NETGEAR®

Nighthawk S8000
Gaming & Streaming Advanced
8-Port Gigabit Ethernet Switch

User Manual

Model GS808E

June 2017
202-11732-02

350 E. Plumeria Drive
San Jose, CA 95134
USA

Support

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Conformity

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

See the regulatory compliance document before connecting the power supply.

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Hardware Overview of the Switch

1

The NETGEAR Nighthawk® S8000 Gaming & Streaming Advanced 8-Port Gigabit Ethernet Switch (GS808E), in this manual referred to as the switch, provides high-performance switching for the home for multiplayer, online, or VR gaming and 4K resolution HD and UHD (ultra-high-definition) television media streaming.

With one click you can optimize settings for gaming, media steaming, and standard networking, but you can also manually optimize Quality of Service (QoS) and set up prioritization and rate limiting for individual ports. The switch supports IGMP snooping for multicast operation and link aggregation for a connection of up to 4 Gbps to link aggregation–enabled devices such as ReadyNAS.

The chapter contains the following sections:

- *Related Documentation* on page 6
- *Switch Package Contents* on page 6
- *Status LEDs* on page 6
- *Back Panel* on page 7
- *Switch Label* on page 8

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

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

Related Documentation

The following related documentation is available at *downloadcenter.netgear.com*:

- Installation guide
- Data sheet

Switch Package Contents

The package contains the switch, AC power adapter (localized to the country of sale), and installation guide.

Status LEDs

Status LEDs are located on the top panel and back panel of the switch.



Figure 1. Power LED



Figure 2. Port LEDs

Table 1. LED descriptions

LED	Description
Power LED	**Off**. No power is supplied to the switch or the switch functions in Stealth Mode with its Power LED disabled (see *Control the Power LED* on page 70). **Solid blue**. Power is supplied to the switch and the switch is ready for operation.
Port LEDs (1 through 8)	**Off**. No link with a powered-on device is detected or the active ports function in Stealth Mode with their Port LEDs disabled (see *Control the Port LEDs* on page 69). **Solid blue**. A link with a powered-on device is detected. **Blinking blue**. Traffic is detected. **All port LEDs blinking red in a scrolling pattern**. Firmware is being loaded onto the switch. **All port LEDs for ports in use blinking blue fast**. The switch detected a network loop. For more information, see *Detect a Network Loop* on page 79.

For information about controlling the LEDs, see *Control the Power LED* on page 70 and *Control the Port LEDs* on page 69.

Back Panel

The back panel of the switch provides a button, eight ports, and a DC power connector.

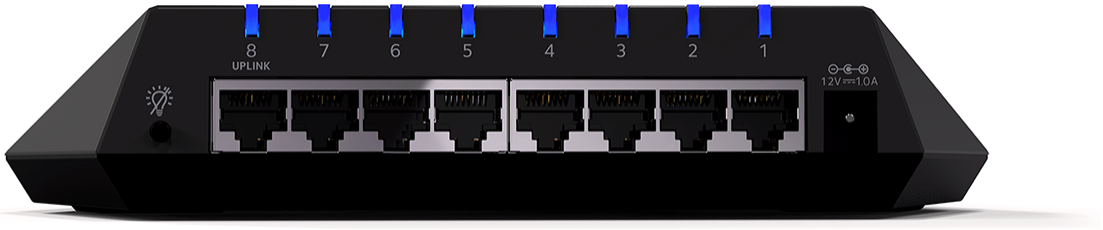


Figure 3. Switch back panel

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

- **LED button**. One button to turn the port LEDs on and off.
- **Gigabit Ethernet ports**. Eight Gigabit Ethernet RJ-45 LAN ports:
  - **Port 8 (UPLINK)**. Connect this port to a LAN port on a router that is connected to the Internet.
  - **Ports 7 through 3**. Connect these ports to your network devices, other than your main streaming device (see Port 2) and main gaming device (see Port 1).
  - **Port 2**. Connect this port to your main streaming device.
  - **Port 1**. Connect this port to your main gaming device.

We recommend these port connections for the one-touch performance presets (see *Apply a Performance Preset Mode* on page 20). However, you can save custom performance presets and use different port connections (see *Manage Custom Performance Preset Modes* on page 26).

- **DC power connector**. One 12V, 1.0 A DC connector for the power adapter.

Note The **RESET** button is located on the bottom panel of the switch. Press the **RESET** button for five seconds to reset the switch to factory default settings. For more information, see *Return the Switch to Its Factory Default Settings* on page 66.

Switch Label

The switch label on the bottom panel of the switch shows the serial number, MAC address, and default login information of the switch.



Figure 4. Switch label

Install and Access the Switch in Your Network

2

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

The chapter contains the following sections:

- *Set Up the Switch in Your Network and Power On the Switch* on page 10
- *Access the Switch and Discover the IP Address of the Switch* on page 11
- *Set Up a Fixed IP Address for the Switch* on page 13
- *Access the Switch From a Mobile Device* on page 18

Set Up the Switch in Your Network and Power On the Switch

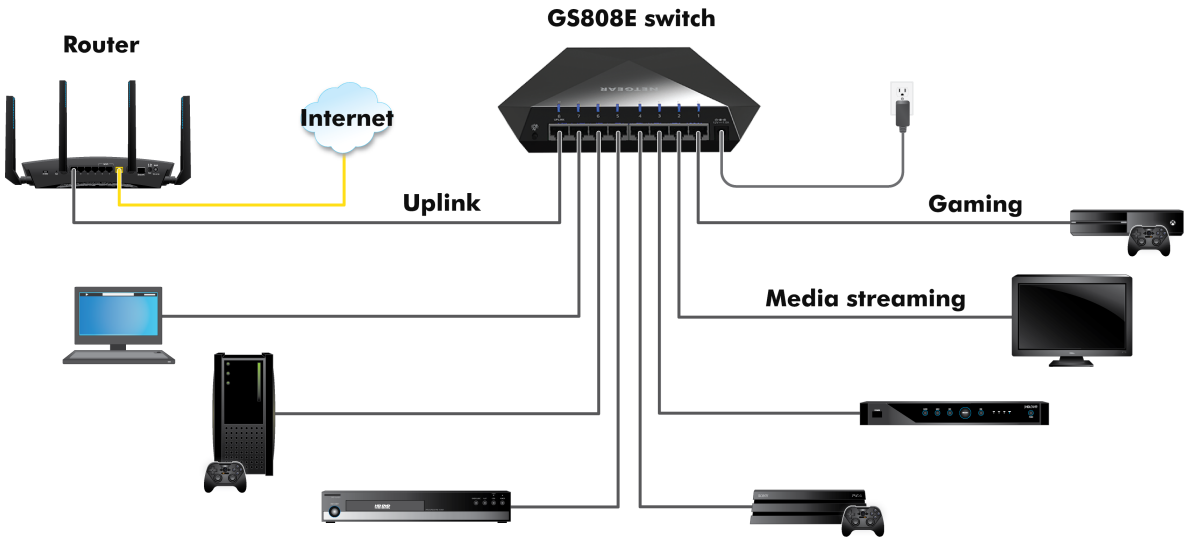


Figure 5. Example connections

To set up the switch in your network and power on the switch:

1. Connect LAN port 8 (UPLINK) on the switch to a LAN port on a router that is connected to the Internet.
2. On the switch, connect your devices as follows:

   - Connect your gaming device to port 1.
   - Connect your streaming device to port 2.
   - Connect all other devices (including additional gaming and streaming devices) to remaining ports 3 through 7.

   We recommend these port connections for the one-touch performance presets (see *Apply a Performance Preset Mode* on page 20). However, you can save custom performance presets and use different port connections (see *Manage Custom Performance Preset Modes* on page 26).

3. Connect the power adapter to the switch and plug the power adapter into an electrical outlet.

   The blue Power LED on top of the switch lights and the port LEDs for connected devices light.

Access the Switch and Discover the IP Address of the Switch

By default, the switch receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network.

Access the Switch From a Windows-Based Computer

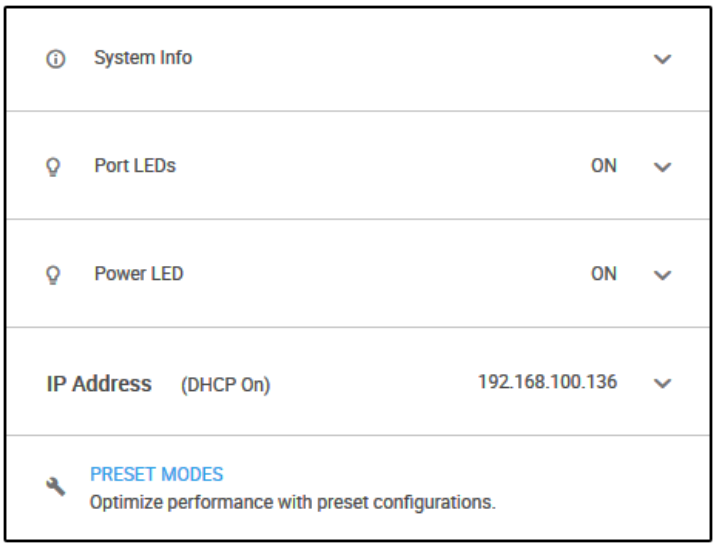
To access the switch from a Windows-based computer and discover the switch IP address:

1. Open Windows Explorer.
2. Click the **Network** link.
3. If prompted, enable the Network Discovery feature.
4. Under Network Infrastructure, locate the Nighthawk S8000.
5. Double-click **Nighthawk S8000 (xx:xx:xx:xx:xx:xx)**, in which xx:xx:xx:xx:xx:xx is the MAC address of the switch.

   The login page of the management interface opens.
6. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.



The previous figure shows the right pane (or, depending on the size of your browser page, the middle pane) of the Home page. The pane shows the IP address that is assigned to the switch.

Tip You can copy and paste the IP address into a new shortcut or bookmark it for quick access on your computer or mobile device. However, if you reboot the switch, a dynamic IP address (assigned by a DHCP server) might change and the bookmark might no longer link to the login page for the switch. In this case, you must repeat *Step 1* through *Step 6* so that you can discover the new IP address of the switch in the network and update your bookmark accordingly. You can also set up a fixed (static) IP address for the switch (see *Set Up a Fixed IP Address for the Switch* on page 13) to ensure that the new bookmark always links to the login page for the switch, even after you reboot the switch.

Access the Switch From a Mac

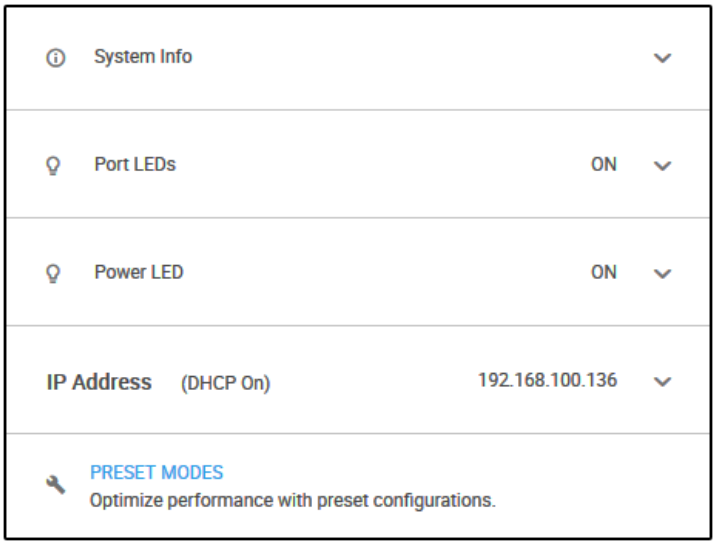
To access the switch from a Mac and discover the switch IP address:

1. Open the Safari browser.
2. Select **Safari > Preferences**.
   The General page displays.
3. Click the **Advanced** tab.
   The Advanced page displays.
4. Select the **Include Bonjour in the Bookmarks Menu** check box.
5. Close the Advanced page.
6. Depending on your Mac OS version, select one of the following, in which xx:xx:xx:xx:xx:xx is the MAC address of the switch:

   - **Bookmarks > Bonjour > Nighthawk S8000 (xx:xx:xx:xx:xx:xx)**
   - **Bookmarks > Bonjour > Webpages Nighthawk S8000 (xx:xx:xx:xx:xx:xx)**

   The login page of the management interface opens.
7. Enter the switch password.
   The default password is **password**. The password is case-sensitive.

The Home page displays.



The previous figure shows the right pane (or, depending on the size of your browser page, the middle pane) of the Home page. The pane shows the IP address that is assigned to the switch.

Tip You can copy and paste the IP address into a new shortcut or bookmark it for quick access on your computer or mobile device. However, if you reboot the switch, a dynamic IP address (assigned by a DHCP server) might change and the bookmark might no longer link to the login page for the switch. In this case, you must repeat *Step 1* through *Step 7* so that you can discover the new IP address of the switch in the network and update your bookmark accordingly. You can also set up a fixed (static) IP address for the switch (see *Set Up a Fixed IP Address for the Switch* on page 13) to ensure that the new bookmark always links to the login page for the switch, even after you reboot the switch.

Set Up a Fixed IP Address for the Switch

By default, the switch receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network. However, the DHCP server might not always issue the same IP address to the switch. For easy access to the switch management interface, you can set up a fixed (static) IP address on the switch. This allows you to manage the switch anytime from a mobile device because the switch IP address remains the same.

To change the IP address of the switch, you can connect to the switch by one of the following methods:

- **Through a network connection**. If the switch and your computer are connected to the same network (which is the most likely situation), you can change the IP address of the switch through a network connection (see *Set Up a Fixed IP Address for the Switch Through a Network Connection* on page 14).
- **Through a direct connection**. If the unlikely situation that the switch is not connected to a network, or for some reason you cannot connect to the switch over a network connection, you can change the IP address of the switch by using an Ethernet cable and making a direct connection to the switch (see *Set Up a Fixed IP Address for the Switch By Connecting Directly to the Switch Off-Network* on page 16).

Set Up a Fixed IP Address for the Switch Through a Network Connection

If the switch and your computer are connected to the same network (which is the most the likely situation), you can change the IP address of the switch through a network connection.

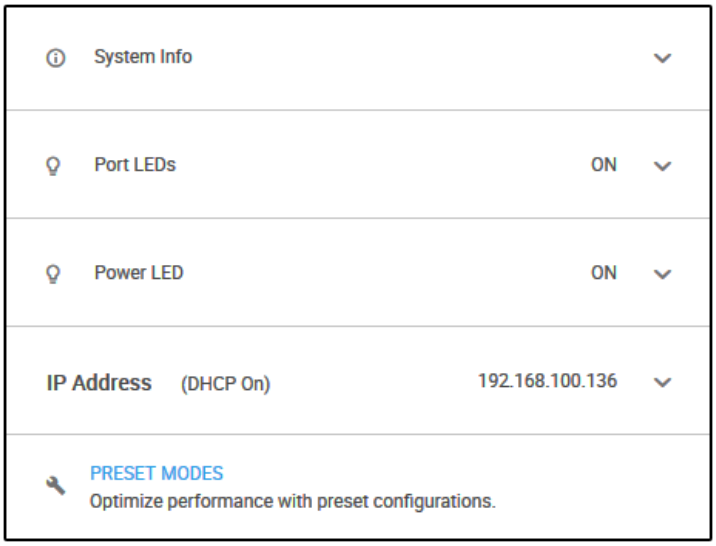
To disable the DHCP client of the switch and change the IP address of the switch to a fixed IP address by using a network connection:

1. Open a web browser from a computer that is connected to the same network as the switch.
2. Enter the IP address that is assigned to the switch.

   The login page opens.
3. Enter the switch password.

