NETGEAR®

Hardware Installation Guide

8-Port, 12-Port, and 16-Port Gigabit Smart Managed Pro Switch

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202-11618-01	March 2016	First publication

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1
Introduction

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

- Model XS708T 8-Port 10-Gigabit Smart Managed Pro Switch
- Model XS712Tv2 12-Port 10-Gigabit Smart Managed Pro Switch
- Model XS716T 16-Port 10-Gigabit Smart Managed Pro Switch

These models provide eight, twelve, or sixteen 100/1000/10GBASE-T RJ-45 copper ports, two of which are combo ports that can accept SFP+ 1G and 10G copper or 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 support.netgear.com.

Note: For detailed technical specifications and information about supported features, see the datasheet at netgear.com/business/products/switches/smart/.

Note: For software and configuration documentation, visit netgear.com/support/.

Overview

The switch provides eight, twelve, or sixteen 100/1000/10GBASE-T RJ-45 copper ports that support nonstop 100M/1G/10G Layer 2 and Layer 3 networks. Two of these ports are combo ports that can accept enhanced small form-factor pluggable (SFP+) 1G and 10G 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 100M/1G/10G copper and 1G and 10G fiber connectivity

The switch provides administrative management options that let you configure, monitor, and control the network. Using the web 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. 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 Smart Control Center program for very basic setup. To download Smart Control Center Utility, you can visit netgear.com/support, enter **Smart Control Center** in the search box, and click the **Downloads** button. For more information, see the user manual, which you can download from the same link.

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 Fast Ethernet, 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 switches:

- Eight (model XS708T), twelve (model XS712Tv2), or sixteen (model XS716T) 100/1000/10GBASE-T switching ports, two of which are combo ports that can accept SFP+ 1G and 10G copper and fiber optical modules.

- One USB port (for configuration files, firmware, and debug logs).

- Full NETGEAR Smart Managed Pro Switch functionality.

- Full compatibility with IEEE standards:

  - IEEE 802.3 Ethernet

  - IEEE 802.3u 100BASE-T

  - 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, 10GBASE-ER, 10GBASE-LX4)

  - 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 autonegotiation 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.

- Half-duplex backpressure control.

- Jumbo frames up to 9K bytes.

- Static or LACP LAGs (8 LAGS, 8 members).

- Per-port LEDs and system status LEDs.

- Internal power supply.

- Standard NETGEAR chassis (1U high).

Safety instructions and warnings

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

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

- This product is designed for indoor use only in a temperature-controlled and humidity-controlled environment. For more information, see the environmental specifications in the appendix or the data sheet.
  Any device that is located outdoors and connected to this product must be properly grounded and surge protected.
  Failure to follow these guidelines can result in damage to your NETGEAR product, which might not be covered by NETGEAR's warranty, to the extent permissible by applicable law.

- Observe and follow service markings:

  - Do not service any product except as explained in your system documentation. Some devices should never be opened.

  - If applicable to your device, opening or removing covers that are marked with the triangular symbol with a lightning bolt can expose you to electrical shock. We recommend that only a trained technician services components inside these compartments.

- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:

  - Depending on your device, the power adapter, power adapter cable, power cable, extension cable, or plug is damaged.

  - An object fell into the product.

  - The product was exposed to water.

- The product was dropped or damaged.

- The product does not operate correctly when you follow the operating instructions.

- Keep your system away from radiators and heat sources. Also, do not block cooling vents.

- Do not spill food or liquids on your system components, and never operate the product in a wet environment. If the system gets wet, see the appropriate section in your troubleshooting guide, or contact your trained service provider.

- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.

- Use the product only with approved equipment.

- If applicable to your device, allow the product to cool before removing covers or touching internal components.

- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

- To avoid damaging your system, if your device uses a power supply with a voltage selector, be sure that the selector is set to match the power at your location:

  - 115V, 60 Hz in most of North and South America and some Far Eastern countries such as South Korea and Taiwan

  - 100V, 50 Hz in eastern Japan and 100V, 60 Hz in western Japan

  - 230V, 50 Hz in most of Europe, the Middle East, and the Far East

- Be sure that attached devices are electrically rated to operate with the power available in your location.

