MAC address into the ACL is allowed access to the WiFi network, but all other WiFi devices are denied access to the WiFi network.  
If you select the **Deny** radio button, a WiFi device for which you import the MAC address into the ACL is denied access to the WiFi network, but all other WiFi devices are allowed access to the WiFi network.
- To download a sample of a MAC ACL in the format that is required for importing, click the **Download Sample** link.



9. Import and compose the ACL in the following way:
  - For an ACL for which you selected the **Allow** radio button in [Step 7](#), do the following:
    - a. Replace or merge the MAC addresses in the import list with the MAC addresses in the Trusted Stations table (if any are already in the table) by selecting one of the following radio buttons:
      - **Replace**. MAC addresses in the Trusted Stations table are replaced with the ones in the import list.
      - **Merge**. MAC addresses in the Trusted Stations table are merged with the ones in the import list.
    - b. Click the **Browse** button and navigate to and select the import file. The MAC addresses on the import list are placed in the Trusted Stations table.
    - c. To remove a MAC address from the Trusted Stations table, select the MAC address and click the **Remove** button. You can search the Trusted Stations table. When you remove a device from the Trusted Stations table, after the access point redetects the device, the device is once again placed in the Available Stations table.
  - For an ACL for which you selected the **Deny** radio button in [Step 7](#), do the following:
    - a. Replace or merge the MAC addresses in the import list with the MAC addresses in the Untrusted Stations table (if any are already in the table) by selecting one of the following radio buttons:
      - **Replace**. MAC addresses in the Untrusted Stations table are replaced with the ones in the import list.
      - **Merge**. MAC addresses in the Untrusted Stations table are merged with the ones in the import list.
    - b. Click the **Browse** button and navigate to and select the import file. The MAC addresses on the import list are placed in the Untrusted Stations table.
    - c. To remove a MAC address from the Untrusted Stations table, select the MAC address and click the **Remove** button. You can search the Untrusted Stations table. When you remove a device from the Untrusted Stations table, after the access point redetects the device, the device is once again placed in the Available Stations table.

10. Click the **Apply** button.

Your settings are saved. For information about manually adding MAC addresses to those in the Trusted Stations table or Untrusted Stations table, see [Manually set up a MAC access control List](#) on page 92.

For more information about applying an ACL to a WiFi network, see [Select a MAC ACL for a WiFi network](#) on page 50.

WiFi devices in the Trusted Stations table can access the WiFi network to which you apply the ACL. WiFi devices in the Untrusted Stations table cannot access the WiFi network to which you apply the ACL.

## Manage user accounts

User accounts provide either read/write or read-only access to the local browser interface of the access point. You can add, change, or delete user accounts. You cannot delete or change the default admin user account except for the password.

The following sections describe how you can manage user accounts:

- [Add a user account](#)
- [Change the settings for a user account](#)
- [Remove a user account](#)

For information about changing the password for the default admin user account, see [Change the admin user account password](#) on page 122.

### Add a user account

#### To add a user account:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > User Accounts**.

The screenshot shows a configuration form for a user account. At the top, there are three main sections: 'User Name' with a blue 'a' icon and a text input field containing 'admin'; 'Password' with a text input field containing masked characters; and 'Privilege' with a dropdown menu showing 'Read-Write'. Below these is a 'Session Timeout' section with 'Hours' set to '0' and 'Minutes' set to '45'. At the bottom, there are two buttons: 'Cancel' and 'Apply'.

5. Click the add user account icon.  
Additional fields and a menu display.
6. Specify the settings for the new user account:
  - **User Name.** Enter a user name.
  - **Password.** Enter a password between 6 and 64 characters in length. The ideal password contains no English dictionary words and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks (") in the password.
  - **Privilege.** From the menu, select **Read-Write** or **Read-Only**.
  - **Session Timeout.** Use the **Hours** and **Minutes** fields to specify the period after which a session automatically expires and the user must log in again. By default, a session expires after 45 minutes.
7. Click the **Apply** button.  
Your settings are saved.

## Change the settings for a user account

You cannot change the access privilege for the default admin user account.

### To change the user name, password, or access privilege for a user account:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.

The default 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 Dashboard page displays.

4. Select **Management > Configuration > System > Advanced > User Accounts**.

The existing user accounts display.

5. To the right of the user account, change the existing settings as needed:

- **User Name.** Enter another user name.
- **Password.** Enter another password between 6 and 64 characters in length. The ideal password contains no English dictionary words and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks (") in the password.
- **Privilege.** From the menu, select **Read-Write** or **Read-Only**.
- **Session Timeout.** Use the **Hours** and **Minutes** fields to specify the period after which a session automatically expires and the user must log in again. By default, a session expires after 45 minutes.

6. Click the **Apply** button.

Your settings are saved.

## Remove a user account

You can remove a user account that you no longer need. You cannot remove the default admin user account.

### To remove a user account:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > User Accounts**.  
The existing user accounts display.

5. Click the **X** to the right of the user account.  
A pop-up warning window opens.
6. Click the **Delete** button.  
The pop-up windows closes and the user account is removed.

## Manage neighbor AP detection

The access point can detect neighbor access points (APs) and you can classify them as known APs.

If you enable neighbor AP detection, the access point continuously scans the WiFi network, collects information about all access points on the channels, and maintains a list of access points it detects in the area. Initially all detected access points are displayed in the Unknown AP List. You can add access points that you are familiar with to the Known AP List. You can also import a list of known access points in the Known AP List.

**CAUTION:** Access points in the Unknown AP List require further investigation. They could be rogue access points, which use the SSID of a legitimate network. These types of access points can present a serious security threat.

The following sections describe how you can manage neighbor AP detection and add neighbor access points to the Known AP List:

- [Enable neighbor access point detection and move access points to the Known AP List](#)
- [Import an existing neighbor access point list in the Known AP List](#)

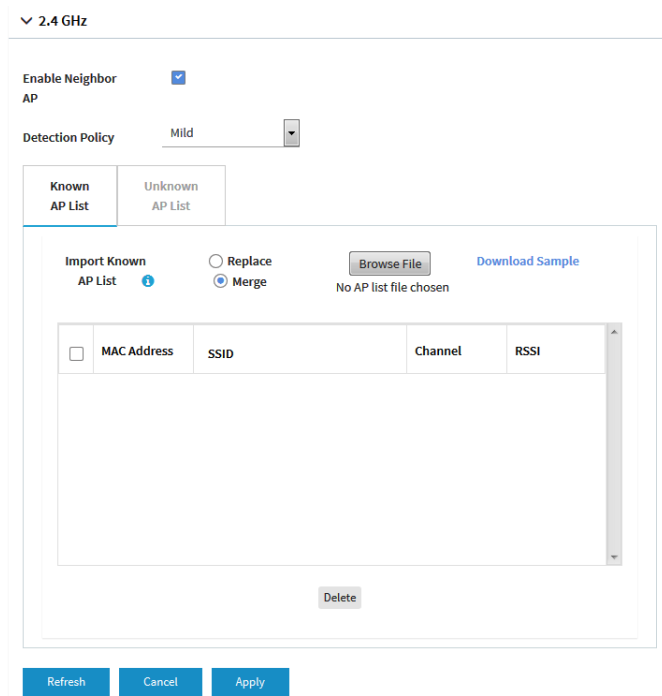
### Enable neighbor access point detection and move access points to the Known AP List

The access point can detect neighbor access points (APs) and lets you classify them as known APs. After you enable neighbor AP detection, the access point maintains a list of access points it detects in the area. Initially all detected access points are displayed in the Unknown AP List. You can manually move access points from the Unknown AP List to the Known AP List.

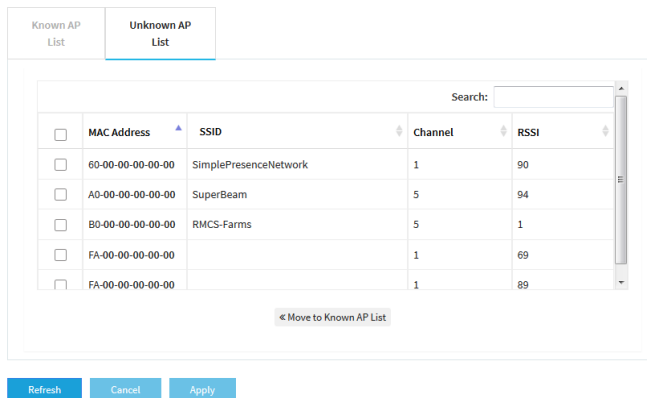
By default neighbor access point detection is disabled.

**To enable neighbor access point detection and move detected access points to the Known AP List:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Security > Neighbor AP**.  
The page that displays lets you select the radio band (2.4 GHz, 5 GHz Low, or 5 GHz High).
5. Click the ► button to the left of the radio band.  
The Neighbor AP page displays for the selected radio band.
6. Select the **Enable Neighbor AP** check box.
7. Click the **Apply** button.  
Your settings are saved. Neighbor AP detection is now enabled.



8. From the **Detection Policy** menu, select the scan method:
  - **Mild.** The access point scans for neighbor access points every 15 minutes. This is the default setting.
  - **Moderate.** The access point scans for neighbor access points every 5 minutes.
  - **Aggressive.** The access point scans for neighbor access points every 1 minute.
9. To move access points from the Unknown AP List to the Known AP List, do the following:
  - a. Click the **Unknown AP List** tab.



- b. If no access points display, click the **Refresh** button.
- c. Select the check boxes for the access points that you are familiar with.
- d. Click the **<< Move to Known AP List** button.
- e. Click the **Known AP List** tab.  
The selected access points display in the Known AP List.

**Note:** You can delete access points from the Known AP List. After being detected, these access points once more display in the Unknown AP List.

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

## Import an existing neighbor access point list in the Known AP List

You can import a list with MAC addresses of known neighbor access points in the Known AP List.

The file with MAC addresses must be in the following format:

- Entries in the file must be MAC addresses only in hexadecimal format with each octet separated by a hyphen, for example 00-11-22-33-44-55.
- You must separate entries with a comma.
- The file must be in text format (that is, with a `.txt` or `.cfg` extension).

For information about enabling neighbor AP detection, see [Enable neighbor access point detection and move access points to the Known AP List](#) on page 101.

### **To import a list with MAC addresses of known neighbor access points in the Known AP List:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > Security > Neighbor AP**.  
The page that displays lets you select the radio band (2.4 GHz, 5 GHz Low, or 5 GHz High).



- Click the ► button to the left of the radio band.

- To download a sample of an AP list in the format that is required for importing in the Known AP List, click the **Download Sample** link.
- Import and compose the Known AP List in the following way:
  - Replace or merge the MAC addresses in the import list with the MAC addresses in the Known AP List by selecting one of the following radio buttons:
    - Replace.** MAC addresses in the Known AP List are replaced with the ones in the import list.
    - Merge.** MAC addresses in the Known AP List are merged with the ones in the import list.
  - Click the **Browse** button and navigate to and select the import file. The MAC addresses on the import list are placed in the Known AP List.
  - To remove a MAC address from the Known AP List, select the MAC address and click the **Delete** button. When you remove a device from the Known AP List, after the access point redetects the device, the device is once again placed in the Known AP List.
- Click the **Apply** button. Your settings are saved.

# Set up RADIUS servers

If you use WPA2 Enterprise security or a RADIUS MAC ACL, you must set up RADIUS servers for authentication, accounting, or both authentication and accounting using RADIUS. You must set up primary IPv4 servers and you can set up secondary IPv4 servers. These RADIUS server settings apply either to all WiFi networks that use WPA2 Enterprise security (see [Set up an open or secure WiFi network](#) on page 36) or to all WiFi networks that use a RADIUS MAC ACL.

**Note:** WPA2 Enterprise security and a RADIUS MAC ACL are mutually exclusive. If you want to use a RADIUS MAC ACL for a WiFi network, select a different type of WiFi security (see [Set up an open or secure WiFi network](#) on page 36). If you want to use WPA2 Enterprise security for a WiFi network, use a local MAC ACL (see [Manage local MAC access control lists](#) on page 91).

If you use a RADIUS MAC ACL, you must define the ACL on the RADIUS server, using the format in the following example for client MAC addresses in the RADIUS server: If the client MAC address is 00:0a:95:9d:68:16, specify it as 000a959d6816 in the RADIUS server.

## To set up RADIUS servers:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > Security > RADIUS Settings**.

	IPv4 Address	Port	Password	
Primary Authentication Server	<input type="text"/>	1812	.....	
Secondary Authentication Server	<input type="text"/>	1812	.....	
Primary Accounting Server	<input type="text"/>	1813	.....	
Secondary Accounting Server	<input type="text"/>	1813	.....	

---

**Authentication Settings**

Reauthentication Time	Update Global Key <input checked="" type="checkbox"/>
3600	1800

5. For each RADIUS server that you want to set up, configure the following settings:

- **IPv4 Address.** Enter the IPv4 address of the RADIUS server. The access point must be able to reach this IP address.
- **Port.** Enter the number of the UDP port on the access point that is used to access the RADIUS server. For authentication servers, the default port number is 1812. For accounting servers, the default port number is 1813.
- **Password.** Enter the password (shared key) that is used between the access point and the RADIUS server during the authentication or accounting process. By default, the password is sharedsecret.

6. Configure the following authentication settings, which apply to all RADIUS server that you set up:

- **Reauthentication time.** Enter the interval in seconds after which the supplicant (the WiFi client) must be reauthenticated with the RADIUS server. The default interval is 3600 seconds (1 hour). Enter **0** to disable reauthentication.
- **Update Global Key.** Select the check box to allow the global key update, and enter the interval in seconds. The check box is selected by default, and the default interval is 1800 seconds (30 minutes). Clear the check box to prevent the global key update.

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

# 6

## Manage the Local Area Network and IP Settings

---

This chapter describes how you can manage the local area network (LAN) and IP settings of the access point.