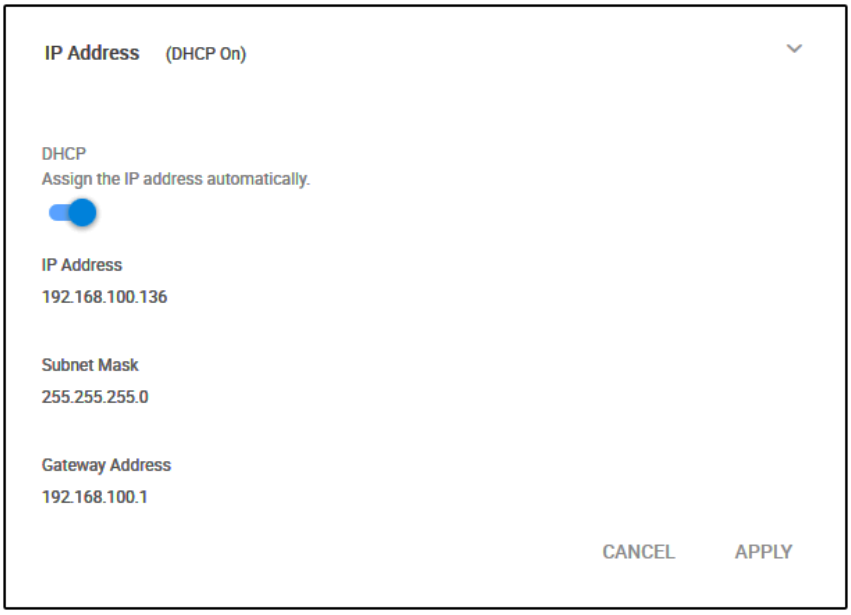
   The default password is **password**. The password is case-sensitive.

   The Home page displays.



The previous figure shows the right pane (or, depending on the size of your browser page, the middle pane) of the Home page.

4. Select **IP Address (DHCP On)**.



   The button in the DHCP section displays blue because the DHCP client of the switch is enabled.

5. Click the button in the DHCP section.

   The button displays white, indicating that the DHCP client of the switch is disabled, and the IP address fields become editable.

6. Enter the fixed (static) IP address that you want to assign to the switch and the associated subnet mask and gateway IP address.

   You can also either leave the address in the **IP Address** field as it is (with the IP address that was issued by the DHCP server) or change the last three digits of the IP address to an unused IP address.

7. Write down the complete fixed IP address.

   You can bookmark it later.

8. Click the **APPLY** button.

   Your settings are saved. Your switch web session is disconnected when you change the IP address.

9. If the login page does not display, in the address field of your web browser, enter the new IP address of the switch.

   The login page displays.

10. For easy access to the management interface, bookmark the page on your computer.

Set Up a Fixed IP Address for the Switch By Connecting Directly to the Switch Off-Network

If the unlikely situation that the switch is not connected to a network, or for some reason you cannot connect to the switch over a network connection, you can change the IP address of the switch by using an Ethernet cable and making a direct connection to the switch.

To disable the DHCP client of the switch and change the IP address of the switch to a fixed IP address by using a direct connection:

1. Connect an Ethernet cable from your computer to an Ethernet port on the switch.
2. Change the IP address of your computer to be in the same subnet as the default IP address of the switch.

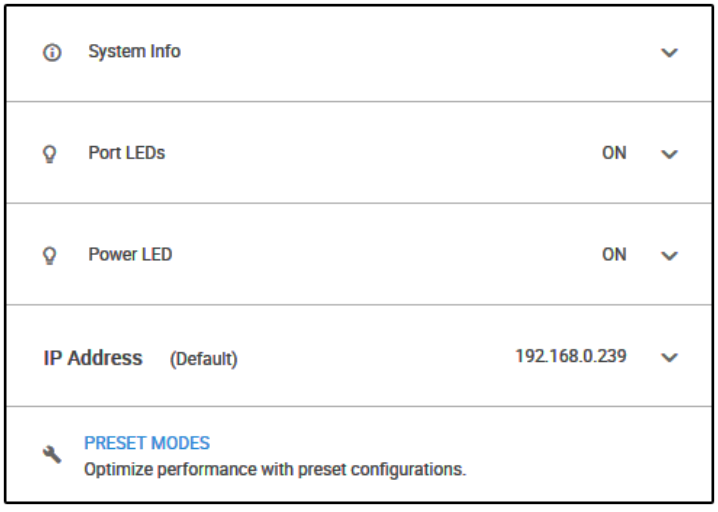
   The default IP address of the switch is 192.168.0.239. This means that you must change the IP address of the computer to be on the same subnet as the default IP address of the switch (192.168.0.x).

   The method to change the IP address on your computer depends on the operating system of your computer.
3. Open a web browser from a computer that is connected to the switch directly through an Ethernet cable.
4. Enter **192.168.0.239** as the IP address of the switch.

   The login page opens.
5. Enter the switch password.

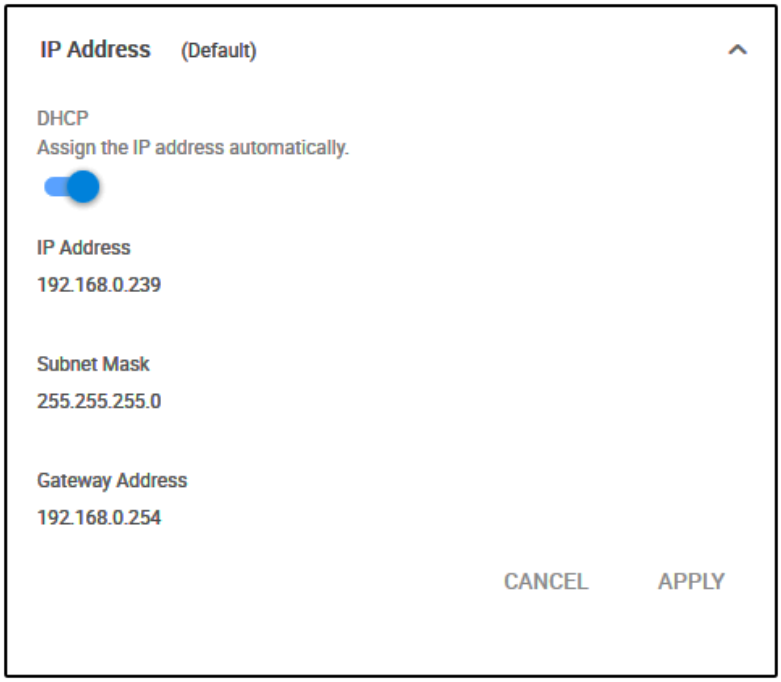
   The default password is **password**. The password is case-sensitive.

   The Home page displays.



The previous figure shows the right pane (or, depending on the size of your browser page, the middle pane) of the Home page.

6. Select **IP Address (Default)**.



The button in the DHCP section displays blue because the DHCP client of the switch is enabled.

7. Click the button in the DHCP section.
   The button displays white, indicating that the DHCP client of the switch is disabled, and the IP address fields become editable.
8. Enter the fixed (static) IP address that you want to assign to the switch and the associated subnet mask and gateway IP address.
9. Write down the complete fixed IP address.
   You can bookmark it later.
10. Click the **APPLY** button.
    Your settings are saved. Your switch web session is disconnected when you change the IP address.
11. Disconnect the switch from your computer and install the switch in your network.
    For more information, see *Set Up the Switch in Your Network and Power On the Switch* on page 10.
12. Restore your computer to its original IP address.
13. Verify that you can connect to the switch with its new IP address:
    a. Open a web browser from a computer that is connected to the same network as the switch.
    b. Enter the new IP address that you assigned to the switch.
       The login page opens.
    c. Enter the switch password.
       The default password is **password**. The password is case-sensitive.
       The Home page displays.

Access the Switch From a Mobile Device

Although you can access the switch management interface from the IP address at which you discovered the switch in your network (see *Access the Switch and Discover the IP Address of the Switch* on page 11), that IP address could change if the DHCP server issues another IP address to the switch. If you set up a fixed IP address (see *Set Up a Fixed IP Address for the Switch* on page 13), you can then bookmark the web page for that IP address to quickly access the management interface on your mobile device.

To access the switch from a mobile device:

1. Open a web browser, and in the address bar, type the IP address of the switch.
2. For easy access to the management interface, bookmark the page on your mobile device.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

Optimize the Switch Performance

3

This chapter describes how you can optimize the performance of the switch.

The chapter contains the following sections:

- *Apply a Performance Preset Mode* on page 20
- *Manage Custom Performance Preset Modes* on page 26
- *Manually Set the Quality of Service Mode and Port Rate Limits* on page 30
- *Manage Broadcast Filtering and Set Port Storm Control Rate Limits* on page 35
- *Manage Individual Port Settings* on page 37

Apply a Performance Preset Mode

The switch comes with three predefined preset modes that let you optimize the performance of the switch with a preset configuration. These modes include a gaming mode, a media streaming mode, and a standard mode. The switch also provides two custom preset modes that you can define with a preset configuration and save for easy retrieval (see *Manage Custom Performance Preset Modes* on page 26).

A preset mode affects the Quality of Service (QoS) and port prioritization of the switch.

Apply the Gaming Preset Mode

The Gaming Preset mode minimizes the data delay (latency) of traffic that the switch manages so that gaming network traffic can be processed very quickly. If you use the Gaming Preset mode, be sure that you connect your gaming device to port 1 and the uplink to your router to port 8.

Applying the Gaming Preset mode does the following:

- Sets the QoS port priority for ports 1 and 8 to Critical.
- Sets the QoS port priority for ports 2 through 7 to Low.
- Enables IGMP snooping for the switch (for more information, see *Manage IGMP Snooping* on page 53).
- Disables flow control for all ports (for more information, *Manage Flow Control for a Port* on page 41).
- Disables power saving for the switch (for more information, see *Manage the Power Saving Mode* on page 68).
- Sets the QoS mode to port-based (for more information, see *Use Port-Based Quality of Service and Set Port Priorities* on page 30).

Before you apply the Gaming Preset mode, you can save your current QoS, port prioritization, multicast, flow control, and IGMP snooping settings and other settings as a custom preset mode (see *Save Your Quality of Service Settings as a Custom Preset Mode* on page 26) so that you can easily revert to your current QoS configuration.

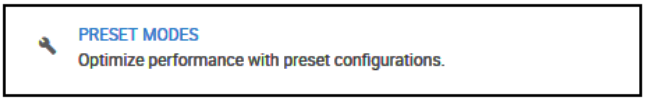
To apply the Gaming Preset mode:

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

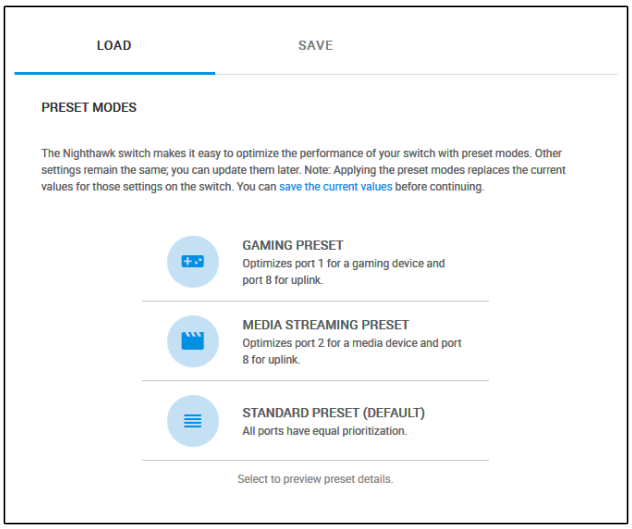
   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

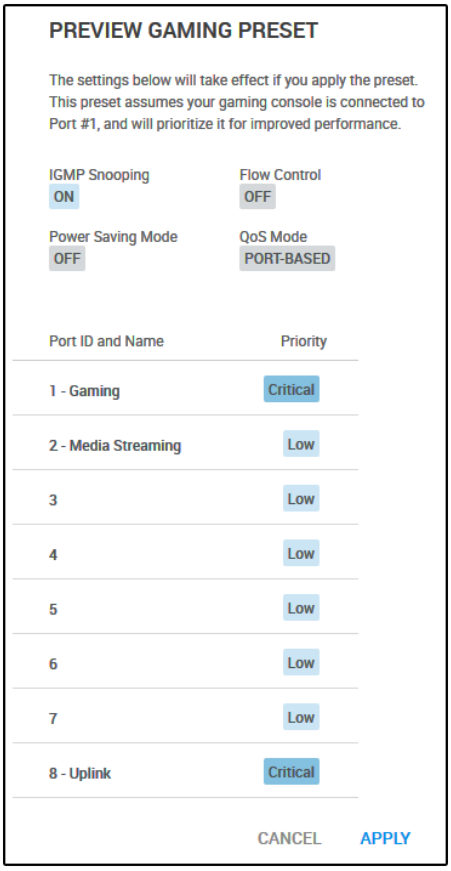
   The Home page displays.



4. Select **PRESET MODES**.



5. Select **GAMING PRESET**.



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

Apply the Media Streaming Preset Mode

The Media Streaming Preset mode maximizes the throughput of traffic that the switch manages so that streaming media such as music, videos, and movies can be processed very quickly. If you use the Media Streaming mode, be sure that you connect your media streaming device to port 2 and the uplink to your router to port 8.

Applying the Media Streaming Preset mode does the following:

- Sets the QoS port priority for ports 2 and 8 to Critical.
- Sets the QoS port priority for ports 1 and 3 through 7 to Low.
- Enables IGMP snooping for the switch (for more information, see *Manage IGMP Snooping* on page 53).
- Disables flow control for all ports (for more information, *Manage Flow Control for a Port* on page 41).
- Disables power saving for the switch (for more information, see *Manage the Power Saving Mode* on page 68).
- Sets the QoS mode to port-based (for more information, see *Use Port-Based Quality of Service and Set Port Priorities* on page 30).

Before you apply the Media Streaming Preset mode, you can save your current QoS, port prioritization, multicast, flow control, and IGMP snooping settings and other settings as a custom preset mode (see *Save Your Quality of Service Settings as a Custom Preset Mode* on page 26) so that you can easily revert to your current QoS configuration.

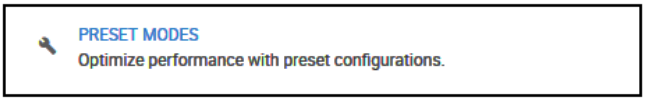
To apply the Media Streaming Preset mode:

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

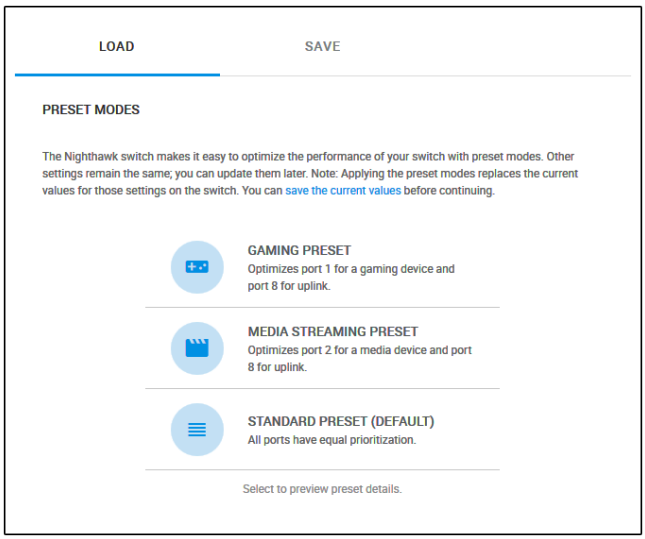
   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

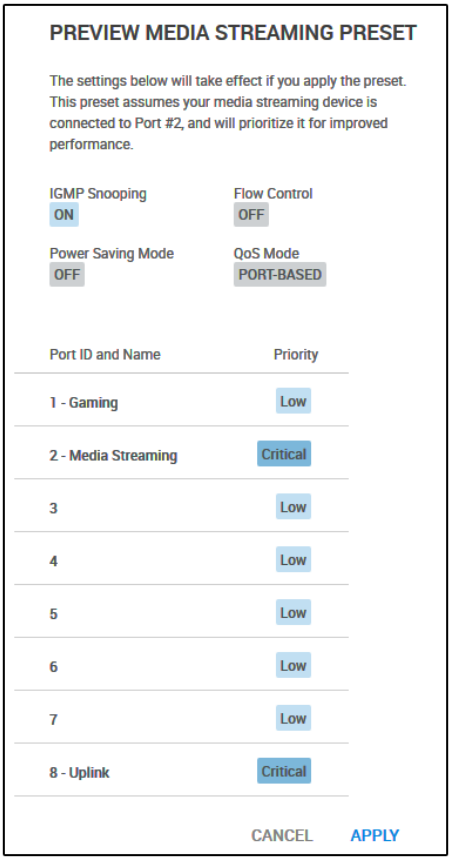
   The Home page displays.



4. Select **PRESET MODES**.



5. Select **MEDIA STREAMING PRESET**.



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

Apply the Standard Preset Mode

The Standard Preset mode, which is the default mode, gives all ports equal prioritization.

