



ProSAFE 28-Port and 48-Port 10-Gigabit Smart Managed Switch Models XS728T and XS748T Hardware Installation Guide



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Introduction

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This hardware installation guide is for the following NETGEAR® ProSAFE® Smart Managed Switches:

- Model XS728T 28-Port 10-Gigabit Smart Managed Switch
- Model XS748T 48-Port 10-Gigabit Smart Managed Switch

These models provide twenty-four or forty-four 1000/10GBASE-T RJ-45 copper ports and four dedicated enhanced small form-factor pluggable (SFP+) GBIC slots that can accept SFP+ 1G and 10G copper and fiber optical modules.

In this hardware installation guide, except where indicated otherwise, these models are referred to as *the switch*. This hardware installation guide complements the installation guide that came with the switch.

The chapter 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 www.support.netgear.com.

Note: For detailed technical specifications and information about supported features, see the datasheet:
For model XS728T, visit www.netgear.com/XS728T.
For model XS748T, visit www.netgear.com/XS748T.

Note: For software and configuration documentation, see the links on the resource CD in the product package or visit downloadcenter.netgear.com.

Overview

The switch provides twenty-four or forty-four 1000/10GBASE-T RJ-45 copper ports that support nonstop 1G/10G Layer 2 and Layer 3 networks. The switch also provides four dedicated enhanced small form-factor pluggable (SFP+) slots that can accept 1GBASE and 10GBASE copper and fiber optical modules, or Direct Attach Cables (DAC) for short distance inter-switch connections.

Using the 10G ports, you can create high-speed connections to a server, network attached storage (NAS) system, or backbone network. For example, you can do the following:

- Connect switches to each other with high-speed links
- Link to high-speed servers
- Provide 1G/10G copper and 1G/10G fiber connectivity

The switch provides administrative management options that let you configure, monitor, and control the network. Using the web browser-based management interface, you can configure the switch and the network, including the ports, the management VLAN, VLANs for traffic control, link aggregation for increased bandwidth, quality of service (QoS) for prioritizing traffic, and network security.

Initial discovery of the switch on the network requires the Smart Control Center program, which runs on a Windows-based computer and is included on the resource CD. If you do not use a Windows-based computer, get the IP address of the switch from the DHCP server in the network or use an IP scanner utility.

After discovery, you can configure the switch using the web browser-based management interface for advanced setup and configuration of features, or the Smart Control Center program for very basic setup. For more information, see the user manual that you can download from downloadcenter.netgear.com.

You can install the switch freestanding or rack mounted in a wiring closet or equipment room. The switch is IEEE compliant and offers low latency for high-speed networking. All ports can automatically negotiate to the highest speed, which makes the switch very suitable for a mixed environment with Gigabit Ethernet and 10-Gigabit Ethernet devices.

Use Category 5e (Cat 5e) or higher rated Ethernet cables (Cat 6, Cat 6a, or Cat 7) to make 10G connections. For 10G speeds, if the cable distance is greater than 148 feet (45 meters), we recommend that you use a Cat 6a cable or higher rated cable.

Features

The following list describes the key features of the switch:

- Twenty-four (model XS728T) or forty-four (model XS748T) 1000/10GBASE-T switching ports.
- Four dedicated SFP+ slots for 1GBASE and 10GBASE copper and fiber optical modules or Direct Attach Cables (DAC).
- One USB port (for configuration files, firmware, and debug logs)
- Full NETGEAR Smart Managed Switch functionality.
- Full compatibility with IEEE standards:
 - IEEE 802.3 Ethernet
 - IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX
 - IEEE 802.3an 10GBASE-T 10 Gbit/s Ethernet over copper twisted-pair cable
 - IEEE 802.3ae 10-Gigabit Ethernet over fiber (10GBASE-SR, 10GBASE-LR)
 - IEEE 802.3ab 1000BASE-T
 - IEEE 802.1Q VLAN tagging
 - IEEE 802.3x Full-duplex flow control
 - IEEE 802.3ad Link Aggregation (LAG with LACP)
 - IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)
 - IEEE 802.1p Class of Service (QoS and DSCP)
 - 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)
- AutoSensing and auto-negotiation capabilities for all ports.
- Auto Uplink™ on all ports to make the right connection.
- 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.
- Full-duplex IEEE 802.3x pause frame flow control.
- Active flow control to minimize packet loss and frame drops.
- Jumbo frames up to 10K bytes.
- Static or LACP LAGs (12 LAGs with up to 8 members per LAG for model XS728T; 24 LAGs with up to 8 members per LAG for model XS748T).
- Per-port LEDs and system status LEDs.
- Internal open-frame power supply.
- Standard NETGEAR chassis (1U high).

- 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 (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 may 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.