The chapter includes the following sections:

- [Disable the DHCP client and specify a fixed IP address](#)
- [Enable the DHCP client](#)
- [Set the 802.1Q VLAN and management VLAN](#)
- [Enable or disable Spanning Tree Protocol](#)
- [Enable or disable the network integrity check function](#)
- [Enable or disable IGMP snooping](#)
- [Enable or disable Ethernet LLDP](#)
- [Enable or disable UPnP](#)
- [Manage the link aggregation capability](#)

# Disable the DHCP client and specify a fixed IP address

By default, the DHCP client of the access point is enabled and the access point receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network. If your network does not include a DHCP server or you prefer to specify a fixed (static) IP address, disable the DHCP client of the access point.

## To disable the DHCP client and specify a fixed IP address:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > IP > LAN**.  
The page that displays lets you specify the LAN settings, but the fields are masked because the DHCP client is enabled.
5. Select the **Disable** radio button.

DHCP Client

Enable  Disable

IP Address	Subnet Mask	Gateway
<input type="text" value="192.168.100.113"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="192.168.100.1"/>
Primary DNS	Secondary DNS	
<input type="text" value="192.168.100.1"/>	<input type="text" value="8.8.8.8"/>	

---

802.1Q VLAN

Untagged VLAN <input checked="" type="checkbox"/>	Management VLAN
<input type="text" value="1"/>	<input type="text" value="1"/>

---

- Specify the settings that are described in the following table.

Setting	Description
IP Address	IP address in the range that is used by your LAN (usually 255.255.255.0).
Subnet Mask	The subnet mask must be compatible with your LAN.
Gateway	IP address of the gateway on your LAN.
Primary DNS	IP address of the primary Domain Name System (DNS) server on your LAN.
Secondary DNS	IP address of the secondary DNS server on your LAN, or leave this field blank.

- Click the **Apply** button.

Your settings are saved. The access point restarts with the new IP settings.

## Enable the DHCP client

By default, the DHCP client of the access point is enabled and the access point receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network.

If you disabled the DHCP client, you can reenabling it.

### To enable the DHCP client:

- Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
- Enter the IP address that is assigned to the access point.  
A login window opens.
- Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > IP > LAN**.

DHCP Client

Enable  Disable

IP Address	Subnet Mask	Gateway
<u>192.168.100.113</u>	<u>255.255.255.0</u>	<u>192.168.100.1</u>
Primary DNS	Secondary DNS	
<u>192.168.100.1</u>	<u>8.8.8.8</u>	

---

802.1Q VLAN

Untagged VLAN <input checked="" type="checkbox"/>	Management VLAN
<u>1</u>	<u>1</u>

---

5. Select the **Enable** radio button.

The fields are masked.

6. Click the **Apply** button.

Your settings are saved. The access point restarts with the new IP settings. It might take a while before the access point receives its IP address setting from the DHCP server.

## Set the 802.1Q VLAN and management VLAN

The 802.1Q VLAN protocol on the access point logically separates traffic on the same physical (wired) network. This protocol can work with tagged and untagged VLANs, as follows:

- **Untagged VLAN.** The access point sends untagged frames from its Ethernet interface. Incoming untagged frames are assigned to the untagged VLAN. By default, the untagged VLAN is VLAN 1. By default, the access point functions with an untagged VLAN.
- **Tagged VLAN.** The access point tags all frames that it sends from its Ethernet interface. Only the incoming frames that are tagged with known VLAN IDs are accepted.

The management VLAN is used for managing traffic such as Telnet, SNMP, and HTTP traffic to and from the access point. Frames that belong to the management VLAN and that are sent over the trunk do not receive an 802.1Q header. If a port is a member of a single VLAN, its traffic can be untagged.

**To set the 802.1Q VLAN and management VLAN:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > IP > LAN**.

DHCP Client

Enable  Disable

IP Address	Subnet Mask	Gateway
<input type="text" value="192.168.100.113"/>	<input type="text" value="255.255.255.0"/>	<input type="text" value="192.168.100.1"/>
Primary DNS	Secondary DNS	
<input type="text" value="192.168.100.1"/>	<input type="text" value="8.8.8.8"/>	

---

802.1Q VLAN

Untagged VLAN <input checked="" type="checkbox"/>	Management VLAN
<input type="text" value="1"/>	<input type="text" value="1"/>

5. To change the 802.1Q VLAN, either clear or select the **Untagged VLAN** check box:
  - **Untagged VLAN.** By default, the **Untagged VLAN** check box is selected. The access point sends untagged frames from its Ethernet interface. Incoming untagged frames are assigned to the untagged VLAN. By default, the untagged VLAN is VLAN 1 but you can enter another VLAN ID in the field if that VLAN ID is supported on your network.
  - **Tagged VLAN.** Clear the **Untagged VLAN** check box only if the hubs and switches on your LAN support the 802.1Q VLAN protocol. The access point tags all frames



that it sends from its Ethernet interface. Only the incoming frames that are tagged with known VLAN IDs are accepted. Similarly, change the ID for the untagged VLAN only if the hubs and switches on your LAN support the 802.1Q VLAN protocol and the new VLAN ID is supported on your network.

6. To change the VLAN ID for the management VLAN, enter another VLAN ID in the **Management VLAN** field.

By default, the management VLAN is VLAN 1. If you change the VLAN ID, be sure that the VLAN ID is supported on your network.

7. Click the **Apply** button.

Your settings are saved. The access point restarts with the new VLAN settings.

## Enable or disable Spanning Tree Protocol

For locations where multiple access points are active and redundant network paths might be present, Spanning Tree Protocol (STP) can prevent network loops. If your location might include redundant network paths, we recommend that you enable STP.

### To enable or disable Spanning Tree Protocol:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > General**.  
The General page displays.
5. Select one of the following radio buttons:
  - **Enable**. STP is enabled.
  - **Disable**. STP is disabled. This is the default setting.
6. Click the **Apply** button.  
Your settings are saved.

# Enable or disable the network integrity check function

The network integrity check function enables the access point to validate whether the upstream link is active before the access point allows WiFi associations. Make sure that the default gateway is configured correctly. By default, the network integrity check function is disabled.

## To enable or disable the network integrity check function:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > General**.  
The General page displays.
5. Select one of the following radio buttons:
  - **Enable**. The network integrity check function is enabled.
  - **Disable**. The network integrity check function is disabled. This is the default setting.
6. Click the **Apply** button.  
Your settings are saved.

# Enable or disable IGMP snooping

IGMP snooping allows IP multicast packets to be transmitted only to the members of a corresponding multicast group. Enabling IGMP snooping prevents flooding of multicast traffic to all the ports in a broadcast domain. By default IGMP snooping is disabled on the access point.

### To enable or disable IGMP snooping:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > General**.  
The General page displays.
5. Select one of the following radio buttons:
  - **Enable**. IGMP snooping is enabled.
  - **Disable**. IGMP snooping is disabled. This is the default setting.
6. Click the **Apply** button.  
Your settings are saved.

## Enable or disable Ethernet LLDP

Link Layer Discovery Protocol (LLDP), as specified in IEEE 802.1AB, can provide link-layer messages to adjacent network devices. For example, LLDP lets network devices such as switches and management devices discover the access point in a network and detect if the access point receives power through PoE. By default, LLDP is enabled.

### To enable or disable the LLDP:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

4. Select **Management > Configuration > System > Advanced > Ethernet LLDP**.

The Ethernet LLDP page displays.

5. Select one of the following radio buttons:

- **Enable**. LLDP is enabled. This is the default setting.
- **Disable**. LLDP is disabled.

**CAUTION:** If the access point receives power from a PoE switch and you disable LLDP, power to the access point might be turned off after you click the **Apply** button. In that case, restart the access point.

6. Click the **Apply** button.

Your settings are saved.

## Enable or disable UPnP

Universal Plug and Play (UPnP) lets the access point be discovered by other devices in the network that support UPnP. UPnP is enabled by default.

### To enable or disable UPnP:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.

2. Enter the IP address that is assigned to the access point.  
A login window opens.

3. Enter the access point user name and password.

The default 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 Dashboard page displays.

4. Select **Management > Configuration > System > Advanced > UPnP**.

The UPnP page displays.

5. Select one of the following radio buttons:

- **Enable**. UPnP is enabled. This is the default setting.
- **Disable**. UPnP is disabled.

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

## Manage the link aggregation capability

For a link aggregation (LAG) connection, you must use a switch that supports link aggregation. You can make a LAG connection between the access point and a switch that supports static link aggregation in an 802.3ad link aggregation group. Such a LAG connection allows for a single 2 Gbps connection for increased throughput or a 1 Gbps redundancy connection.

By default, both LAN 1 port and LAN 2 port are enabled on the access point. The LAN 2 port is the LAG connection port, required for a LAG connection. Link aggregation is enabled by default on the access point, so you do not have to configure it. However, you must configure link aggregation on the switch.

**Note:** You can disable the link aggregation capability on the access point. If you do so, you also disable the LAN 2 port and you cannot set up a LAG connection. In such a situation, make sure that the access point is connected to the switch through the LAN 1 port, otherwise the access point loses its Internet connection.



Figure 7. Link aggregation connection

You can set up a static link aggregation connection between the access point and a switch by doing the following:

1. On the switch, configure static link aggregation on the two Ethernet ports that you intend to use for the LAG connection to the access point.

**CAUTION:** To prevent a network loop, configure the switch ports before connecting them to the access point ports.

2. Connect the two Ethernet ports on the switch to the LAN 1 port and the LAN 2 port on the access point.

### To enable or disable the link aggregation capability on the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > LAG**.  
The LAG page displays.
5. Do one of the following:
  - To disable the link aggregation capability, select the **Disable** radio button.  
Both the link aggregation capability and the LAN 2 port are disabled. To prevent a network loop, make sure that the access point is connected to the switch through the LAN 1 port only.
  - To enable the link aggregation capability, select the **Enable** radio button.  
Both the link aggregation capability and the LAN 2 port are enabled. This is the default setting.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved.

# 7

## Manage and Maintain the Access Point

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This chapter describes how you can manage and maintain the access point.

The chapter includes the following sections:

- [Change the management mode to NETGEAR Insight or Web-browser](#)
- [Change the country or region of operation](#)
- [Change the admin user account password](#)
- [Change the system name](#)
- [Specify a custom NTP server](#)
- [Set the time zone](#)
- [Manage the syslog settings](#)
- [Manage the firmware of the access point](#)
- [Manage the configuration file of the access point](#)
- [Reboot the access point from the local browser interface](#)
- [Schedule the access point to reboot](#)
- [Return the access point to its factory default settings](#)
- [Enable or disable Telnet](#)
- [Enable or disable Secure Shell](#)
- [Enable SNMP and manage the SNMP settings](#)
- [Manage the LEDs](#)

# Change the management mode to NETGEAR Insight or Web-browser

The access point can function in one of the following management modes:

- **NETGEAR Insight mode.** You can manage the access point remotely from a mobile device on which the NETGEAR Insight mobile app is installed or, if you are an Insight Premium or Insight Pro subscriber, through the Insight Cloud Portal. The NETGEAR Insight mode is the default setting. In this mode, you *can* connect to the access point over the local browser interface, but only a basic and limited local browser interface is available. For information about the Insight mobile app and Insight Cloud Portal, visit [insight.netgear.com](http://insight.netgear.com) and see the NETGEAR knowledge base at [netgear.com/support/product/insight.aspx](http://netgear.com/support/product/insight.aspx).

**IMPORTANT:** When you change the management mode from Web-browser mode to NETGEAR Insight mode, the configuration of the access point is reset (cleared) with the exception of the IP address, access point name, and password for the local browser interface. The access point restarts and broadcasts SSID Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address. The MAC address is listed on the product label. The default WiFi passphrase is **sharedsecret**.

- **Web-browser mode.** You can manage the access point locally from a WiFi or wired device through the local browser interface. In this mode, the access point functions as a standalone device and is not connected to the Insight cloud-based management platform.

## To change the management mode to NETGEAR Insight mode or Web-browser mode:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Basic > Management Mode**.



The Management Mode page displays.

5. Select one of the following radio buttons:
  - **NETGEAR Insight.** The access point functions in NETGEAR Insight management mode.
  - **Web-browser.** The access point functions in Web-browser management mode.

**WARNING:** When you change the management mode from Web-browser mode to NETGEAR Insight mode, the configuration of the access point is reset (cleared) with the exception of the IP address, access point name, and password for the local browser interface. The access point restarts and broadcasts SSID Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address. The MAC address is listed on the product label. The default WiFi passphrase is **sharedsecret**.

6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The access point restarts in the new management mode.

## Change the country or region of operation

You can change the country or region in which the access point operates. Note the following:

- Make sure that the country is set to the location where the device is operating. You are responsible for complying with the local, regional, and national regulations that are set for channels, power levels, and frequency ranges.
- It might not be legal to operate the access point in a country or region other than those listed in the menu. If your country or region is not listed in the menu, you must check with your local government agency or check the NETGEAR website for information about which channels you can use.

### To change the country or region of operation:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.

A login window opens.

3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Basic**.  
The General page displays the basic system settings.
5. Select a country or region from the **Country / Region** menu.
6. Click the **Apply** button.  
A pop-up warning window opens.
7. Click the **OK** button.  
The pop-up window closes and your settings are saved. The access point restarts with the default WiFi settings that are specific to the selected country or region.

## Change the admin user account password

This admin user account password is the password that you use to log in to the local browser interface of the access point with the user name admin. It is not the passphrase that you use for WiFi access.

The ideal password contains no dictionary words from any language and contains uppercase and lowercase letters, numbers, and symbols. However, do not include quotation marks in the password. The password must be between 6 and 64 characters in length.