- Depending on your device, use only a supplied power adapter or approved power cable:
  If your device uses a <u>power adapter</u>:

  - If you were not provided with a power adapter, contact your local NETGEAR reseller.

  - The power adapter must be rated for the product and for the voltage and current marked on the product electrical ratings label.

  If your device uses a <u>power cable</u>:

  - If you were not provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable approved for your country.

- The power cable must be rated for the product and for the voltage and current marked on the product electrical ratings label. The voltage and current rating of the cable must be greater than the ratings marked on the product.

- To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets.

- If applicable to your device, the peripheral power cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.

- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.

- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).

- Position system cables, power adapter cables, or power cables carefully. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.

- Do not modify power adapters, power adapter cables, power cables or plugs. Consult a licensed electrician or your power company for site modifications.

- Always follow your local and national wiring rules.

2

Hardware Overview

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

- Hardware Overview Model XS708T
- Hardware Overview Model XS712Tv2
- Hardware Overview Model XS716T
- Switch Hardware Interfaces

Hardware Overview Model XS708T

The following sections describe the physical characteristics of model XS708T.

Front Panel Model XS708T

The switch provides eight 100M/1G/10G copper RJ-45 ports, of which port 7T and slot 7F form one combo port and port 8T and slot 8F form another combo port. The 1G and 10G SFP+ slots (7F and 8F) accept copper or fiber modules. You use either port 7T or port 7F, and similarly, either port 8T or port 8F. 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 XS708T.

Figure 1. Front panel model XS708T

Number	Description
1	Power and Fan LEDs.
2	Recessed **Reset** button to restart the device.
3	Recessed **Factory Defaults** button to restore the device back to the factory defaults.
4	Eight RJ-45 connectors for 100M/1G/10G AutoSensing 10-Gigabit Ethernet switching ports.
5	Two of these ports (7 and 8) are combo ports: You can either use ports 7T and 8T as Gigabit Ethernet switching ports or you can install copper or fiber modules in 1G or 10G SFP+ slots 7F and 8F.
6	Speed and activity (ACT) LEDs for each port.
7	One USB 2.0 port for firmware uploads or configuration settings file uploads and downloads (backup) using a USB storage device (supports FAT32 and VFAT file systems only).

Back Panel Model XS708T

The following figure shows the back panel of model XS708T.
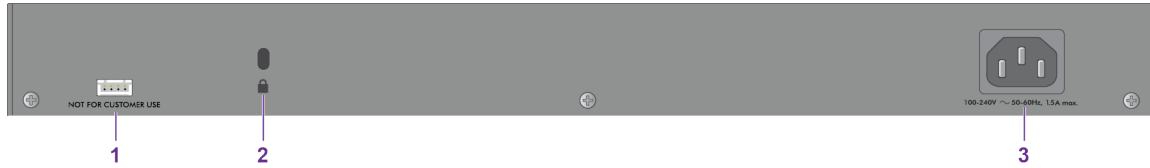
Figure 2. Back panel model XS708T

Number	Description
1	Serial console (not for customer use)
2	Kensington lock slot
3	AC power connector

System and Port LEDs Model XS708T

The following table describes the RJ-45 and SFP+ slot LED designations. Each RJ-45 port provides a left LED and a right LED and each SFP+ slot provides two LEDs.

Table 1. LEDs on model XS708T switch

LED	Description
Power LED	• **Solid green**. The device is powered on. • **Solid yellow**. The device is booting. • **Off**. Power is not supplied to the device.
Fan LED	• **Solid yellow**. The fans have failed. • **Off**. The fan is operating normally.
Speed and ACT LEDs for copper ports 1 to 8	• **Off**: No link is established. • **Solid green**: A valid 1000 Mbps link is established. • **Blinking green**. The port is transmitting or receiving packets at 1000 Mbps. • **Solid yellow**. A valid 10 or 100 Mbps link is established. • **Blinking yellow**. The port is transmitting or receiving packets at 10 or 100 Mbps.
Speed and ACT LEDs for SFP+ slots 7F and 8F	**10G LED**: • **Off**: No SFP+ module link is established. • **Solid**. A valid 10 Gbps link is established. • **Blinking**. The SFP fiber port is transmitting or receiving packets at 10 Gbps. **1G LED** • **Off**. No SFP+ module link is established. • **Solid**. A valid 1 Gbps link is established. • **Blinking**. The module is transmitting or receiving packets at 1 Gbps.

