NETGEAR®

ProSAFE 8-Port and 16-Port Gigabit Web Managed Click Switch

Model GSS108E, GSS116E, and GSS108EPP Hardware Installation Guide

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See the regulatory compliance document before connecting the power supply.

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Revision History

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Contents

Overview

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The ProSAFE® Click Switches use the 1-2-3-4 Click Mounting system, which lets you easily mount the switch vertically or horizontally on a wall, pole, or table leg. Cable retention straps are included for cable management. The internal power supply allows for a simple power cord from the switch to an outlet. The switches are fanless for silent operation and you can turn off the LEDs to minimize distractions.

This hardware installation guide is for the following switches:

- Model GSS108E 8-Port Gigabit Web Managed Switch
- Model GSS116E 16-Port Gigabit Web Managed Switch
- Model GSS108EPP 8-Port Gigabit Web Managed Switch with PoE

This hardware installation guide complements the installation guide that came with the switch.

This chapter covers the following topics:

- *Click Switch Features*
- *Safety Instructions and Warnings*

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

Note: For technical specifications, see the data sheet at *downloads.netgear.com/files/GDC/datasheet/en/Click-Switch.pdf*.

Click Switch Features

The click switches provide traffic management and multicast efficiency.

- Traffic management
  - Auto-negotiation of speed and duplex modes
  - 802.3x flow control
  - DHCP client
  - Dynamic MAC address management
  - IEEE 802.1Q–based or port-based VLAN
  - QoS based on weighted round robin (WRR)
  - Port-based and IEEE 802.1p–based Quality of Service (QoS)
  - QoS based on Type of Service (ToS)
  - DSCP support
  - Rate limiting
- Multicast efficiency
  - IGMP snooping, v1, v2, and v3
  - Blocking of unknown multicast traffic
  - Act as static multicast router port

Certain features such as USB charging ports, link aggregation, and PoE ports are available in specific switch models, as follows:

- **USB charging ports**. See *Use the GSS108E Switch USB Charging Ports* on page 19.
- **Link aggregation**. For the GSS116E and GS108EPP, see *Set Up Link Aggregation* on page 20.
- **PoE ports**. See *Connect PoE Devices to the GSS108EPP Switch* on page 20.

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 (32-104°F, 0–40°C) and humidity-controlled (10–90 percent relative humidity) 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 could 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.
- 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.
- 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.

  The switch supports an input power rating of 100–240V, 50–60 Hz.

- 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).

- 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.

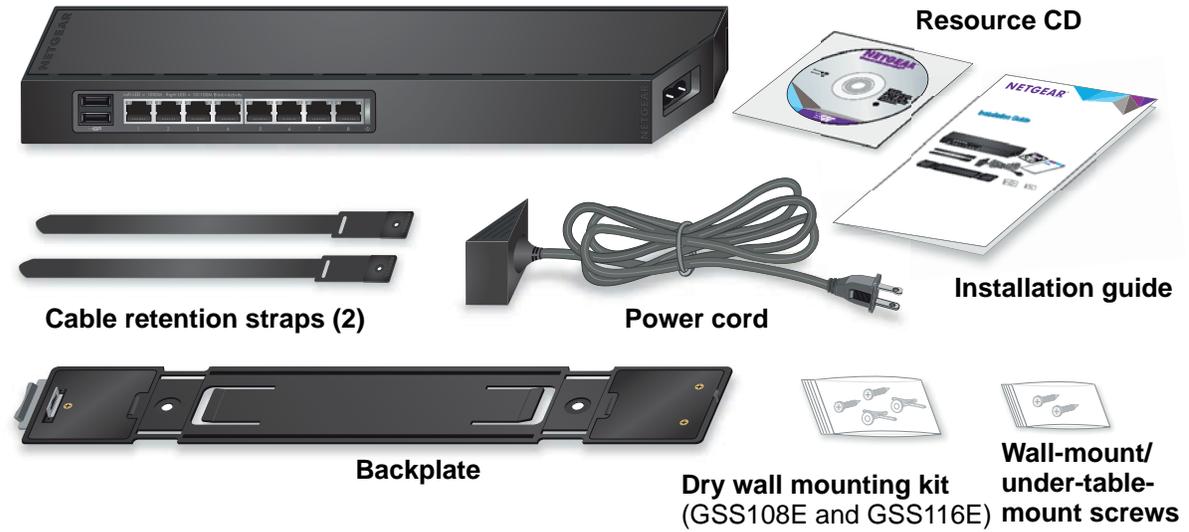- Always follow your local and national wiring rules.

