



Insight Managed 8-Port Gigabit Ethernet PoE+ Smart Cloud Switch with 2 SFP Fiber Ports

Hardware Installation Guide

Models GC510P and GC510PP

September 2017
202-11780-02

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Conformity

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See the regulatory compliance document before connecting the power supply.

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Introduction

1

This hardware installation guide is for the following NETGEAR Insight managed switch models:

- 8-Port Gigabit Ethernet PoE+ Insight Managed Smart Cloud Switch with 2 SFP Fiber Ports, Model GC510P
- 8-Port Gigabit Ethernet High-Power PoE+ Insight Managed Smart Cloud Switch with 2 SFP Fiber Ports, Model GC510PP

The switch provides eight Gigabit Ethernet RJ-45 copper ports and two dedicated Gigabit SFP fiber ports.

Both models support Power over Ethernet Plus (PoE+) on all eight RJ-45 copper ports so that you can let the switch provide power to devices that are PoE and PoE+ capable, such as WiFi access points, VoIP phones, and IP security cameras. The switches differ in their maximum PoE power budget:

- **Model GC510P.** This model can supply up to 30W PoE (IEEE 802.3at) to each port, with a maximum PoE power budget of 134W across all active PoE+ ports.
- **Model GC510PP.** This model can supply up to 30W PoE (IEEE 802.3at) to each port, with a maximum PoE power budget of 195W across all active PoE+ ports.

The hardware installation guide complements the installation guide that came with your switch.

This chapter serves as an introduction to the switch and includes the following sections:

- *Overview*
- *Features*
- *Safety Instructions and Warnings*

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

Note For technical specifications, see the data sheet at netgear.com/business/products/switches/app-managed-smart-cloud/gigabit-switch.aspx#tab-resources. For switch documentation, visit downloadcenter.netgear.com.

Overview

The switch provides eight Gigabit Ethernet copper ports and two dedicated Gigabit SFP fiber ports. All copper ports use RJ-45 connectors. The SFP ports require a standard small form-factor pluggable (SFP) gigabit interface converter (GBIC, also referred to as transceiver module), which is sold separately from the switch. The switch integrates full-duplex, nonblocking switch fabric that provides full-wire speed for all packet sizes.

The switch supports PoE+ on all copper ports with a maximum PoE power budget of 134W (model GC510P) or 195W (model GC510PP) across all active PoE+ ports.

Note For information about application examples, see *Applications* on page 17.

The switch provides management options that let you discover the switch on the network and configure, monitor, and control the switch:

- **NETGEAR Insight app.** Using the NETGEAR Insight app, you can discover the switch on the network and add the switch to the NETGEAR Insight app so that you can perform basic management and monitoring tasks from your smartphone. You can choose from four methods to add the switch to the NETGEAR Insight app: You can scan the serial number bar code of the switch, add the switch from the Day Zero window, add the switch from the Network window, or add the switch from the Device List window. For more information, see the NETGEAR knowledge base articles at support.netgear.com.
- **Local browser-based management interface.** Using the local browser-based management interface, in this guide referred to as the local browser interface, you can perform very advanced configurations and, if needed, debugging. For more information, see the user manual, which you can download from downloadcenter.netgear.com.

Note The switch is designed to be managed using the NETGEAR Insight app. By default, the local browser interface is disabled and you cannot use it to manage the switch while the NETGEAR Insight app is enabled to manage the switch.

You can install the switch freestanding (on a desktop), wall-mounted, using the VESA-standard mounting holes and supplied wall-mount kit, or rack-mounted in a standard 19-inch rack, using the supplied rack-mount kit. The switch is IEEE compliant and offers low latency. All ports can automatically negotiate to the highest speed, which makes the switch very suitable for a mixed environment with Gigabit Ethernet and Fast Ethernet.

For Gigabit Ethernet connections, use Category 5 (Cat 5) or higher-rated Ethernet cables terminated with RJ-45 connectors.

Features

The switch includes the following key hardware features:

- Eight Gigabit Ethernet ports.
- Two dedicated Gigabit SFP fiber ports.
- PoE and PoE+ on copper ports:
 - Eight ports PoE+ supporting both IEEE 802.3af and IEEE 802.3at
 - Total PoE power budget of 134W (model GC510P) or 195W (model GC510PP)
- MAC table size of 16K entries.
- Switch fabric full duplex nonblocking.
- Includes the following mounting hardware:
 - Four rubber footpads for tabletop installation
 - Wall-mount screw kit for wall installation
 - Rack-mount brackets and screw kit for rack-mount installation in a standard 19-inch rack
- Full compatibility with IEEE standards:
 - IEEE 802.3 Ethernet
 - IEEE 802.3u 100BASE-T
 - IEEE 802.3ab 1000BASE-T
 - IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX
 - IEEE 802.1Q VLAN tagging
 - IEEE 802.3x Full-duplex flow control
 - IEEE 802.3ad Link aggregation (LAG with LACP)
 - IEEE 802.1ab LLDP
 - IEEE 802.1p Class of Service (QoS)
 - IEEE 802.1D Spanning Tree Protocol (STP)
 - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
 - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
 - IEEE 802.1x RADIUS network access control
 - IEEE 802.3az Energy Efficient Ethernet (EEE)
 - IEEE 802.3af (PoE)
 - IEEE 802.3at (PoE+)

- AutoSensing and autonegotiating capabilities for all ports.
- Auto Uplink™ technology is supported on all ports.
- Automatic address learning function to build the packet-forwarding information table. The table contains up to 16K Media Access Control (MAC) addresses.
- Store-and-forward transmission to remove bad packets from the network.
- Active flow control to minimize packet loss and frame drops.
- Half-duplex backpressure control.
- Per-port status LEDs and system status LEDs:
 - System Power LED (front and back panels)
 - Cloud Connection LED (front and back panels)
 - Fan LED (model GC510PP only)
 - PoE Max or Fault LED
 - Per-port link, speed, and activity LED for copper ports
 - Per-port PoE status LED for copper ports
 - Per-port link and activity LED for SFP fiber ports
- NETGEAR green power-saving features:
 - Energy efficiency mode that fully conforms to the IEEE 802.3az standard
 - Per-port automatic change to a lower power mode when the port link is down

Safety Instructions and Warnings

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

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

- This product is designed for indoor use only in a temperature-controlled (0–50°C) and humidity-controlled (90 percent maximum relative humidity, noncondensing) environment.
Any device that is located outdoors and connected to this product must be properly grounded and surge protected.
To the extent permissible by applicable law, failure to follow these guidelines can result in damage to your NETGEAR product, which might not be covered by NETGEAR's warranty.
- Observe and follow service markings:
 - Do not service any product except as explained in your system documentation.
 - Opening or removing covers that are marked with the triangular symbol with a lightning bolt can expose you to electrical shock. We recommend that only a trained technician services components inside these compartments.

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- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
 - The power cable, extension cable, or plug is damaged.
 - An object fell into the product.
 - The product was exposed to water.
 - The product was dropped or damaged.
 - The product does not operate correctly when you follow the operating instructions.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide, or contact your trained service provider.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.
- To avoid damaging your system, be sure that the voltage selection switch (if provided) on the power supply is set to match the power at your location:
 - 115V, 60 Hz in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100V, 50 Hz in eastern Japan and 100V, 60 Hz in western Japan
 - 230V, 50 Hz in most of Europe, the Middle East, and the Far East
- Be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cables. If you were not provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable approved for your country. The power cable must be rated for the product and for the voltage and current marked on the product electrical ratings label. The voltage and current rating of the cable must be greater than the ratings marked on the product.
- To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets.
- The peripheral power cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

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- Position system cables and power cables carefully. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications.
- Always follow your local and national wiring rules.