Hardware Overview Model XS712Tv2

The following sections describe the physical characteristics of model XS712Tv2.

Front Panel Model XS712Tv2

The switch provides twelve 100M/1G/10G copper RJ-45 ports, of which port 11T and slot 11F form one combo port and port 12T and slot 12F form another combo port. The 1G and 10G SFP+ slots (11F and 12F) accept copper or fiber modules. You use either

port 11T or port 11F, and similarly, either port 12T or port 12F. 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 XS712Tv2.
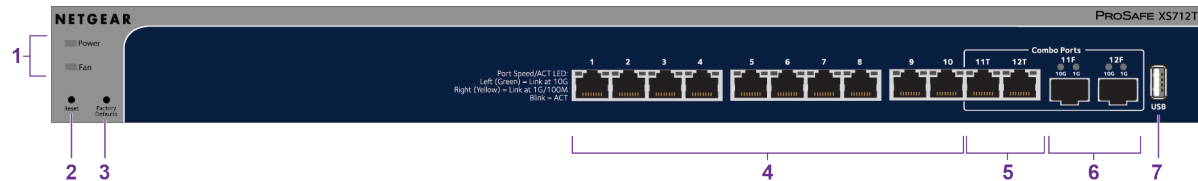

Figure 3. Front panel model XS712Tv2

Number	Description
1	Power and Fan LEDs.
2	Recessed **Reset** button to restart the device.
3	Recessed **Factory Defaults** button to restore the device back to the factory defaults.
4	Ten RJ-45 connectors for 100M/1G/10G AutoSensing 10-Gigabit Ethernet switching ports.
5	Two of these ports (11 and 12) are combo ports: You can either use ports 11T and 12T as Gigabit Ethernet switching ports or you can install copper or fiber modules in 1G or 10G SFP+ slots 11F and 12F.
6	Speed and activity (ACT) LEDs for each port.
7	One USB 2.0 port for firmware uploads or configuration settings file uploads and downloads (backup) using a USB storage device (supports FAT32 and VFAT file systems only).

Back Panel Model XS712Tv2

The following figure shows the back panel of model XS712Tv2.

Figure 4. Front panel model XS712Tv2

Number	Description
1	Serial console (not for customer use)
2	Kensington lock slot

Number	Description
3	AC power connector

System and Port LEDs Model XS712Tv2

The following table describes the RJ-45 and SFP+ slot LED designations. Each RJ-45 port provides a left LED and a right LED and each SFP+ slot provides two LEDs.

Table 2. LEDs on switch

LED	Description
Power LED	• **Solid green**. The device is powered on. • **Solid yellow**. The device is booting. • **Off**. Power is not supplied to the device.
Fan LED	• **Solid yellow**. The fans have failed. • **Off**. The fan is operating normally.
Speed and ACT LEDs for copper ports 1 to 12	• **Off**: No link is established. • **Solid green**: A valid 1000 Mbps link is established. • **Blinking green**. The port is transmitting or receiving packets at 1000 Mbps. • **Solid yellow**. A valid 10 or 100 Mbps link is established. • **Blinking yellow**. The port is transmitting or receiving packets at 10 or 100 Mbps.
Speed and ACT LEDs for SFP+ slots 11F and 12F	**10G LED**: • **Off**: No SFP+ module link is established. • **Solid**. A valid 10 Gbps link is established. • **Blinking**. The SFP fiber port is transmitting or receiving packets at 10 Gbps. **1G LED** • **Off**. No SFP+ module link is established. • **Solid**. A valid 1 Gbps link is established. • **Blinking**. The module is transmitting or receiving packets at 1 Gbps.

Hardware Overview Model XS716T

The following sections describe the physical characteristics of model XS716T.

Front Panel Model XS716T

The switch provides sixteen 100M/1G/10G copper RJ-45 ports, of which port 15 and slot 15F form one combo port and port 16 and slot 16F form another combo port. The 1G and 10G SFP+ slots (15F and 16F) accept copper or fiber modules. You use either

port 15T or port 15F, and similarly, either port 16T or port 16F. Each copper RJ-45 port is capable of sensing the line speed and negotiating the duplex mode with the link partner automatically.