2. Hardware Overview

2

This chapter describes the switch hardware features and includes the following sections:

- *Hardware Overview Model XS728T*
- *Hardware Overview Model XS748T*
- *Switch Hardware Interfaces*

Hardware Overview Model XS728T

The following sections describe the physical characteristics of model XS728T.

Front Panel Model XS728T

The switch provides twenty-four 1G/10G copper RJ-45 ports and four dedicated SFP+ slots that can accept copper and fiber optical modules or Direct Attach Cables (DAC). Each copper RJ-45 port is capable of sensing the line speed and negotiating the duplex mode with the link partner automatically.

The following figure shows the front panel of the model XS728T.

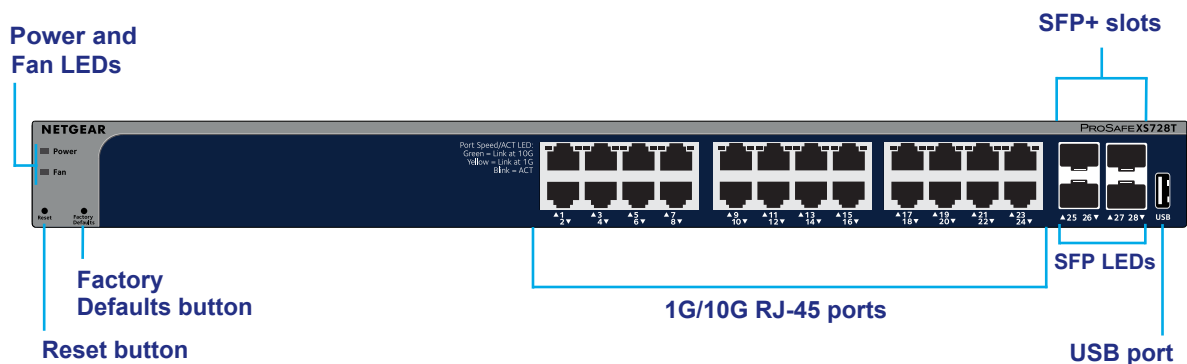


Figure 1. Front panel model XS728T

From left to right, the front panel of model XS728T contains the following components:

- Power and Fan LEDs.
- Recessed **Reset** button to restart the device.
- Recessed **Factory Defaults** button to restore the device back to the factory defaults.
- Twenty-four RJ-45 connectors for 1G/10G AutoSensing 10-Gigabit Ethernet switching ports.
- Four dedicated SFP+ slots that can accept copper and fiber optical modules or Direct Attach Cables (DAC).
- Speed and activity (ACT) LEDs for each port.
- One USB 2.0 port for firmware upload or configuration settings file upload and download (backup) using a USB storage device (supports FAT32 file systems only).

Back Panel Model XS728T

The following figure shows the back panel of model XS728T.



Figure 2. Back panel model XS728T

The back panel contains a Kensington™ lock slot and the AC power connector. The serial console port is not for customer use.

System and Port LEDs Model XS728T

The following table describes the RJ-45 and SFP+ slot LED designations. For each RJ-45 port, the left bicolor LED is for the top port and the right bicolor LED is for the bottom port. For the SFP+ slots, the port numbers under the slots function as bicolor LEDs.

Table 1. Port and system LEDs model XS728T

LED	Designation
Power	<ul style="list-style-type: none"> • Solid green. The device is powered on. • Solid yellow. The device is booting. • Off. Power is not supplied to the device.
Fan	<ul style="list-style-type: none"> • Solid yellow. A fan failure occurred. • Off. The fan is operating normally.
Speed/ACT LEDs for copper ports 1 to 24	<ul style="list-style-type: none"> • Off. No link is established. • Solid green. A valid 10 Gbps link is established. • Blinking green. The port is transmitting or receiving packets at 10 Gbps. • Solid yellow. A valid 1 Gbps link is established. • Blinking yellow. The port is transmitting or receiving traffic at 1 Gbps.
Link/ACT LEDs for SFP+ slots 25 to 28	<ul style="list-style-type: none"> • Off. No SFP+ module is inserted or no module link is established. • Solid green. A valid 10 Gbps link is established. • Blinking green. The module is transmitting or receiving packets at 10 Gbps. • Solid yellow. A valid 1 Gbps link is established. • Blinking yellow. The module is transmitting or receiving packets at 1 Gbps.

Hardware Overview Model XS748T

The following sections describe the physical characteristics of model XS748T.

Front Panel Model XS748T

The switch provides forty-four 1G/10G copper RJ-45 ports and four dedicated SFP+ slots that can accept copper and fiber optical modules or Direct Attach Cables (DAC). Each copper RJ-45 port is capable of sensing the line speed and negotiating the duplex mode with the link partner automatically.