Applying the Standard Preset mode does the following:

- Sets the QoS port priority for all ports to High.
- Enables IGMP snooping for the switch (for more information, see *Manage IGMP Snooping* on page 53).
- Disables flow control for all ports (for more information, *Manage Flow Control for a Port* on page 41).
- Disables power saving for the switch (for more information, see *Manage the Power Saving Mode* on page 68).
- Sets the QoS mode to port-based (for more information, see *Use Port-Based Quality of Service and Set Port Priorities* on page 30).

Before you apply the Standard Preset mode, you can save your current QoS, port prioritization, multicast, flow control, and IGMP snooping settings and other settings as a custom preset mode (see *Save Your Quality of Service Settings as a Custom Preset Mode* on page 26) so that you can easily revert to your current QoS configuration.

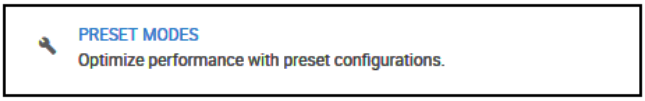
To apply the Standard Preset mode:

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

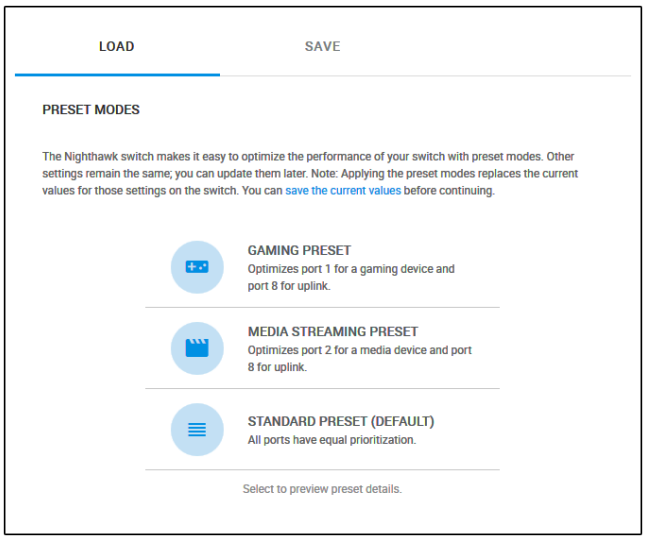
   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

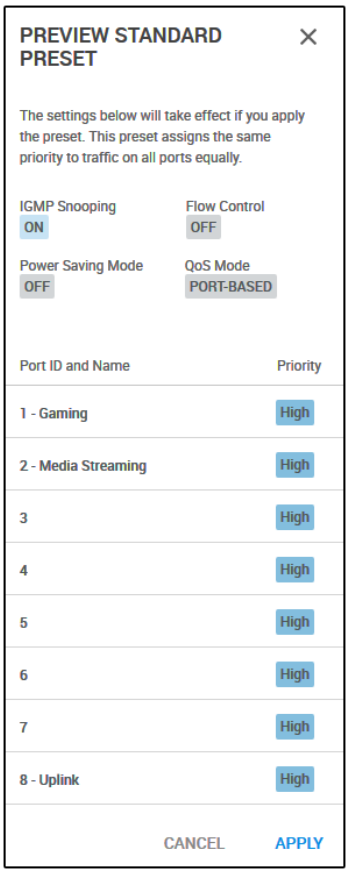
   The Home page displays.



4. Select **PRESET MODES**.



5. Select **STANDARD PRESET (DEFAULT)**.



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

Manage Custom Performance Preset Modes

You can save your current Quality of Service (QoS) settings as a custom preset mode, including the settings for IGMP snooping, flow control, the power saving mode, the QoS mode, and the priorities of the individual ports. You can also rename or delete these custom preset modes.

Save Your Quality of Service Settings as a Custom Preset Mode

Before you apply a performance preset mode (see *Apply a Performance Preset Mode* on page 20), you can save your current Quality of Service (QoS) settings as a custom preset mode.

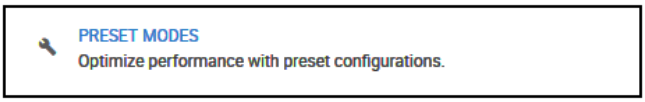
To save your QoS settings as a custom preset mode:

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

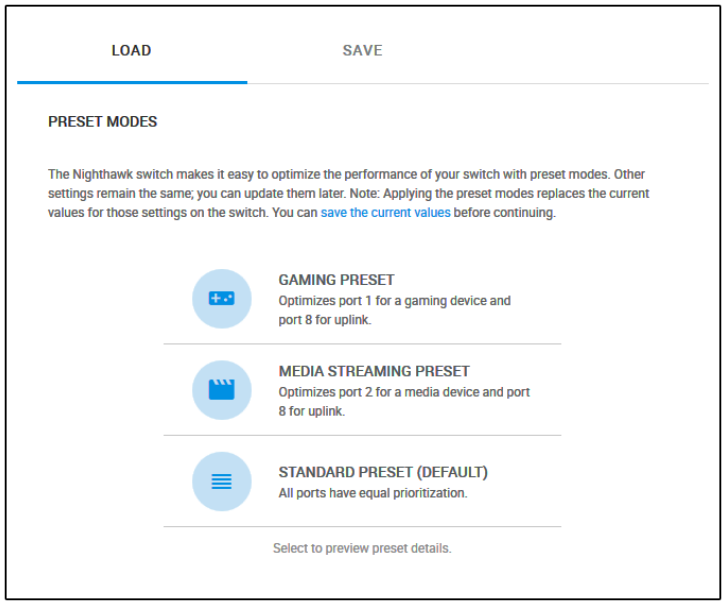
   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

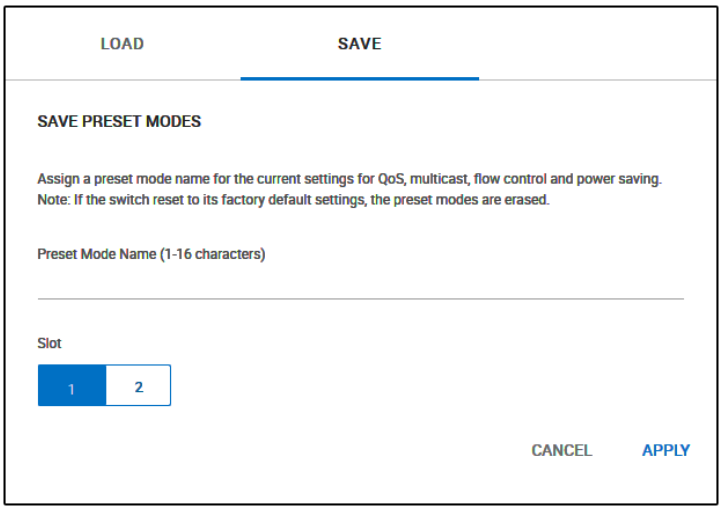
   The Home page displays.



4. Select **PRESET MODES**.



5. Click the **SAVE** tab.



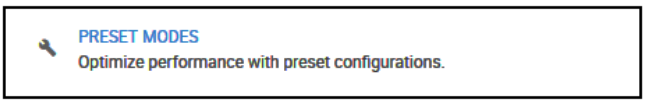
6. In the **Preset Mode Name** field, enter a name from 1 to 16 characters for the custom preset mode.
7. Select the Slot **1** or **2** button.
   You can save two custom preset modes, one in each slot.
8. Click the **APPLY** button.
   Your settings are saved. The preset custom mode is displayed on the PRESET MODES page.

Rename a Custom Preset Mode

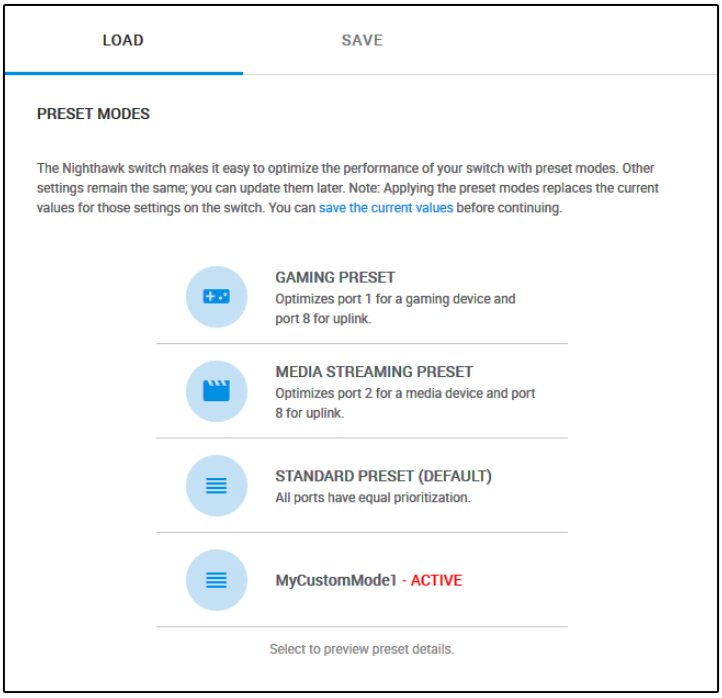
Ater you save a custom preset mode, you can rename the mode.

To rename a custom preset mode:

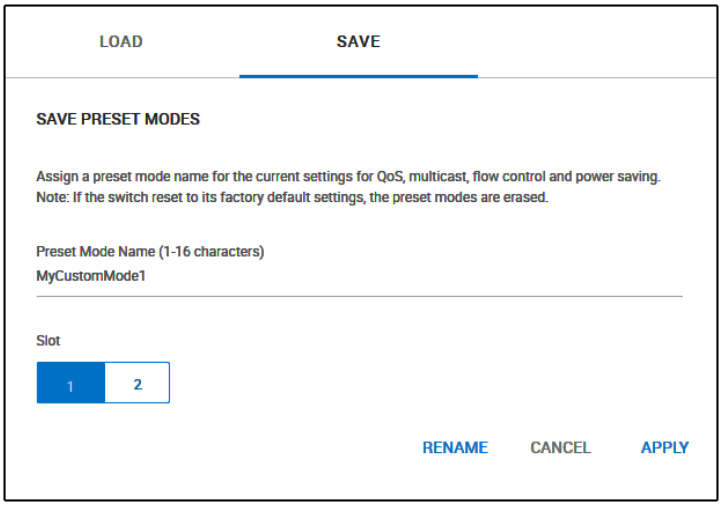
1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.



4. Select **PRESET MODES**.



5. Click the **SAVE** tab.



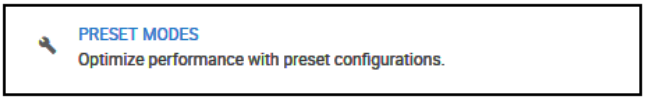
6. Select the Slot **1** or **2** button.
7. In the **Preset Mode Name** field, enter a new name from 1 to 16 characters for the custom preset mode.
8. Click the **RENAME** button.
   Your settings are saved.

Delete a Custom Preset Mode

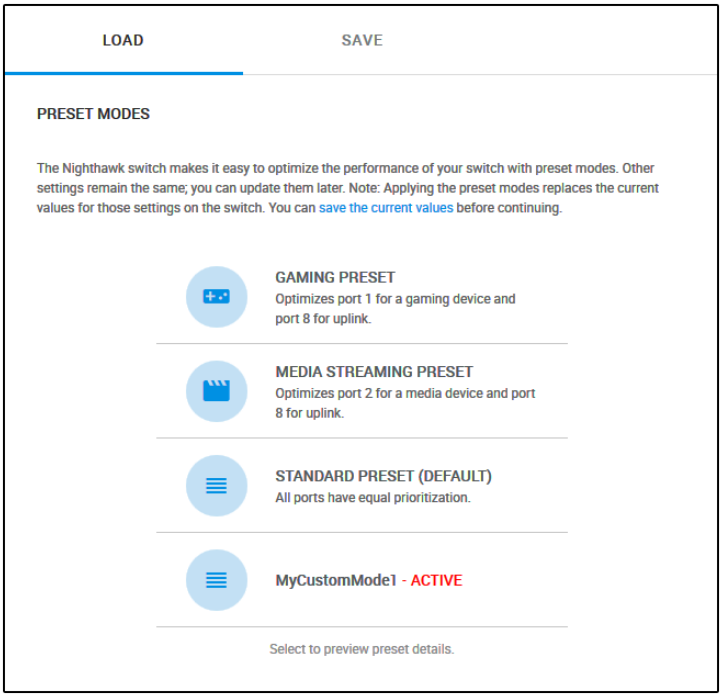
You can delete a custom preset mode that you no longer need.

To delete a custom preset mode:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.



4. Select **PRESET MODES**.



5. Select the custom preset mode.
   The PREVIEW page displays.
6. Click the **DELETE** button.
   Your settings are saved. The custom preset mode is removed from the PRESET MODES pages.

Manually Set the Quality of Service Mode and Port Rate Limits

Instead of using performance preset modes, you can manually set the Quality of Service (QoS) modes to manage traffic:

- **Port-based QoS mode**. Lets you set the priority (low, medium, high, or critical) for individual port numbers and lets you set rate limits for incoming and outgoing traffic for individual ports. If broadcast filtering is enabled, you can also set the storm control rate for incoming traffic for individual ports.
- **802.1P/DSCP QoS mode**. Applies pass-through prioritization that is based on tagged packets and lets you set rate limits for incoming and outgoing traffic for individual ports. If broadcast filtering is enabled, you can also set the storm control rate for incoming traffic for individual ports.
  This QoS mode applies only to devices that support 802.1P and Differentiated Services Code Point (DSCP) tagging. For devices that do not support 802.1P and DSCP tagging, ports are not prioritized but the configured rate limit is still applied.

You can limit the rate of incoming traffic, outgoing traffic, or both on a port to prevent the port (and the device that is attached to it) from taking up too much bandwidth on the switch. Rate limiting, which you can set for individual ports in either QoS mode, simply means that the switch slows down all traffic on a port so that traffic does not exceed the limit that you set for that port. If you set the rate limit on a port too low, you might, for example, see degraded video stream quality, sluggish response times during online activity, and other problems.

Use Port-Based Quality of Service and Set Port Priorities

Port-based priority is the default QoS mode on the switch and the preset performance modes (gaming, media streaming, and standard) are port-based.

> **Note** If the QoS mode on the switch is 802.1P/DSCP, we recommend that you first save your current QoS settings as a custom preset mode before you change the QoS mode to the Port-based mode. For more information, see *Save Your Quality of Service Settings as a Custom Preset Mode* on page 26.

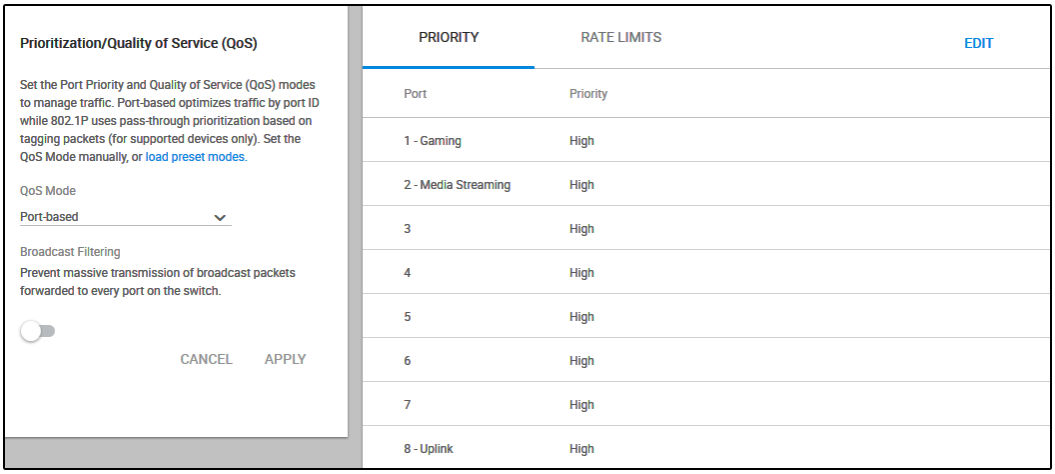
For each port, you can set the priority and the rate limits both for incoming and outgoing traffic:

- **Port priority**. The switch services traffic from ports with a critical priority before traffic from ports with a high, medium, or low priority. Similarly, the switch services traffic from ports with a high priority before traffic from ports with a medium or low priority. If severe network congestion occurs, the switch might drop packets with a low priority.
- **Port rate limits**. The switch accepts traffic on a port at the rate (the speed of the data transfer) that you set for incoming traffic on that port. The switch transmits traffic from a port at the rate that you set for outgoing traffic on that port. You can select each rate limit as a predefined data transfer threshold from 512 Kbps to 512 Mbps.