Hardware

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This chapter covers the following topics:

- *Package Contents*
- *GSS108E 8-Port Switch Hardware*
- *GSS116E 16-Port Switch Hardware*
- *GSS108EPP 8-Port With PoE+ Switch Hardware*
- *Switch Hardware Interfaces*

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Package Contents

The package includes the items shown in the following illustration. Your switch might look different from the model that is shown.

Click switch

Resource CD

Installation guide

Cable retention straps (2)

Power cord

Backplate

Dry wall mounting kit
(GSS108E and GSS116E)

Wall-mount/ under-table- mount screws

Note: In the package the cable retention straps are connected. You must separate them before use.

Figure 1. Switch package contents

GSS108E 8-Port Switch Hardware

The front panel includes USB ports, Ethernet ports with LEDs, and the power connector.

Figure 2. GSS108E switch front panel

Table 1. GSS108E 8-port switch LEDs

LED	Description
Power	• **On**. The switch is receiving power. • **Off**. The switch is not receiving power.

Table 1. GSS108E 8-port switch LEDs

LED	Description
Left LED on all ports	• **Solid green**.1000 Mbps link on this port. • **Blinking green**. Activity on the 1000 Mpbs link on this port.
Right LED on all ports	• **Solid green**. 100 or 10 Mbps link on this port. • **Blinking green**. Activity on the 100 or 10 Mbps link on this port.

The rear panel includes a **Factory Reset** button.

Factory Reset button

Figure 3. GSS108 switch rear panel

GSS116E 16–Port Switch Hardware

The front panel includes Ethernet ports with LEDs and the power connector.

Figure 4. GSS116E switch front panel

Table 2. GSS116E 16-port switch LEDs

LED	Description
Power	• **On**. The switch is receiving power. • **Off**. The switch is not receiving power.
Left LED on all ports	• **Solid green**.1000 Mbps link on this port. • **Blinking green**. Activity on the 1000 Mpbs link on this port.
Right LED on all ports	• **Solid green**. 100 or 10 Mbps link on this port. • **Blinking green**. Activity on the 100 or 10 Mbps link on this port.

The rear panel includes a **Factory Reset** button.

Factory Reset button

Figure 5. GSS116E switch rear panel

GSS108EPP 8-Port With PoE+ Switch Hardware

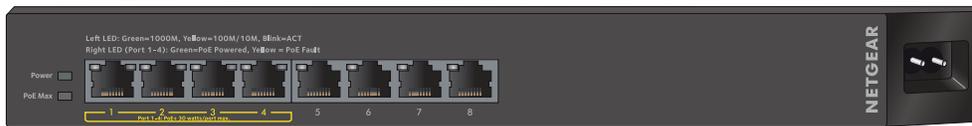The front panel includes Ethernet ports with LEDs and the power connector.

Figure 6. GSS108EPP switch front panel

Table 3. GSS108EPP 8-port switch LEDs

LED	Description
Power	• **On**. The switch is receiving power. • **Off**. The switch is not receiving power.
Speed and Activity (Left LED on ports 1–8)	• **Solid green**. 1000 Mbps link on this port. • **Blinking green**. Activity on the 1000 Mpbs link on this port. • **Solid yellow**. 100 or 10 Mpbs link on this port. • **Blinking yellow**. Activity on the 100 or 10 Mpbs link on this port. • **Off**. No link on this port.
PoE (Right LED on ports 1–4)	• **Solid green**. PoE is in use on this port. • **Solid yellow**. PoE is halted on this port. • **Off**. PoE is not in use on this port.
PoE Max.	• **Solid yellow**. Less than 7W of PoE power is available. • **Blinking yellow**. The PoE Max LED was active in the previous two minutes. • **Off**. The PoE ports are working normally.