The following figure shows the front panel of the model XS748T.

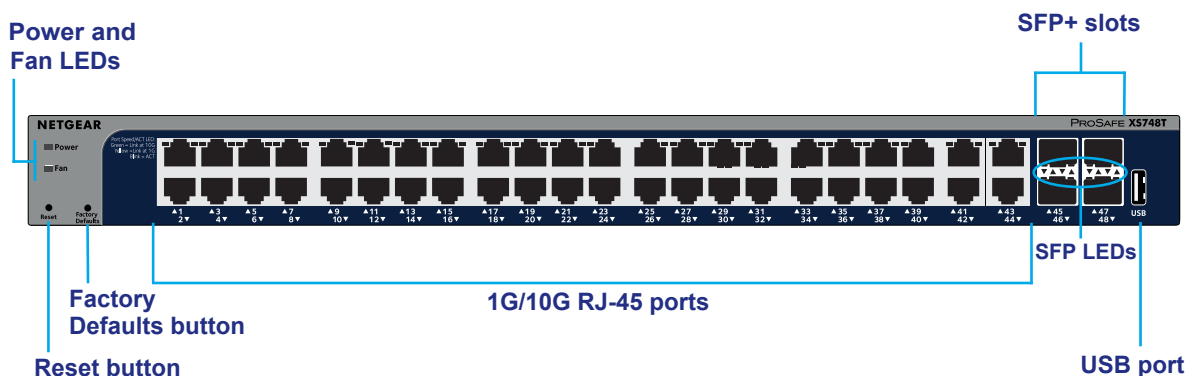


Figure 3. Front panel model XS748T

From left to right, the front panel of model XS748T contains the following components:

- Power and Fan LEDs.
- Recessed **Reset** button to restart the device.
- Recessed **Factory Defaults** button to restore the device back to the factory defaults.
- Forty-four RJ-45 connectors for 1G/10G AutoSensing 10-Gigabit Ethernet switching ports.
- Four dedicated SFP+ slots that can accept copper and fiber optical modules or Direct Attach Cables (DAC).
- Speed and activity (ACT) LEDs for each port.
- One USB 2.0 port for firmware upload or configuration settings file upload and download (backup) using a USB storage device (supports FAT32 file systems only).

Back Panel Model XS748T

The following figure shows the back panel of model XS748T.



Figure 4. Back panel model XS748T

The back panel contains a Kensington™ lock slot and the AC power connector. The serial console port is not for customer use.

System and Port LEDs Model XS748T

The following table describes the RJ-45 and SFP+ slot LED designations.

For each RJ-45 port, the left bicolor LED is for the top port and the right bicolor LED is for the bottom port.

The LEDs for the SFP+ slots are located between the top and bottom SFP+ slots. Each SFP+ slot provides two single-color triangular LEDs. Triangular LEDs that point up are for slots 45 and 47; Triangular LEDs that point down are for slots 46 and 48.

Table 2. Port and system LEDs model XS748T

LED	Designation
Power	<ul style="list-style-type: none"> • Solid green. The device is powered on. • Solid yellow. The device is booting. • Off. Power is not supplied to the device.
Fan	<ul style="list-style-type: none"> • Solid yellow. A fan failure occurred. • Off. The fan is operating normally.
Speed/ACT LEDs for copper ports 1 to 44	<ul style="list-style-type: none"> • Off. No link is established. • Solid green. A valid 10 Gbps link is established. • Blinking green. The port is transmitting or receiving packets at 10 Gbps. • Solid yellow. A valid 1 Gbps link is established. • Blinking yellow. The port is transmitting or receiving traffic at 1 Gbps.

Table 2. Port and system LEDs model XS748T (continued)

LED	Designation
Speed/ACT LEDs for SFP+ slots 45 to 48	Green LED (10G LED) <ul style="list-style-type: none"> • Off. No SFP+ module is inserted or no module link is established. • Solid green. A valid 10 Gbps link is established. • Blinking green. The module is transmitting or receiving packets at 10 Gbps.
	Yellow LED (1G LED) <ul style="list-style-type: none"> • Off. No SFP+ module is inserted or no module link is established. • Solid yellow. A valid 1 Gbps link is established. • Blinking yellow. The module is transmitting or receiving packets at 1 Gbps.

Switch Hardware Interfaces

The following sections describe the hardware interfaces on the switch.

1G/10G RJ-45 Ports

All copper RJ-45 ports support AutoSensing. When you insert a cable into an RJ-45 port, the switch automatically ascertains the maximum speed (1 Gbps or 10 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 attaching devices to the RJ-45 ports with either straight-through or crossover cables.

Note: For 10GBASE-T ports, Ethernet specifications limit a Category 6 (Cat 6) cable length between the switch and the attached device to 328 feet (100 meters).