> **Note** If you set a port rate limit, the actual rate might fluctuate, depending on the type of traffic that the port is processing.

To use the Port-based QoS mode and set the priority and rate limits for ports:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **PRIORITIZATION**.
   The Prioritization/Quality of Service (QoS) page displays.
5. If the selection from the **QoS Mode** menu is **802.1P/DSCP**, do the following to change the selection to **Port-based**:
   a. In the left pane, from the **QoS Mode** menu, select **Port-based**.
      A pop-up warning window opens.
   b. Click the **CONTINUE** button.
      The pop-up window closes.

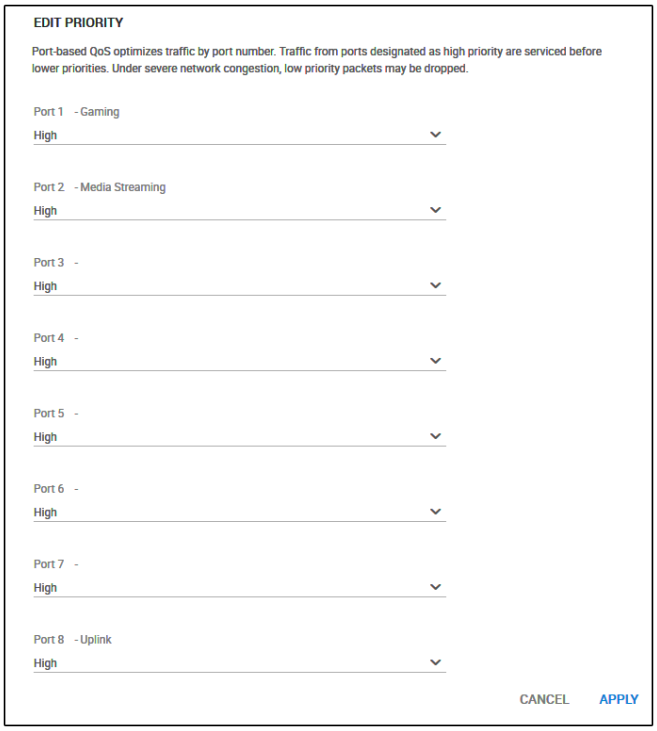


Note For information about broadcast filtering, see *Manage Broadcast Filtering and Set Port Storm Control Rate Limits* on page 35.

6. To set the port priorities, do the following:

a. In the right pane, click the **PRIORITY** tab.

b. Click the **EDIT** button.



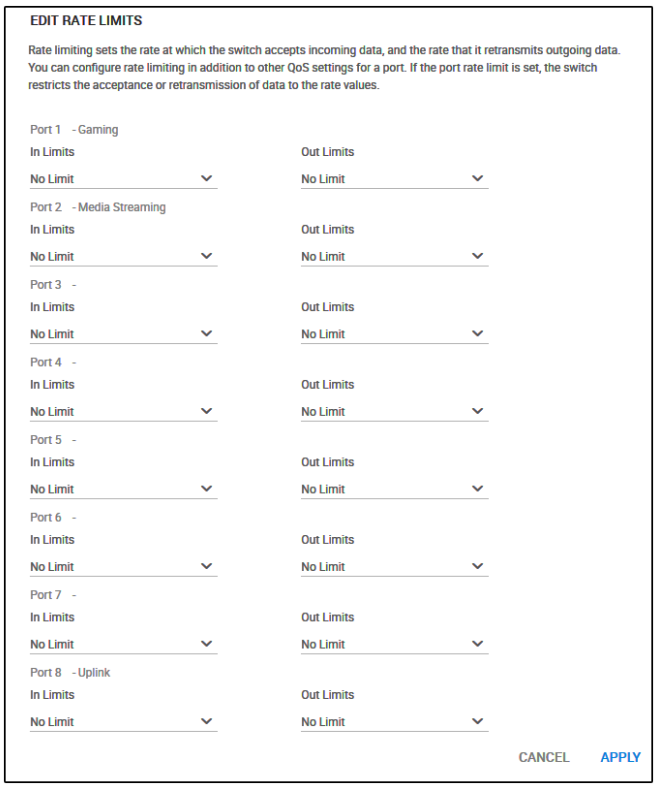
c. For each port for which you want to set the priority, select **Low**, **Medium**, **High**, or **Critical** from the individual menu for the port.
The default selection is High.

d. Click the **APPLY** button.
Your settings are saved and the EDIT PRIORITY page closes.

7. To set rate limits, do the following:

a. In the right pane, click the **RATE LIMITS** tab.

b. Click the **EDIT** button.



c. For each port for which you want to set rate limits, select the rate in Kbps or Mbps from the individual **In Limits** and **Out Limits** menus for the port.
The default selection is No Limit.

d. Click the **APPLY** button.
Your settings are saved and the EDIT RATE LIMITS page closes.

Use 802.1P/DSCP Quality of Service

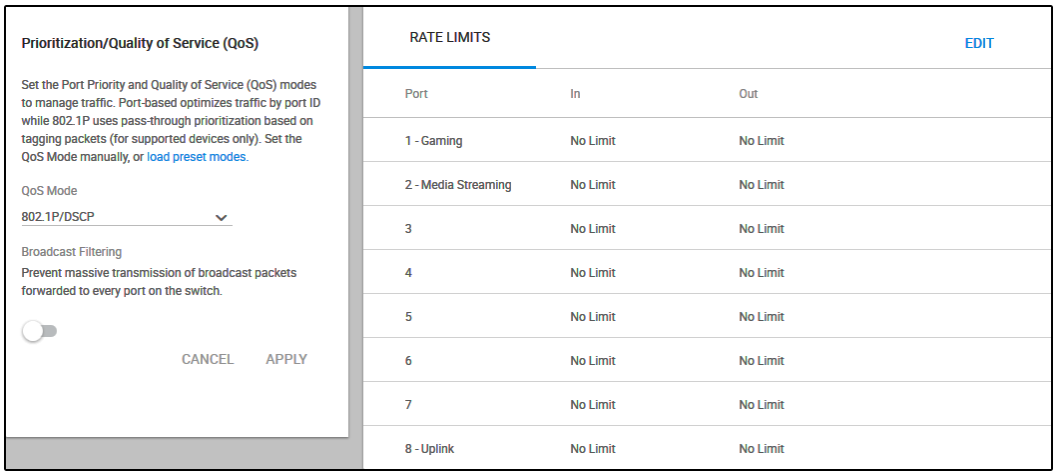
In the 802.1P/DSCP QoS mode, the switch uses the 802.1P or DSCP information in the header of an incoming packet to prioritize the packet. With this type of QoS, you cannot control the port prioritization on the switch because the device that sends the traffic (that is, the packets) to the switch prioritizes the traffic. However, you can set the rate limits for individual ports on the switch.

The switch accepts traffic on a port at the rate (the speed of the data transfer) that you set for incoming traffic on that port. The switch transmits traffic from a port at the rate that you set for outgoing traffic on that port. You can select each rate limit as a predefined data transfer threshold from 512 Kbps to 512 Mbps.

Note If the QoS mode on the switch is Port-based, we recommend that you first save your current QoS settings as a custom preset mode before you change the QoS mode to the 802.1P/DSCP QoS mode. For more information, see *Save Your Quality of Service Settings as a Custom Preset Mode* on page 26.

To use 802.1P/DSCP QoS mode and set the rate limits for ports:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **PRIORITIZATION**.
   The Prioritization/Quality of Service (QoS) page displays.
5. If the selection from the **QoS Mode** menu is **Port-based**, do the following to change the selection to **802.1P/DSCP**:
   a. In the left pane, from the **QoS Mode** menu, select **802.1P/DSCP**.
   A pop-up warning window opens.
   b. Click the **CONTINUE** button.
   The pop-up window closes.

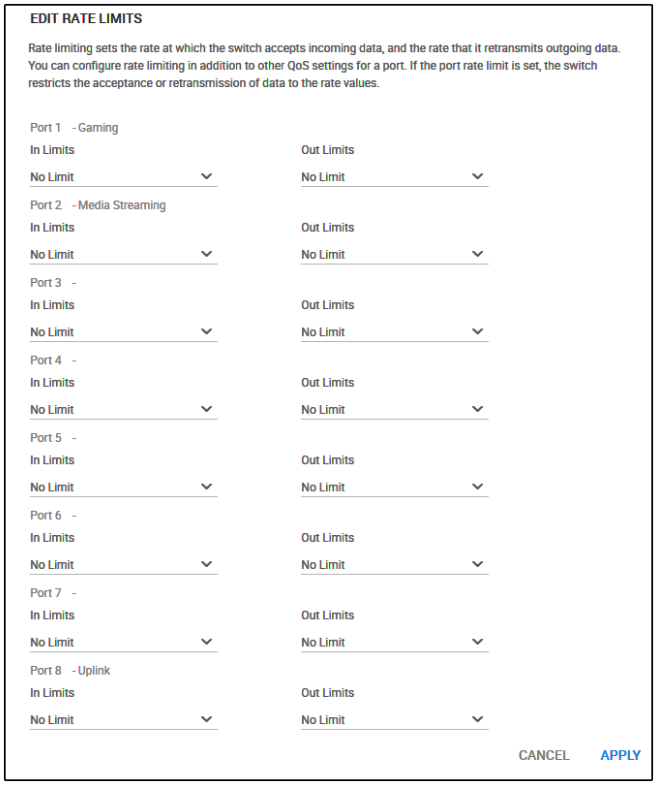


Note For information about broadcast filtering, see *Manage Broadcast Filtering and Set Port Storm Control Rate Limits* on page 35.

6. To set rate limits, do the following:

a. In the right pane, click the **RATE LIMITS** tab.
If broadcast filtering is disabled, only the RATE LIMITS tab displays.

b. Click the **EDIT** button.



c. For each port for which you want to set rate limits, select the rate in Kbps or Mbps from the individual **In Limits** and **Out Limits** menus for the port.
The default selection is No Limit.

d. Click the **APPLY** button.
Your settings are saved and the EDIT RATE LIMITS page closes.

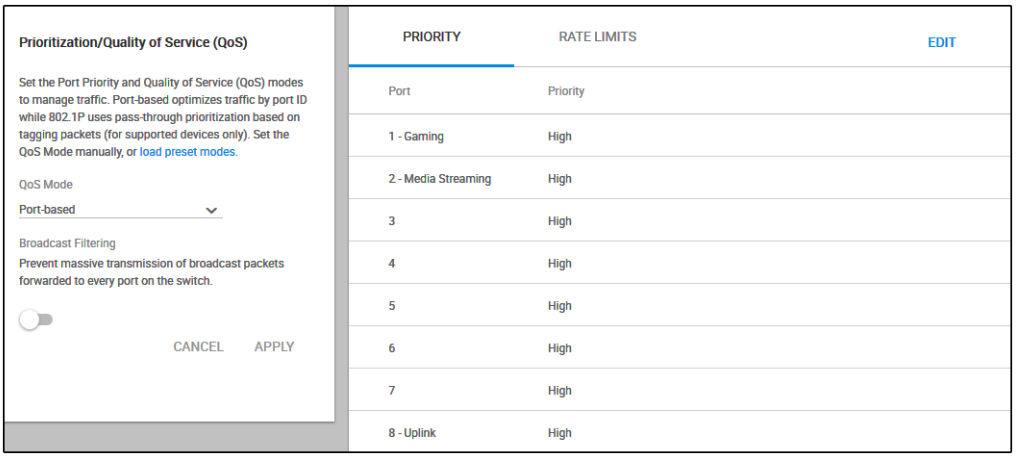
Manage Broadcast Filtering and Set Port Storm Control Rate Limits

A broadcast storm is a massive transmission of broadcast packets that are forwarded to every port on the switch. If they are not blocked, broadcast storm packets can delay or halt the transmission of other data and cause problems. However, you can block broadcast storms on the switch.

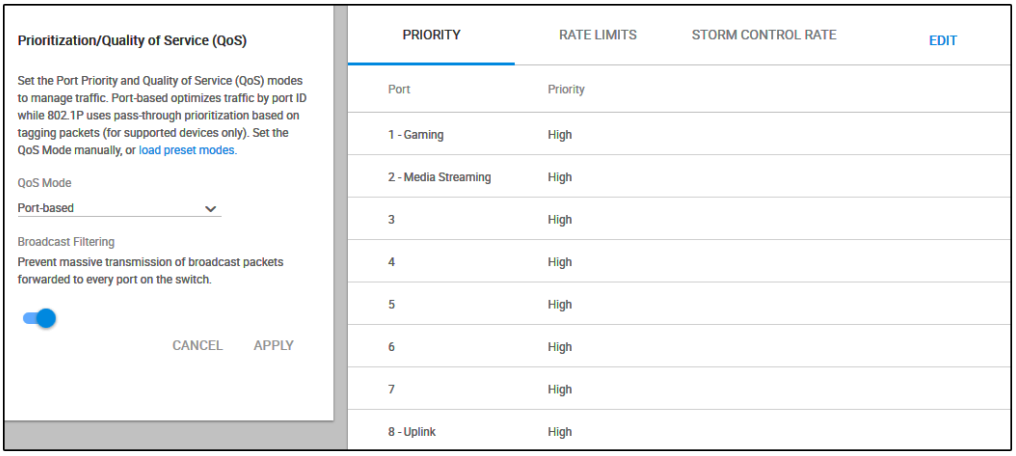
You can also set storm control rate limits for each port. Storm control measures the incoming broadcast, multicast, and unknown unicast frame rates separately on each port, and discards the frames if the rate that you set for the port is exceeded. By default, no storm control rate limit is set for a port. You can select each storm control rate limit as a predefined data transfer threshold from 512 Kbps to 512 Mbps.

To manage broadcast filtering and set the storm control rate limits for ports:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **PRIORITIZATION**.



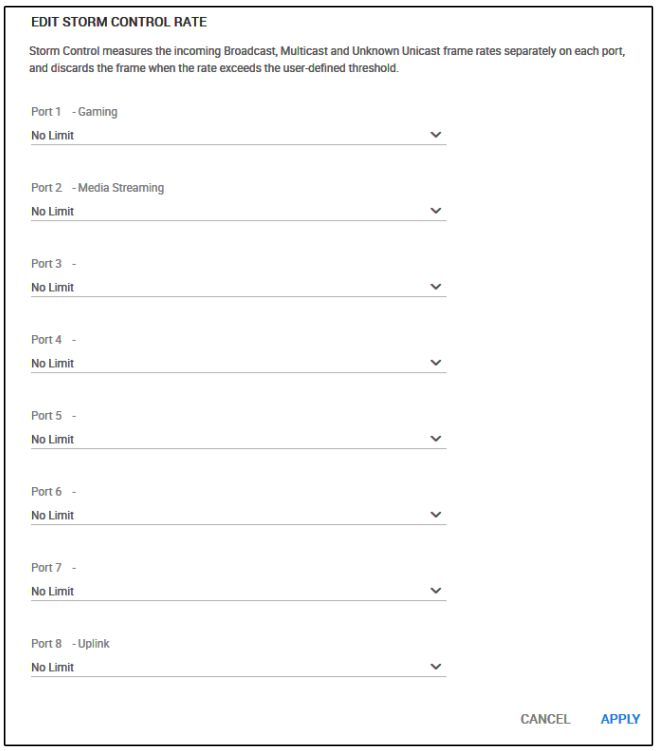
5. In the left pane, click the button in the Broadcast Filtering section.
6. Click the **APPLY** button.
   Broadcast filtering is enabled. In the right pane, the **STORM CONTROL RATE** tab displays.



7. To set storm control rate limits, do the following:

a. In the right pane, click the **STORM CONTROL RATE** tab.

b. Click the **EDIT** button.



c. For each port for which you want to set storm control rate limits, select the rate in Kbps or Mbps from the individual menu for the port.
The default selection is No Limit.

d. Click the **APPLY** button.
Your settings are saved and the EDIT STORM CONTROL RATE page closes.

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

Manage Individual Port Settings

For each individual port, you can set rate limits for incoming and outgoing traffic, set the port speed (by default, the speed is set automatically), enable flow control, and change the port name label.

Set Rate Limits for a Port

You can limit the rate of incoming traffic, outgoing traffic, or both on a port to prevent the port (and the device that is attached to it) from taking up too much bandwidth on the switch. Rate limiting simply means that the switch slows down all traffic on a port so that traffic does not exceed the limit that you set for that port. If

you set the rate limit on a port too low, you might, for example, see degraded video stream quality, sluggish response times during online activity, and other problems.