Hardware Overview

2

This chapter describes the switch hardware features.

The chapter includes the following sections:

- *Hardware Description*
- *Switch Hardware Interfaces*

Hardware Description

The following sections describes the switch hardware features.

Front Panel

The front panel does not contain any components other than two LEDs: The upper LED is the Cloud Connection LED and the lower LED is the Power LED (see [LEDs](#) on page 13).

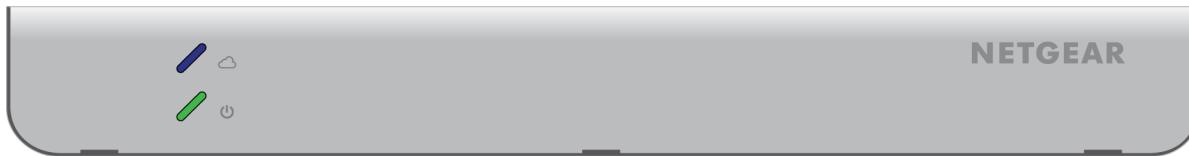


Figure 1. Front panel

Back Panel

Both model GC510P and model GC510PP provide eight 10/100/1000BASE-T RJ-45 PoE+ ports and two dedicated Gigabit SFP fiber ports.

Both models integrate a fixed, internal power supply unit (PSU). Model GC510PP also integrates a fan.

The following figures show the back panels.

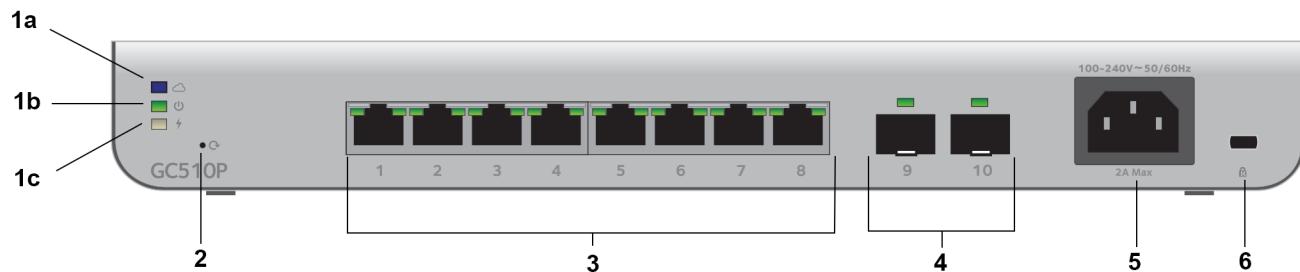


Figure 2. Back panel model GC510P

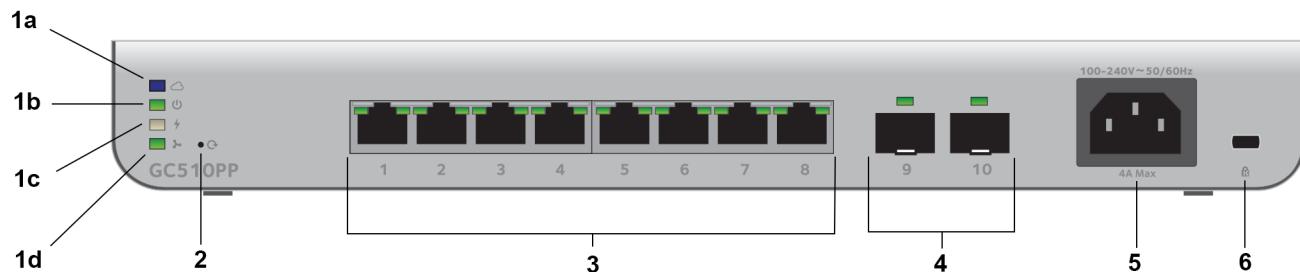


Figure 3. Back panel model GC510PP

Table 1. Back panel components

Number	Description
1a	Cloud Connection LED (see LEDs on page 13).
1b	Power LED (see LEDs on page 13).
1c	PoE Max or Fault LED (see LEDs on page 13).
1d	Fan LED (see LEDs on page 13) for model GC510PP only.
2	Recessed multi-function Reset button (see Multi-Function Reset Button on page 15).
3	Eight independent 10/100/1000BASE-T RJ-45 PoE+ ports, each with a left LED that functions as the combined speed and activity LED and a right LED that indicates the PoE status (see LEDs on page 13).
4	Two dedicated Gigabit SFP fiber ports that can accept optional transceiver modules (see SFP Ports for Fiber Connectivity on page 15) with a single LED that functions as the combined link and activity LED (see LEDs on page 13).
5	AC power receptacle.
6	Kensington lock for an optional security cable.

LEDs

This section describes the LED designations of the switch.

Table 2. LEDs on the back panel

LED	Description
Cloud Connection LED	Solid blue. The switch is connected to the cloud server and is set up to be managed by the NETGEAR Insight app. Off. The switch is not connected to the cloud server or is set up to be managed by the local browser interface.
Power LED	Solid green. The switch is powered on. Solid amber. The switch is booting. Off. Power is not supplied to the switch.
PoE Max/Fault LED	Off. Sufficient (more than 7W of) PoE power is available. Solid amber. Less than 7W of PoE power is available. Blinking amber. At least once during the previous two minutes, less than 7W of PoE power was available.
Fan LED Model GC510PP only	Solid green. The fan is operating normally. Solid amber. A problem occurred with the fan.

Hardware Overview

Table 2. LEDs on the back panel (Continued)

LED	Description
RJ-45 left LED Link, speed, and activity for Ethernet ports 1 to 8	Off. No link is established. Solid green. A valid 1 Gbps link is established. Blinking green. The port is transmitting or receiving packets at 1 Gbps. Solid amber. A valid 10 Mbps or 100 Mbps link is established. Blinking amber. The port is transmitting or receiving packets at 10 Mbps or 100 Mbps.
RJ-45 right LED PoE status for Ethernet ports 1 to 8	Off. The port is not delivering PoE power. Solid green. The port is delivering PoE power. Solid amber. A PoE fault occurred.
Link/ACT LED Link and activity for SFP fiber ports 9 and 10	Off. No SFP module link is established. Solid green. A valid 1 Gbps link is established. Blinking green. The SFP fiber port is transmitting or receiving packets at 1 Gbps.

Table 3. LEDs on the front panel

LED	Description
Cloud Connection LED	Solid blue. The switch is connected to the cloud server and is set up to be managed by the NETGEAR Insight app. Off. The switch is not connected to the cloud server or is set up to be managed by the local browser interface.
Power LED	Solid green. The switch is powered on. Solid amber. The switch is booting. Off. Power is not supplied to the switch.

Switch Hardware Interfaces

The following sections describe the hardware interfaces on the switch.

RJ-45 Ports for 10/100/1000M BASE-T Ethernet Connectivity

All RJ-45 copper ports support autosensing. When you insert a cable into an RJ-45 port, the switch automatically ascertains the maximum speed (10 Mbps, 100 Mbps, or 1 Gbps) and duplex mode (half-duplex or full-duplex) of the attached device. All ports support a Category 5e (Cat 5e) cable (or higher-rated Ethernet cable) terminated with an 8-pin RJ-45 connector.