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.

1000/10GBASE-X SFP+ Slots

To enable high-speed fiber, copper, and long-distance connections on the switch, SFP+ slots accommodate standard 10G and 1G SFP+ transceiver modules, which are sold separately.

The switch supports most NETGEAR ProSAFE SFP and SFP+ transceiver modules and Direct Attach Cables (DAC), including:

- Short-reach transceiver modules
- Long-reach transceiver modules

For information about specific NETGEAR ProSAFE SFP and SFP+ transceiver modules and cables that are supported for the switch, visit www.netgear.com/business/products/switches/ and click the **MODULES AND ACCESSORIES** tab, or see the datasheet for your specific switch.

USB Port

The switch provides one USB 2.0 port that lets you upload firmware, upload or download (back up) the configuration settings file, and download a memory dump (for debugging purposes) using a USB storage device.

The USB storage device that you attach to the USB port must comply with the following requirements:

- The USB device must support USB 2.0.
- The USB device must support the FAT32 file system. The NTFS file system is not supported.

Reset Button

The switch provides a recessed **Reset** button on the front panel so that you can reboot the switch. This action is equivalent to powering the unit off and back on. The last saved configuration is loaded into the switch as it resets.

➤ To reboot the switch using the Reset button:

1. Insert a device such as a straightened paper clip into the opening.
2. Press the recessed **Reset** button for about three seconds.

The switch reboots. The front panel LEDs turn off and light again as the switch performs its power-on self-test (POST).

Factory Defaults Button

The switch provides a recessed **Factory Defaults** button on the front panel so that you can remove the current configuration and return the device to its factory settings. When you press the **Factory Defaults** button, all settings including the password, VLAN settings, and port configurations are removed.

➤ **To reset the switch to factory default settings using the Factory Defaults button:**

1. Insert a device such as a straightened paper clip into the opening.
2. Press and hold the recessed **Factory Defaults** button for about five seconds, then release the button.

The switch reboots. The front panel LEDs turn off and light again as the switch performs its power-on self-test (POST).



CAUTION:

If you press and hold the button for more than 15 seconds, the switch enters Recovery Mode, and the Power LED turns from green to yellow. Use Recovery Mode only as directed by NETGEAR support. If the switch enters Recovery Mode, power cycle the switch or press the **Reset** button. Then follow [Step 1](#) and [Step 2](#) in the previous procedure to make sure the switch is reset to factory default settings.

3 Applications

3

The switch is designed to provide flexibility in configuring network connections. The switch can be used as your only network traffic-distribution device or with 1 Gbps and 10 Gbps hubs, routers, and switches.

This chapter includes the following sections:

- *Desktop Switching*
- *Backbone Switching*
- *High-Speed Network Storage*

Desktop Switching

You can use the switch as a desktop switch to build a small network that provides up to 10 Gbps access to a file server.

With 1G and 10G 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 20 Gbps bidirectional throughput.