You also can set port rate limits (the same feature) as part of the Quality of Service configuration on the switch (see *Manually Set the Quality of Service Mode and Port Rate Limits* on page 30).

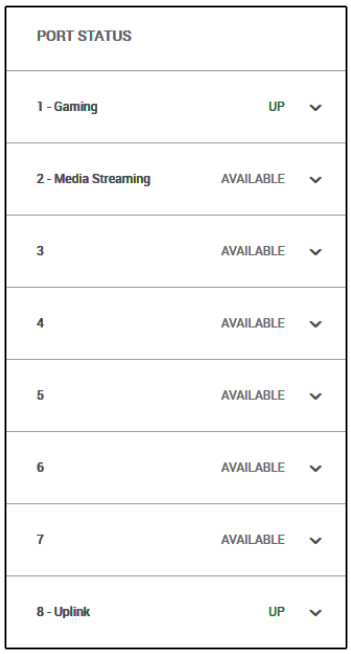
To set rate limits for incoming and outgoing traffic on a port:

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

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

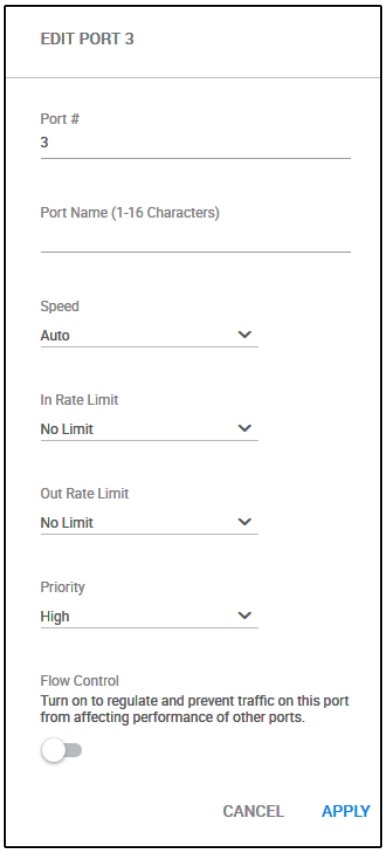


   The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

   A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.
4. Select a port.

   The pane displays detailed information about the port.

5. Click the **EDIT** button.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** menu displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** menu does not display.

6. From the **In Rate Limit** menu, **Out Rate Limit** menu, or both, select the rate in Kbps or Mbps.
   The default selection is No Limit.

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

Set the Priority for a Port

If the QoS mode on the switch is Port-based (the default setting), you can set the priority for a port.

The switch services traffic from ports with a critical priority before traffic from ports with a high, medium, or low priority. Similarly, the switch services traffic from ports with a high priority before traffic from ports with a medium or low priority. If severe network congestion occurs, the switch might drop packets with a low priority.

You also can set the priority for a port (the same feature) as part of the Quality of Service configuration on the switch (see *Use Port-Based Quality of Service and Set Port Priorities* on page 30).

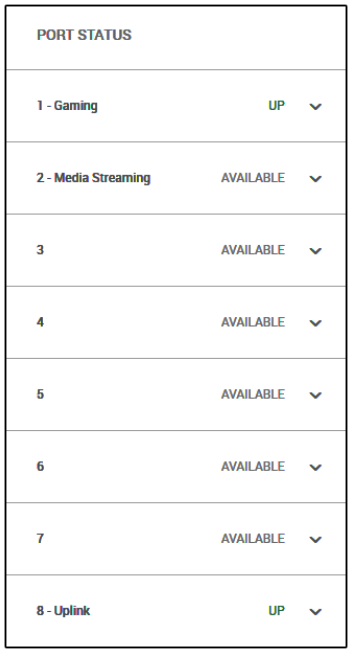
To set the priority for a port:

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

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

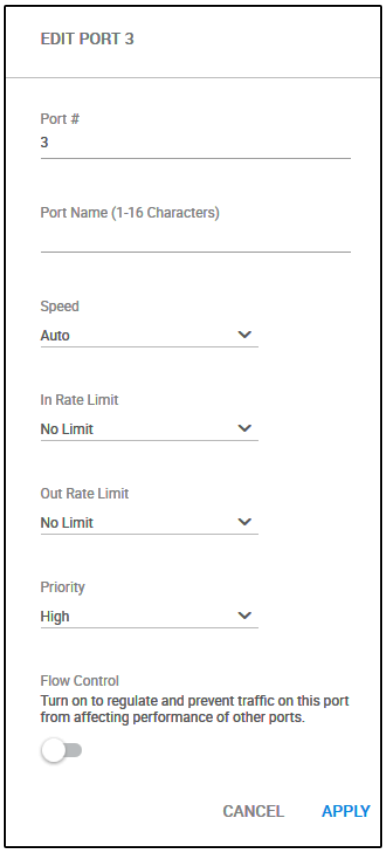


   The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

   A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.
4. Select a port.

   The pane displays detailed information about the port.

5. Click the **EDIT** button.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** menu displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** menu does not display.

6. From the **Priority** menu, select **Low**, **Medium**, **High**, or **Critical**.
   The default selection is High.
7. Click the **APPLY** button.
   Your settings are saved.

Manage Flow Control for a Port

IEEE 802.3x flow control works by pausing a port if the port becomes oversubscribed (that is, the port receives more traffic than it can process) and dropping all traffic for small bursts of time during the congestion condition.

You can enable or disable flow control for an individual port. By default, flow control is disabled for all ports.

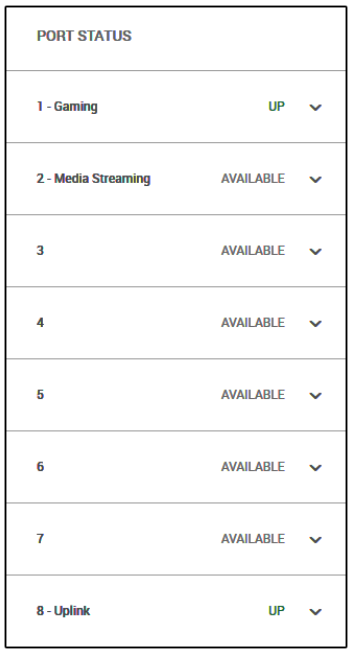
To manage flow control for a port:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.

3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.



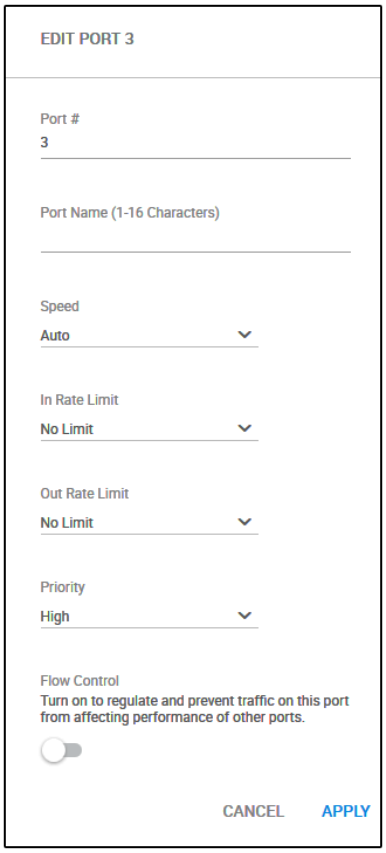
   The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

   A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.

4. Select a port.

   The pane displays detailed information about the port.

5. Click the **EDIT** button.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** menu displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** menu does not display.

6. In the Flow Control section, enable or disable flow control by clicking the button.

   When flow control is enabled, the button displays blue. When flow control is disabled, the button displays white

7. Click the **APPLY** button.

   Your settings are saved.

Change the Speed for a Port

By default, the port speed on all ports is set automatically (that is, the setting is Auto) after the switch determines the speed using autonegotiation with the linked device. We recommend that you leave the Auto setting for the ports. However, you can select a specific port speed setting for each port or disable a port by shutting it down manually.

To change the speed for a port or disable a port:

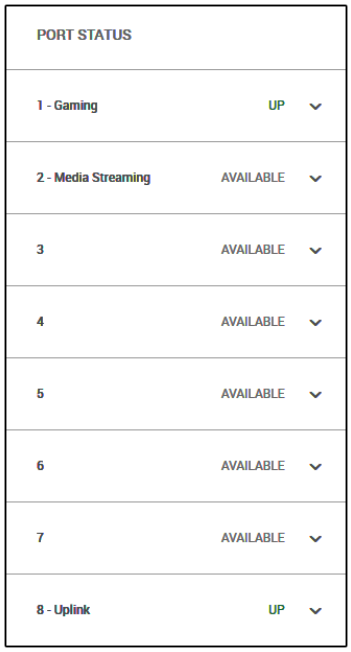
1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.

The login page opens.

3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.



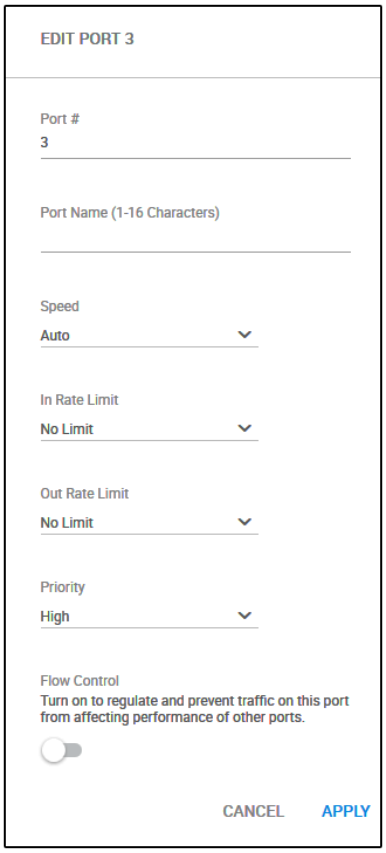
   The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

   A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.

4. Select a port.

   The pane displays detailed information about the port.

5. Click the **EDIT** button.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** menu displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** menu does not display.

6. Select one of the following options from the **Speed** menu:

- **Auto**. The port speed is set automatically after the switch determines the speed using autonegotiation with the linked device. This is the default setting.
- **Disable**. The port is shut down.
- **10M half**. The port is forced to function at 10 Mbps with half-duplex.
- **10M full**. The port is forced to function at 10 Mbps with full-duplex.
- **100M half**. The port is forced to function at 100 Mbps with half-duplex.
- **100M full**. The port is forced to function at 100 Mbps with full-duplex.

Note You cannot select Gigabit Ethernet as the port speed. However, if the setting from the **Speed** menu is **Auto**, the switch can use autonegotiation to automatically set the port speed to Gigabit Ethernet if the linked device supports that speed.

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

Change the Name Label for a Port

By default, only ports 1, 2, and 8 contain a port name label:

- **Port 1**. Gaming
- **Port 2**. Media Streaming
- **Port 8**. Uplink

You can change these name labels. Other ports do not contain name labels, but you can add them. Changing or adding a name label does not change the nature of a port, that is, it is just a label.

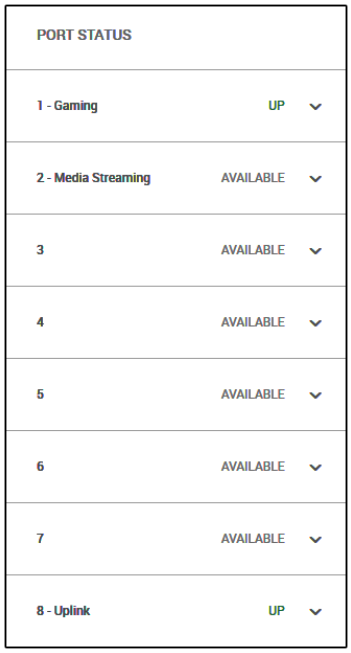
To change or add a name label for a port:

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

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

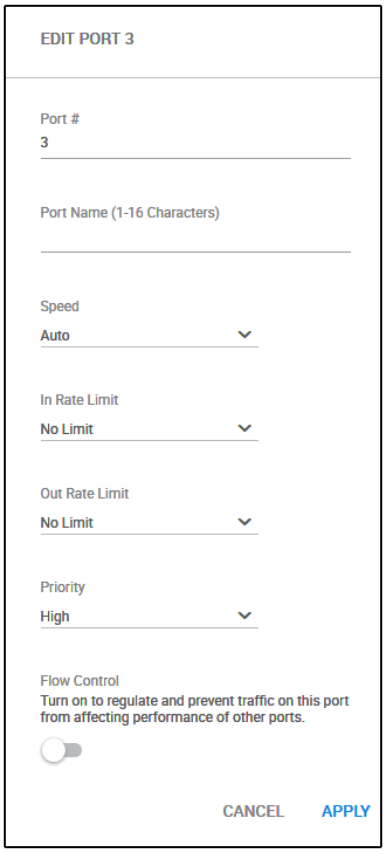


   The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

   A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.
4. Select a port.

   The pane displays detailed information about the port.

5. Click the **EDIT** button.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** menu displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** menu does not display.

6. In the **Port Name** field, type a new name label for the port.
   The name label can be from 1 to 16 characters.

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

Manage the Switch in Your Network

4

This chapter describes how you can manage the switch in your network.

The chapter contains the following sections:

- *Manage Switch Discovery Protocols* on page 49
- *Set Up Static Link Aggregation* on page 51
- *Manage Multicast* on page 53
- *Change the IP Address of the Switch* on page 57
- *Reenable the DHCP Client of the Switch* on page 58

Manage Switch Discovery Protocols

The switch supports Universal Plug-N-Play (UPnP), Bonjour, and NETGEAR Switch Discovery Protocol (NSDP), any of which allows the switch to be discovered in a network. You need to know the switch IP address to access the management interface.

As a security measure, you can disable one or more discovery protocols. However, we recommend that you leave at least one discovery protocol enabled to allow the switch to be discovered if its IP address changes.

Manage Universal Plug-N-Play

Universal Plug-N-Play (UPnP) allows the switch to be discovered on Window-based devices so that you can find the IP address of the switch on your network and log in to the management interface of the switch. UPnP is enabled by default. For security reasons, you can disable UPnP.

To manage UPnP:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Switch Discovery**.
   The Switch Discovery page displays.
6. Enable or disable UPnP by clicking the button in the UPnP section.
   When UPnP is enabled, the button displays blue. When UPnP is disabled, the button displays white.
7. Click the **APPLY** button.
   Your settings are saved.

Manage Bonjour

Bonjour allows the switch to be discovered on Mac OS devices so that you can find the IP address of the switch on your network and log in to the management interface of the switch. Bonjour is enabled by default. For security reasons, you can disable Bonjour.

To manage Bonjour:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Switch Discovery**.
   The Switch Discovery page displays.
6. Enable or disable Bonjour by clicking the button in the Bonjour section.
   When Bonjour is enabled, the button displays blue. When Bonjour is disabled, the button displays white.
7. Click the **APPLY** button.
   Your settings are saved.

Manage NETGEAR Switch Discovery Protocol

NETGEAR Switch Discovery Protocol (NSDP) allows the switch to be discovered on NETGEAR devices and applications so that you can find the IP address of the switch on your network and log in to the management interface of the switch. NSDP is enabled by default. For security reasons, you can disable NSDP.

To manage NSDP:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.

5. Select **Switch Discovery**.
   The Switch Discovery page displays.
6. Enable or disable NSDP by clicking the button in the NSDP section.
   When NSDP is enabled, the button displays blue. When NSDP is disabled, the button displays white.
7. Click the **APPLY** button.
   Your settings are saved.

Set Up Static Link Aggregation

Static link aggregation on the switch allows you to combine multiple Ethernet ports into a single logical link. Your network devices treat the aggregation as if it were a single link. Depending on how link aggregation is set up in your network, the link supports either increased bandwidth (a larger pipe) or fault tolerance (if one port fails another, one takes over).

The switch supports two static LAGs with up to four ports each. That means that one static LAG can support a link of up to 4 Gbps.

Note The switch does not support Link Aggregation Control Protocol (LACP).

You set up static link aggregation on the switch through link aggregation groups (LAG)s in the following order:

1. Set up the LAG on the switch (see *Set Up Link Aggregation Groups* on page 52).
2. Connect the ports that you intend to make members of a LAG on the switch to the ports that are members of a LAG on *another* device in your network (see *Make a Link Aggregation Connection* on page 51).

Make a Link Aggregation Connection

Before you make a physical link aggregation connection to another network device (usually a router or another switch) that also supports link aggregation, you must first set up a link aggregation group (LAG) on the switch (see *Set Up Link Aggregation Groups* on page 52). If you do not, the LAG cannot take effect. Whether a LAG on the switch functions to support increased bandwidth or fault tolerance depends on the LAG configuration on the other network device.