### To change the password for the user name admin:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default user name is **admin**. The password is the one that you specified the first time that you logged in to the access point. The user name and password are case-sensitive.  
The Dashboard page displays.

4. Select **Management > Configuration > System > Advanced > User Accounts**.  
The page that displays lets you change the user accounts.
5. Next to admin, in the **Password** field, enter the new password.
6. In the **Confirm Password** field, enter the same new password.

**Note:** You cannot change the user name. The name must remain admin.

7. Click the **Apply** button.  
Your settings are saved. The next time that you log in to the access point, you must use the new password. If you forget the new password, you must reset the access point to factory default settings. Doing so restores the password to the default password.

## Change the system name

The system name is a unique NetBIOS name for the access point. The default system name is located on the access point label. By default, the system name is Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address.

### To change the system name:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Basic**.  
The General page displays the basic system settings.
5. Enter a new name in the **System Name** field.

Using the following guidelines:

- The name must contain alphanumeric characters, can contain hyphens, and cannot be longer than 15 characters.
- The name cannot start or end with a hyphen.
- The name must contain at least one alphabetical character.

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

## Specify a custom NTP server

By default, the access point receives its time from a default NETGEAR Network Time Protocol (NTP) server, but you can also specify a custom NTP server.

### To specify a custom NTP server:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Basic > Time**.

The screenshot shows the 'Time' configuration page. It includes a 'Time Zone' dropdown menu set to 'USA-Pacific', a 'Current Time (24-hour)' display showing 'Tue Dec 13 14:14:54 PST 2016', an 'NTP Client' section with 'Enable' selected, a 'Use Custom NTP Server' checkbox, and radio buttons for 'Hostname' (selected) and 'IP Address'. The hostname field contains 'time-b.netgear.com'. At the bottom are 'Cancel' and 'Apply' buttons.

By default, the **Enable** radio button is selected and the access point receives its time from a default NETGEAR NTP server.

5. Select the **Use Custom NTP Server** check box.

6. Take one of the following actions:
  - Enter the host name of the NTP server.  
By default, the **Hostname** radio button is selected.
  - Select the **IP address** radio button and enter the IP address of the NTP server.
7. Click the **Apply** button.

Your settings are saved. When the access point connects over the Internet to the new NTP server, the date and time that display on the page are adjusted according to your settings.

For information about setting the time zone, see [Set the time zone](#) on page 125.

## Set the time zone

The access point might detect the time zone automatically or you might need to adjust the time zone and daylight saving time settings. When the access point synchronizes its clock with a Network Time Protocol (NTP) server, the page shows the date and time. If the page does not show the correct date and time, you might need to set the time zone and adjust the daylight saving time setting.

### To set the time zone and adjust the daylight saving time setting:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Basic > Time**.  
The page that displays lets you change the time settings.
5. From the **Time Zone** menu, select the time zone for the area in which the access point operates.
6. Click the **Apply** button.

Your settings are saved. When the access point connects over the Internet to an NTP server, the date and time that display on the page are adjusted according to your settings.

For information about other time settings, see [Specify a custom NTP server](#) on page 124.

## Manage the syslog settings

If a syslog server is present on your network, you can configure the access point to send its system logs to the syslog server.

### To manage the syslog settings and enable the syslog function:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > Syslog**.

Enable Syslog

Syslog Server IP Address  
192.168.0.1

Port Number  
514

Cancel Apply

5. Specify the IP address and port number for the syslog server:
  - **Syslog Server IP Address.** Enter the IP address of the syslog server on your network.
  - **Port Number.** Enter the port number at which the syslog can be reached. By default, the port number is 514.
6. To enable the syslog server function, select the **Enable Syslog** check box.
7. Click the **Apply** button.

Your settings are saved.

## Manage the firmware of the access point

The access point firmware is stored in flash memory.

You can check to see if new firmware is available and upgrade the access point to the new firmware. You can also visit the NETGEAR support website, download the firmware manually to a local computer, and update the access point to the new firmware. If someone (usually the network administrator) places new firmware on a secure FTP (SFTP) server in the network, you can load the firmware from the server and upgrade the firmware of the access point.

The following sections describe the firmware management methods:

- [Check for new firmware and upgrade the access point](#)
- [Manually download firmware and upgrade the access point](#)
- [Revert to the backup firmware](#)
- [Use an SFTP server to upgrade the access point](#)

### Check for new firmware and upgrade the access point

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

#### **To check for new firmware and upgrade your access point:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Click the **Check for Upgrade** button.  
The access point detects new firmware if any is available and displays a message asking if you want to download and install it.
5. To download and install the new firmware, follow the prompts and dialog boxes.  
The access point locates the firmware, downloads it, and begins the upgrade.

**WARNING:** 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 access point. Wait until the access point finishes restarting and the Power/Cloud LED remains solid green.

The firmware upgrade process takes several minutes. When the upgrade is complete, your access point restarts.

6. Verify that the access point runs the new firmware version by logging back in to the access point.

The firmware version is stated on the Dashboard page.

7. Read the new firmware release notes to determine whether you must reconfigure the access point after upgrading.

## Manually download firmware and upgrade the access point

Downloading firmware to a local computer and upgrading the access point are two separate tasks that are combined in the following procedure. After you upgrade the access point to new firmware, the old firmware is saved as backup firmware so that you can revert to it (see [Revert to the backup firmware](#) on page 130).

**IMPORTANT:** When you install an older firmware version (or the backup firmware version), that is, you downgrade rather than upgrade the firmware, the configuration of the access point is reset (cleared) with the exception of the IP address, access point name, and password for the local browser interface. The access point restarts and broadcasts SSID Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address. The MAC address is listed on the product label. The default WiFi passphrase is **sharedsecret**.

### To download firmware manually and upgrade your access point:

1. Visit [netgear.com/support/download/](http://netgear.com/support/download/), locate the support page for your product, and download the new firmware.
2. Read the new firmware release notes to determine whether you must reconfigure the access point after upgrading.
3. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
4. Enter the IP address that is assigned to the access point.  
A login window opens.
5. Enter the access point user name and password.



The default 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 Dashboard page displays.

6. Select **Management > Maintenance > Upgrade > Firmware Upgrade**.

The Firmware Upgrade page displays.

7. Make sure that **Local** is selected from the **Upgrade Options** menu.

Local is the default selection.

8. Locate and select the firmware file on your computer by doing the following:

- a. Click the **Browse** button.

- b. Navigate to the firmware file.

The file ends in `.tar`. An example of a firmware file name is `WAC540_v8.0.0.23_firmware.tar`.

- c. Select the firmware file.

9. Click the **Upgrade** button.

**WARNING:** 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 access point. Wait until the access point finishes restarting and the Power/Cloud LED remains solid green.

The firmware upgrade process takes several minutes. When the upgrade is complete, the access point restarts.

10. Verify that the access point runs the new firmware version by logging back in to the access point.

The firmware version is stated on the Dashboard page.

## Revert to the backup firmware

After you upgrade the access point to new firmware, the old firmware is saved as backup firmware so that you can revert to it.

**IMPORTANT:** When you revert to the backup firmware and the backup firmware is an earlier version than the firmware version that is running on the access point, the configuration of the access point is reset (cleared) with the exception of the IP address, access point name, and password for the local browser interface. The access point restarts and broadcasts SSID Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address. The MAC address is listed on the product label. The default WiFi passphrase is **sharedsecret**.

### To revert to the backup firmware on the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Upgrade > Firmware Upgrade**.  
The Firmware Upgrade page displays. The page shows both the current firmware version and the backup firmware version.
5. Click the **Bootup Backup Firmware** button.  
A pop-up warning window opens.

**IMPORTANT:** When you revert to the backup firmware, the configuration of the access point is reset (cleared) with the exception of the IP address, access point name, and password for the local browser interface. The access point restarts and broadcasts SSID Netgearxxxxxx, in which xxxxxx represents the last six hexadecimal digits of the access point's MAC address. The MAC address is listed on the product label. The default WiFi passphrase is **sharedsecret**.

6. Click the **Swap** button.  
The pop-up window closes, the firmware reversion process initiates, and the access point restarts.

**WARNING:** To avoid the risk of corrupting the firmware, do not interrupt the reversion. For example, do not close the browser, click a link, or load a new page. Do not turn off the access point. Wait until the access point finishes restarting and the Power/Cloud LED remains solid green.

7. Verify that the access point runs the backup firmware version by logging back in to the access point.

The firmware version is stated on the Dashboard page.

## Use an SFTP server to upgrade the access point

If someone (usually the network administrator) places new firmware on a secure FTP (SFTP) server in the network, you can load the firmware from the SFTP server and upgrade the firmware of the access point.

### To upgrade the firmware of the access point from an SFTP server:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Upgrade > Firmware Upgrade**.  
The Firmware Upgrade page displays.
5. From the **Upgrade Options** menu, select **SFTP**.
6. Specify the following server settings:
  - **Firmware File.** The name of the access point firmware file on the SFTP server.
  - **SFTP Server IP.** The IP address of the SFTP server on your network.
  - **User Name.** The user name that is required to access the SFTP server.
  - **Password.** The password that is required to access the SFTP server.
7. Click the **Upgrade** button.

**WARNING:** 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 access point. Wait until the access point finishes restarting and the Power/Cloud LED remains solid green.

The firmware upgrade process takes several minutes. When the upgrade is complete, the access point restarts.

8. Verify that the access point runs the new firmware version by logging back in to the access point.

The firmware version is stated on the Dashboard page.

## Manage the configuration file of the access point

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

### Back up the access point configuration

You can save a copy of the current configuration settings. If necessary, you can restore the configuration settings later.

#### **To back up the access point's configuration settings:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Upgrade > Backup and Restore > Backup Settings**.  
The Backup Settings page displays.
5. Click the **Backup** button.

6. Choose a location to store the file on your computer.

The name of the backup file is `WAC540-WAC540-dd-mm-yy_hh-mm-ss-config.tar`, in which `dd` is the date, `mm` is the month, `yy` is the year, `hh` is the hour (in 24-hour format), `mm` is the minutes, and `ss` is the seconds.

An example of a name of a backup file is  
`WAC540-WAC540-03-01-19_18-55-52-config.tar`.

7. Follow the directions of your browser to save the file.

## Restore the access point configuration

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

### To restore configuration settings that you backed up:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Upgrade > Backup and Restore > Restore Settings**.  
The Restore Settings page displays.
5. Click the **Browse** button and navigate to and select the saved configuration file.  
The name of the backup file is `WAC540-WAC540-dd-mm-yy_hh-mm-ss-config.tar`, in which `dd` is the date, `mm` is the month, `yy` is the year, `hh` is the hour (in 24-hour format), `mm` is the minutes, and `ss` is the seconds.  
An example of a name of a backup file is  
`WAC540-WAC540-03-01-19_18-55-52-config.tar`.
6. Click the **Restore** button.  
A pop-up warning window opens.
7. Click the **Restore** button.

The pop-up window closes and the configuration is uploaded to the access point. When the restoration is complete, the access point reboots. This process takes about two minutes.

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

## Reboot the access point from the local browser interface

If you cannot physically access the access point to reboot it (that is, disconnect the power and reconnect the power), you can use the local browser interface to reboot the access point.

### To reboot the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Reset > Reboot AP**.  
The Reboot AP page displays.
5. Click the **Reboot AP** button.  
A pop-up warning window opens.
6. Click the **Reboot** button.  
The pop-up window closes and the access point reboots, which takes about one minute.

# Schedule the access point to reboot

You can schedule the access point to reboot at a time that is more convenient for the network, for example, when you do not expect any WiFi clients (or only a few) to be connected to the access point.

## To schedule the access point to reboot:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Reset > Reboot AP**.  
The Reboot AP page displays.
5. Click the **Enable Scheduled Reboot** button so that the button displays blue.  
The scheduling controls display.
6. Select the check box for the day on which you want the access point to reboot.  
You can select multiple days.
7. Using the **Start Time** menus, specify the hour and minutes for the time at which the access point must reboot.  
Specify the hour in 24-hour format.
8. Click the **Apply** button.  
Your settings are saved.

# Return the access point to its factory default settings

Under some circumstances (for example, if you lost track of the changes that you made to the access point settings or you move the access point to a different network), you

might want to erase the configuration and reset the access point to factory default settings.

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

To reset the access point to factory default settings, you can use either the **Reset** button on the side of the access point or use the erase function in the local browser interface. However, if you cannot find the IP address or lost the password to access the access point, you must use the **Reset** button.

After you reset the access point to factory default settings, the user name is admin, the password is password, the LAN IP address is 192.168.0.100, the access point's DHCP client is enabled, the default SSID is shown in the format NETGEARxxxxxx-SETUP, and the default password for WiFi access is sharedsecret.

For an extensive list of factory default settings, see [Factory settings](#) on page 180.

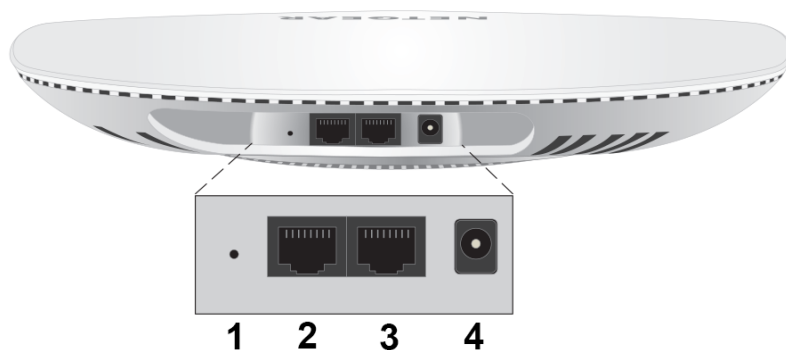
## Use the Reset button

You can use the **Reset** button to return the access point to its factory default settings. However, if you added the access point to a NETGEAR Insight network location, you must first use the Insight mobile app or Insight Cloud Portal to remove the access point from the Insight network location before the factory default settings function of the **Reset** button is available.