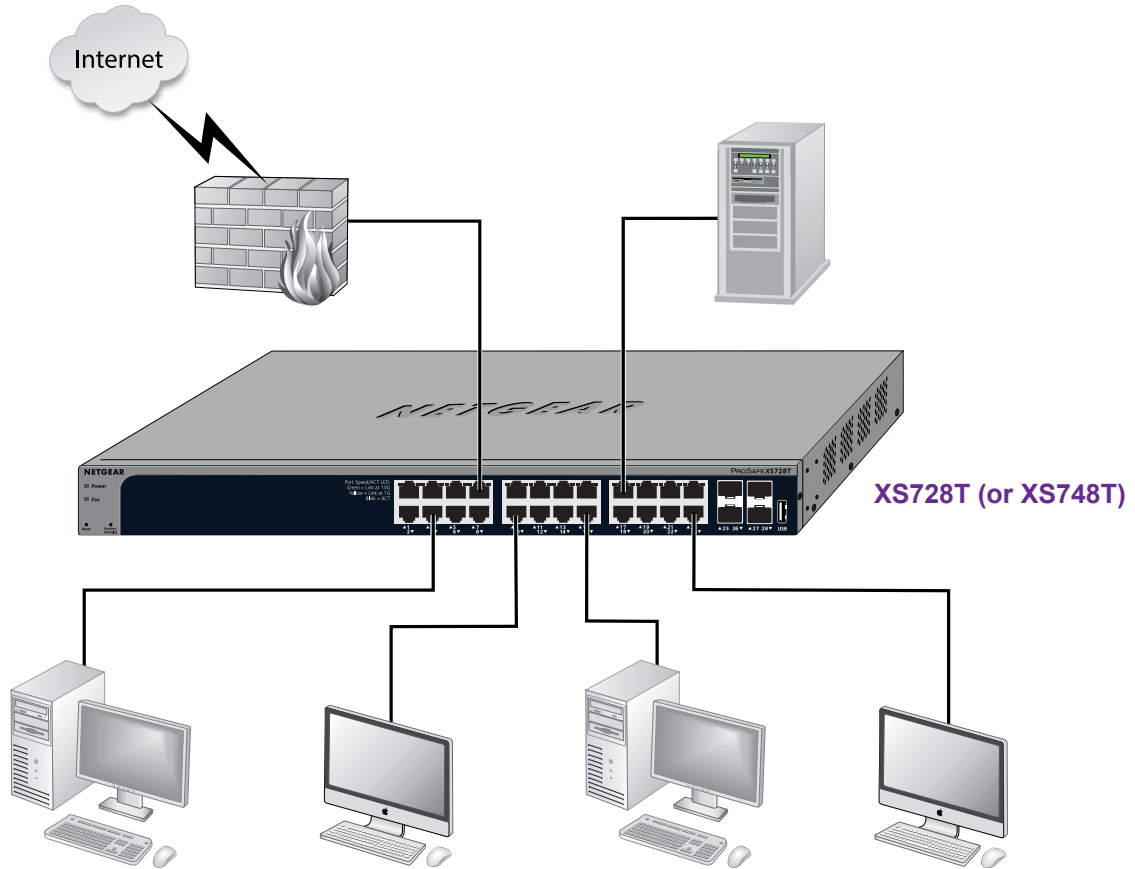


Figure 5. Desktop switching

Backbone Switching

You can use the switch as a backbone switch in a small network that gives users high-speed access to servers and other network devices.

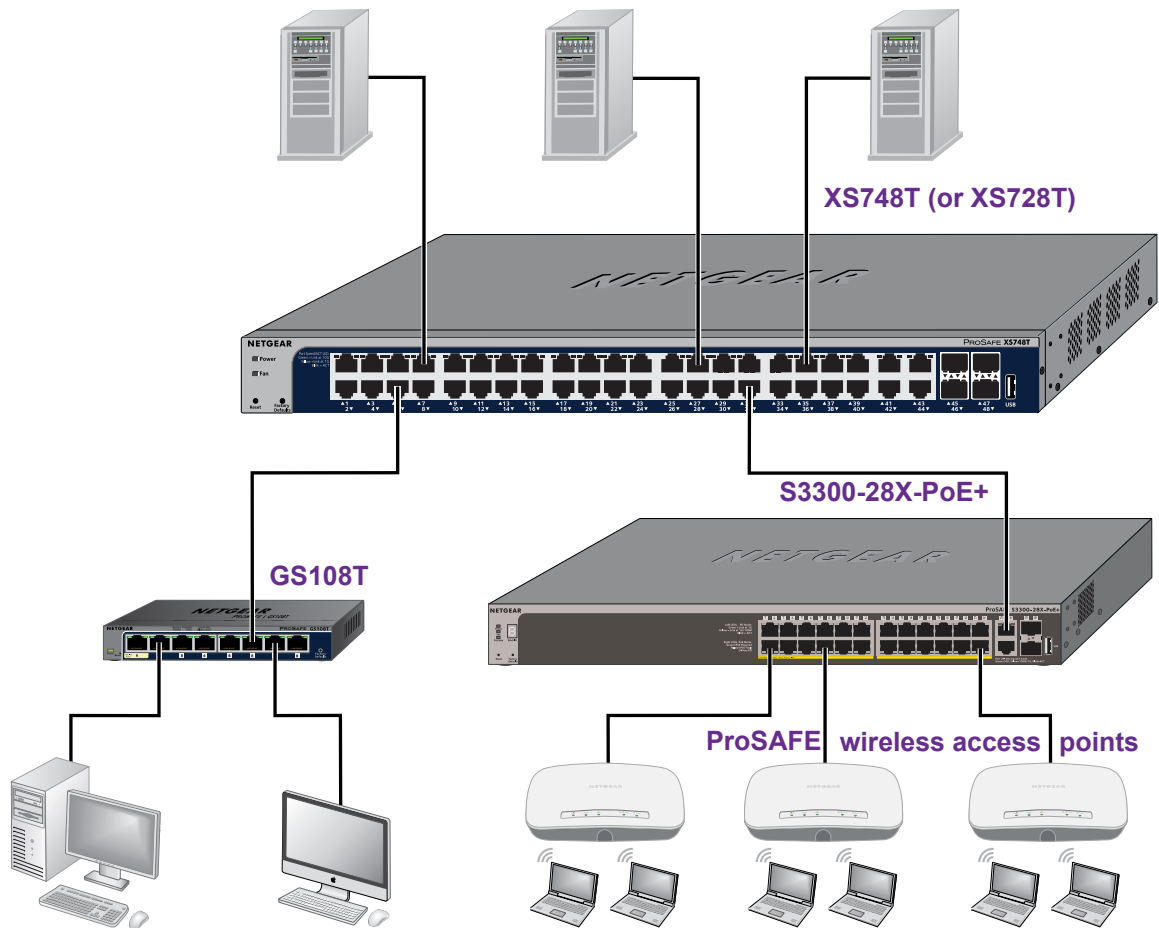


Figure 6. Backbone switching

High-Speed Network Storage

You can use the switches to provide high-speed connections and redundancy between ReadyNAS storage platforms and virtual machines or servers.