All ports that participate in a LAG (that is, the ports on both devices) must use the same speed, full duplex mode, and flow control setting. For information about changing these settings on the switch, see *Manage Individual Port Settings* on page 37.

To make link aggregation connections between the switch and other network devices:

1. Using Ethernet cables, connect each port that you intend to made a member of LAG 1 on the switch to each port that is member of the same LAG on another network device.
   LAG 1 can include ports 1 through 4. The port numbers on the other network device do not matter as long as the ports on the other network device are members of the same LAG and the LAG consists of the same total number of ports.
2. Using Ethernet cables, connect each port that you intend to made a member of LAG 2 on the switch to each port that is member of the same LAG on another network device.

LAG 2 can include ports 5 through 8. The port numbers on the other network device do not matter as long as the ports on the other network device are members of the same LAG and the LAG consists of the same total number of ports.

Set Up Link Aggregation Groups

You set up static link aggregation on the switch by adding up to four ports to a link aggregation group (LAG) and by enabling the LAG. However, for a LAG to take effect, you first must make sure that all ports that participate in a LAG (that is, the ports on both devices) must use the same speed, duplex mode, and flow control setting (see *Manage Individual Port Settings* on page 37 for information about changing these settings on the switch) and you must set up a physical link aggregation connection (see *Make a Link Aggregation Connection* on page 51).

To set up link aggregation groups on the switch:

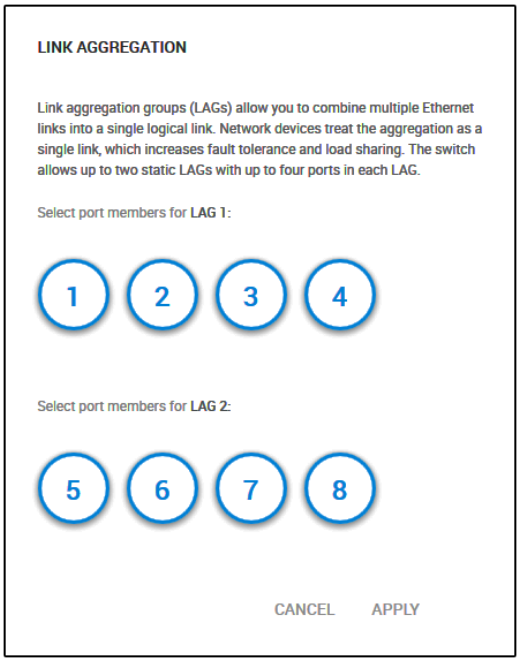
1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.

   The PRESET MODES page displays.
5. Select **Link Aggregation**.



6. To add ports to LAG 1, click two, three, or all port numbers from **1** to **4**.
   A selected port displays blue.

   LAG 1 must consist of at least two ports but can consist of all ports in the range from 1 through 4.
7. To add ports to LAG 2, click two, three, or all port numbers from **5** to **8**.
   A selected port displays blue.

   LAG 2 must consist of at least two ports but can consist of all ports in the range from 5 through 8.
8. Click the **APPLY** button.
   Your settings are saved.

Manage Multicast

Multicast IP traffic is traffic that is destined to a host group. Host groups are identified by Class D IP addresses, which range from 224.0.0.0 to 239.255.255.255. Internet Group Management Protocol (IGMP) snooping allows the switch to forward multicast traffic intelligently. Based on the IGMP query and report messages, the switch forwards traffic only to the ports that request the multicast traffic rather than to all ports, which could affect network performance.

IGMP snooping helps to optimize multicast performance and is especially useful for bandwidth-intensive IP multicast applications such as online media streaming applications.

Manage IGMP Snooping

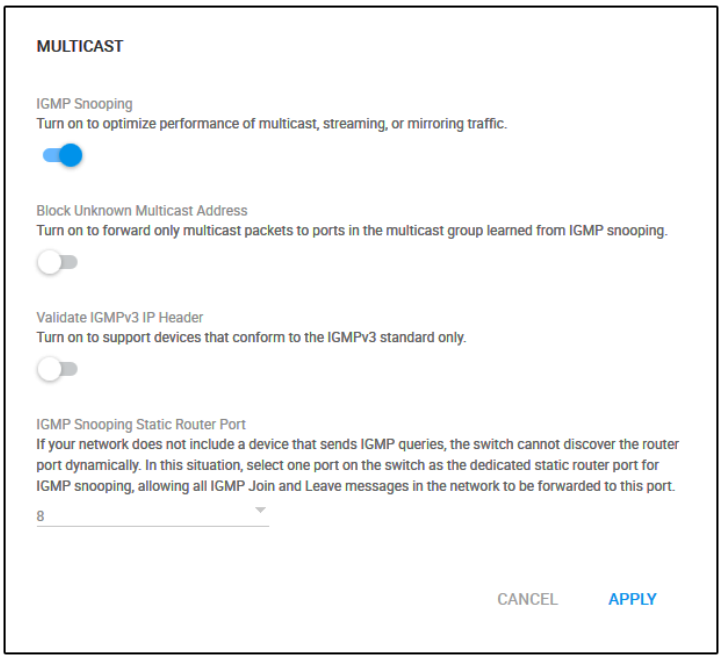
Internet Group Management Protocol (IGMP) snooping is enabled by default. Under some circumstances you might want to temporarily disable IGMP snooping.

To manage IGMP snooping:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.

   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.

5. Select **Multicast**.



6. Enable or disable IGMP snooping by clicking the button in the IGMP Snooping section.

   When IGMP snooping is enabled, the button displays blue. When IGMP snooping is disabled, the button displays white.

7. Click the **APPLY** button.

   Your settings are saved.

Manage Blocking of Unknown Multicast Addresses

As a way to limit unnecessary multicast traffic, you can block multicast traffic from unknown multicast addresses. If you do this, the switch forwards multicast traffic only to ports in the multicast group that the switch learned through IGMP snooping. By default, multicast traffic from unknown addresses is allowed.

To manage blocking of unknown multicast addresses:

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

   The login page opens.

3. Enter the switch password.

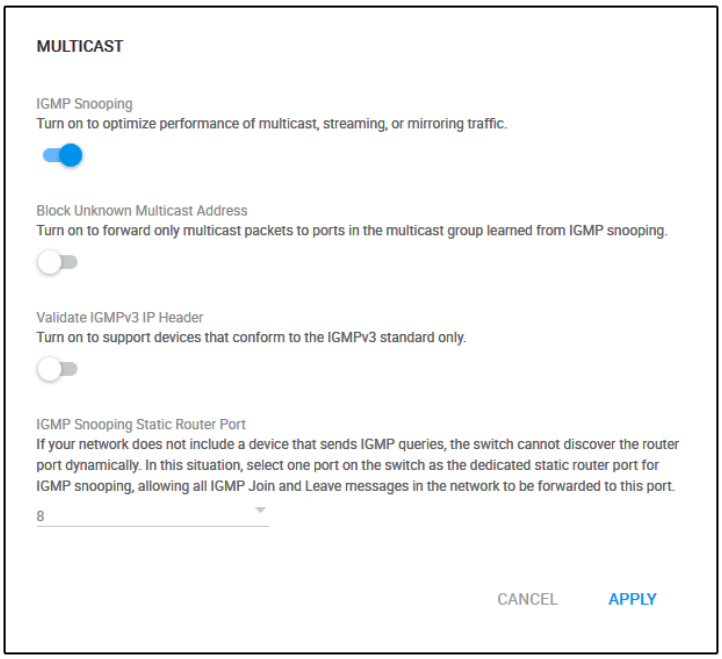
   The default password is **password**. The password is case-sensitive.

   The Home page displays.

4. From the menu at the top of the page, select **ADVANCED SETTINGS**.

   The PRESET MODES page displays.

5. Select **Multicast**.



6. Enable or disable the blocking of unknown multicast traffic by clicking the button in the Block Unknown Multicast Address section.

   When the blocking of unknown multicast traffic is enabled, the button displays blue. When the blocking of unknown multicast traffic is disabled, the button displays white.

7. Click the **APPLY** button.

   Your settings are saved.

Manage IGMPv3 IP Header Validation

You can enable IGMPv3 IP header validation so that the switch inspects whether IGMPv3 packets conform to the IGMPv3 standard. By default, IGMPv3 IP header validation is disabled. If IGMPv3 IP header validation is enabled, IGMPv3 messages must include a TTL of 1 and a ToS byte of 0xC0 (Internetwork Control). In addition, the router alert IP option (9404) must be set.

> **Note** If IGMPv3 IP header validation is enabled, switch does not drop IGMPv1 and IGMPv2 traffic but processes this traffic normally.

To manage IGMPv3 IP header validation:

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

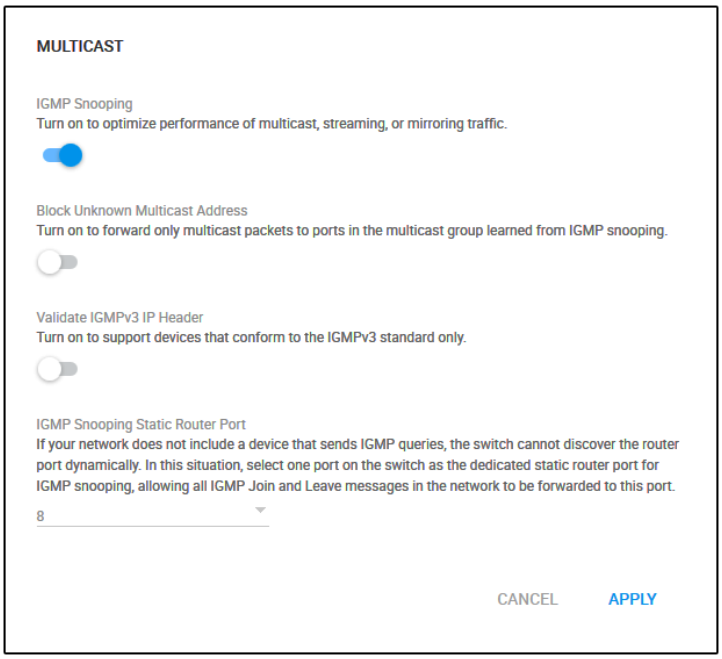
   The login page opens.

3. Enter the switch password.

The default password is **password**. The password is case-sensitive.

The Home page displays.

4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Multicast**.



6. Enable or disable IGMPv3 IP header validation by clicking the button in the Validate IGMPv3 IP Header section.
   When IGMPv3 IP header validation is enabled, the button displays blue. When IGMPv3 IP header validation is disabled, the button displays white.
7. Click the **APPLY** button.
   Your settings are saved.

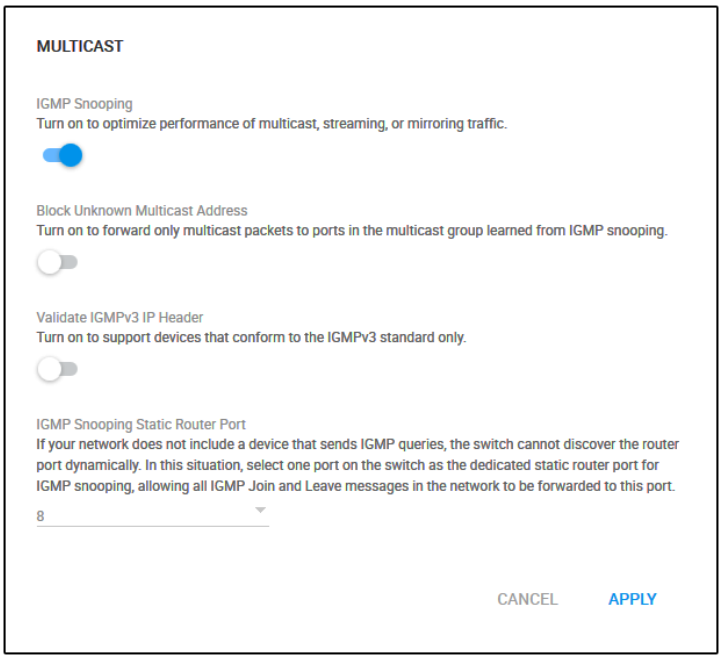
Set Up a Static Router Port for IGMP Snooping

If your network does not include a device that sends IGMP queries, the switch cannot discover the router port dynamically. (The router port is a port on a device in the network that performs IGMP snooping in the network.) In this situation, select one port on the switch as the dedicated static router port for IGMP snooping, allowing all IGMP Join and Leave messages in the network to be forwarded to this port.

To set up a static router port for IGMP snooping:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.

3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Multicast**.



6. From the menu in the IGMP Snooping Static Router Port section, select a specific port as the router port or select **Any** to let IGMP Join and Leave messages be sent to every port on the switch.
   Typically, the uplink port (that is, the port that is connected to your router or to the device that provides your Internet connection) serves as the router port.
7. Click the **APPLY** button.
   Your settings are saved.

Change the IP Address of the Switch

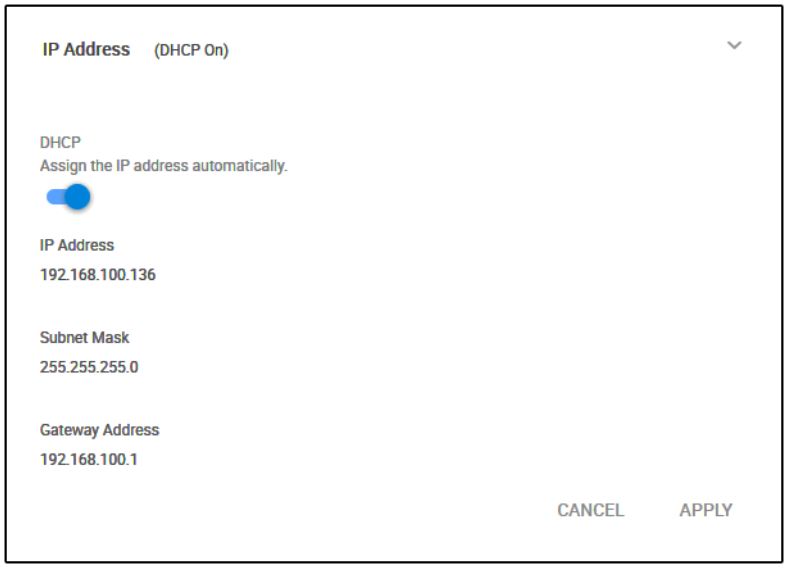
By default, the switch receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network.

To disable the DHCP client of the switch and change the IP address of the switch to a fixed IP address:

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

The login page opens.

3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. Select **IP Address**.



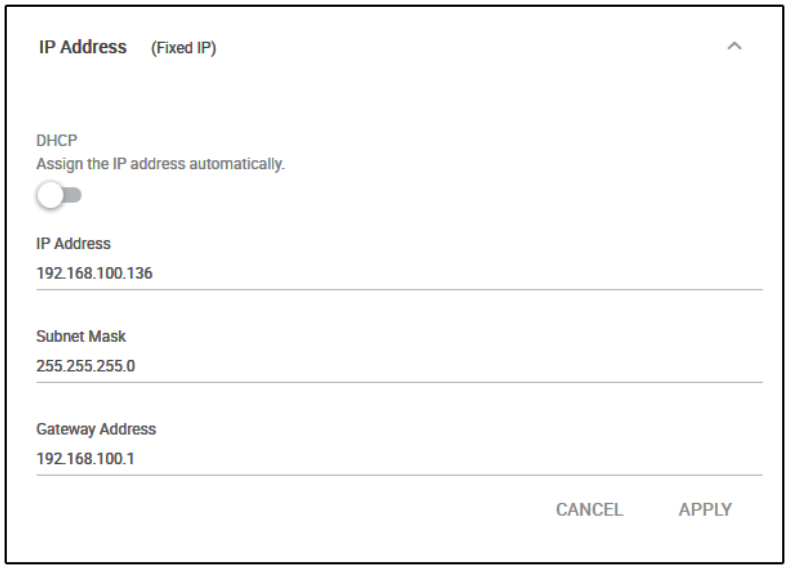
   The button in the DHCP section displays blue because the DHCP client of the switch is enabled.
5. Click the button in the DHCP section.
   The button displays white, indicating that the DHCP client of the switch is disabled, and the IP address fields become editable.
6. Enter the fixed (static) IP address that you want to assign to the switch and the associated subnet mask and gateway IP address.
7. Click the **APPLY** button.
   A pop-up window displays a message.
8. Click the **X** in the pop-up window.
   Your settings are saved. Your switch web session might be disconnected when you change the IP address.