**CAUTION:** This process erases all settings that you configured in the access point.

### To reset the access point to factory default settings:

1. On the back panel of the access point, locate the recessed **Reset** button (see **1** in the following figure) at the opposite end of the DC power connector.



2. Using a straightened paper clip, press and hold the **Reset** button for at least 10 seconds.



**Note:** If you hold the **Reset** button for less than 10 seconds and then release it, the access point reboots rather than returning to its factory default settings.

3. Release the **Reset** button.

The configuration is reset to factory default settings. When the reset is complete, the access point reboots. This process takes about two minutes.

**WARNING:** To avoid the risk of corrupting the firmware, do not interrupt the reset. Do not turn off the access point. Wait until the access point finishes restarting and the Power/Cloud LED turns solid green.

## Use the local browser interface

You can use the access point's local browser interface to return the access point to its factory default settings.

**CAUTION:** This process erases all settings that you configured in the access point.

### To erase the settings:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Reset > Restore Defaults**.  
The Restore Defaults page displays.
5. Click the **Restore Defaults** button.  
A pop-up warning window opens.
6. Click the **Restore** button.  
The pop-up windows closes and the configuration is reset to factory default settings. When the reset is complete, the access point reboots. This process takes about two minutes.

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

## Enable or disable Telnet

By default, you cannot access the access point over a Telnet connection. You first must enable the access point for a Telnet connection.

### To enable or disable Telnet:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Remote Management**.  
The Remote Management page displays.
5. Select one of the following Telnet radio buttons:
  - **Enable**. Telnet is enabled.
  - **Disable**. Telnet is disabled. This is the default setting.
6. Click the **Apply** button.  
Your settings are saved.

## Enable or disable Secure Shell

By default, you can access the access point over a Secure Shell (SSH) connection.

### To enable or disable SSH:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Remote Management**.  
The Remote Management page displays.
5. Select one of the following Secure Shell (SSH) radio buttons:
  - **Enable**. SSH is enabled. This is the default setting.
  - **Disable**. SSH is disabled.
6. Click the **Apply** button.  
Your settings are saved.

## Enable SNMP and manage the SNMP settings

You can access the access point over a Simple Network Management Protocol (SNMP) connection, which allows SNMP network management software such as HP OpenView to manage the access point by using the SNMPv1 or v2 protocol. By default, SNMP is disabled.

**To enable SNMP and manage the SNMP settings:**

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Maintenance > Remote Management**.  
The Remote Management page displays.
5. Select the SNMP **Enable** radio button.  
By default, SNMP is disabled.

The screenshot shows a configuration window for Remote Management. It includes sections for Telnet, Secure Shell (SSH), and SNMP. Under the SNMP section, the 'Enable' radio button is selected. Below this, there are three text input fields: 'Read-Only Community Name' with the value 'public', 'Read-Write Community Name' with the value 'private', and 'Trap Community Name' with the value 'trap'. At the bottom of the SNMP section, there are two more text input fields: 'IP Address (to receive traps)' with the value '192.168.0.1' and 'Trap Port' with the value '162'. At the bottom of the window are 'Cancel' and 'Apply' buttons.

6. Specify the following settings:
  - **Read-Only Community Name.** The community string that allows the SNMP manager to read the access point’s MIB objects. The default is public.
  - **Read-Write Community Name.** The community string that allows the SNMP manager to read and write the access point’s MIB objects. The default is private.
  - **Trap Community Name.** The community name that is associated with the IP address at which traps must be received. The default is trap.

- **IP address (to receive traps).** The IP address of the SNMP manager that must receive the traps.
- **Trap Port.** The port number at which the SNMP manager must receive traps. The default is 162.

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

## Manage the LEDs

By default, all LEDs are enabled and function as described in [Top panel with LEDs](#) on page 9. You can manage whether the LEDs light at all. This function is useful if the access point must function in a dark environment.

### To enable or disable the LEDs:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Configuration > System > Advanced > LED Control**.  
The LED Control page displays.
5. Select one of the following radio buttons:
  - **Enable All LEDs.** All LEDs are enabled. This is the default setting.
  - **Disable All LEDs.** All LEDs are disabled.
  - **Enable Power/Cloud LED.** All LEDs are disabled except for the Power/Cloud LED.
6. Click the **Apply** button.  
Your settings are saved.

# 8

## Monitor the Access Point and the Network

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This chapter describes how you can monitor the access point and the network.

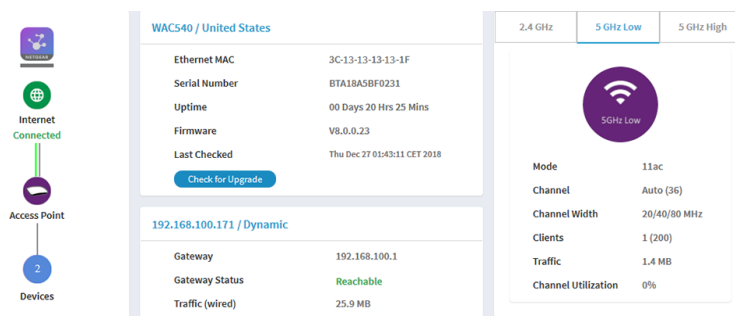
The chapter includes the following sections:

- [View the access point Internet, IP, and system settings](#)
- [View the WiFi radio settings](#)
- [View unknown and known neighbor access points](#)
- [View client distribution, connected clients, and client trends](#)
- [View WiFi and Ethernet traffic, traffic statistics, and channel utilization](#)
- [View or download tracked URLs](#)
- [View, save, download, or clear the logs](#)
- [View a WiFi bridge connection](#)
- [View the data volume consumption](#)
- [View Air Time Fairness client distribution](#)
- [View alarms and notifications](#)

# View the access point Internet, IP, and system settings

## To view the access point, Internet, IP, and system settings:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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.



4. Look at the following panes:
  - **Connection Status Information pane.** The Connection Status Information pane is in the top, left corner of the Dashboard (if the page width on your device is sufficient; otherwise, it might be elsewhere) and displays the following:
    - Status of the connection to the NETGEAR Insight cloud-based management platform, if any.
    - Status of the Internet connection.
    - Status of the link aggregation (LAG) connection.
    - Functioning mode of the access point, which is always Access Point.
    - Number of clients connected to the access point.

- **System Information pane.** The System Information pane is in the center at the top of the Dashboard (if the page width on your device is sufficient; otherwise, it might be elsewhere) and displays the following:
  - System name of the access point and country or region of operation.
  - Ethernet MAC address.
  - The serial number.
  - Device uptime.
  - Firmware version.
  - The date and time that the access point itself or someone manually last checked if new firmware was available.

This pane also contains a button that you can click to check for firmware updates for the access point (see [Check for new firmware and upgrade the access point](#) on page 127).

- **IP Settings Information pane.** The IP Settings Information pane is in the center of the Dashboard page (if the page width on your device is sufficient; otherwise, it might be elsewhere) and displays the following:
  - IP address of the access point and its DHCP status
  - Gateway IP address
  - Gateway status
  - Wired traffic volume

5. To view more detailed information, select **Management > Monitoring > System**.

The screenshot displays two panes: 'System Information' and 'AP Interface Status'.

**System Information**

System Name	WAC540
System Mode	AP
Lan1 MAC Address	3C-37-86-13-74-1F
Wireless MAC Address for 2.4 GHz	3C-37-86-13-74-10
Wireless MAC Address for 5 GHz Low	3C-37-86-13-74-20
Wireless MAC Address for 5 GHz High	3C-37-86-13-74-30
Power Source	PoE 802.3at Only
Ethernet LLDLP	Enabled
LLDP Neighbour	WAC505
Country / Region	United States
Current Firmware Version	V8.0.0.23
Backup Firmware Version	V8.0.0.22
Bootloader Version	U-Boot-2012.07-V8.0.0.8
Serial Number	BTA18A58F0231
Current Time	Fri Dec 28 00:36:18 CET 2018
Uptime	00 Days 22 Hrs 55 Mins

**AP Interface Status**

LAN1 LAN2 2.4GHz 5GHz Low 5GHz High

**IPv4 Settings**

IPv4 Address	192.168.100.171
Subnet Mask	255.255.255.0
Default Gateway	192.168.100.1
DHCP Client	Enabled
LAG Status	Enabled

**Wireless Settings**

Parameters	2.4 GHz	5 GHz Low	5 GHz High
Antenna	2x2	2x2	4x4
Wireless Mode	11ng	11ac	11ac
Channel / Frequency	Auto (11)/2.462 GHz	Auto (36)/5.18 GHz	Auto (157)/5.785 GHz



The page shows four sections:

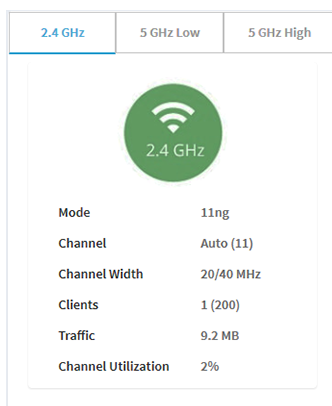
- **System Information section.** The following settings are displayed:
  - **System Name.** The access point NetBIOS name.
  - **System Mode.** The access point system mode (AP).
  - **Lan 1 MAC Address.** The MAC address of the LAN 1 Ethernet port of the access point.
  - **Wireless MAC Address for 2.4 GHz.** The MAC address of 2.4 GHz WiFi interface (radio) of the access point.
  - **Wireless MAC Address for 5 GHz Low.** The MAC address of 5 GHz low band WiFi interface (radio) of the access point.
  - **Wireless MAC Address for 5 GHz High.** The MAC address of 5 GHz high band WiFi interface (radio) of the access point.
  - **Power Source.** The type of power source (Power Adapter, PoE 802.3at Only, or Power Adapter & PoE 802.3at)
  - **Ethernet LLDP.** The status of Ethernet LLDP feature (Enabled or Disabled).
  - **LLDP Neighbour.** The name of the LLDP neighbour, if any.
  - **Country / Region.** The country or region in which the access point operates or for which the access point is licensed.
  - **Current Firmware Version.** The version of the firmware that is running on the access point.
  - **Backup Firmware Version.** The version of the backup firmware on the access point.
  - **Bootloader Version.** The primary bootloader (U-Boot) version that is installed on the access point.
  - **Serial Number.** The serial number of the access point.
  - **Current Time.** The current system time of the access point.
  - **Uptime.** The time since the access point was last restarted.
- **AP Interface Status.** A green icon indicates that the interface is in use. A gray icon indicates that the interface is not in use.
- **IPv4 Settings section.** The following settings are displayed:
  - **IPv4 Address.** The IPv4 address of the access point.
  - **Subnet Mask.** The subnet mask of the access point.
  - **Default Gateway.** The default gateway for the access point.

- **DHCP Client.** The status of DHCP client (Enabled or Disabled).
- **LAG Status.** The status of the LAG feature (Enabled or Disabled), independent of whether a physical LAG connection is present.
- **Wireless Settings section.** The following settings are displayed, with separate columns for the 2.4 GHz and 5 GHz radios:
  - **Antenna.** The type of antenna (2x2 or 4x4).
  - **Wireless Mode.** The operating WiFi mode of the radio.
  - **Channel / Frequency.** The channel and frequency that are used by the radio.

## View the WiFi radio settings

### To view the WiFi radio settings of the access point:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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.



4. Look at the Radio Information pane at the top, right corner of the Dashboard page (if the page width on your device is sufficient; otherwise, it might be elsewhere). The following settings are displayed:
  - Radio status (If the 2.4 GHz, 5 GHz Low, or 5GHz High icon is displayed as gray, the radio is turned off.)
  - Mode
  - Channel
  - Channel width
  - Number of connected clients and maximum number of supported clients
  - WiFi traffic volume
  - Channel utilization
5. To view information for a 5 GHz radio, click the **5 GHz Low** or **5 GHz High** tab. By default, information for the 2.4 GHz radio is shown.
6. To view more detailed information, select **Management > Monitoring > System**.

The screenshot displays three panels from the dashboard:

- System Information:** A table listing system details such as System Name (WAC540), System Mode (AP), LAN1 MAC Address, and various wireless MAC addresses for 2.4 GHz and 5 GHz bands.
- AP Interface Status:** A visual status bar showing icons for LAN1, LAN2, 2.4GHz, 5GHz Low, and 5GHz High.
- IPv4 Settings:** A table showing network configuration including IPv4 Address (192.168.100.171), Subnet Mask (255.255.255.0), Default Gateway (192.168.100.1), DHCP Client (Enabled), and LAG Status (Enabled).
- Wireless Settings:** A table comparing parameters for 2.4 GHz, 5 GHz Low, and 5 GHz High bands, including Antenna, Wireless Mode, and Channel/Frequency.

The page shows four sections:

- **System Information section.** The following settings are displayed:
  - **System Name.** The access point NetBIOS name.
  - **System Mode.** The access point system mode (AP).
  - **Lan 1 MAC Address.** The MAC address of the LAN 1 Ethernet port of the access point.

- **Wireless MAC Address for 2.4 GHz.** The MAC address of 2.4 GHz WiFi interface (radio) of the access point.
- **Wireless MAC Address for 5 GHz Low.** The MAC address of 5 GHz low band WiFi interface (radio) of the access point.
- **Wireless MAC Address for 5 GHz High.** The MAC address of 5 GHz high band WiFi interface (radio) of the access point.
- **Power Source.** The type of power source (Power Adapter, PoE 802.3at Only, or Power Adapter & PoE 802.3at)
- **Ethernet LLDP.** The status of Ethernet LLDP feature (Enabled or Disabled).
- **LLDP Neighbour.** The name of the LLDP neighbour, if any.
- **Country / Region.** The country or region in which the access point operates or for which the access point is licensed.
- **Current Firmware Version.** The version of the firmware that is running on the access point.
- **Backup Firmware Version.** The version of the backup firmware on the access point.
- **Bootloader Version.** The primary bootloader (U-Boot) version that is installed on the access point.
- **Serial Number.** The serial number of the access point.
- **Current Time.** The current system time of the access point.
- **Uptime.** The time since the access point was last restarted.
  