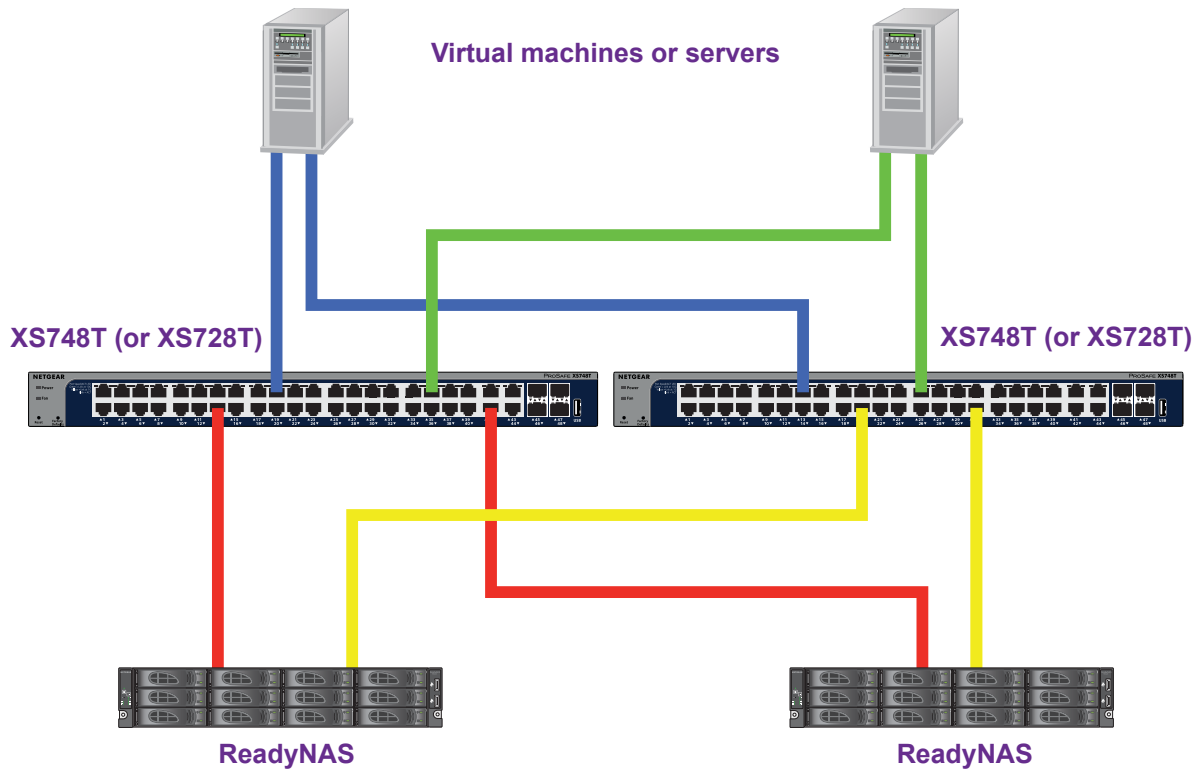


Figure 7. High-speed network storage switching in a redundant configuration

4 Installation

4

This chapter describes the installation procedures for your switch. Switch installation involves the steps that are 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

Step 5: Check the Installation

Optional Step 6: Install an SFP Transceiver Module

Step 7: Connect Devices to the Switch

Step 8: Apply AC Power

Step 9: Manage the Switch

Step 1: Prepare the Site

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

Table 3. Site requirements

Characteristics	Requirements
Mounting	<ul style="list-style-type: none"> • Desktop installations. Provide a flat table or shelf surface. • 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.
Access	Locate the switch in a position that allows you to access the front panel RJ-45 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. Ensure 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	<ul style="list-style-type: none"> • Temperature. Install the switch in a dry area with an ambient temperature between 0°C and 50°C (32°F and 122°F). Keep the switch away from heat sources such as direct sunlight, warm-air exhausts, hot-air vents, and heaters. • Operating humidity. The maximum relative humidity of the installation location must not exceed 90 percent, noncondensing. • 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. • 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.

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):

- 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 of the switch.