Reenable the DHCP Client of the Switch

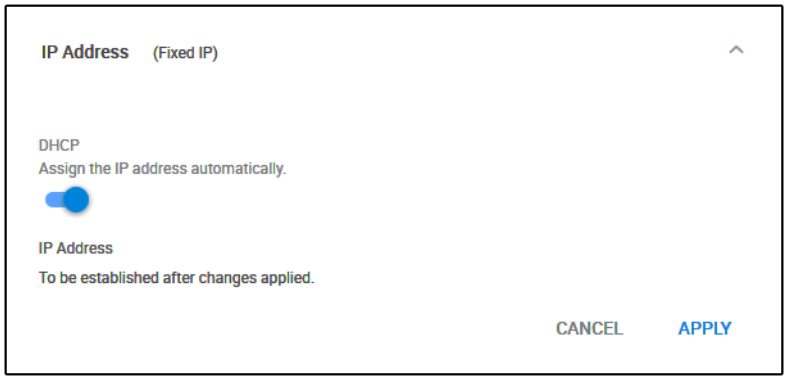
If you disabled the DHCP client of the switch and changed the IP address of the switch to a fixed (static) IP address, you can reverse the situation. You can also press the **RESET** button for five seconds (not longer) to reenable DHCP (see *Use the RESET Button to Renew the DHCP IP Address or Reenable DHCP* on page 68).

To reenable the DHCP client on the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. Select **IP Address**.



   The button in the DHCP section displays white because the DHCP client of the switch is disabled.
5. Click the button in the DHCP section.



   The button displays blue, indicating that the DHCP server of the switch is enabled.
6. Click the **APPLY** button.

A pop-up window displays a message.

7. Click the **X** in the pop-up window.

   Your settings are saved. The switch receives an IP address from a DHCP server (or a router that functions as a DHCP server) in your network. Your switch web session might be disconnected when you enable the DHCP client of the switch.

Maintain and Monitor the Switch

5

This chapter describes how you can maintain and monitor the switch.

The chapter contains the following sections:

- *Change the Switch Password* on page 62
- *Check for New Switch Firmware and Upgrade the Switch* on page 62
- *Manage the Configuration File* on page 64
- *Return the Switch to Its Factory Default Settings* on page 66
- *Use the RESET Button to Renew the DHCP IP Address or Reenable DHCP* on page 68
- *Manage the Power Saving Mode* on page 68
- *Control the Port LEDs* on page 69
- *Control the Power LED* on page 70
- *Change the Switch Device Name* on page 71
- *Register the Switch* on page 72
- *View System Information* on page 72
- *View Switch Connections* on page 73
- *View the Status of a Port* on page 74

Change the Switch Password

The default password to access the management interface of the switch is **password**. We recommend that you change this password to a more secure password. The ideal password contains no dictionary words from any language and contains uppercase and lowercase letters, numbers, and symbols. It can be up to 20 characters.

To change the switch password:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Change Password**.
   The CHANGE PASSWORD page displays.
6. In the **Old Password** field, type the current password for the switch.
7. Type the new password in the **New Password** field and in the **Retype New Password** field.
8. Click the **APPLY** button.
   Your settings are saved. Keep the new password in a secure location so that you can access the switch in the future.

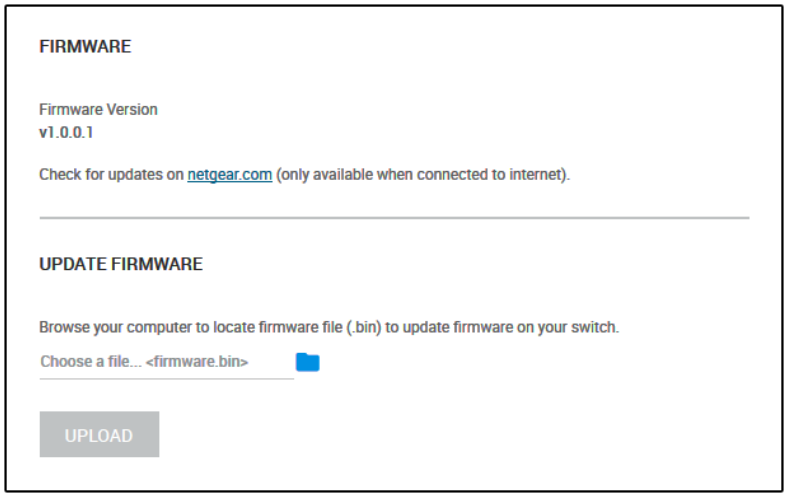
Check for New Switch Firmware and Upgrade the Switch

You can check for the latest firmware version through the management interface of the switch, download the firmware, and upload the firmware to the switch. If firmware release notes are available with new firmware, read the release notes to find out if you must reconfigure the switch after upgrading.

To check for new switch firmware and upgrade the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.

4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Firmware**.



   The page displays the current firmware of the switch.
6. To check if new firmware is available, click the link in the FIRMWARE section.
   A NETGEAR web page opens.
7. If new firmware is available, download the firmware file to your computer.
   If the file does not end in `.bin`, you might need to unzip the file. For example, if the file ends in `.rar`, you must unzip the file.
8. In the FIRMWARE UPDATE section, click the blue file icon, navigate to the firmware file that you just downloaded, and select the file.
   An example of a firmware file name is `S8000_V1.0.0.1.bin`.
9. Click the **UPLOAD** button.
   A pop-up window displays a warning and the firmware upgrade process starts.

WARNING:
Do not interrupt the network connection or power to the switch during the firmware upgrade process. Do not disconnect any Ethernet cables or power off the switch until the firmware upgrade process and switch reboot are complete.

Your switch web session is disconnected and you must log back in to the management interface.

Manage the Configuration File

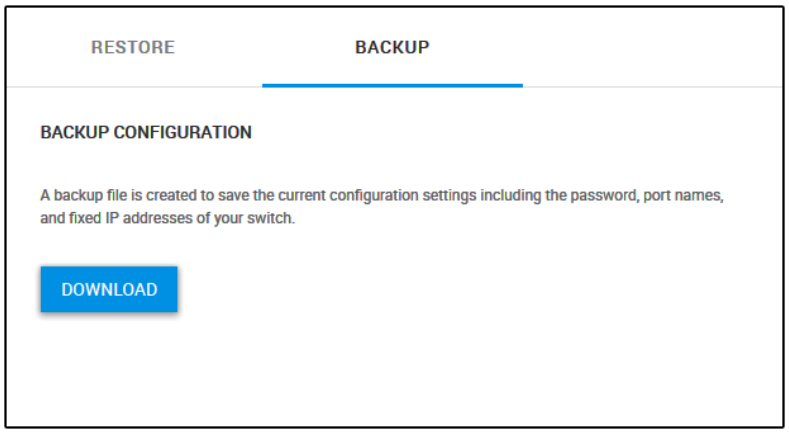
The configuration settings of the switch are stored within the switch in a configuration file. You can back up (save) this file to your computer or restore it from your computer to the switch.

Back Up the Switch Configuration

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

To back up the switch's configuration settings:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Configuration File**.
   The RESTORE CONFIGURATION page displays.
6. Click the **BACKUP** tab.



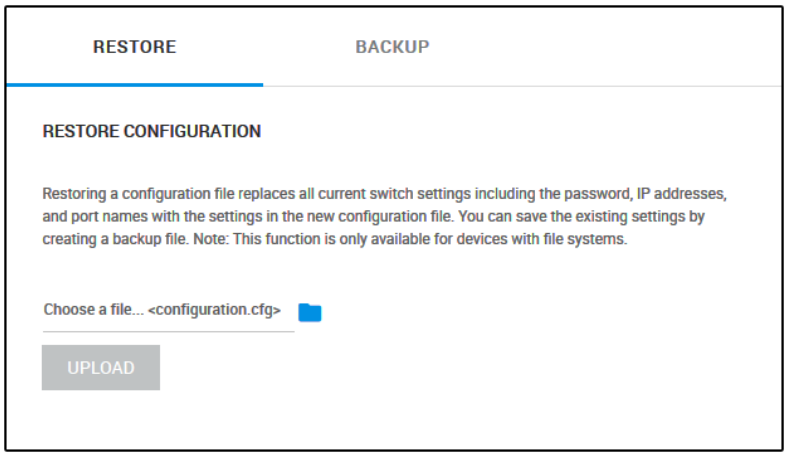
7. Click the **DOWNLOAD** button.
8. Follow the directions of your browser to save the file.
   The name of the backup file is `S8000.cfg`.

Restore the Switch Configuration

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

To restore the switch's configuration settings:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Configuration File**.



6. Click the blue file icon and navigate to and select the saved configuration file.
   The name of the saved configuration file is `S8000.cfg`.
   The **UPLOAD** button changes to the **APPLY CONFIGURATION** button.
7. Click the **APPLY CONFIGURATION** button.
   A pop-up window displays a warning.
8. Click the **CONTINUE** button.
   The configuration is uploaded to the switch.

WARNING:
Do not interrupt the network connection or power to the switch during the restoration process. Do not disconnect any Ethernet cables or power off the switch until the restoration process and switch reboot are complete.

Your switch web session is disconnected and you must log back in to the management interface.

Return the Switch to Its Factory Default Settings

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

To reset the switch to factory default settings, you can either use the **RESET** button on the bottom of the switch or use the reset function in the management interface. However, if you changed and lost the password and cannot access the switch, you must use the **RESET** button.

After you reset the switch to factory default settings, the password is password and the switch's DHCP client is enabled.

Use the RESET Button to Reset the Switch

You can use the **RESET** button to return the switch to its factory default settings.



CAUTION:

This process erases all settings that you configured on the switch.

To reset the switch to factory default settings:

1. On the bottom of the switch, locate the recessed **RESET** button.
2. Using a straightened paper clip, press and hold the **RESET** button for more than 10 seconds or until all port LEDs start blinking red.
3. Release the **RESET** button.

   All port LEDs blink red five times and the configuration is reset to factory default settings. When the reset is complete, the switch reboots. This process takes about one minute.



WARNING:

Do not interrupt the network connection or power to the switch during the reset process. Do not disconnect any Ethernet cables or power off the switch until the reset process and switch reboot are complete.

Use the Management Interface to Reset the Switch



CAUTION:

This process erases all settings that you configured on the switch.

To reset the switch to factory default settings using the management interface:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Factory Default**.
   The FACTORY DEFAULT page displays.
6. Click the **RESTORE DEFAULT SETTINGS** button.
   A warning pop-up window opens.
7. Click the **CONTINUE** button.
   The switch is reset to factory default settings and reboots.



WARNING:

Do not interrupt the network connection or power to the switch during the reset process. Do not disconnect any Ethernet cables or power off the switch until the reset process and switch reboot are complete.

Use the RESET Button to Renew the DHCP IP Address or Reenable DHCP

You can use the **RESET** button to renew the DHCP IP address of the switch or, if DHCP is disabled, reenable DHCP.

To renew the DHCP IP address of the switch or reenable DHCP:

1. On the bottom of the switch, locate the recessed **RESET** button.
2. Using a straightened paper clip, press and hold the **RESET** button for about five seconds or until all port LEDs start blinking blue.

   WARNING:
   Do not hold the RESET button for more than 10 seconds to prevent the switch from returning to its factory default settings.

3. Release the **RESET** button.

   All port LEDs blink blue three times and the DHCP IP address of the switch is reenabled.

Manage the Power Saving Mode

The power saving mode enables the IEEE 802.3az Energy Efficient Ethernet (EEE) function, cable length power saving, and link-up and link-down power saving:

- **IEEE 802.3az**. Combines the Energy Efficient Ethernet (EEE) 802.3 MAC sublayer with the 100BASE-TX, 1000BASE-T, and 10GBASE-T physical layers to support operation in Low Power Idle (LPI) mode. When LPI mode is enabled, systems on both sides of the link can disable portions of their functionality and save power during periods of low link utilization.
- **Short cable power saving**. Dynamically detects and adjusts power that is required for the detected cable length.
- **Link-down power saving**. Reduces the power consumption considerably when the network cable is disconnected. When the network cable is reconnected, the switch detects an incoming signal and restores normal power.

By default, the power saving mode is disabled.

To manage the power saving mode on the switch:

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

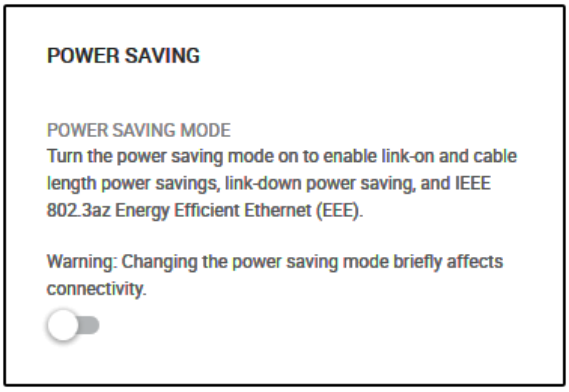
   The login page opens.

3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

4. From the menu at the top of the page, to the right of NETGEAR, click the three-dot icon and select **Power Saving**.



5. Enable or disable the power saving mode by clicking the button.

   When the power saving mode is enabled, the button displays blue. When the power saving mode is disabled, the button displays white.

   (You do not need to click an **APPLY** button.)

Control the Port LEDs

You can turn the blue port LEDs on the switch on and off, either by pushing the button to the left of port 8 (labeled UPLINK) on the back of the switch, or by using the management interface. By default, a port LED lights when you connect a powered-on device to the port. When the switch functions with its port LEDs off, we refer to it as Stealth Mode.

To control the port LEDs through the management interface:

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

   The login page opens.

3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

4. Select **Port LEDs**.



5. Disable or enable the port LEDs by clicking the button.

   When the port LEDs are enabled, the button displays blue. When the ports LEDs are disabled (Stealth Mode), the button displays white.

6. Click the **APPLY** button.

   Your settings are saved.

Control the Power LED

You can turn off the blue Power LED, for example, if you prefer to keep the environment dark. When the switch functions with its Power LED off, we refer to it as Stealth Mode.

To control the Power LED:

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

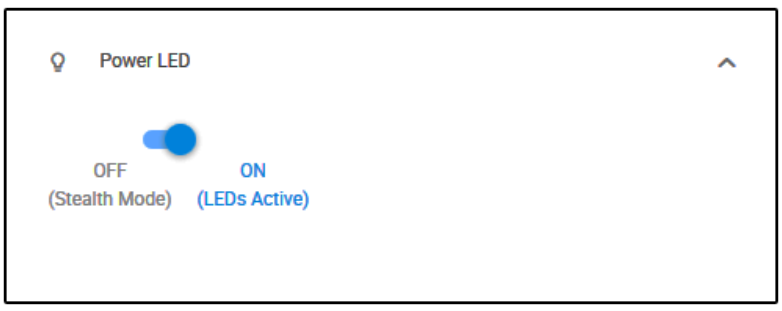
   The login page opens.

3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.

4. Select **Power LED**.



5. Disable or enable the Power LED by clicking the button.

When the Power LEDs is enabled, the button displays blue. When the Power LEDs is disabled (Stealth Mode), the button displays white.

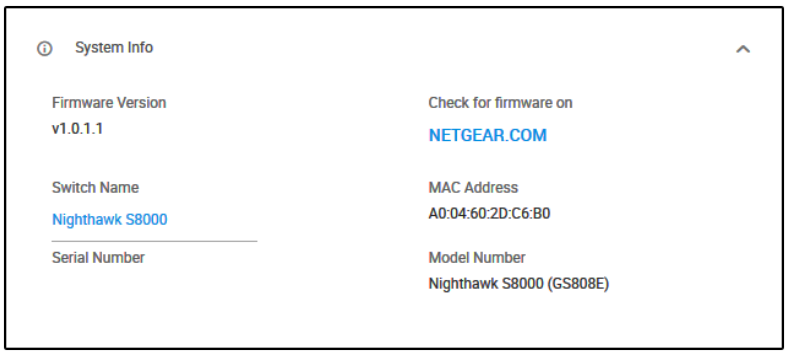
6. Click the **APPLY** button.
   Your settings are saved.

Change the Switch Device Name

By default, the device name of the switch is Nighthawk S8000. This device name shows in, for example, Windows Explorer and Bonjour. You can change the device name, which can be up to 20 characters.

To change the device name of the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. Select **System Info**.



(The previous figure does not show an actual serial number.)