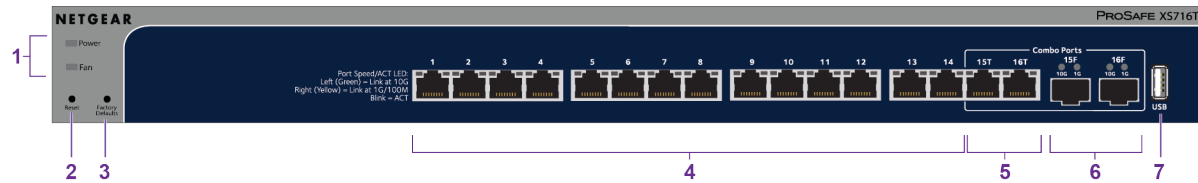The following figure shows the front panel of the model XS716T.

Figure 5. Front panel model XS716T

Number	Description
1	Power and Fan LEDs.
2	Recessed **Reset** button to restart the device.
3	Recessed **Factory Defaults** button to restore the device back to the factory defaults.
4	Sixteen RJ-45 connectors for 100M/1G/10G AutoSensing 10-Gigabit Ethernet switching ports.
5	Two of these ports (15 and 16) are combo ports: You can either use ports 15T and 16T as Gigabit Ethernet switching ports or you can install copper or fiber modules in 1G or 10G SFP+ slots 15F and 16F.
6	Speed and activity (ACT) LEDs for each port.
7	One USB 2.0 port for firmware uploads or configuration settings file uploads and downloads (backup) using a USB storage device (supports FAT32 and VFAT file systems only).

Back Panel Model XS716T

The following figure shows the back panel of model XS716T.

Figure 6. Back panel model XS716T

Number	Description
1	Serial console (note for customer use)
2	Kensington lock slot

Number	Description
3	AC power connector

System and Port LEDs Model XS716T

The following table describes the RJ-45 and SFP+ slot LED designations. Each RJ-45 port provides a left LED and a right LED and each SFP+ slot provides two LEDs.

Table 3. LEDs on switch

LED	Description
Power LED	• **Solid green**. The device is powered on. • **Solid yellow**. The device is booting. • **Off**. Power is not supplied to the device.
Fan LED	• **Solid yellow**. The fans have failed. • **Off**. The fan is operating normally.
Speed and ACT LEDs for copper ports 1 to 16	• **Off**: No link is established. • **Solid green**: A valid 1000 Mbps link is established. • **Blinking green**. The port is transmitting or receiving packets at 1000 Mbps. • **Solid yellow**. A valid 10 or 100 Mbps link is established. • **Blinking yellow**. The port is transmitting or receiving packets at 10 or 100 Mbps.
Speed and ACT LEDs for SFP+ slots 15F and 16F	**10G LED**: • **Off**: No SFP+ module link is established. • **Solid**. A valid 10 Gbps link is established. • **Blinking**. The SFP fiber port is transmitting or receiving packets at 10 Gbps. **1G LED** • **Off**. No SFP+ module link is established. • **Solid**. A valid 1 Gbps link is established. • **Blinking**. The module is transmitting or receiving packets at 1 Gbps.

Switch Hardware Interfaces

The following sections describe the hardware interfaces on the switch.

100M/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 (100 Mbps, 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 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 or VFAT file type. The NTFS file type is not supported.

Reset Button

The switch provides a **Reset** button on the front panel so that you can reboot the switch. Save the configuration before you press the **Reset** button.

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

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 the recessed **Factory Defaults** button for more than three seconds.
   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 (see Reset Button on page 22) to make sure the switch is reset to factory default settings.