To simplify the procedure for attaching devices, all RJ-45 ports support Auto Uplink technology. This technology allows attaching devices to the RJ-45 ports with either straight-through or crossover cables.

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When you insert a cable into the switch's RJ-45 port, the switch automatically performs the following actions:

- Senses whether the cable is a straight-through or crossover cable.
- Determines whether the link to the attached device requires a normal connection (such as when you are connecting the port to a computer) or an uplink connection (such as when you are connecting the port to a router, switch, or hub).
- Automatically configures the RJ-45 port to enable communications with the attached device. The Auto Uplink technology compensates for setting uplink connections while eliminating concern about whether to use crossover or straight-through cables when you attach devices.

All RJ-45 copper ports on model GC510P and model GC510PP support Power over Ethernet (PoE+).

SFP Ports for Fiber Connectivity

To enable fiber connections on the switch, SFP fiber ports accommodate standard small form-factor pluggable (SFP) gigabit interface converters (GBICs, also referred to as transceiver modules). GBICs are sold separately from the switch.

The switch supports the NETGEAR SFP transceiver modules that are listed in the following table.

Table 4. Supported SFP transceiver modules

Speed and Medium	Model	Description
1G Ethernet short-reach fiber	AGM731F	SFP transceiver 1000BASE-SX
1G Ethernet long-reach fiber	AGM732F	SFP transceiver 1000BASE-LX
1G Ethernet copper	AGM734	SFP transceiver 1000BASE-T

For more information about NETGEAR SFP transceiver modules, visit netgear.com/business/products/switches/modules-accessories.

Note If you use a third-party passive direct-attach cable (DAC), the length of the cable must not exceed 5 meters (16.4 feet).

Multi-Function Reset Button

The switch provides a recessed multi-function **Reset** button on the back panel so that you can either restart (power-cycle) the switch, reset the switch to the most recently saved cloud-managed configuration, or return the switch to its factory default settings, causing all custom settings to be erased. The factory default settings function of the **Reset** button is available only after you use the NETGEAR Insight app to remove the switch from your network.

► To restart or reset the switch or return the switch to its factory default settings:

1. Insert a device such as a straightened paper clip into the opening.
2. Do one of the following:

- **Restart the switch.** Press the **Reset** button for about two seconds. (Do not press the button for more than five seconds!)
The switch restarts but retains its custom settings. During this process, the Power LED lights amber.
- **Reset the switch to the most recently saved cloud-managed configuration.** Press the **Reset** button for at least five seconds.
The switch restarts and returns to the most recently saved cloud-managed configuration. During this process, the Power LED lights amber.
- **Return the switch to its factory default settings.** After you use the NETGEAR Insight app to remove the switch from your network, press the **Reset** button for at least five seconds.
The switch restarts and returns to its factory default settings. During this process, the Power LED lights amber.

Applications

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The switch is designed to provide flexibility in configuring network connections. The switch can be used as your only network traffic-distribution device for PoE+, PoE, and non-PoE devices or with 10 Mbps, 100 Mbps, and 1 Gbps Ethernet and fiber hubs, routers, and switches.

This chapter includes the following sections:

- *PoE Applications*
- *Desktop Switching*

PoE Applications

This section covers the following topics:

- *PoE Overview* on page 18
- *Connect PoE Equipment in a Business Environment* on page 19
- *Connect PoE Equipment for Surveillance and Security* on page 20

PoE Overview

The switch supports eight Power over Ethernet Plus (PoE+) ports and can supply up to 30W PoE+ (IEEE 802.3at) to each port up to its total maximum PoE power budget of 134W (model GC510P) or 195W (model GC510PP) across all active PoE+ ports. The switch is backward compatible with PoE (IEEE 802.3af).

Supplied power is prioritized according to the port order, up to the total power budget of the device. Port 1 receives the highest PoE priority, while port 8 is relegated to the lowest PoE priority.

If the power requirements for attached devices exceed the total power budget of the switch, the PoE power to the device on the highest-numbered active PoE+ port is disabled to make sure that the devices connected to the higher-priority, lower-numbered PoE+ ports are supported first.

Although a device is listed as an 802.3at PoE+-powered or 802.3af PoE-powered device, it might not require the maximum power limit that is specified by its IEEE standard. Many devices require less power, allowing all eight PoE+ ports to be active simultaneously when the devices correctly report their PoE class to the switch.

Using the local browser interface, you can control how PoE power is allocated across active PoE+ ports by overriding the default or autodetected PoE power limits for individual PoE+ ports.

Connect PoE Equipment in a Business Environment

The following figure shows an example of how you can connect PoE wireless access points that require 802.11af only, PoE VoIP phones, and PoE surveillance equipment to the switch in a business environment.

In a small office or home office network, the blue network icon represents a router that is connected to an Internet modem. In such a setup, you must connect one port on the switch to a LAN port on the router.

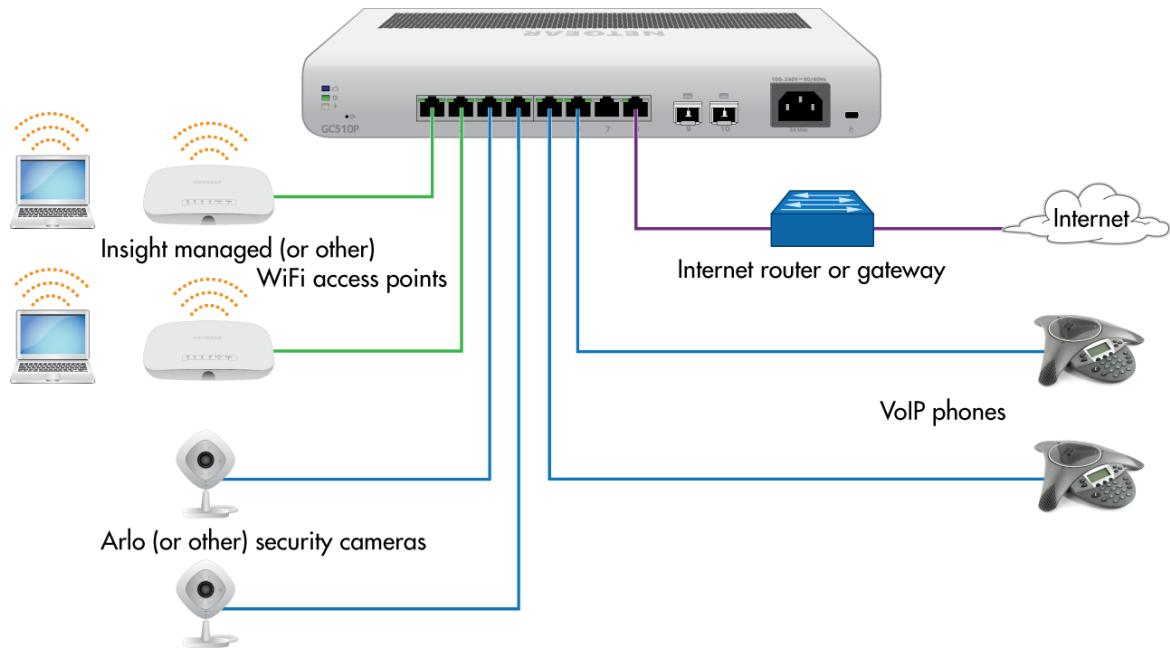


Figure 4. Sample PoE business use case

Line Color	Connection
Purple	Internet router or gateway
Green	PoE+ devices such as Insight managed (or other) WiFi access points
Blue	PoE devices such as Arlo (or other) security cameras and VoIP phones

Connect PoE Equipment for Surveillance and Security

The following figure shows an example of how you can connect PoE and non-PoE equipment to the switch for surveillance and security purposes.