The rear panel includes a **Factory Defaults** button.
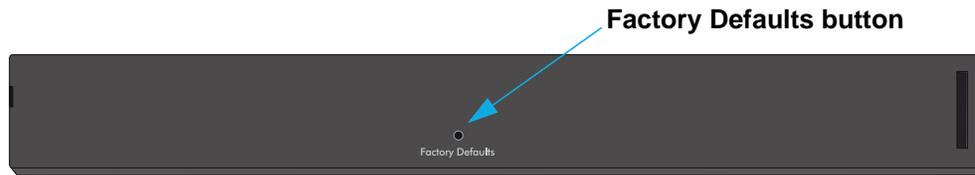
Factory Defaults button

Figure 7. GSS108EPP switch rear panel

Switch Hardware Interfaces

The following sections describe the hardware interfaces on the switch.

1G RJ–45 Ports

All copper RJ-45 ports support AutoSensing. When you insert a cable into an RJ-45 port, the switch automatically detects the maximum speed (1 Gbps) and duplex mode (half-duplex or full-duplex) of the attached device. All ports support a Category 5e (Cat 5e) unshielded twisted-pair (UTP) 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. This technology allows you to attach devices to the RJ-45 ports with either straight-through or crossover cables.

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.

Model GSS108E USB Charging Ports

The GSS108E switch provides two USB charging ports for tablets or smartphones.

Model GSS108EPP PoE+ Ports

The GSS108EPP switch includes four Power over Ethernet (PoE+) ports. The switch can supply up to 30W PoE+ (IEEE 802.3at) to ports 1–4, with a total maximum PoE power budget of 47W across all active PoE+ ports.

Installation

3.

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Use the 1-2-3-4 Click Mounting System to place the switch. You can place the click switch directly on a wall, strapped to a pole, under a table, or in a server closet. The innovative mounting system allows you to put it virtually anywhere.

This chapter includes the following topics:

- *Wall-Mount the Switch*
- *Mount the Switch on a Table Leg or Pole*
- *Cable the Devices and Connect Power*
- *Use Cable Retention Straps for Cable Management*
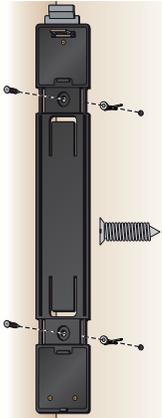- *Check the Status*

Wall-Mount the Switch

➢ **To wall-mount the switch:**

1. Peel the plastic cover off the adhesive squares on the rear of the backplate.

   The adhesive helps hold the backplate in place when you are mounting the switch.

2. Wall-mount the backplate.

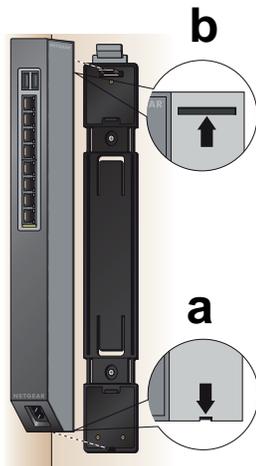Note: You must screw the backplate into a wall stud.

Note: Fold wings in before inserting the anchor into a wall.

OR

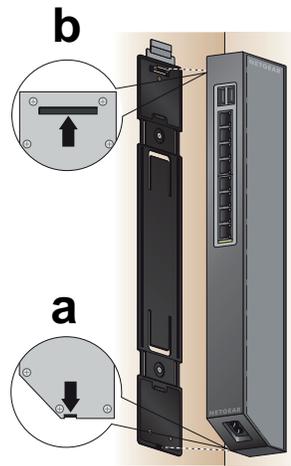**Wall mount to stud (or solid surface)**   **Dry wall mount (using anchors)**

3. Use either a vertical rear mount or a vertical side mount for the switch.

b   **b**

OR

a   **a**

Vertical rear mount   **Vertical side mount**

Mount the Switch on a Table Leg or Pole

➢ **To table-mount the switch:**

1. Peel the plastic cover off the adhesive squares on the rear of the backplate.

   The adhesive helps hold the backplate in place when you are mounting the switch.