- **AP Interface Status.** A green icon indicates that the interface is in use. A gray icon indicates that the interface is not in use.
- **IPv4 Settings section.** The following settings are displayed:
  - **IPv4 Address.** The IPv4 address of the access point.
  - **Subnet Mask.** The subnet mask of the access point.
  - **Default Gateway.** The default gateway for the access point.
  - **DHCP Client.** The status of DHCP client (Enabled or Disabled).
  - **LAG Status.** The status of the LAG feature (Enabled or Disabled), independent of whether a physical LAG connection is present.

- **Wireless Settings section.** The following settings are displayed, with separate columns for the 2.4 GHz and 5 GHz radios:
  - **Antenna.** The type of antenna (2x2 or 4x4).
  - **Wireless Mode.** The operating WiFi mode of the radio.
  - **Channel / Frequency.** The channel and frequency that are used by the radio.

## View unknown and known neighbor access points

If you enabled neighbor access point (AP) detection (see [Manage neighbor AP detection](#) on page 101), you can view the unknown access points in the Unknown AP list and the known access points in the Known AP list.

### To view the detected neighbor access points:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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.
4. Select **Management > Monitoring > Neighbor AP.**

The screenshot shows the 'Unknown AP' tab selected in the 'Neighbor AP' monitoring section. The interface displays statistics for 2.4 GHz (5), 5 GHz Low (0), and 5 GHz High (0) access points. Below the statistics is a table with columns for MAC Address, SSID, Radio, Channel, RSSI, and Timestamp. A search bar and a 'Show 10 Entries' dropdown are also visible.

MAC Address	SSID	Radio	Channel	RSSI	Timestamp
08-00-00-00-00-00	Netgear3A21CF	2.4 GHz	6	94	Fri Aug 4 17:30:05 PDT
60-00-00-00-00-00	SimplePresenceNetwork 5GHz	2.4 GHz	4	53	Fri Aug 4 17:30:05 PDT
B0-00-00-00-00-00	RMCS-Farms	2.4 GHz	5	2	Fri Aug 4 17:09:53 PDT
FA-00-00-00-00-00		2.4 GHz	1	79	Fri Aug 4 17:34:57 PDT
FA-00-00-00-00-00		2.4 GHz	1	87	Fri Aug 4 17:34:57 PDT

Navigation: Previous 1 Next

Refresh

At the top of the page, for each radio band, the page states the total number of unknown access points.

- To display the most recent unknown access points, click the **Refresh** button.
- To view the Known AP list, click the **Known AP** tab.

Unknown AP   **Known AP**

2.4 GHz : 2   5 GHz Low : 0   5 GHz High : 0

Show  Entries   Search:

MAC Address	SSID	Radio	Channel	RSSI	Timestamp
08-00-00-00-00-00	Netgear3A21CF	2.4 GHz	5	94	Fri Aug 4 17:34:57 PDT
60-33-00-00-00-00	SimplePresenceNetwork	2.4 GHz	1	90	Fri Aug 4 17:34:57 PDT

Previous   1   Next

**Refresh**

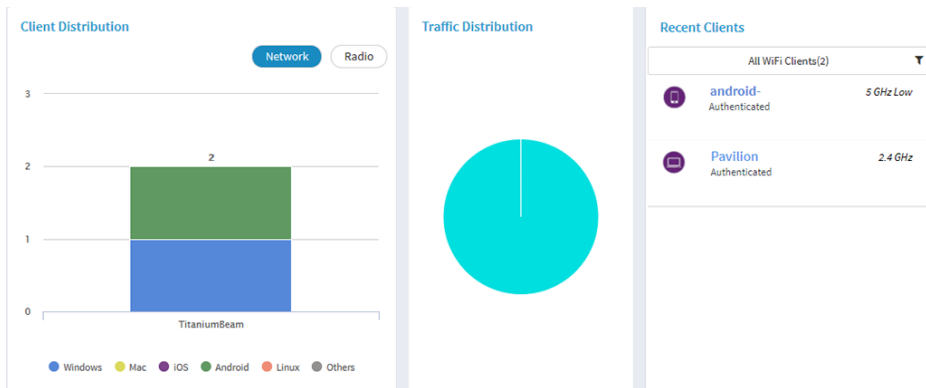
At the top of the page, for each radio band, the page states the total number of known access points.

- To display the most recent known access points, click the **Refresh** button.

## View client distribution, connected clients, and client trends

### To view the clients that are connected to the access point over WiFi:

- Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
- Enter the IP address that is assigned to the access point.  
A login window opens.
- Enter the access point user name and password.  
The default 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 Client Distribution pane (shown on the left side in the previous figure) shows the types of clients (Windows, Mac, iOS, Android, Linux, and other operating systems) and how these clients are distributed over the networks. (By default, the **Network** button is selected.)

The Recent Clients pane (shown on the right side in the previous figure) shows the top 5 recently connected clients list.

4. To see how the clients are distributed over the radios, click the **Radio** button in the Client Distribution pane.

The page adjusts and shows the types of clients for each radio.

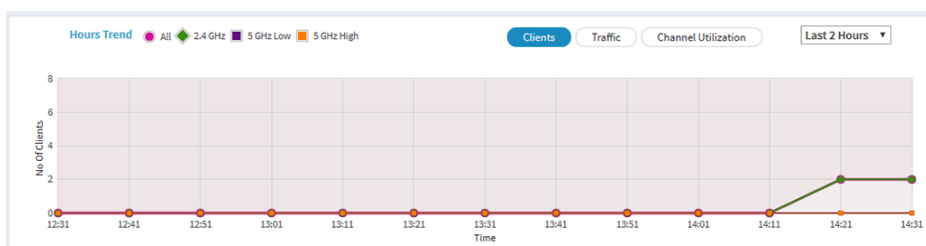
5. To see recent clients for all networks or a single network, in the Connected Clients pane, click the icon in the menu under Recent Clients, and select **All WiFi Clients** or the clients for a specific WiFi network (SSID).

For your selection, the pane displays the total number of connected clients and the device names of the connected clients.

6. To view information about a connected client, click its device name.

The page displays the MAC address, device name, IP address, and SSID for the client. You can also view more information, including very detailed information (see [Step 10](#)).

7. To view trends about clients, scroll down to the Hours Trend pane.



The Hours Trend pane shows a graph with the number of clients, the traffic in MB, or the channel utilization over a period that you can select. (The previous figure

shows the trend for the last 2 hours.) By default, the client information is selected (that is, the **Client** button is selected) and the graph shows the total number of clients for all radios and the number of clients for each radio (2.4 GHz, 5 GHz Low, and 5 GHz High).

You can also click the **Traffic** button or the **Channel Utilization** button. For more information, see [View WiFi and Ethernet traffic, traffic statistics, and channel utilization](#) on page 154.

8. To view more information, point to a node on one of the lines on the graph.
9. To change the period over which information is filtered and displayed, select the number of recent hours from the menu to the right of the buttons.
10. To view more information about currently connected WiFi, select **Management > Monitoring > Connected Clients**.

The screenshot shows the 'Wireless Clients' interface. At the top, it says '2.4 GHz Clients : 2 (200)'. Below this, there is a search bar and a 'Show 10 Entries' dropdown. The main table has columns for #, SSID, MAC Address, IP Address, Host Name, OS, and Mode. Two entries are listed for 'TitaniumBeam' with different MAC addresses and IP addresses. Below this, there are sections for '5 GHz Low Clients : 0 (200)' and '5 GHz High Clients : 0 (200)', both showing 'No Available Clients'. A 'Refresh' button is at the bottom left.

#	SSID	MAC Address	IP Address	Host Name	OS	Mode
1	TitaniumBeam	C0-B0-B0-B0-B0-F1	192.168.100.198	android-	Generic Android	11NG
2	TitaniumBeam	D0-B0-B0-B0-B0-41	192.168.100.195	Pavillion	Windows Vista/7 or Server 2008	11NG

For each radio, the page displays the number of connected clients and the maximum number of supported clients.

For each radio and each WiFi client, the page displays the SSID, MAC address, IP address, host name, operating system (OS), and WiFi mode.

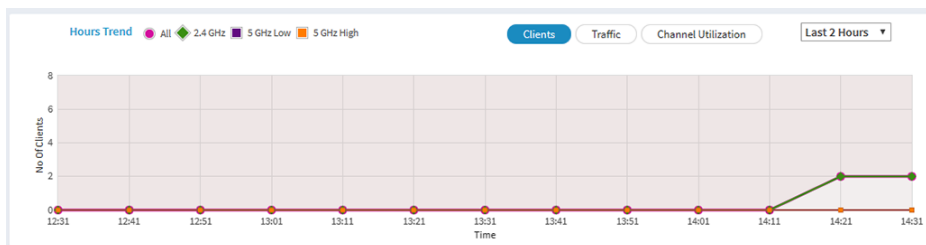


11. To view very detailed information about a WiFi client, do the following:
  - a. Click the information icon to the left of the client.  
The Detailed Client Information page displays and shows the following information:
    - **MAC Address.** The MAC address of the client.
    - **IP Address.** The IP address associated with the client.
    - **Host Name.** The host name of the client.
    - **OS.** The operating system that runs on the client.
    - **BSSID.** The BSSID that the client connects to.
    - **SSID.** The SSID of the radio that the client connects to.
    - **Channel.** The channel that the client connects to.
    - **Channel Width.** The width of the channel that the client connects to.
    - **Tx Rate.** The rate of traffic transmission of the client.
    - **Rx Rate.** The rate of traffic reception of the client.
    - **RSSI.** The RSSI threshold value of the client.
    - **Tx Bytes.** The number of bytes that the client transmitted.
    - **Rx Bytes.** The number of bytes that the client received.
    - **State.** The QoS state of the connection.
    - **Type.** The type of WiFi security that is used for the connection.
    - **Device Type.** The type of device that the client is.
    - **Mode.** The WiFi mode of the connection.
    - **Status.** The security status of the connection.
    - **Idle Time.** The time that the client remained idle.
    - **Assoc Time Stamp.** The time that is associated with the information on the Detailed Client Information page.
  - b. Click the **Close** button.  
The Detailed Client Information page closes.
12. To display the most recent information, click the **Refresh** button.

# View WiFi and Ethernet traffic, traffic statistics, and channel utilization

## To view WiFi and Ethernet traffic, traffic statistics, and channel utilization:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Scroll down to the Hours Trend pane at the bottom of the Dashboard page.  
By default, the **Clients** button is selected.



The previous figure shows the trend for the last 2 hours. (The default is the last 48 hours.)

5. To view traffic information, do the following:
  - a. Click the **Traffic** button.  
The graph shows the information for Ethernet traffic, total WiFi traffic, WiFi traffic for the 2.4 GHz radio, WiFi traffic for the 5 GHz Low radio, and WiFi traffic for the 5 GHz High radio.
  - b. To view more information, point to a node on one of the lines on the graph.

6. To view channel utilization, do the following:
  - a. Click the **Channel Utilization** button.  
The graph shows the channel utilization for the 2.4 GHz radio.
  - b. To view the channel utilization in the 5 GHz band, click the **5 GHz Low** or **5 GHz High** button.
  - c. To view more information, point to a bar.
7. To change the period over which information is filtered and displayed, select the number of recent hours from the menu to the right of the buttons.
8. To view traffic statistics, select **Management > Monitoring > Statistics**.

Wireless

Parameters	2.4 GHz		5 GHz Low		5 GHz High	
	Received	Transmitted	Received	Transmitted	Received	Transmitted
Unicast Packets	12944	8354	6229	5550	129	121
Broadcast Packets	1095	8168	17	2852	4	40
Multicast Packets	9716	87089	109	27804	8	418
Total Packets	23755	103611	6355	36206	141	579
Total Bytes	6402759	20141107	1528636	7914648	40968	142728
Number of Clients	2		0		0	

Ethernet (LAG Enabled)

Parameters	LAN1		LAN2	
	Received	Transmitted	Received	Transmitted
Total Packets	444793	74828	0	0
Total Bytes	73704404	15667970	0	0

Refresh

The page displays the network traffic statistics for both the WiFi and wired (Ethernet) interfaces of the access point since the access point started or rebooted. The page also displays the number of clients that are associated with each radio. If the LAG is disabled, the page does not show (*LAG Enabled*).

9. To display the most recent information, click the **Refresh** button.

# View or download tracked URLs

If you enabled URL tracking for a WiFi network (see [Enable or disable URL tracking for a WiFi network](#) on page 49), you can view the tracked URLs by URL, WiFi client, and SSID. You can also download a URL tracking report as a `.csv` file.

## To view or download tracked URLs:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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.
4. Select **Management > Monitoring > URL Tracking**.

List by

URL	Clients	SSIDs	Hit-Count
connectivitycheck.android.	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	2
clients3.google.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
g.whatsapp.net	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
mqtt-mini.facebook.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
android.googleapis.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
app.bugfender.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
mtalk.google.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
connectivitycheck.gstatic.	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
www.msftncsi.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1
us.norton.com	C0-BD-D1-B0-F0-F1...	NETGEAR-1...	1

Previous 1 2 3 4 5 6 Next [View All](#)

By default, the table shows the URLs that were accessed, each with the MAC address of the WiFi client that accessed the URL, the associated SSID, and the number of times that the WiFi client accessed the URL.