5. In the **Switch Name** field, enter a new name for the switch.
6. Click the **APPLY** button.
   Your settings are saved.

Register the Switch

Registering the switch allows you to receive email alerts and streamlines the technical support process. For you to register the switch, the switch must be connected to the Internet.

To register the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, select **ADVANCED SETTINGS**.
   The PRESET MODES page displays.
5. Select **Product Registration**.
   The PRODUCT REGISTRATION page displays.
6. Click the **REGISTER** button.
   The switch contacts the registration server.
7. Follow the onscreen process to register the switch.

View System Information

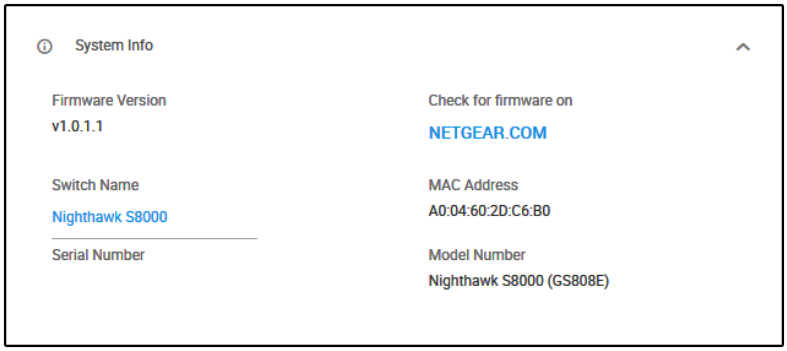
You can view basic information about the switch, such as the firmware version, MAC address, and serial number.

To view basic information about the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.

The Home page displays.

4. Select **System Info**.



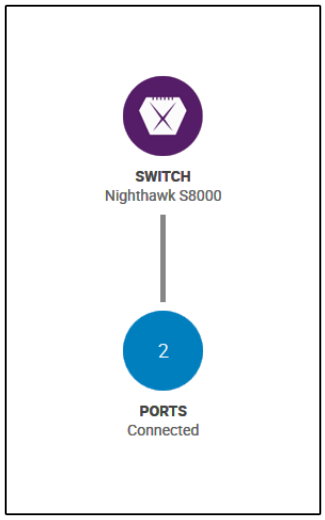
(The previous figure does not show an actual serial number.)

View Switch Connections

You can see the number of connections that are established on the switch.

To see the number of connections on the switch:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.



The previous figure shows two connections on the switch.

View the Status of a Port

You can view the status of and details about a port.

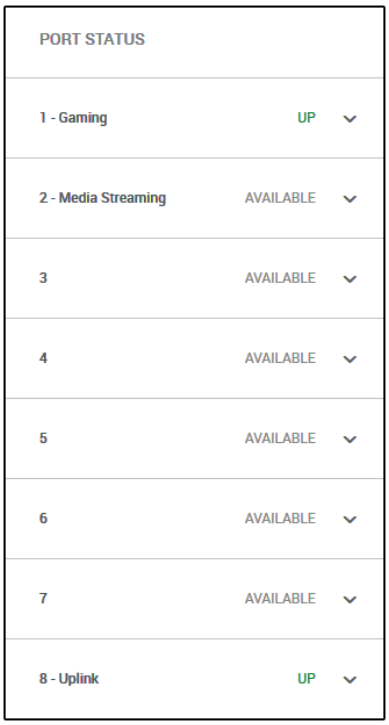
To view the status of a port:

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

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

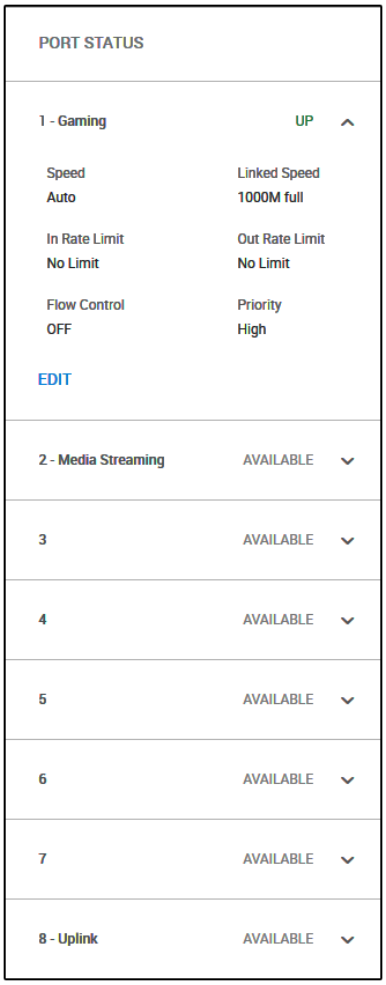
   The Home page displays.



The PORT STATUS pane displays on the right or the bottom of the Home Page, depending on the size of your browser page.

A port that is in use shows as UP. A port that is not in use shows as AVAILABLE.

4. To view details about a port, select the port.



If the QoS mode on the switch is Port-based (the default setting), the **Priority** field displays on the page. If the QoS mode is 802.1P/DSCP, the **Priority** field does not display.

For information about setting rate limits for incoming and outgoing traffic, setting the port priority (if the QoS mode on the switch is Port-based), setting the port speed (by default, the speed is set automatically), enabling flow control, and changing the port name label, see *Manage Individual Port Settings* on page 37.

Diagnostics and Troubleshooting

6

This chapter provides information to help you diagnose and solve problems that you might experience with the switch. If you do not find the solution here, check the NETGEAR support site at *netgear.com/support* for product and contact information.

The chapter contains the following sections:

- *Test a Cable Connection* on page 77
- *Reboot the Switch From the Management Interface* on page 78
- *Detect a Network Loop* on page 79
- *Resolve a Subnet Conflict to Access the Switch* on page 79

Test a Cable Connection

You can use the cable diagnostic feature to easily find out the health status of network cables. If any problems exist, this feature helps quickly locate the point where the cabling fails, allowing connectivity issues to be fixed much faster, potentially saving technicians hours of troubleshooting.

If an error is detected, the distance at which the fault is detected is stated in meters. (This is the distance from the port.)

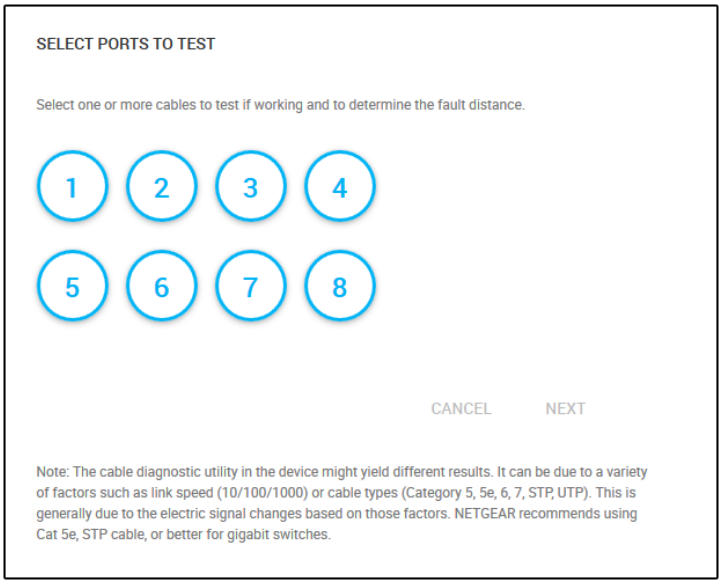
To test one or more cable connections:

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

   The login page opens.
3. Enter the switch password.

   The default password is **password**. The password is case-sensitive.

   The Home page displays.
4. From the menu at the top of the page, select **DIAGNOSTICS**.

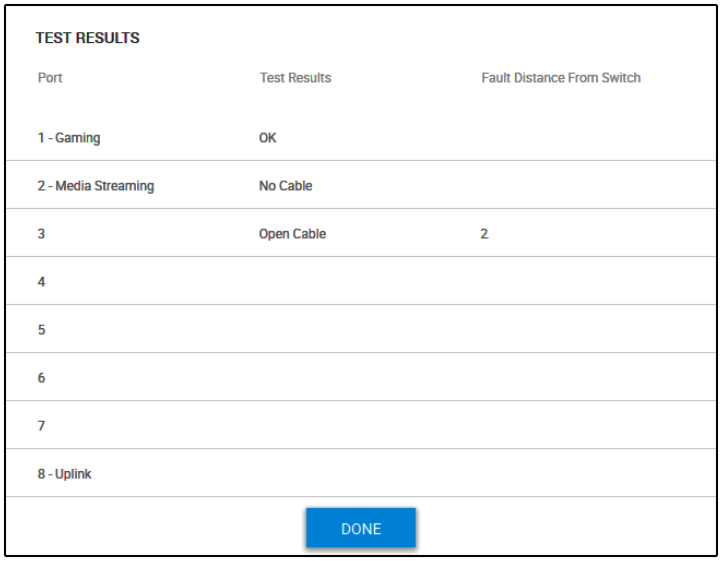


5. Select one or more ports to test by clicking the numbers.

   Selected ports display blue.
6. Click the **NEXT** button.

   The switch sends a signal to the cables for the selected ports, causing the ports to be temporarily out of service and traffic on the ports to be temporarily affected.

   When the test is complete, the results are displayed.



If a fault was detected, the distance (from the switch port) to that fault is displayed in feet. The previous figure shows an example.

7. Click the **DONE** button.
   The SELECT PORTS TO TEST page displays again.

Reboot the Switch From the Management Interface

You can reboot the switch remotely from the management interface.

To reboot the switch from the management interface:

1. Open a web browser from a computer that is connected to the same network as the switch or to the switch directly through an Ethernet cable.
2. Enter the IP address that is assigned to the switch.
   The login page opens.
3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.
   The Home page displays.
4. From the menu at the top of the page, to the right of NETGEAR, click the three-dot icon and select **Reboot Switch**.
   A pop-up window displays.
5. Click the **CONTINUE** button.
   The switch reboots. Your switch web session is disconnected and you must log back in to the management interface.

Detect a Network Loop

When a network loop occurs, the switch, and possibly the router to which the switch is connected, could become very sluggish or traffic on your network could come to a halt.

By default, loop detection is enabled on the switch. (You cannot disable it.)

If the switch detects a network loop, all port LEDs for the ports that are being used blink blue fast. This visual warning allows you to determine which ports are involved in the loop and remove the loop.

Resolve a Subnet Conflict to Access the Switch

If you power on the switch before you connect it to a network that includes a DHCP server (or a router that functions as a DHCP server), the switch uses its own default IP address of 192.168.0.239. This subnet might be different from the subnet used in your network.

To fix this subnet conflict:

1. Disconnect the Ethernet cable between the switch and your network.
2. Unplug the switch's power adapter.
3. Reconnect the Ethernet cable between the switch and your network.
4. Plug the switch's power adapter into an electrical outlet.

   The switch powers on. The DHCP server in the network discovers the switch and assigns it an IP address that is in the correct subnet for the network.

Factory Default Settings and Technical Specifications

A

This appendix includes the following sections:

- *Factory Settings* on page 81
- *Technical Specifications* on page 82

Factory Settings

You can return the switch to its factory settings. Use the end of a paper clip or some other similar object to press and hold the **RESET** button on the bottom panel of the switch for at least five seconds. The switch resets and returns to the factory settings that are shown in the following table.

Table 2. Factory default settings

Feature	Default Setting
Access point login and discovery	
IP address	**DHCP client**. Enabled. That is, an IP address is issued to the switch by a DHCP server in the network. **Standalone IP address**. 192.168.0.239 with subnet mask 255.255.255.0
Login password	password
Switch discovery protocols	All enabled (UPnP, Bonjour, and NSDP)
QoS	
QoS port assignments	**Port 1**. Gaming **Port 2**. Media streaming **Port 8**. Uplink
QoS mode	Port-based
Port priority	High (all ports)
Port rate limits	None (for all ports)
Flow control	Disabled
Broadcast filtering	Disabled
Port storm control rate limits	None (for all ports)
Multicast	
IGMP snooping	Enabled
Blocking of unknown multicast addresses	Disabled
IGMPv3 IP header validation	Disabled
Static router port for IGMP snooping	None
Ports and LEDs	
Port link speed	Autonegotiation

Table 2. Factory default settings (Continued)

Feature	Default Setting
Port LEDs	Enabled
Power LED	Enabled
Other features	
Link aggregation	No LAGs configured
Power saving mode	Disabled
Loop detection	Enabled (nonconfigurable)
Jumbo frames	Enabled (nonconfigurable)

Technical Specifications

The following table shows the technical specifications of the switch.

Table 3. Technical specifications

Feature	Description
IEEE standards	IEEE 802.3 Ethernet IEEE 802.3x Full-Duplex Flow Control IEEE 802.3u 100BASE-TX IEEE 802.1p Class of Service IEEE 802.3ab 1000BASE-T IEEE 802.3az Energy Efficient Ethernet (EEE)
Network connectors	RJ-45, supporting 10BASE-T, 100BASE-TX, or 1000BASE-T
Ethernet ports	8
Power adapter	12V, 1.0A (The plug is localized to the country of sale.) Power consumption from 0.8W to 3.8W
Power consumption	From 0.8W to 3.8W
Dimensions (W x D x H)	7.7 x 5.9 x 1.6 in. (195 x 149 x 40 mm)
Weight	1.63 lb (0.74 kg)
Operating temperature	32º to 104ºF (0° to 40°C)
Operating humidity	90% maximum relative humidity, noncondensing

Table 3. Technical specifications (Continued)

Feature	Description
Operating altitude	10,000 ft (3,000 m) maximum
Storage temperature	–40° to 158°F (–40º to 70ºC)
Storage humidity	95% maximum relative humidity, noncondensing
Storage altitude	10,000 ft (3,000 m) maximum
Safety certifications	UL, CB, CE LVD, EAC

Additional Switch Discovery and Access Information

B

This appendix provides additional information about how you can discover and access the switch in your network.

The appendix contains the following section:

Access the Switch From Any Computer on page 85

Access the Switch From Any Computer

This procedure requires you to use an IP scanner application. Such applications are available on the Internet, and some of them are free of charge.

To discover the switch IP address and access the switch from a computer:

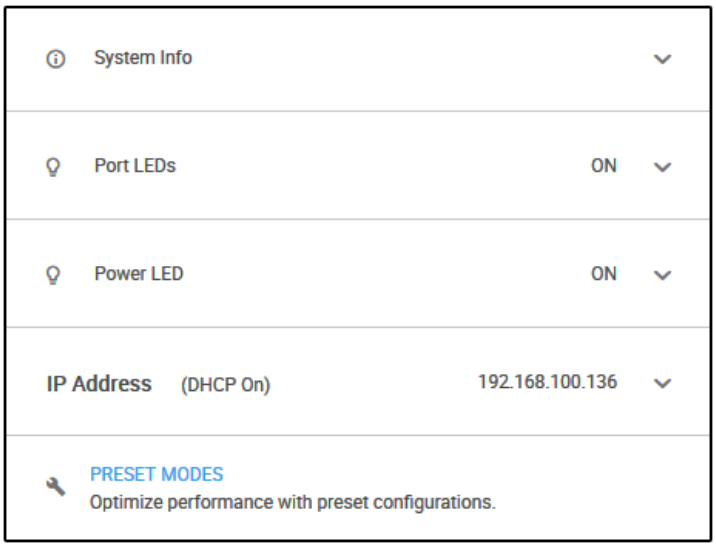
1. From a computer that is connected to your network, run the IP scanner application in your network.
   The IP address that is assigned to the switch displays in the IP scanner application.

   Note You can also access the DHCP server (or the router that functions as a DHCP server) in your network and determine the IP address that is assigned to the switch.

2. Open a web browser, and in the address bar, type the IP address of the switch.
   The login page of the management interface opens.

3. Enter the switch password.
   The default password is **password**. The password is case-sensitive.

   The Home page displays.



The previous figure shows the right pane (or, depending on the size of your browser page, the middle pane) of the Home page. The pane also shows the IP address that is assigned to the switch.

Tip You can copy and paste the IP address into a new shortcut or bookmark it for quick access on your computer or mobile device. However, if you reboot the switch, a dynamic IP address (assigned by a DHCP server) might change and the bookmark might no longer link to the login page for the switch. In this case, you must repeat *Step 1* through *Step 3* so that you can discover the new IP address of the switch in the network and update your bookmark accordingly. You can also set up a fixed (static) IP address for the switch (see *Set Up a Fixed IP Address for the Switch* on page 13) to ensure that the new bookmark always links to the login page for the switch, even after you reboot the switch.