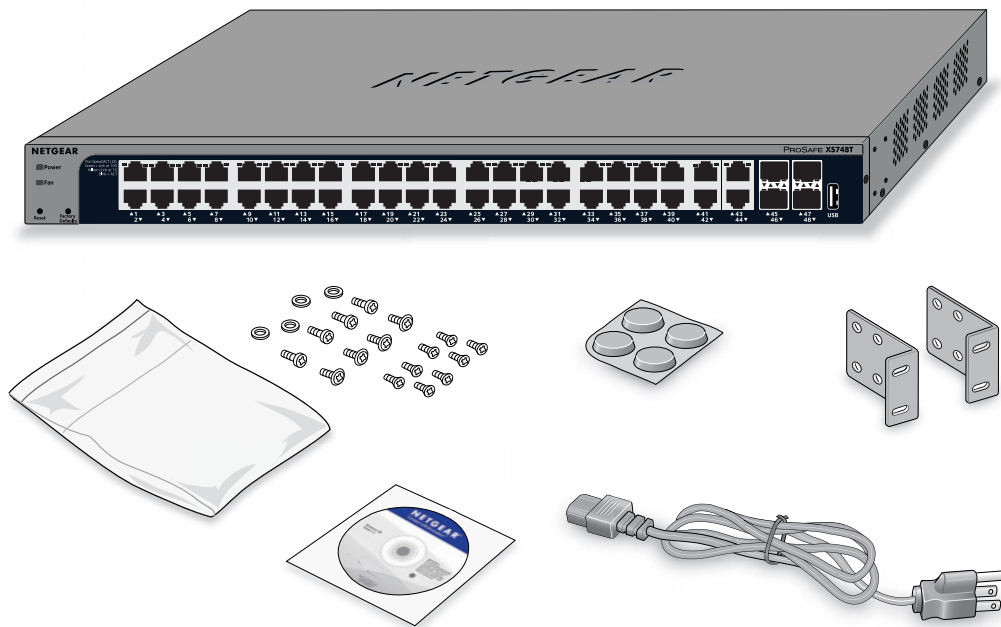


Figure 8. Package contents (model XS748T shown)

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 box 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:
 - Model XS728T or Model XS748T Smart Managed Switch
 - AC power cord (localized to the country of sale)
 - 19-inch rack-mount kit for rack installation
 - Rubber footpads for tabletop installation
 - Installation guide
 - Resource CD with NETGEAR Smart Control Center

If any item is missing or damaged, contact the place of purchase immediately.

Step 4: Install the Switch

The switch can be used on a flat surface or mounted in a standard network equipment rack.

Install the Switch on a Flat Surface

This procedure explains how to install the switch on a flat surface. The switch ships with four self-adhesive rubber footpads. The rubber footpads cushion the switch against shock and vibrations.

➤ **To install the switch on a flat surface:**

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

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 each side of the switch.
2. Insert the screws provided in the rack-mount kit through each bracket and into the bracket mounting holes in the switch.
3. To secure each bracket, tighten the screws with a No.1 Phillips screwdriver.
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. To secure the mounting brackets to the rack, tighten the screws with a No. 2 Phillips screwdriver.

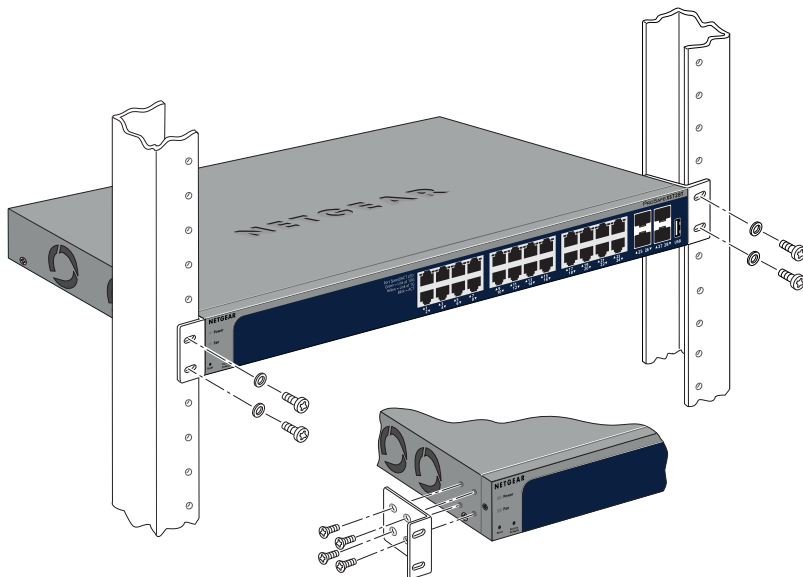


Figure 9. Rack mounting (model XS728T shown)

Step 5: Check the Installation

Before you apply power to the switch, perform the steps that are described in this section.