In a small office or home office network, the blue network icon represents a router that is connected to an Internet modem. In such a setup, you must connect one port on the switch to a LAN port on the router.

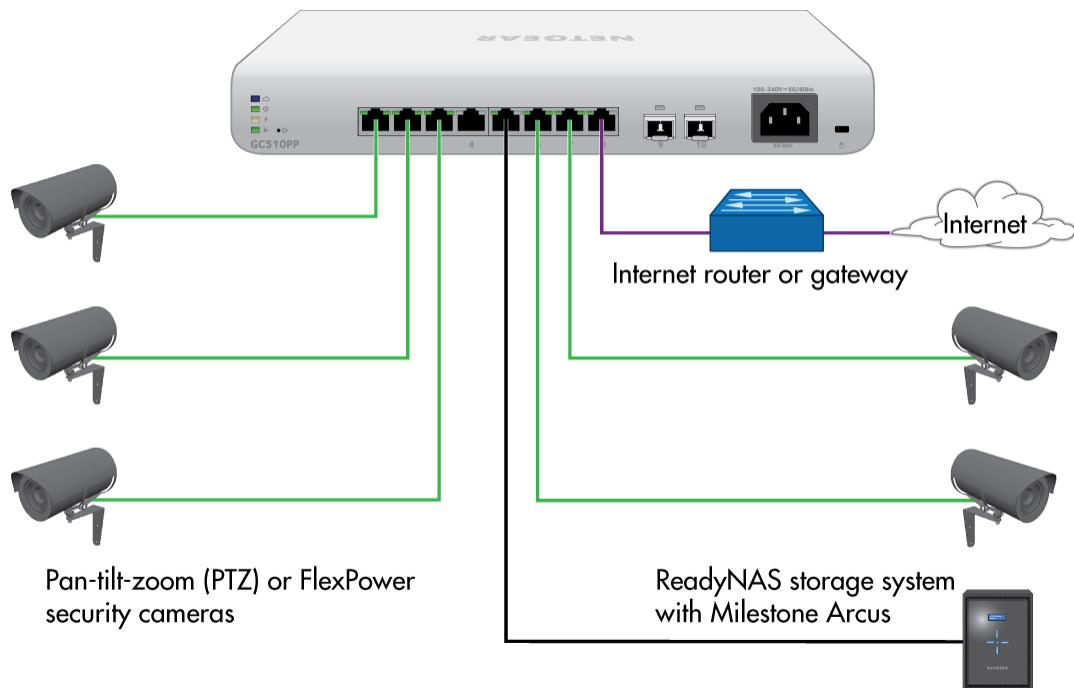


Figure 5. Sample switch surveillance and security application

Line Color	Connection
Purple	Internet router or gateway
Green	PoE+ devices such as pan-tilt-zoom (PTZ) or FlexPower security cameras
Black	Network devices such as a ReadyNAS storage system

Desktop Switching

You can use the switch as a desktop switch to build a small network that provides up to 1 Gbps access to servers such as a file server. In a small network such as a small office or home office network, connect the switch to a router that, in turn, is connected to an Internet modem.

With 1 Gbps connections, the switch always functions in full-duplex mode. Any switch port that is connected to a computer or file server can provide up to 2 Gbps bidirectional throughput.

In a small office or home office network, the blue network icon represents a router that is connected to an Internet modem. In such a setup, you must connect one port on the switch to a LAN port on the router.

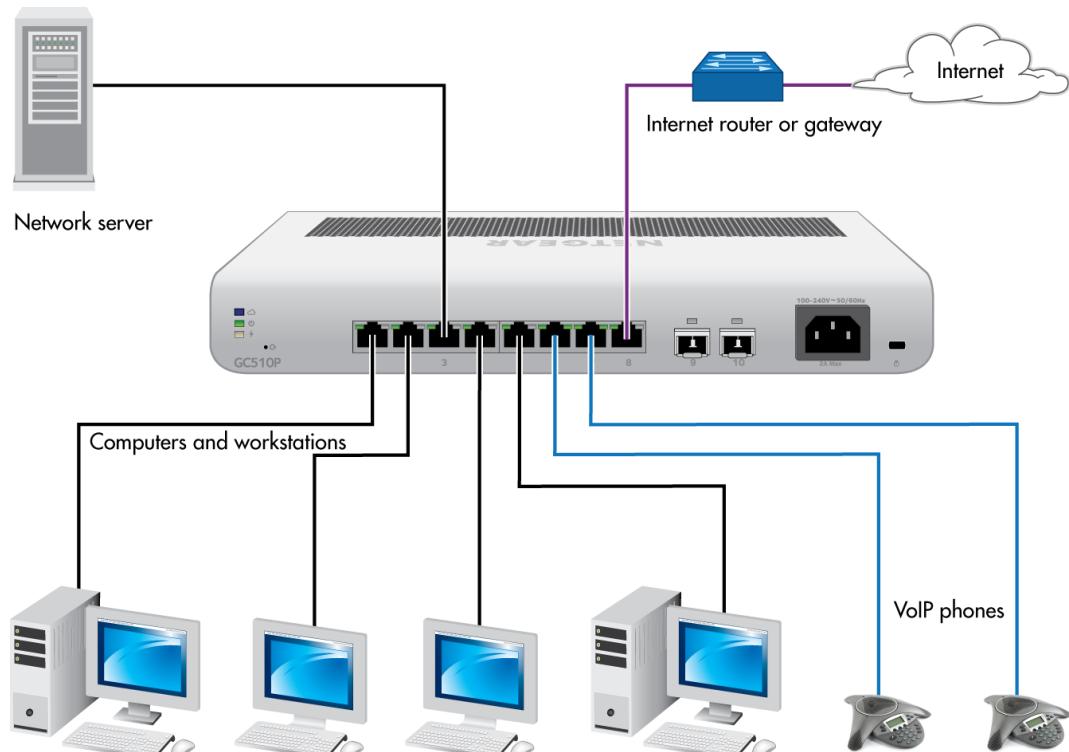


Figure 6. Sample desktop switching

Line Color	Connection
Purple	Internet router or gateway
Blue	PoE devices such VoIP phones
Black	Network devices such as servers, workstations, and computers

Applications

Installation

4

This chapter describes the installation procedures for the switch. Switch installation involves the steps described in the following sections:

- *Step 1: Prepare the Site*
- *Step 2: Protect Against Electrostatic Discharge*
- *Step 3: Unpack the Switch*
- *Step 4: Install the Switch*
- *Optional Step 5: Install SFP Transceiver Modules*
- *Step 6: Connect Devices to the Switch*
- *Step 7: Check the Installation*
- *Step 8: Apply Power and Check the LEDs*
- *Step 9: Manage the Switch*

Step 1: Prepare the Site

Before you install the switch, make sure that the operating environment meets the site requirements that are listed in the following table.