5. To view additional information, click the ... link to the right of a MAC address or SSID.
6. To view URL tracking information by WiFi client, do the following:
  - a. From the menu, select **Client**.  
The table shows the MAC addresses of the WiFi clients, each with the client host name, and the first URL of the list of URLs that the client accessed.
  - b. To view all URLs that a WiFi client accessed, click the ... link to the right of the first URL.  
A pop-up window opens and displays all URLs that the WiFi client accessed.
  - c. Click the **Close** button.  
The pop-up window closes.
7. To view URL tracking information by SSID, do the following:
  - a. From the menu, select **SSID**.  
The table shows the SSIDs and the first URL of the list of URLs that were accessed on the SSID.
  - b. To view all URLs that were accessed on the SSID, click the ... link to the right of the first URL.  
A pop-up window opens and displays all URLs that the were accessed on the SSID.
  - c. Click the **Close** button.  
The pop-up window closes.
8. To download a URL tracking report as a .csv file, click the **Download** button, and follow the directions of your browser.
9. To clear all URL tracking information, do the following:
  - a. Click the **Clear** button.  
A pop-up warning window opens.
  - b. Click the **OK** button.  
The pop-up window closes and the information is cleared.

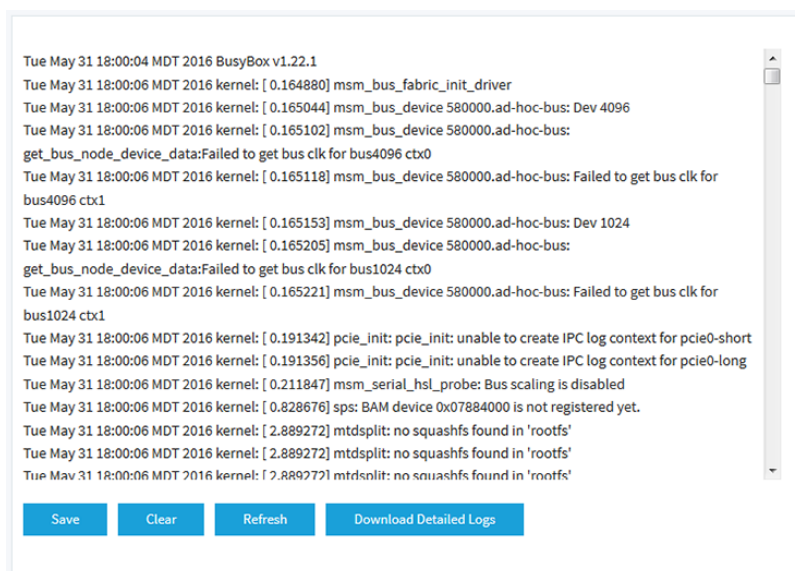
## View, save, download, or clear the logs

You can view and manage the activity logs of the access point. You can also download a detailed log file.

**Note:** If the access point functions in the NETGEAR Insight management mode, you can also view and manage the cloud activity logs, which show the connection of the access point to the Insight cloud-based management platform. If the access point functions in the NETGEAR Insight management mode, this option is available from the Dashboard page by selecting **Management > Monitoring > Cloud Logs**.

### To view, save, download, or clear the logs:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Monitoring > Logs**.



```

Tue May 31 18:00:04 MDT 2016 BusyBox v1.22.1
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.164880] msm_bus_fabric_init_driver
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165044] msm_bus_device 580000.ad-hoc-bus: Dev 4096
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165102] msm_bus_device 580000.ad-hoc-bus:
get_bus_node_device_data:Failed to get bus clk for bus4096 ctx0
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165118] msm_bus_device 580000.ad-hoc-bus: Failed to get bus clk for
bus4096 ctx1
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165153] msm_bus_device 580000.ad-hoc-bus: Dev 1024
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165205] msm_bus_device 580000.ad-hoc-bus:
get_bus_node_device_data:Failed to get bus clk for bus1024 ctx0
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.165221] msm_bus_device 580000.ad-hoc-bus: Failed to get bus clk for
bus1024 ctx1
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.191342] pcie_init: pcie_init: unable to create IPC log context for pcie0-short
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.191356] pcie_init: pcie_init: unable to create IPC log context for pcie0-long
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.211847] msm_serial_hsL_probe: Bus scaling is disabled
Tue May 31 18:00:06 MDT 2016 kernel: [ 0.828676] sps: BAM device 0x07884000 is not registered yet.
Tue May 31 18:00:06 MDT 2016 kernel: [ 2.889272] mtdsplit: no squashfs found in 'rootfs'
Tue May 31 18:00:06 MDT 2016 kernel: [ 2.889272] mtdsplit: no squashfs found in 'rootfs'
Tue May 31 18:00:06 MDT 2016 kernel: [ 2.889272] mtdsplit: no squashfs found in 'rootfs'

```

Save Clear Refresh Download Detailed Logs

The page shows the following information for each log entry:

- **Date and time.** The date and time that the entry was logged.
- **Action.** The action that occurred, such as whether a WLAN connection was made.
- **Source.** The name, IP address, or MAC address of a source device, application, or website, if applicable.
- **Target.** The name, IP address, or MAC address of a target device, application, or website, if applicable.

5. To save the logs, do the following:
  - a. Click the **Save** button.
  - b. Follow the directions of your browser to save the file to your computer.
6. To download the detailed log entries, do the following:
  - a. Click the **Download Detailed Logs** button.  
Depending on the size of the file, downloading the detailed log entries might take several minutes.
  - b. Follow the directions of your browser to save the file to your computer.
7. To refresh the log entries onscreen, click the **Refresh** button.

**WARNING:** After you clear the log entries, you can no longer save or download them.

8. To clear the log entries, click the **Clear** button.

## View a WiFi bridge connection

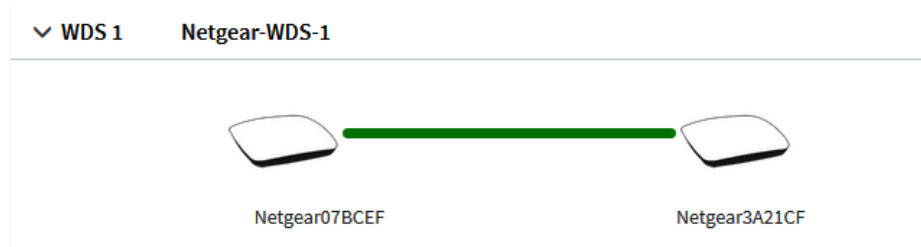
You can view whether a WiFi bridge is established and view the function (master or slave), MAC addresses, and IP addresses of the access points that form the WiFi bridge.

### To view a WiFi bridge connection:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.

The default 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.

4. Select **Management > Monitoring > Wireless Bridge**.



5. To view the function, MAC address, and IP address of an access point, point to the access point.

## View the data volume consumption

If you enabled data limits for one or more WiFi networks (see [Set a data volume limit for the access point](#) on page 81), you can view the data volume consumption and volume status details.

### To view the data volume consumption and volume status details:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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.



4. Select **Management > Monitoring > Data Volume Limit**.

Start date and time	Jun 22 2018 14:08:33
Current date and time	Jun 23 2018 12:46:30
Total volume left (MB)	19999.04

Profile	Allocated Data (MB)	Uploaded Data (MB)	Downloaded Data (MB)	Total Consumption (MB)
NETGEAR-1	20000	0.30	0.96	1.26
NETGEAR-2	12000	0.00	0.00	0.00

Refresh	Volume Status
---------	---------------

At the top, the page states the start date and time of the data volume counter, the current date and time, and the total volume that is left in relation to the data volume limit that you set.

For each SSID, the table shows the allocated data (which is the allocated SSID percentage of the total monthly data volume limit that you set), the uploaded and downloaded data, and the total data consumption.

5. To view details about the volume, do the following:
  - a. Click the **Volume Status** button.  
A pop-up window opens and, for each SSID, displays details in a graphic.
  - b. Click the **X** in the upper right corner.  
The pop-up window closes.
6. To display the most recent information, click the **Refresh** button.

## View Air Time Fairness client distribution

If you enabled Air Time Fairness (ATF) for all radios (see [Manage Airtime Fairness for the radios](#) on page 80), you can view the client distribution and associated performance in each radio band.

### To view the ATF client distribution and associated performance:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.

A login window opens.

3. Enter the access point user name and password.

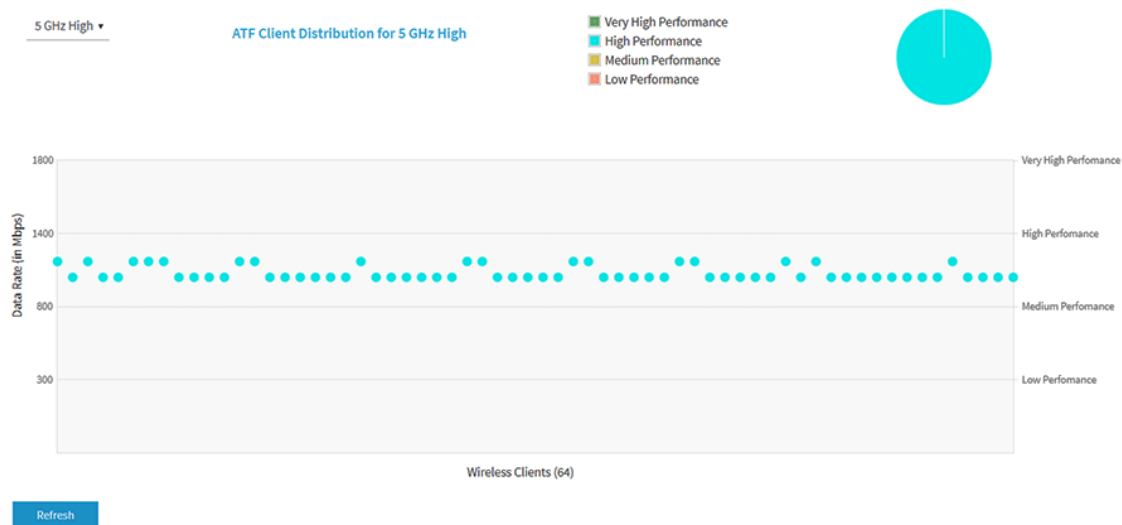
The default user name is **admin**. The password is the one that you specified the first time that you logged in. The user name and password are case-sensitive.

The Dashboard page displays.

4. Select **Management > Monitoring > Air Time Fairness**.

The Air Time Fairness page displays.

5. From the menu at the top left on the page, select the radio band for which you want to view the client distribution and associated performance.



The graph shows the performance for the connected WiFi clients. (The previous figure shows multiple clients connected in the 5 GHz High radio band.)

6. To view more information about a single WiFi client, point to the WiFi client in the graph (that is, the small green dot in the previous figure).
7. To view more information about the performance in the entire radio band, point to the circle at the top right of the page (that is, the large green circle in the previous figure).
8. To display the most recent information, click the **Refresh** button.

# View alarms and notifications

You can view the alarms and notifications from any access point page. The following procedure describes how you can view them from the Dashboard page.

## To view the alarms and notifications:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.

3. Enter the access point user name and password.  
The default 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 Dashboard page displays.

The alarm bell icon at the top right of the page shows a number, indicating the total number of new alarms and notifications since the last time that you viewed alarms and notifications.

4. Click the alarm bell icon.



The pop-up window shows the alarms (indicated by a red bell) and notifications (indicated by a blue bell) with a description and time.

5. To view more alarms and notification, scroll down in the pop-up window.

# 9

## Diagnosics and Troubleshooting

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This chapter describes how you can capture WiFi packets and troubleshoot the access point and network.

The chapter includes the following sections:

- [Capture WiFi and Ethernet packets](#)
- [Perform a ping test](#)
- [Check the Internet speed](#)
- [Quick tips for troubleshooting](#)
- [Troubleshoot with the LEDs](#)
- [Troubleshoot the WiFi connectivity](#)
- [Troubleshoot Internet browsing](#)
- [You cannot log in to the access point over a LAN connection](#)
- [Changes are not saved](#)
- [Troubleshoot your network using the ping utility](#)

# Capture WiFi and Ethernet packets

You can capture WiFi and Ethernet packets that are received and transmitted by the access point and save the file with captured packets to your computer. During the packet capture process, normal functioning of the access point is not affected.

The packet capture capability can be useful for analyzing a WiFi deployment, monitoring a WiFi network, debugging protocols, determining WiFi network bottlenecks, and, in general, troubleshooting any irregularities in a WiFi network.

You can select to capture all packets or selected packets only.