2. Mount the backplate on a table leg using the cable retention straps.

3. Use a horizontal side mount for the switch.
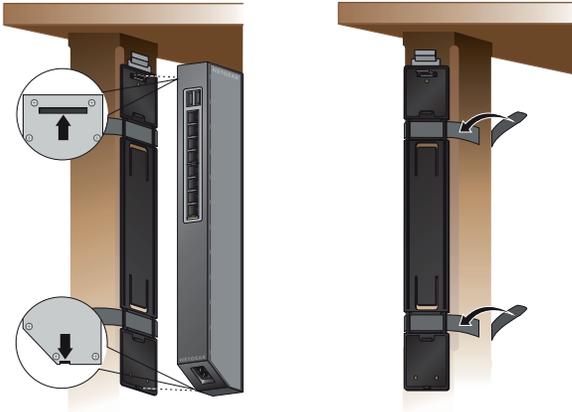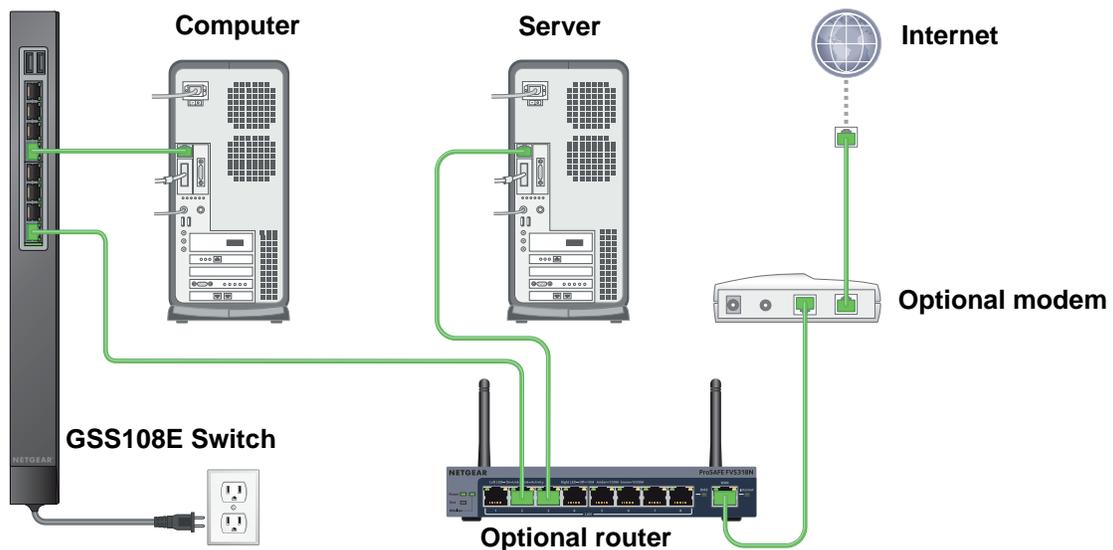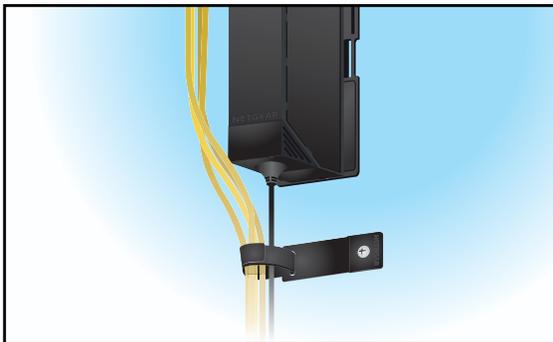

Cable the Devices and Connect Power

Figure 8. Switch connected to devices and power

Use Cable Retention Straps for Cable Management

Cable management is simple with Web Managed Click Switches. You can strap the cables to the bracket or to the wall.