Table 5. Site requirements

Characteristics	Requirements
Mounting	<p>Desktop installations. Provide a flat table or shelf surface.</p> <p>Wall installations. Use the wall-mount screws that are supplied with the switch to attach the switch to a wall.</p> <p>Pole (or other surface) installations. Use an off-the-shelf 75 mm VESA standard mount to secure the switch to a pole or another surface. The bottom panel of the switch provides four mount holes that are VESA-compliant.</p> <p>Rack-mount installations. Use a 19-inch (48.3-centimeter) EIA standard equipment rack that is grounded and physically secure. You also need the rack-mount kit that is supplied with the switch.</p>
Access	Locate the switch in a position that allows you to access the front panel ports, view the front panel LEDs, and access the power connector on the back panel.
Power source	Use the AC power cord that is supplied with the switch. Make sure that the AC outlet is not controlled by a wall switch, which can accidentally turn off power to the outlet and the switch.
Cabling	Route cables to avoid sources of electrical noise such as radio transmitters, broadcast amplifiers, power lines, and fluorescent lighting fixtures.
Environmental	<p>Temperature. Install the switch in a dry area with an ambient temperature between 32°F and 122°F (0°C and 50°C). Keep the switch away from heat sources such as direct sunlight, warm-air exhausts, hot-air vents, and heaters.</p> <p>Operating humidity. The maximum relative humidity of the installation location must not exceed 90 percent, noncondensing.</p> <p>Ventilation. Do not restrict airflow by covering or obstructing air inlets on the sides of the switch. Keep at least 2 inches (5.08 centimeters) free on all sides for cooling. The room or wiring closet in which you install the switch must provide adequate airflow.</p> <p>Operating conditions. Keep the switch at least 6 feet (1.83 meters) away from the nearest source of electromagnetic noise, such as a photocopy machine.</p>

Step 2: Protect Against Electrostatic Discharge



WARNING:

Static electricity can harm delicate components inside your system. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components, such as the microprocessor. You can do so by periodically touching an unpainted metal surface on the switch.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

Installation

- When unpacking a static-sensitive component from its shipping carton, leave it in the antistatic package until you are ready to install it. Just before unwrapping the antistatic package, discharge static electricity from your body.
- Before moving a sensitive component, place it in an antistatic container or package.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads, workbench pads, and an antistatic grounding strap.

Step 3: Unpack the Switch

The following figure shows the package contents.

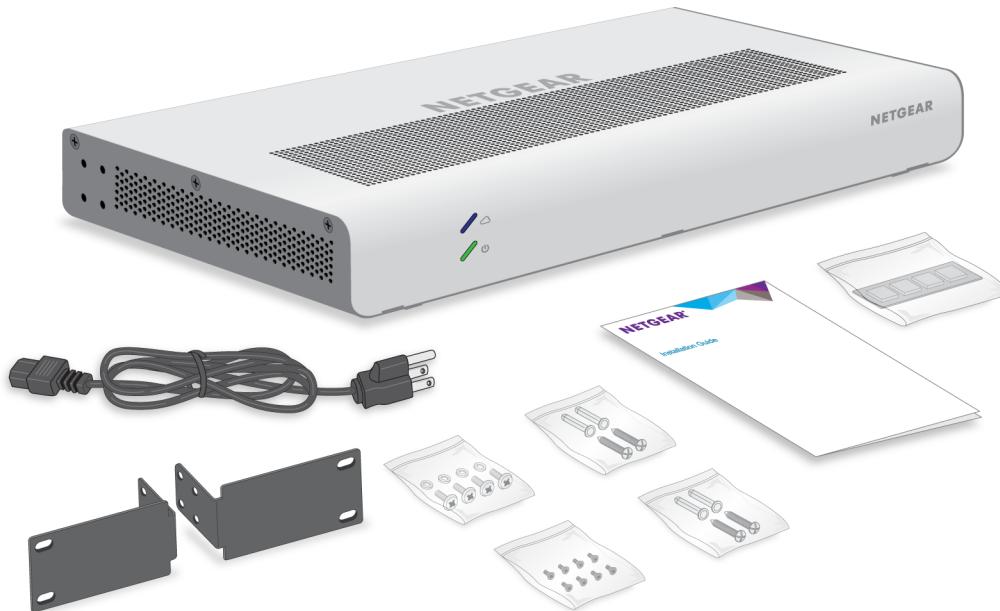


Figure 7. Switch package contents

Check the contents of the boxes to make sure that all items are present before installing the switch.

► To check the package contents:

1. Place the container on a clean flat surface, and cut all straps securing the container.
2. Unpack the hardware from the boxes by carefully removing the hardware and placing it on a secure and clean surface.
3. Remove all packing material.
4. Verify that the package contains the following items:
 - Switch of the correct model
 - Power cord
 - Wall-mounting screws
 - Rack-mounting brackets

Installation

- Rack-mounting screws
- Installation guide
- Rubber footpads for tabletop installation

5. If any item is missing or damaged, contact your local NETGEAR reseller for replacement.

Step 4: Install the Switch

You can also use any off-the-shelf 75 mm VESA standard mount to secure the switch to a wall, a pole, or another surface.

You can place the switch on a flat surface, attach it to a wall, or install it in a standard 19-inch (48.26-centimeter) network equipment rack.

Install the Switch on a Flat Surface

The switch ships with four self-adhesive rubber footpads.

► To install the switch on a flat surface:

Stick one rubber footpad on each of the four concave spaces on the bottom of the switch.

The rubber footpads cushion the switch against shock and vibrations. They also provide ventilation space between stacked switches.

Wall-Mount the Switch

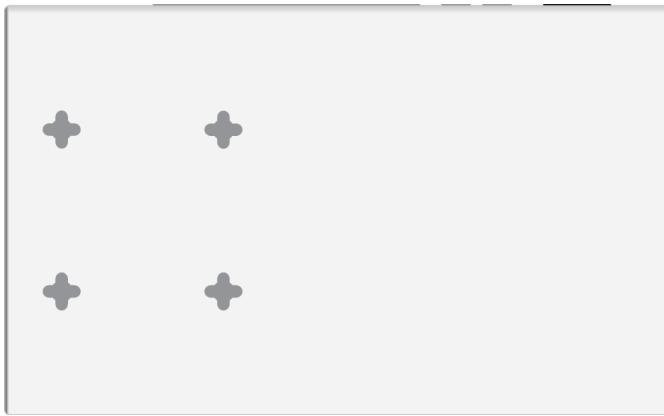
The bottom panel of the switch provides four VESA mount holes that allow you to mount the switch to a wall. The switch ships with wall-mount screws and anchors that you can secure to a wall and attach the switch to. We recommend that you use all four screws for greater stability and correct positioning. Although for some positions you could use only two screws, for other positions, using two screws will cause the switch to tilt.

Note To prevent the switch from tilting, do not wall-mount the switch vertically with the back panel facing right (that is, with the cables on the right). Whether you use two or four screws, the switch *will* tilt in this position.