**Note:** To view the captured packets, you need an application that can open .pcap files.

## To capture packets:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Diagnostics > Packet Capture**.

Current Capture Status	Packet Capture Time	Packet Capture File Size
Not Running	00:00:00	0 KB

---

Settings		
Capture Interface brtrunk	Max. Capture File Size (64-4096 KB) 1024	Promiscuous Capture <input type="radio"/> Enable <input checked="" type="radio"/> Disable
Client Filter <input type="checkbox"/> 00-00-00-00-00-00	Capture Duration (10-3600 secs) 300	

5. Specify the settings that are described in the following table.

Setting	Description
Capture Interface	<p>From the <b>Capture Interface</b> menu, select one of the following interfaces on which packets must be captured:</p> <ul style="list-style-type: none"> <li>• <b>brtunk</b>. All packets are captured, that is, packets on the Ethernet interfaces, 2.4 GHz radio, 5 GHz low band radio, and 5 GHz high band radio. This is the default setting.</li> <li>• <b>Eth0</b>. Only packets on the LAN 1 interface are captured.</li> <li>• <b>Eth1</b>. Only packets on the LAN 2 Ethernet interface if it is functioning in a LAG configuration are captured.</li> <li>• <b>radio1</b>. Only packets on the 2.4 GHz radio are captured.</li> <li>• <b>radio2</b>. Only packets on the 5 GHz low band radio are captured.</li> <li>• <b>radio2</b>. Only packets on the 5 GHz high band radio are captured.</li> </ul>
Max. Capture File Size (64-4096 KB)	Enter the maximum size that the file with captured packets is limited to. The range is from 64 to 4096 KB. The default is 64 KB.
Promiscuous Capture	<p>To enable the access point to capture packets in promiscuous mode, select the <b>Enable</b> check box. By default, promiscuous mode is disabled.</p> <p>In promiscuous mode the radio or radios receive all traffic on the channel, including traffic that is not destined for the access point. While the radio or radios are operating in promiscuous mode, they continue to serve associated clients. Packets that are not destined for the access point are not forwarded. When the capture process stops, the radio or radios revert to nonpromiscuous mode.</p>
Client Filter	To capture packets for a specific client only, select the <b>Client Filter</b> check box and enter the client's MAC address in the <b>Client Filter MAC Address</b> field.
Client Filter MAC Address	<p>If you select the <b>Client Filter</b> check box, enter the client's MAC address to capture the packets only for the specific client on the selected interface.</p> <p>You must enter the MAC address in hexadecimal format with each octet separated by a hyphen, for example 00-11-22-33-44-55.</p>
Capture Duration (10-3600 secs)	<p>Enter the maximum duration of the capture process (that is, if you do not click the <b>Stop</b> button).</p> <p>The range is from 10 to 3600 seconds. By default, the maximum duration is 60 seconds.</p>

6. To start the packet capture process, click the **Start** button.

If any captured packets are already stored on the access point, you are prompted to allow the packet capture process to overwrite the old information.

7. To stop the packet capture process, click the **Stop** button.


8. To download the file with captured packets, do the following:
  - a. Click the **Download** button.
  - b. Follow the directions of your browser to save the file to your computer.
9. To display the latest information on the page, click the **Refresh** button.

## Perform a ping test

You can ping the IP address of a device or network location from the access point and view the results of the ping test.

### To perform a ping test:

1. Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
2. Enter the IP address that is assigned to the access point.  
A login window opens.
3. Enter the access point user name and password.  
The default 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 Dashboard page displays.
4. Select **Management > Diagnostics > Ping Test**.

Ping Count	<input type="text" value="16"/>	Packet Size(in Bytes)	<input type="text" value="64"/>
Ping Interval(in sec)	<input type="text" value="1"/>	Ping Timeout(in sec)	<input type="text" value="60"/>
Remote Host 	<input type="text" value="8.8.8.8"/>		

---

**Ping Result**

5. Specify the settings that are described in the following table.

Setting	Description
Ping Count	The number of pings that the access point must send. The default number is 16.
Packet Size (in Bytes)	The size of each ping packet. The default size is 64 bytes.
Ping Interval (in sec)	The interval between pings. The default interval is 1 second.
Ping Timeout (in sec)	The period after which a ping times out. The default period is 60 seconds.
Remote Host	The IP address that the access point must ping.

- To start the ping test, click the **Start** button.  
The results of the ping test display in the Ping Result field.
- To stop the ping test before the ping count is reached or if the ping times out, click the **Stop** button.

## Check the Internet speed

You can check the Internet speed of the access point. The results might be helpful if you want to set bandwidth rate limits (see [Set bandwidth rate limits for a WiFi network](#) on page 52).

### To check the Internet speed:

- Open a web browser from a computer that is connected to the same network as the access point or to the access point directly through an Ethernet cable or WiFi connection.
- Enter the IP address that is assigned to the access point.  
A login window opens.
- Enter the access point user name and password.  
The default 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 Dashboard page displays.
- Select **Management > Diagnostics > Speed Check**.  
The Internet Speed Check page displays.
- Click the **Test Speed** button.  
After a short delay, the page displays the measured latency in ms, download speed in Mbps, and upload speed in Mbps.



6. To view the test history, click the **View History** link.

A table shows the results of previous tests.

## Quick tips for troubleshooting

If your network is unresponsive or does not function normally, restart your network:

1. Unplug the Ethernet cable from the access point to your network switch or Internet modem.
2. If you use a power adapter, disconnect it from the access point.
3. Plug in the Ethernet cable from the access point to your network switch or Internet modem. Wait two minutes.
4. If you use a power adapter, connect it to the access point and wait two minutes.

If you cannot connect over WiFi to the access point, try the following:

- Make sure that the WiFi LED on the access point is not off.  
If the WiFi LED is off, one or both WiFi radios are probably off too. For more information about the WiFi radios, see [Turn a radio on or off](#) on page 63.
- Make sure that the WiFi settings in your WiFi device and access point match exactly.  
For a device that is connected over WiFi, the WiFi network name (SSID) and WiFi security settings of the access point and WiFi device must match exactly.  
For information about accessing the access point for initial configuration over a WiFi connection, see [Connect to the access point for initial configuration](#) on page 20.
- Make sure that your WiFi device supports the security that you are using for your WiFi network (WPA2 Personal or WPA2 Personal Mixed). For more information, see [Set up and manage WiFi networks](#) on page 36.
- Make sure that your WiFi device is not too far from the access point or too close. To see if the signal strength improves, move your WiFi device near the access point but at least 6 feet (1.8 meters) away.
- Make sure that the WiFi signal is not blocked by objects between the access point and your WiFi device.
- Make sure that the access point's SSID broadcast is not disabled.  
If the access point's SSID broadcast is disabled, the WiFi network name is hidden and does not display in your WiFi device's scanning list. To connect to a hidden network, you must enter the network name and the WiFi password. For more information about the SSID broadcast, see [Set up and manage WiFi networks](#) on page 36.

- Make sure that your WiFi device does not use a static IP address but is configured to receive an IP address automatically with DHCP. (For most devices, DHCP is the default setting.)

If you cannot connect over an Ethernet cable to the access point, try the following:

- Make sure that the Ethernet cables are securely plugged in.
- Make sure that your network includes a DHCP server that can issue an IP address to the access point or, if your access point requires a fixed (static) IP address, that the IP address and subnet are correct.

## Troubleshoot with the LEDs

For general information about the LEDs and LED icons, see [Top panel with LEDs](#) on page 9.

When you turn on the power, the LEDs light as described here:

1. The Power/Cloud LED lights solid amber. After about one minute, the Power/Cloud LED turns either solid green or solid blue, indicating that the startup procedure is complete and the access point is ready:
  - **Solid green.** The access point functions either as a standalone access point, or as an Insight discovered access point that is *not* connected to the Insight cloud-based management platform.
  - **Solid blue.** The access point functions in Insight mode and is connected to the Insight cloud-based management platform.
2. When the startup procedure is complete, verify the following:
  - The 2.4G, 5H, and 5L WLAN LEDs light solid green or solid blue or blink blue (unless the WiFi radios are turned off).
  - For LAN devices that are connected to a LAN port, the LAN 1 LED, LAN 2 LED, or both LAN LEDs light solid amber or solid green.

You can use the LEDs for troubleshooting. For more information, see the following sections:

- [Power/Cloud LED is off](#)
- [Power/Cloud LED remains solid amber](#)
- [Power/Cloud LED is blinking amber slowly, continuously](#)
- [The access point functions as a PoE PD and the Power/Cloud LED remains solid amber](#)
- [Power/Cloud LED does not light blue in the NETGEAR Insight management mode](#)

- [2.4, 5H, or 5L WLAN LED Is Off](#)
- [A LAN LED is off while a switch or LAN device is connected](#)

## Power/Cloud LED is off

If you use a Power over Ethernet (PoE) connection and the Power/Cloud LED and other LEDs are off when the Ethernet cables are connected, do the following:

- Make sure that the Ethernet cable between the access point and the PoE switch is correctly connected at both ends.
- Make sure that the other end of the Ethernet cable is plugged into a PoE port on a PoE switch that is receiving power.
- Make sure that the PoE power budget of the PoE switch is not oversubscribed so that the PoE switch is capable of delivering PoE power to the access point.

If you use a power adapter and the Power/Cloud LED and other LEDs are off when the access point is turned on, do the following:

- Make sure that the power adapter is correctly connected to the access point, and that the power adapter is correctly connected to a functioning power outlet. If it is plugged into a power strip, make sure that the power strip is turned on. If it is plugged directly into the wall, verify that the outlet is not switched off.
- Make sure that you are using the NETGEAR 12V, 2.5A power adapter for this product.

If the error persists, a hardware problem might exist. For recovery instructions or help with a hardware problem, contact technical support at [netgear.com/support](http://netgear.com/support).

## Power/Cloud LED remains solid amber

When you turn on the power to the access point, the Power/Cloud LED lights solid amber temporarily and then turns solid green or solid blue, indicating that the startup procedure is complete and the access point is ready.

If the Power/Cloud LED remains solid amber after five minutes, either a boot error occurred or the access point is malfunctioning.

Do the following:

1. Turn the power off and back on, and wait several minutes to see if the startup procedure completes successfully.
2. If the startup procedure still does not complete successfully and the Power/Cloud LED remains solid amber after five minutes, you can use the **Reset** button to return the access point to its factory default settings. For more information, see [Use the Reset button](#) on page 136.

If the error persists, a hardware problem might exist. For recovery instructions or help with a hardware problem, contact technical support at [netgear.com/support](http://netgear.com/support).

## Power/Cloud LED is blinking amber slowly, continuously

When you turn on the power to the access point, the Power/Cloud LED lights solid amber temporarily and then turns solid green or solid blue, indicating that the startup procedure is complete and the access point is ready. During regular operation, the only time that the Power/Cloud LED blinks amber temporarily is when firmware is being upgraded. Also, in that situation, the Power/Cloud LED blinks amber quickly, not slowly.

If the Power/Cloud LED blinks amber slowly and continuously, the access point did not receive an IP address from a DHCP server.

Check to make sure that the DHCP client of the access point is enabled (see [Enable the DHCP client](#) on page 110), that your network includes a DHCP server (or a router that functions as a DHCP server), and that the DHCP server can reach the access point (both must be on the same network).

If your network does not include a DHCP server, you might need to configure a fixed (static) IP address on the access point (see [Disable the DHCP client and specify a fixed IP address](#) on page 109).

## The access point functions as a PoE PD and the Power/Cloud LED remains solid amber

When you turn on the power to the access point, the Power/Cloud LED lights solid amber temporarily and then turns solid green or solid blue, indicating that the startup procedure is complete and the access point is ready.

If the access point functions as a PoE PD and the Power/Cloud LED remains solid amber after five minutes, the access point might not be receiving power at the required 802.3at (PoE+) level.

Do the following:

1. Disconnect and reconnect the Ethernet cable at LAN port 1 on the access point and at an 802.3at (PoE+) port on the PoE switch.

The access point restarts.

2. If the Power/Cloud LED remains solid amber after five minutes, check to see why the PoE switch cannot provide sufficient PoE power to the access point.

Most likely, the PoE power budget of the PoE switch is oversubscribed and you might need to disconnect another PoE device from the PoE switch to make sufficient PoE power available for the access point.

If the error persists, see [Power/Cloud LED remains solid amber](#) on page 171.

## Power/Cloud LED does not light blue in the NETGEAR Insight management mode

If the access point functions in the Web-browser management mode, the Power/Cloud LED lights green. This is normal LED behavior.

However, if the access point functions in the NETGEAR Insight management mode and the Power/Cloud LED does not light blue but remains green, the access point is not connected to the Insight cloud-based management platform.

If the access point functions in the NETGEAR Insight management mode and the Power/Cloud LED does not light blue, do the following:

1. Verify that the management mode of the access point is NETGEAR Insight.  
For more information, see [Change the management mode to NETGEAR Insight or Web-browser](#) on page 120.
2. Make sure that the cable connections between the access point and your network are good.
3. Make sure that the access point is connected to the Internet and that the Internet connection is good.
4. Make sure that the access point is running the latest firmware version.  
For more information, see [Manage the firmware of the access point](#) on page 127.
5. Restart the access point and wait five minutes to see if the Power/Cloud LED lights solid blue.  
If you use a power adapter with the access point, disconnect and reconnect the power adapter and wait five minutes to see if the Power/Cloud LED lights solid blue.
6. Use the **Reset** button to return the access point to its factory default settings.  
For more information, see [Use the Reset button](#) on page 136.

If the error persists, a hardware problem might exist. For recovery instructions or help with a hardware problem, contact technical support at [netgear.com/support](http://netgear.com/support).

## 2.4, 5H, or 5L WLAN LED Is Off

If the 2.4 WLAN LED, 5H WLAN LED, or 5L WLAN LED is off, do the following:

- Check to see if a radio is disabled (see [Turn a radio on or off](#) on page 63). By default, all radios are enabled and the WLAN LEDs light solid green or solid blue or blink blue.
- If you are using a Power over Ethernet (PoE) connection, make sure that the PoE switch is providing sufficient power to the access point. Insufficient PoE power can

affect the radios. Also see [The access point functions as a PoE PD and the Power/Cloud LED remains solid amber](#) on page 172.

If the error persists, a hardware problem might exist. For recovery instructions or help with a hardware problem, contact technical support at [netgear.com/support](http://netgear.com/support).

## A LAN LED is off while a switch or LAN device is connected

When a switch or a LAN device is connected to a LAN port on the access point, the associated LAN LED lights amber or green, depending on the speed of the connection.

LAN 1 port is a PoE PD port that you can connect to a PoE+ switch, a non-PoE switch, or another LAN device. LAN 2 port is a non-PoE port that you can connect to a non-PoE switch or another LAN device. Either LAN 1 port or LAN 2 port must be connected to a switch for a network connection.

If the LAN 1 LED or LAN 2 LED remains off, a hardware connection problem might be occurring. Check these items:

- Make sure that the Ethernet cable connectors are securely plugged in at the access point and the network device.
- Make sure that the connected network device is actually turned on.
- Make sure that you are using the correct Ethernet cable. Use a standard Category 5 Ethernet patch cable. If the network device incorporates Auto Uplink™ (MDI/MDIX) ports, you can use either a crossover cable or a normal patch cable.