Figure 9. Strap the cables to the bracket

Figure 10. Strap the cables to the wall

Check the Status

Status LEDs are located on the front of the switch. When the switch is powered on, the Power LED lights solid green. The following table describes how the port LEDs work.

Table 4. Port LEDs

Left LED	Right LED	Status
Solid green	Off	1000 Mbps link
Off	Solid green	10/100 Mbps link
Blinking green	Off	1000 Mbps activity
Off	Blinking green	10/100 Mbps activity
Off	Off	No link (off)

The PoE Max LED is included only on the GSS108EPP switch.

Table 5. GSS108EPP PoE Max LED

PoE Max	Status
Solid yellow	Less than 7W of PoE power is available
Blinking yellow	The POE Max LED was active in the previous two minutes.

For information about the maximum PoE power budget, see *Connect PoE Devices to the GSS108EPP Switch* on page 20.

Using the Switch

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This chapter covers the following topics:

- *Use the GSS108E Switch USB Charging Ports*
- *Set Up Link Aggregation*
- *Connect PoE Devices to the GSS108EPP Switch*

Use the GSS108E Switch USB Charging Ports

The GSS108E 8-port switch includes two quick-access USB charging ports. You can use the USB charging ports to charge compatible devices. When charging devices, keep the following in mind:

- The USB charging ports can be used only to charge phones, tablets, and other USB-chargeable devices.

- Do not connect USB storage devices or flash drives to the USB charging ports. The USB charging ports are not designed for this purpose.

- Connecting a device to a USB charging port does not create a network connection to the switch or to the network that includes the switch.

➢ **To charge portable electronics:**

1. Make sure that the switch is plugged in and is receiving power.

   The Power LED lights solid green.

2. Use a USB cable to connect your phone, tablet, or other USB-chargeable device to a USB charging port on the switch.


The device's battery automatically begins charging.

Set Up Link Aggregation

The GSS116E and GSS108EPP switches support link aggregation and link aggregation groups (LAGs). The GSS116E switch supports two IEEE 802.3ad static LAGs with a maximum of eight members in each LAG. The GSS108EPP switch supports two IEEE 802.3ad static LAGs with a maximum of four members in each LAG. LAGs allow you to combine multiple Ethernet links into a single logical link. Network devices treat the aggregation as if it were a single link, which increases fault tolerance and load sharing.

The following figure shows an example of link aggregation.
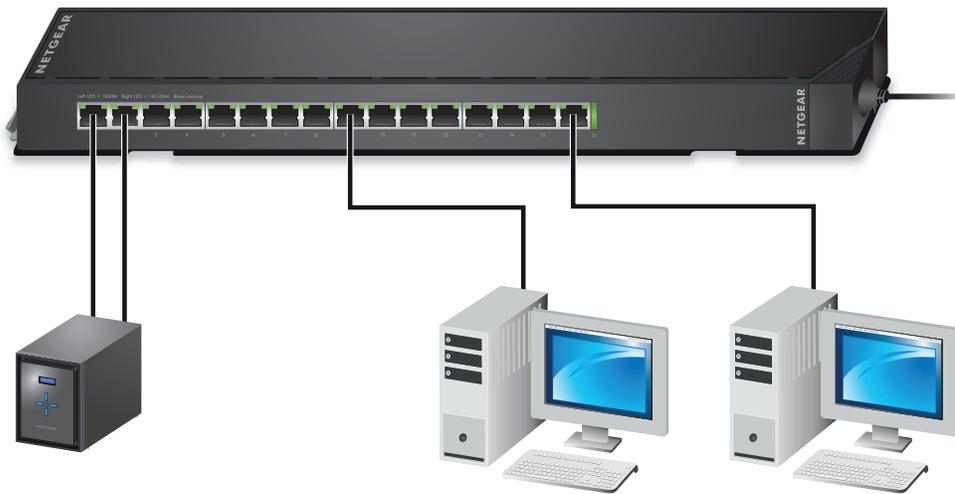
Figure 11. GSS116E switch link aggregation

For more information about link aggregation and LAGS, see the GSS116E Switch user manual.