Wall-Mount the Switch Horizontally With the Back Panel Facing Down

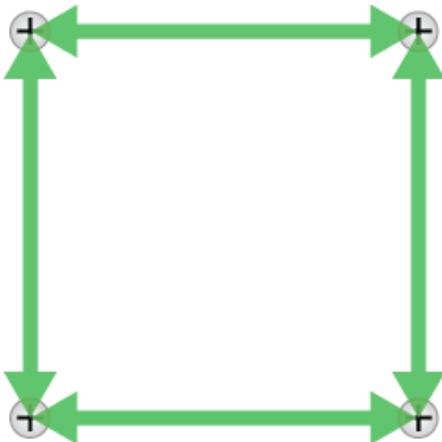
► To mount the switch horizontally to a wall with the back panel facing down (that is, with the cables at the bottom):

1. Locate the four holes on the bottom panel of the switch.



2. Mark the four mounting holes on the wall where you want to mount the switch.

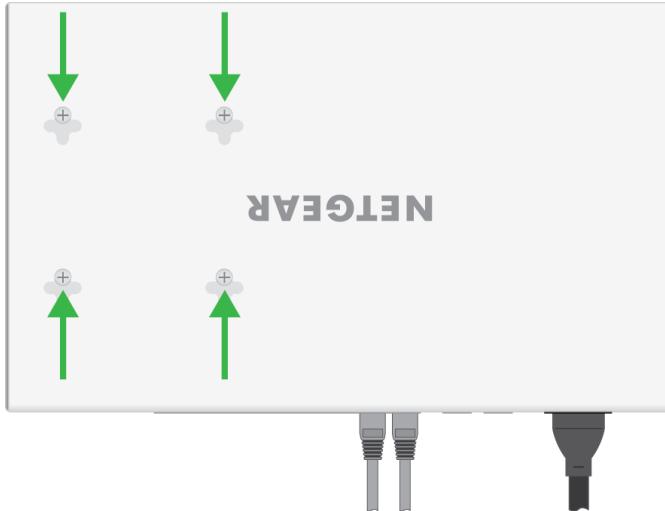
The four mounting holes must be in a square at precise distances of 75 mm (2.953 inches) from each other. In the following figure, each green arrow represents 75 mm.



3. Drill holes into the wall for four anchors in which you will insert M4 x L25 mm screws. The screws and anchors are in the switch package.
4. Insert the anchors into the wall and tighten the screws with a No. 2 Phillips screwdriver.

Leave about 6 mm (1/4 inch) of each screw protruded from the wall so that you can insert the screws into the holes on the bottom of the switch.

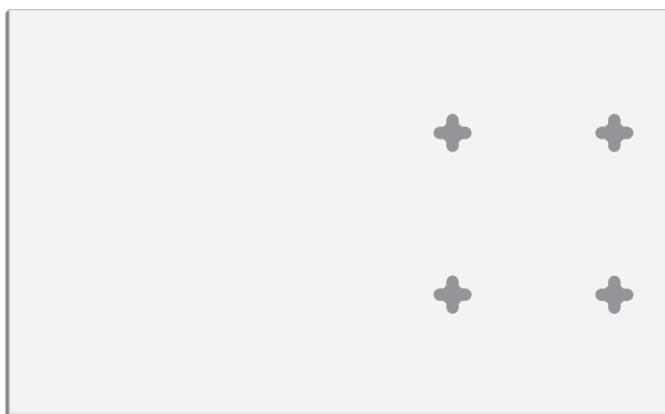
5. Line up the holes on the bottom panel of the switch with the screws in the wall and mount the switch to the wall.



Wall-Mount the Switch Horizontally With the Back Panel Facing Up

► To mount the switch horizontally to a wall with the back panel facing up (that is, with the cables at the top):

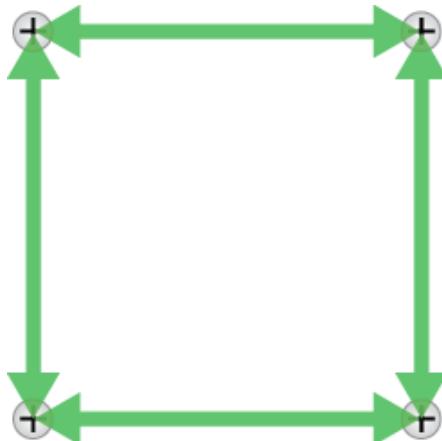
1. Locate the four holes in the bottom panel of the switch.



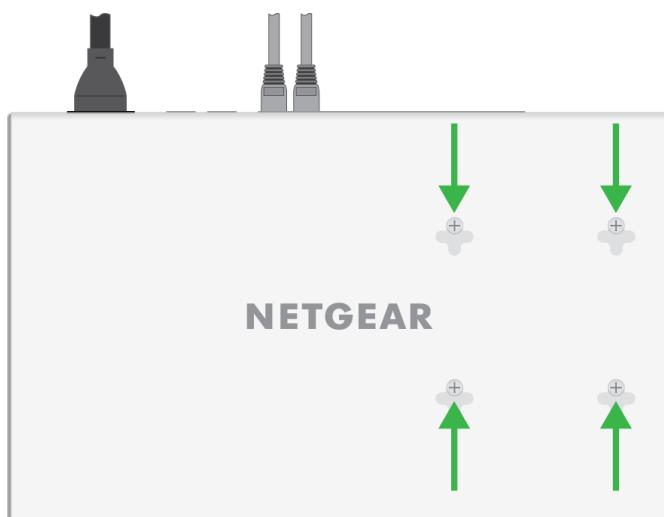
2. Mark the four mounting holes on the wall where you want to mount the switch.

Insight Managed 8-Port Gigabit Ethernet PoE+ Smart Cloud Switch with 2 SFP Fiber Ports

The four mounting holes must be in a square at precise distances of 75 mm (2.953 inches) from each other. In the following figure, each green arrow represents 75 mm.



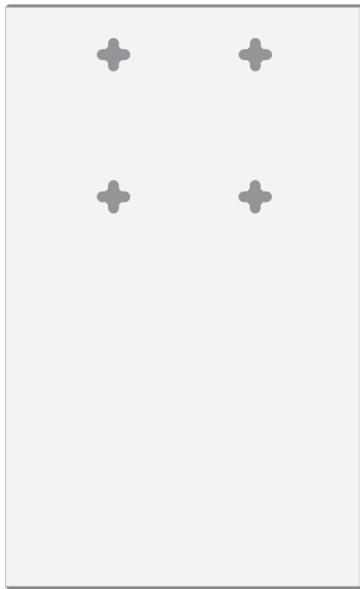
3. Drill holes into the wall for four anchors in which you will insert M4 x L25 mm screws. The screws and anchors are in the switch package.
4. Insert the anchors into the wall and tighten the screws with a No. 2 Phillips screwdriver. Leave about 6 mm ($\frac{1}{4}$ inch) of each screw protruded from the wall so that you can insert the screws into the holes on the bottom of the switch.
5. Line up the holes on the bottom panel of the switch with the screws in the wall and mount the switch to the wall.