3

Installation

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 an SFP Transceiver Module
- 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 4. Site requirements

Characteristics	Requirements
Mounting	**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 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	**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. **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 switch. To prevent static damage, discharge static electricity from your body before you touch any of the electronic components. 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.
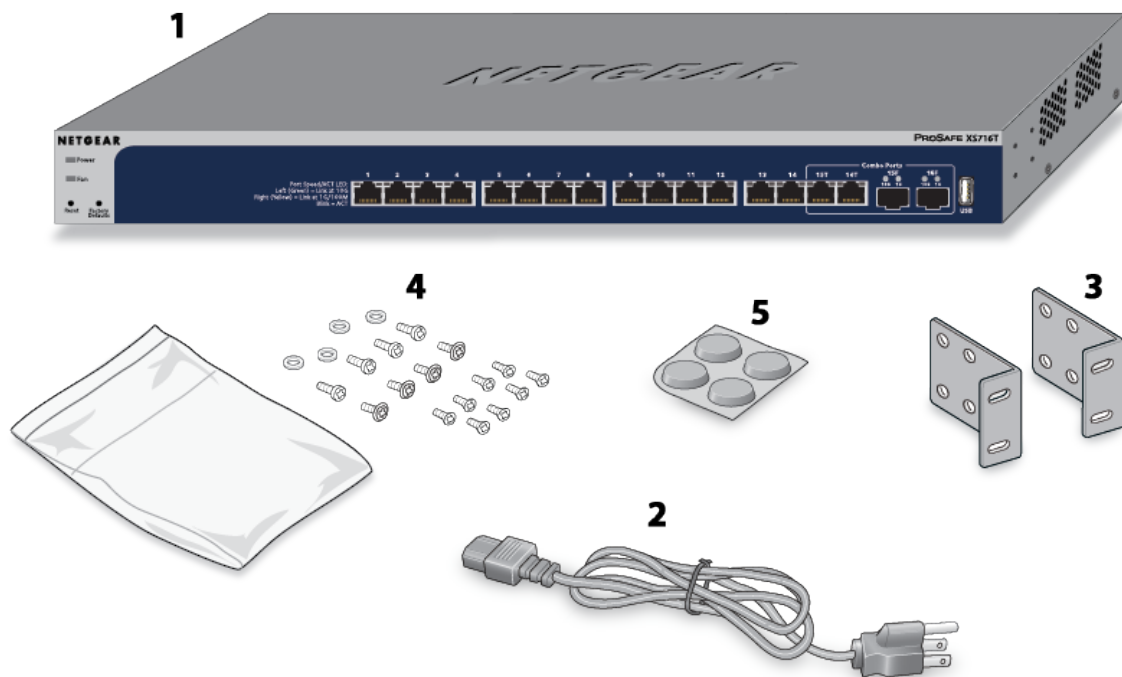

Figure 7. Switch package contents

Number	Description
1	Switch
2	Power cord
3	Rack-mounting brackets
4	Rack-mounting screws
5	Footpads

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

Step 4: Install the switch

You can install the switch in a standard 19-inch (48.26-centimeter) network equipment rack or on a flat surface.

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.

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.

   The following figure shows model XS708T.
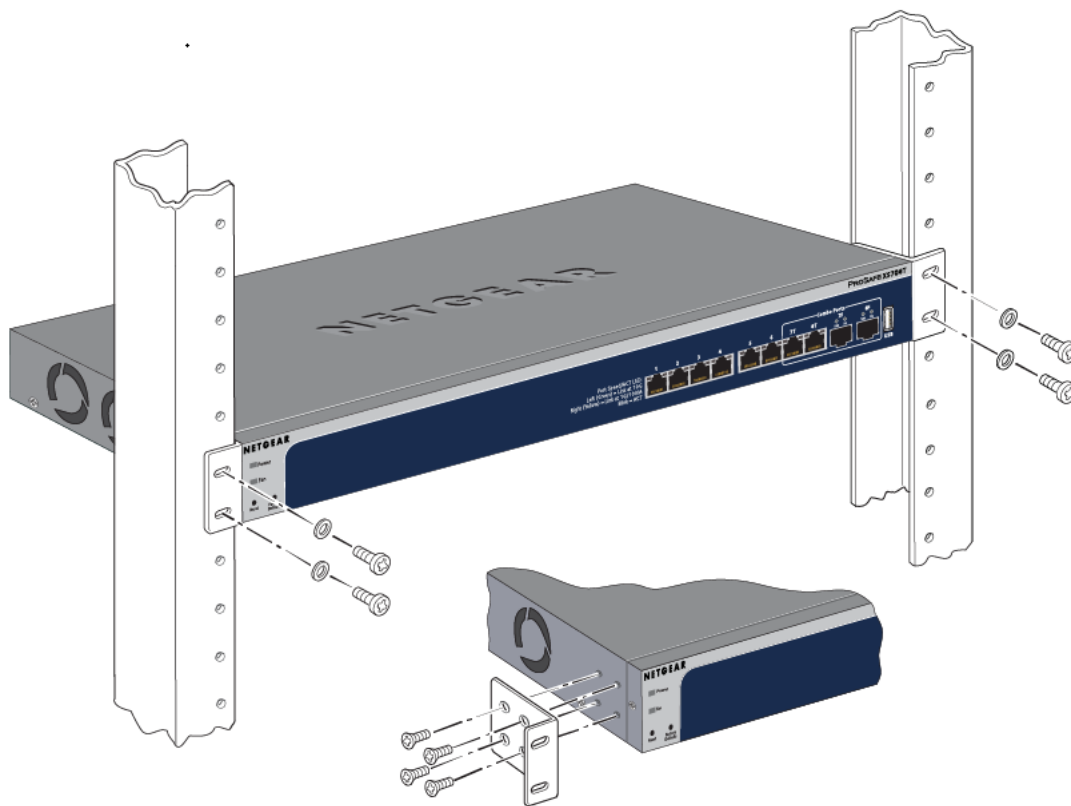
Optional Step 5: Install an SFP Transceiver Module