Connect PoE Devices to the GSS108EPP Switch

The GSS108EPP switch includes four Power over Ethernet (PoE) ports. The switch can supply up to 30W PoE+ (IEEE 802.3at) to ports 1–4, with a total maximum PoE power budget of 47W across all active PoE+ ports.

Supplied power is prioritized in ascending port order, up to the total power budget of the device. If the power requirements for the attached devices exceed the total power budget of the switch, the power to the device on the highest-numbered PoE port is disabled to ensure that the devices connected to the higher-priority, lower-numbered PoE ports are supported first.

It is important to note that although a device is listed as an 802.3at or 802.3af PoE+ or PoE-powered device, it might not require the maximum power limit that is specified. Many devices require less, allowing all four PoE ports to be active simultaneously, when the devices correctly report their PoE class to the switch. The GSS108EPP switch includes four PoE ports.

Connect PoE Equipment in a Home

The following figure shows an example of how you can connect PoE and non-PoE equipment to the GSS108EPP switch in a home.
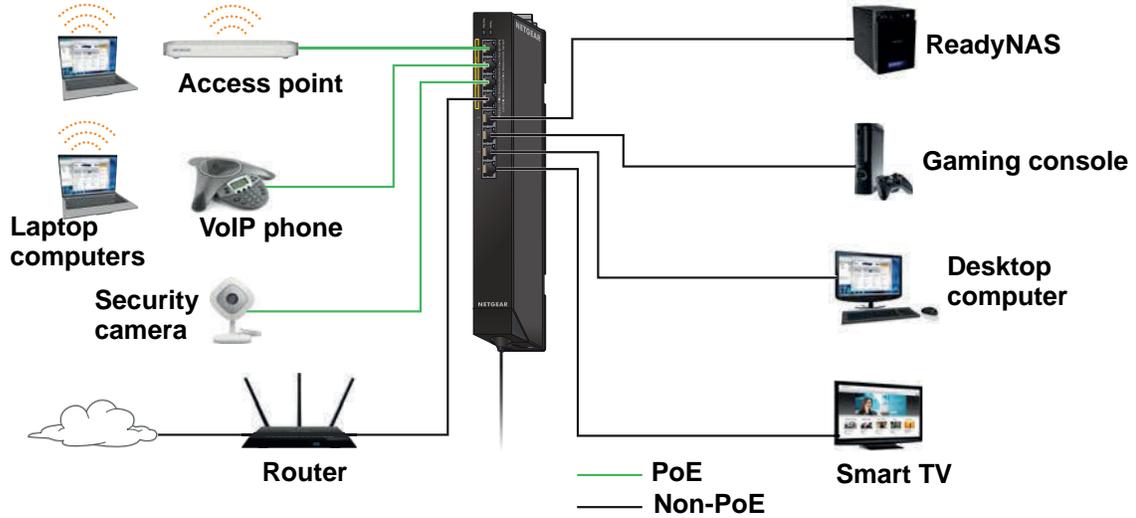

Figure 12. GSS108EPP switch with PoE connections in a home

Connect PoE Equipment in a Business Environment

The following figure shows an example of how you can connect VoIP phones to the PoE ports on the GSS108EPP switch along with other PoE and non-PoE equipment in a business environment.
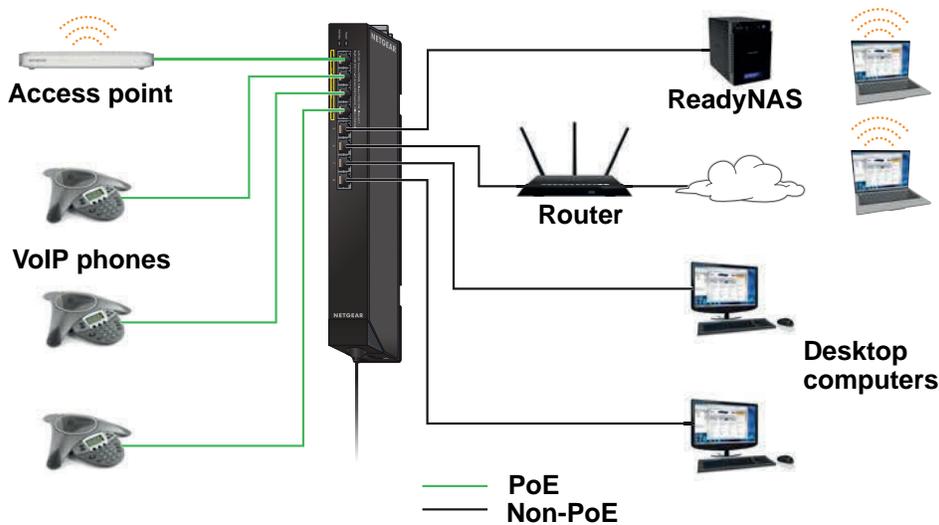