Wall-Mount the Switch Vertically With the Back Panel Facing Left

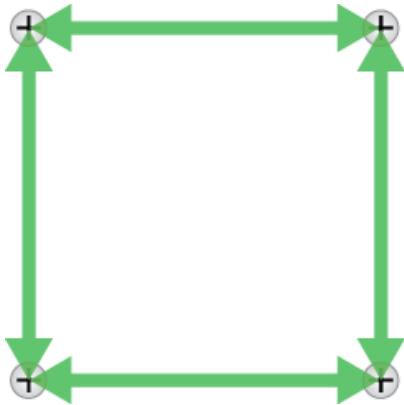
- To mount the switch vertically to a wall with the back panel facing left (that is, with the cables on the left):

1. Locate the four holes on the bottom panel of the switch.



2. Mark the four mounting holes on the wall where you want to mount the switch.

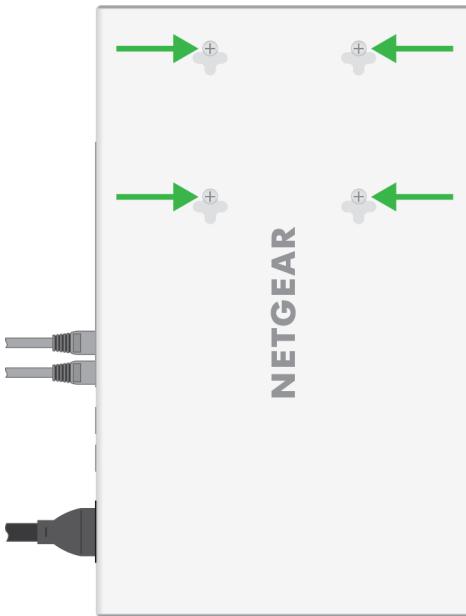
The four mounting holes must be in a square at precise distances of 75 mm (2.953 inches) from each other. In the following figure, each green arrow represents 75 mm.



3. Drill holes into the wall for four anchors in which you will insert M4 x L25 mm screws. The screws and anchors are in the switch package.
4. Insert the anchors into the wall and tighten the screws with a No. 2 Phillips screwdriver.

Leave about 6 mm (1/4 inch) of each screw protruded from the wall so that you can insert the screws into the holes on the bottom of the switch.

5. Line up the holes on the bottom panel of the switch with the screws in the wall and mount the switch to the wall.



Poor Wall-Mounting Position

To prevent the switch from tilting, do not wall-mount the switch vertically with the back panel facing right (that is, with the cables on the right). Whether you use two or four screws, the switch *will* tilt in this position.

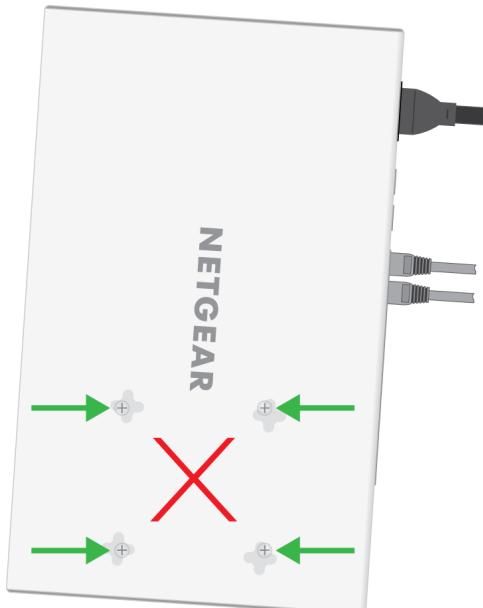


Figure 8. Poor wall-mounting position

Mount the Switch to a Pole or Another Surface

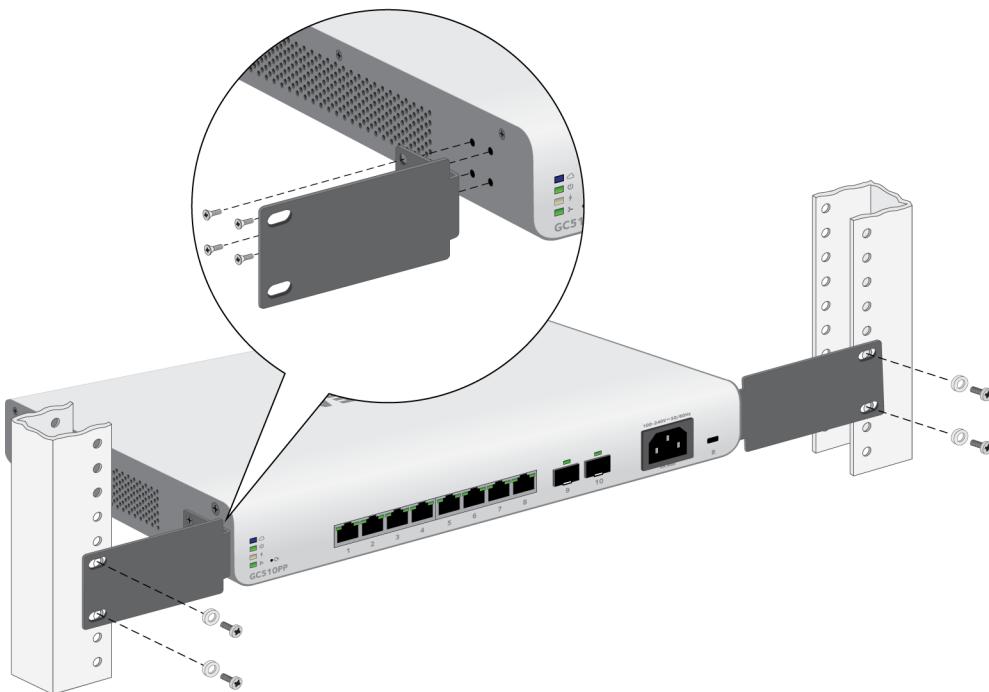
You can use an off-the-shelf 75 mm VESA standard mount to secure the switch to a pole or another surface. The bottom panel of the switch provides four mount holes that are VESA-compliant.

Install the Switch in a Rack

To install the switch in a rack, you need the 19-inch rack-mount kit supplied with the switch.

► **To install the switch in a rack:**

1. Attach the supplied mounting brackets to the side of the switch.
2. Insert the screws provided in the product package through each bracket and into the bracket mounting holes in the switch.
3. Tighten the screws with a No. 2 Phillips screwdriver to secure each bracket.
4. Align the mounting holes in the brackets with the holes in the rack, and insert two pan-head screws with nylon washers through each bracket and into the rack.
5. Tighten the screws with a No. 2 Phillips screwdriver to secure mounting brackets to the rack.



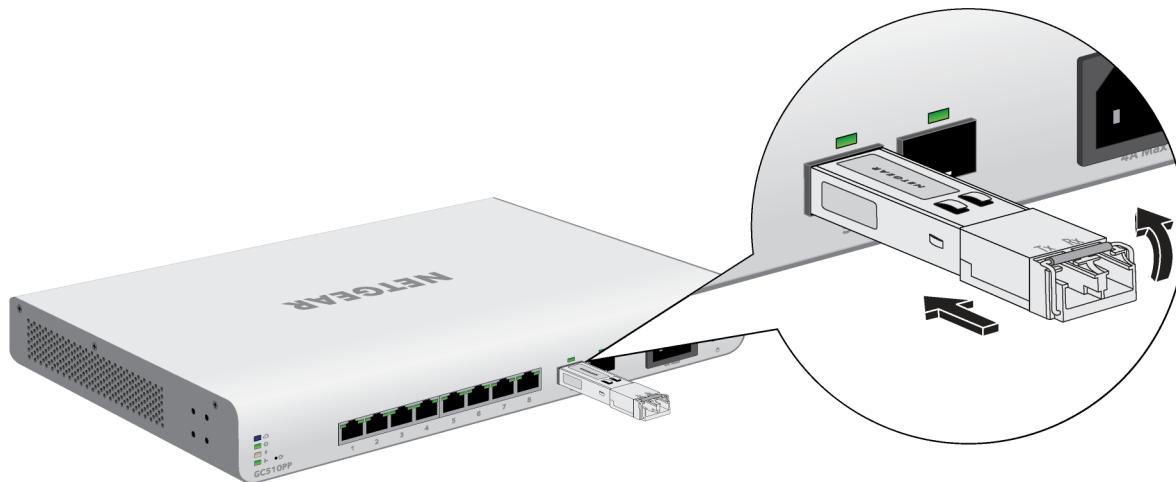
Optional Step 5: Install SFP Transceiver Modules

The following optional procedure describes how to install an optional SFP transceiver module into one of the SFP ports of the switch.