➤ **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. Ensure that all equipment is mounted properly and securely.

Optional Step 6: Install an SFP Transceiver Module

The following procedure describes how to install an optional SFP (or SFP+) transceiver module into one of the SFP slots of the switch. You can install up to four modules.

Note: Contact your NETGEAR sales office to buy these modules. If you do not want to install an SFP module, skip this procedure.

➤ **To install an SFP or SFP+ transceiver module:**

1. Insert the transceiver module into an SFP+ slot.

On model XS728T, insert the module in slot 25, 26, 27, or 28 (each slot can accept a module). On model XS748T, insert the module in slot 45, 46, 47, or 48 (each slot can accept a module).

2. Press firmly on the flange of the module to seat it securely into the connector.

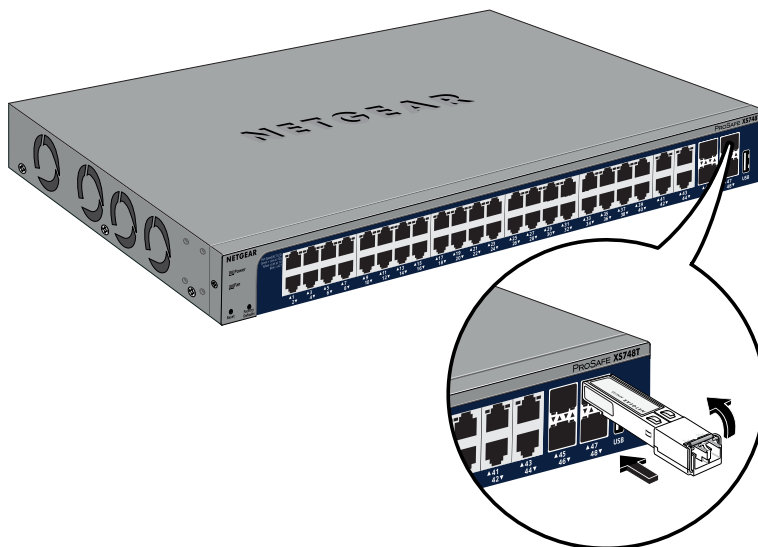


Figure 10. Installing a transceiver module (model XS748T shown)

Step 7: Connect Devices to the Switch

The following procedure describes how to connect computers 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.

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:**

Using a Category 5e (Cat 5e) or higher rated (Cat 6, Cat 6a, or Cat 7) unshielded twisted-pair (UTP) cable terminated with an RJ-45 connector, connect each device to an RJ-45 network port on the switch front panel.

Note: For 10G speeds, if the cable distance is greater than 148 feet (45 meters), we recommend that you use a Cat 6a cable or higher rated cable.

Step 8: Apply AC Power

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 AC power:**

1. Connect the end of the power cord to the AC power connector on back of the switch.
2. Plug the AC power cord into a power source such as a wall socket or power strip.

When you apply power, the Power LED on the switch's front panel lights.

If the Power LED does not light, check to make sure that the power cable is plugged in correctly and that the power source is functioning. If this does not resolve the problem, see [Appendix A, Troubleshooting](#).

Step 9: Manage the Switch

The switch contains built-in web browser accessible software for viewing, changing, and monitoring the way it functions. This management software is not required for the switch to work. You can use the ports without using 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 up the switch for the first time, you can configure the smart managed switch using the web browser-based management interface for advanced setup and configuration of features, or the Smart Control Center program (which requires a Windows computer) for very basic setup. For more information about managing the switch, see the installation guide on the resource CD and the user manual that 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.

A Troubleshooting



This appendix provides information about troubleshooting the switch.

The appendix includes the following sections:

- *Troubleshooting Chart*
- *Additional Troubleshooting Suggestions*

Troubleshooting Chart

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

Table 4. Troubleshooting chart

Symptom	Cause	Solution
Power LED is off.	No power is received.	<ul style="list-style-type: none"> 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.
Combined speed/activity LED is off when the port is connected to a device.	Port connection is not working.	<ul style="list-style-type: none"> 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. Ensure 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: 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. After you connect to the switch web browser-based management interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
	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 auto-negotiation.
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.	<ul style="list-style-type: none"> Verify that the cabling is correct. Ensure that all connectors are securely positioned in the required ports. It is possible that equipment was accidentally disconnected.
Combined speed/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 ensuring that only one path exists from any networked device to any other networked device. After you connect to the switch web browser-based management interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.

Additional Troubleshooting Suggestions

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

- **Network adapter cards.** Ensure 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. Ensure 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 www.support.netgear.com.
- **Auto-negotiation.** 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 auto-negotiation, 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.