## Troubleshoot the WiFi connectivity

If you are experiencing trouble connecting over WiFi to the access point, try to isolate the problem:

- Make sure that the WiFi settings in your WiFi device and access point match exactly. For a device that is connected over WiFi, the WiFi network name (SSID) and WiFi security settings of the access point and WiFi device must match exactly. For information about accessing the access point for initial configuration over a WiFi connection, see [Connect to the access point for initial configuration](#) on page 20.
- Does the WiFi device that you are using find your WiFi network? If not, check the WLAN LEDs. If a WLAN LED is off, the associated WiFi radio is probably off, too. For more information about the WiFi radios, see [Turn a radio on or off](#) on page 63.
- If you disabled the access point's SSID broadcast, your WiFi network is hidden and does not display in your WiFi client's scanning list. (By default, SSID broadcast is

enabled.) For more information about the SSID broadcast, see [Set up and manage WiFi networks](#) on page 36.

- Does your WiFi device support the security that you are using for your WiFi network (WPA2 Personal or WPA2 Personal Mixed). For more information, see [Set up and manage WiFi networks](#) on page 36.

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

If your WiFi device finds your network but the signal strength is weak, check these conditions:

- Is your access point too far from your WiFi device, or too close? Place your WiFi device near the access point, but at least 6 feet (1.8 meters) away, and see whether the signal strength improves.
- Are objects between the access point and your WiFi device blocking the WiFi signal?

## Troubleshoot Internet browsing

If your computer or WiFi device is connected to the access point but unable to load any web pages from the Internet, it might be for one of the following reasons:

- Your computer might not recognize any DNS server addresses.  
If you manually entered a DNS address when you set up the access point (that is, the access point uses static IP address settings), reboot your computer and verify the DNS address. Alternatively, you can configure your computer manually with DNS addresses, as described in your operating system documentation.
- Your computer might not use the correct TCP/IP settings.  
If your computer obtains its information by DHCP, reboot the computer and verify the address of the switch or Internet modem to which the access point is connected. For information about TCP/IP problems, see [Troubleshoot your network using the ping utility](#) on page 177.

# You cannot log in to the access point over a LAN connection

If you are unable to log in to the access point from a computer on your local network and use the access point's local browser interface, check the following:

- If you are using an Ethernet-connected computer, check the Ethernet cable between the computer and the access point.
- Make sure that the IP address of your computer is in the same subnet as the access point.  
If you disabled the access point's DHCP client and configured a fixed (static) IP address when you connected the access point to network or Internet modem (see [Disable the DHCP client and specify a fixed IP address](#) on page 109), change the IP address and subnet mask on your computer to so that the IP addresses of your computer and the access point are in the same IP subnet.
- If your access point's IP address was changed (for example, the DHCP server in your network issued an IP address to the access point) and you do not know the current IP address, use an IP scanner application to detect the IP address. If you still cannot find the IP address, reset the access point's configuration to factory defaults. This sets the access point's IP address to 192.168.0.100. For more information, see [Use the Reset button](#) on page 136.
- Make sure that Java, JavaScript, or ActiveX is enabled in your browser. If you are using Internet Explorer, click the **Refresh** button to be sure that the Java applet is loaded.
- Try quitting the browser and launching it again.
- Make sure that you are using the correct login information. The user name is **admin** and the password is the one that you specified the first time that you logged in. Make sure that Caps Lock is off when you enter this information.

## Changes are not saved

If you are logged in to the access point's local browser interface and the access point does not save the changes that you make on a page, do the following:

- When entering configuration settings, always click the **Apply** button before moving to another page or tab or your changes are lost.
- Click the **Refresh** or **Reload** button in the web browser. It is possible that the changes occurred but that the old settings remain in the web browser's cache.



# 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 access point

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

### To ping the access point from a Windows computer:

1. From the Windows taskbar, click the **Start** button and select **Run**.
2. In the field provided, enter **ping** followed by the IP address of the access point, as in this example:

**ping 192.168.0.100**

3. Click the **OK** button.

A message such as the following one displays:

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

If the path is working, you see this message:

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

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

```
Request timed out
```

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

- Wrong physical connections  
For a wired connection, make sure that the numbered LAN LED is lit for the port to which you are connected.  
Check that the appropriate LEDs are on for your network devices. If your access point 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 access point.
- 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 access point and your computer are correct and that the addresses are in the same subnet.

## Test the path from your computer to a remote device

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

### To test the path from your computer to a remote device:

1. From the Windows toolbar, click the **Start** button and select **Run**.
2. In the field provided, enter **ping -n 10 IP address**.

*IP address* is the IP address of a remote device such as a remote DNS server.

If the path is functioning correctly, replies as described in [Test the LAN path to your access point](#) on page 177 display. If you do not receive replies, do the following:

- Check to see that your computer lists the IP address of the router to which the access point is connected as the default router. If the IP configuration of your computer is assigned by DHCP, this information is not visible in your computer's Network Control Panel.
- Check to see that the network address of your computer (the portion of the IP address specified by the netmask) is different from the network address of the remote device.

# A

## Factory Default Settings and Technical Specifications

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This appendix includes the following sections:

- [Factory settings](#)
- [Technical specifications](#)

# Factory settings

You can reset the access point to the factory default settings, which are shown in the following table.

For more information about resetting the access point to its factory settings, see [Return the access point to its factory default settings](#) on page 135.

Table 2. Access point factory default settings

Feature	Default Setting
<b>Access point login</b>	
Management mode	NETGEAR Insight management mode
User login URL	192.168.0.100
User name (case-sensitive)	admin, nonconfigurable
Login password (case-sensitive)	password, configurable
<b>General system settings</b>	
Operating mode	AP mode
DHCP client	Enabled so that the access point receives an IP address from a DHCP server in the network.
NTP client	Enabled
Spanning Tree Protocol	Disabled
Network integrity check	Disabled
802.1Q VLAN	Untagged VLAN with VLAN ID 1
Management VLAN	VLAN ID 1
Syslog	Disabled
Ethernet LLDP	Enabled
UPnP	Enabled
LEDs	Enabled
<b>WiFi network for initial setup</b>	
SSID name	SSID for initial setup is NETGEARxxxxxx-SETUP, where xxxxxx is the last six hexadecimal digits of the access point's MAC address.

Table 2. Access point factory default settings (Continued)

Feature	Default Setting
Security	WPA2 Personal (which is WPA2-PSK) WiFi password (network key): sharedsecret
RF channel	Auto. The available channels depend on the region.
<b>WLAN settings for an individual WiFi network (SSID or VAP)</b>	
WiFi communication	The 2.4 GHz radio and both 5 GHz radios are enabled.
Client isolation	Disabled
Broadcast SSID	Enabled
Band steering	Disabled Automatic band steering includes automatic 802.11k RRM and automatic 802.11v WiFi network management.
VLAN ID (for WiFi clients)	1
Network authentication	WPA2 Personal (which is WPA2-PSK)
Data encryption	AES
Passphrase	sharedsecret
802.11w (PMF)	Disabled
URL tracking	Disabled
MAC ACL	None assigned
Rate limit	None
Captive portal	None
<b>Basic WiFi settings for all WiFi networks (SSIDs or VAPs)</b>	
Radios	The 2.4 GHz radio and both 5 GHz radios are enabled.
WiFi mode	2.4 GHz radio: 11ng mode, which also supports 11b and 11bg 5 GHz radios: 11ac mode, which also support 11a and 11na
MCS index / data rate	Best
Channel width	Dynamic 20 / 40 MHz for the 2.4 GHz radio Dynamic 20 / 40 / 80 MHz for the 5 GHz radios
Output power	Maximum (100%)
Guard interval	Auto
Channel	Auto
WiFi schedule	None

Table 2. Access point factory default settings (Continued)

Feature	Default Setting
Wi-Fi Multimedia (WMM)	Enabled
WMM powersave	Enabled
<b>Advanced WiFi settings for all WiFi networks (SSIDs or VAPs)</b>	
Number of WiFi clients	Default: 200 per radio Maximum: 200 per radio
Beacon interval	100 millisc.
802.11n 256 QAM	Disabled for the 2.4 GHz radio (nonconfigurable for the 5 GHz radios)
RTS threshold	2346
DTIM interval	2 sec.
Broadcast/multicast rate limiting	Enabled with a limit of 50 packets per second
Fixed multicast rate	Auto
MU-MIMO	Enabled for the 5 GHz radios (nonconfigurable for the 2.4 GHz radio)
802.11h	Disabled for the 5 GHz radios (nonconfigurable for the 2.4 GHz radio)
Load balancing between radios	Disabled
Data volume limit	None
Wireless bridge	None configured
<b>General security</b>	
URL filtering	None
RADIUS servers	None configured
Neighbour AP detection	Disabled
MAC ACLs	None

# Technical specifications

The following table shows the technical specifications of the access point.

Table 3. Access point specifications

Feature	Description
Supported WiFi radio frequencies and WiFi modes	2.4 GHz band: 802.11ng, 801.11bg, and 802.11b 5 GHz band: 802.11ac, 802.11na, and 802.11a Supports 2.4 GHz and 5 GHz concurrent operation
Maximum theoretical throughput	About 3000 Mbps simultaneous throughput (400 Mbps on the 2.4 GHz band, 867 Mbps on the 5 GHz low band, and 1733 Mbps on the 5 GHz high band) <b>Note:</b> Throughput can vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, affect the data throughput rate.
Maximum number of supported clients	Maximum number of 2.4 GHz WiFi clients: 200 (200 per radio) Maximum number of 5 GHz WiFi clients: 400 (200 per radio) Maximum number of clients for the access point: 600 (3 radios)
WiFi standards	IEEE 802.11ac Wave 2 standard WiFi Multimedia Prioritization (WMM) Wireless distribution system (WDS)
802.11 security	WPA2 Personal, WPA2 Personal Mixed, and WPA2 Enterprise
Operating frequency range	2.4 GHz band: <ul style="list-style-type: none"> <li>• US and Canada: 2.412-2.462 GHz</li> <li>• Europe: 2.412-2.472 GHz</li> <li>• Australia: 2.412-2.472 GHz</li> <li>• Japan: 2.412-2.472 GHz</li> </ul> 5 GHz low band: <ul style="list-style-type: none"> <li>• US and Canada: 5.18-5.24 GHz</li> <li>• Europe: 5.18-5.24 GHz and DFS 5.25-5.35 GHz</li> <li>• Australia: 5.18-5.24 GHz</li> <li>• Japan: 5.18-5.24 GHz and DFS 5.26-5.32 GHz</li> </ul> 5 GHz high band: <ul style="list-style-type: none"> <li>• US and Canada: 5.745-5.825 GHz</li> <li>• Europe: DFS 5.50-5.70 GHz</li> <li>• Australia: 5.745-5.825 GHz</li> <li>• Japan: DFS 5.50-5.64 GHz</li> </ul>

Table 3. Access point specifications (Continued)

Feature	Description
Power over Ethernet	If you do not use a power adapter, the PoE port requires 802.3at (PoE+) power but can also function with 802.3at (PoE) power. We recommend that you use 802.3at (PoE+) power. PoE might be considered a network environment 0 per IEC TR 62101, and thus the interconnected ITE circuits might be considered safety extra low voltage (SELV).
PoE consumption	25.02W
Power adapter (not included but can be ordered as an option)	12 VDC, 2.5A The plug is localized to the country of sale.
Hardware interfaces	One LAN port that can receive PoE+ power and one regular (non-PoE) LAN port, both of which are 10/100/1000BASE-T RJ-45 ports with Auto Uplink (Auto MDI-X). If you do not use a power adapter, the PoE port requires 802.3at (PoE+) power but can also function with 802.3at (PoE) power. We recommend that you use 802.3at (PoE+) power.
Dimensions (W x D x H)	9.51 x 9.51 x 1.58 in. (241.6 x 241.6 x 40.2 mm)
Weight	1.66 lb (752 g)
Operating temperature	32° to 104°F (0° to 40°C)
Operating humidity	10 to 90% maximum relative humidity, noncondensing
Storage temperature	-4° to 158°F (-20° to 70°C)
Storage humidity	5 to 95% maximum relative humidity, noncondensing
EMI certification	FCC Part 15 Report (EMI) SubPart B Industry Canada EMI Report, ICES-003 ACMA EMI Report CE EMC Report, EN 55032/24 Report VCCI EMI Report and Certificate EN 301 489-17 EMC Report
Regulatory compliance US	FCC Grant, FCC Authorization FCC Spectrum Report, Part 15, SubPart C (15.247) FCC Spectrum Report, Part 15, SubPart E (15.407) FCC DFS Report FCC DFS Grant, FCC Authorization DFS FCC Standard Absorption Rate Report (SAR or MPE), FCC Part 2 SpJ
Regulatory compliance Canada	Industry Canada Certificate Cover Letter Industry Canada RSS-247 2.4GHz Report Industry Canada RSS-247 5GHz Report
Regulatory compliance Europe	EN 300 328, Radio Spectrum Report EN 301 893 Radio Spectrum Report EN 301 893 DFS Report EN RF Exposure (SAR or MPE), EN 62311(for Wi-Fi) , EN 62479 (for BT), EN 50385 (for AP router), EN 50566 (Body SAR)



Table 3. Access point specifications (Continued)

Feature	Description
Regulatory compliance Australia and New Zealand	AS/NZS 4268:2012, AUS RF - Short range devices Australia SDoC Australia ACMA Registration Australia MPE Maximum Personal Exposure New Zealand SDoC
Safety and energy compliance	IEC 60950-1 CB Certificate and Test Report, CB IEC60950 / EN60950 CE LVD Report, EN60950 Report AU/NZ Report, AS/NZS EN 60950 EC 278/2009, External Power Supply SNE VA