Note Contact your NETGEAR reseller to purchase these modules. If you do not want to install an SFP module, skip this procedure.

► **To install an SFP transceiver module:**

1. Insert the transceiver into the SFP port.
2. Press firmly on the flange of the module to seat it securely into the connector.



Step 6: Connect Devices to the Switch

The following procedure describes how to connect devices to the switch's RJ-45 ports. The switch supports Auto Uplink technology, which allows you to attach devices using either straight-through or crossover cables. Use a Category 5 (Cat 5), Cat 5e, or Cat 6 cable that is terminated with an RJ-45 connector.

Note Ethernet specifications limit the cable length between the switch and the attached device to 328 feet (100 meters).

► **To connect devices to the switch's RJ-45 ports:**

1. Connect a PoE or non-PoE device to an RJ-45 network port on the switch front panel.
2. Verify that all cables are installed correctly.

Step 7: Check the Installation

Before you apply power to the switch, perform the following steps.

► **To check the installation:**

1. Inspect the equipment thoroughly.
2. Verify that all cables are installed correctly.

3. Check cable routing to make sure that cables are not damaged or creating a safety hazard.
4. Make sure that all equipment is mounted properly and securely.

Step 8: Apply Power and Check the LEDs

The switch does not provide an on/off power switch. The power cord connection controls the power.

Before connecting the power cord, select an AC outlet that is not controlled by a wall switch, which can turn off power to the switch.

► To apply power:

1. Connect the end of the power cord to the AC power receptacle on the back of the switch.
2. Plug the AC power cord into a power source such as a wall socket or power strip.
3. Check to see that the LEDs on the switch light correctly.

When you apply power, the Power LED on the switch front panel lights and the port LEDs for attached devices light.

Note After you apply power, the Power LED lights solid amber while the switch starts. After two or three minutes, the switch completes its startup process and the Power LED turns from amber to solid green.

If the Power LED does not light, check to see that the power cord is plugged in correctly and that the power source is good.

Step 9: Manage the Switch

Using the NETGEAR Insight app, you can discover the switch on the network and add the switch to the NETGEAR Insight app so that you can perform basic management and monitoring tasks from your smartphone. The switch also contains built-in web browser-accessible software for viewing, changing, and monitoring the way it functions.

The NETGEAR Insight app and management software are not required for the switch to work. You can use the ports without using NETGEAR Insight app or the management software. However, the management software enables the setup of VLAN and trunking features and also improves the efficiency of the switch, which results in the improvement of its overall performance as well as the performance of the network.

After you power on the switch for the first time, you can configure the switch using the NETGEAR Insight app. For very advanced configurations, you can use the local browser interface.

For more information about managing the switch, see the installation guide that came with the switch, the NETGEAR knowledge base articles at support.netgear.com, and the user manual, which you can download from downloadcenter.netgear.com.

Note The switch's default IP address is 192.168.0.239 and its default subnet mask is 255.255.255.0.

Troubleshooting

5

This chapter provides information about troubleshooting the switch. The chapter includes the following sections:

- *Troubleshooting Chart*
- *PoE Troubleshooting Suggestions*
- *Additional Troubleshooting Suggestions*

Troubleshooting Chart

The following table lists symptoms, possible causes, and possible solutions for problems that might occur.

Table 6. Troubleshooting chart

Symptom	Possible Cause	Possible Solution
Power LED is off.	Power is not supplied to the switch.	Check the power cable connections at the switch and the power source. Make sure that all cables are used correctly and comply with the Ethernet specifications.
Cloud Connection LED is off.	The switch is not connected to the Internet or is not yet discovered and activated through the NETGEAR Insight app.	Make sure that the switch is connected to the Internet and that you discover and add the switch to your network by using the NETGEAR Insight app.
A combined speed and activity LED or an individual speed LED and an individual activity LED are off when the port is connected to a device.	Port connection is not working.	Check the crimp on the connectors and make sure that the plug is properly inserted and locked into the port at both the switch and the connecting device. Make sure that all cables are used correctly and comply with the Ethernet specifications. Check for a defective port, cable, or module by testing them in an alternate environment where all products are functioning.
File transfer is slow or performance is degraded.	One possible cause is that a broadcast storm occurred and that a network loop (redundant path) was created.	Break the loop by making sure that only one path exists from any networked device to any other networked device. After you connect to the local browser interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
A segment or device is not recognized as part of the network.	One or more devices are not properly connected, or cabling does not meet Ethernet guidelines.	Verify that the cabling is correct. Make sure that all connectors are securely positioned in the required ports. It is possible that equipment was accidentally disconnected.
A combined speed and activity LED or an individual speed LED and an individual activity LED are blinking continuously on all connected ports and the network is disabled.	A network loop (redundant path) was created.	Break the loop by making sure that only one path exists from any networked device to any other networked device. After you connect to the local browser interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.

PoE Troubleshooting Suggestions

Here are some tips for correcting PoE problems that might occur:

- Make sure that the PoE Max LED is off. If the PoE Max LED is solid amber, disconnect one or more PoE devices to prevent PoE oversubscription. Start by disconnecting the device from the highest-numbered port.
- Make sure that the Ethernet cables are plugged in correctly. For each powered device (PD) that is connected to the switch, the associated right port LED on the switch lights solid green. If the right port LED lights solid amber, a PoE fault occurred and PoE halted because of one of the conditions that are listed in the following table.

Table 7. PoE fault conditions and possible solutions

PoE Fault Condition	Possible Solution
A PoE-related short circuit occurred on the port.	The problem is most likely with the attached PD. Check the condition of the PD or restart the PD by disconnecting and reconnecting the PD.
The PoE power demand of the PD exceeded the maximum level that the switch permits. The maximum level is 15.4W for a PoE connection or 30W for a PoE+ connection.	
The PoE current on the port exceeded the classification limit of the PD.	
The PoE voltage of the port is outside the range that the switch permits.	Restart the switch to see if the condition resolves itself.

Additional Troubleshooting Suggestions

If the suggestions in the troubleshooting chart do not resolve the problem, see the following troubleshooting suggestions:

- **Network adapter cards.** Make sure that the network adapters that are installed in the computers are in working condition and the software driver was installed.
- **Configuration.** If problems occur after you alter the network configuration, restore the original connections and determine the problem by implementing the new changes, one step at a time. Make sure that cable distances, repeater limits, and other physical aspects of the installation do not exceed the Ethernet limitations.
- **Switch integrity.** If necessary, verify the integrity of the switch by resetting it. To reset the switch, disconnect the AC power from the switch and then reconnect the AC power. If the problem continues, contact NETGEAR technical support. For more information, visit the support website at support.netgear.com.
- **Autonegotiation.** The RJ-45 ports negotiate the correct duplex mode, speed, and flow control if the device at the other end of the link supports autonegotiation. If the device does not support autonegotiation, the switch determines only the speed correctly, and the duplex mode defaults to half-duplex. The Gigabit Ethernet ports negotiate speed, duplex mode, and flow control if the attached device supports autonegotiation.