Figure 13. PoE VoIP phones in a business use case

The following figure shows an example of how you can connect security cameras to PoE ports on the GSS108EPP switch along with other non-PoE equipment in a business environment.
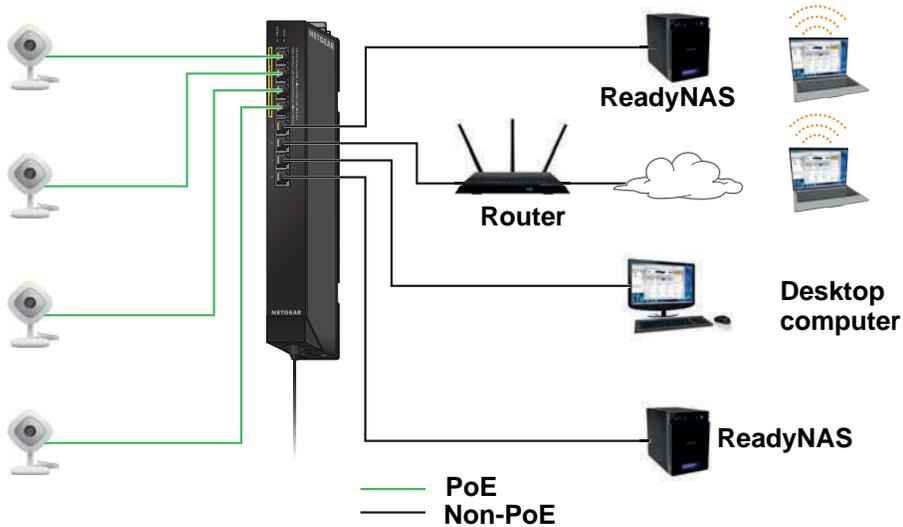

Figure 14. PoE security cameras in a business use case

Troubleshooting

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This chapter covers the following topics:

- *Troubleshooting Chart*
- *Additional Troubleshooting Suggestions*

Troubleshooting Chart

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

Table 6. Troubleshooting chart

Symptom	Cause	Solution
Power LED is off.	No power is received.	• Check the power cable connections at the switch and the power source. • Ensure that all cables are used correctly and comply with the Ethernet specifications.
PoE Max LED is lit or blinking (GSS108EPP switch only)	• **Solid yellow**. Less than 7W of PoE power is available. • **Blinking yellow**. The PoE Max LED was active in the previous two minutes.	For information about the maximum PoE power budget , see *Connect PoE Devices to the GSS108EPP Switch* on page 20.
Combined Speed and Activity LED is 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 or cable by testing them in an alternate environment where all products are functioning.
File transfer is slow or performance is degraded.	One possible cause: A broadcast storm occurred and a network loop (redundant path) was created.	Break the loop by ensuring that only one path exists from any networked device to any other networked device.
	Another possible cause: Half-duplex or full-duplex setting on the switch and the connected device are not the same.	Make sure that the attached device is configured for autonegotiation.
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.
Combined Speed and Activity LED is 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.

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 auto-negotiation. If the device does not support autonegotiation, the switch determines only the speed correctly, and the duplex mode defaults to half-duplex.

  The ports negotiate speed, duplex mode, and flow control if the attached device supports auto-negotiation.