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 sales office 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. The following figure shows model XS708T.
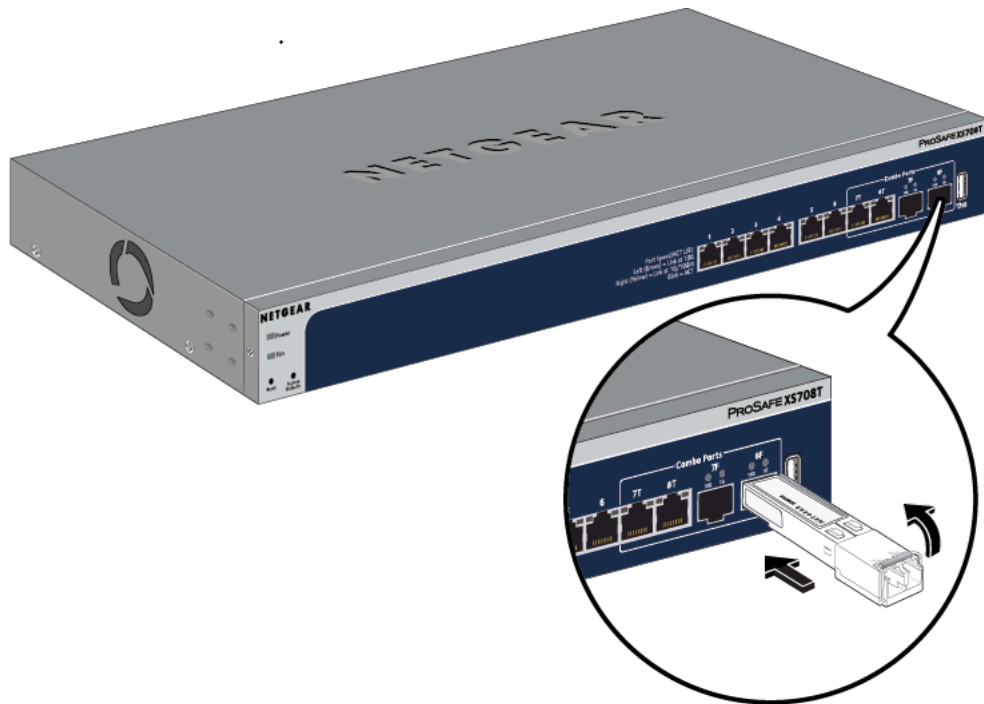
Step 6: Connect devices to the switch

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.

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.

   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

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 on the switch for the first time, you can configure the switch using the Smart Control Center program for very basic setup. To download Smart Control Center Utility, you can visit netgear.com/support, enter **Smart Control Center** in the search box, and click the **Downloads** button. For more information, see the user manual, which you can download from the same link.

Note: By default, the DHCP client of the switch is enabled. If the switch cannot get an IP address from a DHCP server, the switch's default IP address is 192.168.0.239 and the default subnet mask is 255.255.255.0.

4

Applications

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 100 Mbps, 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.

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.
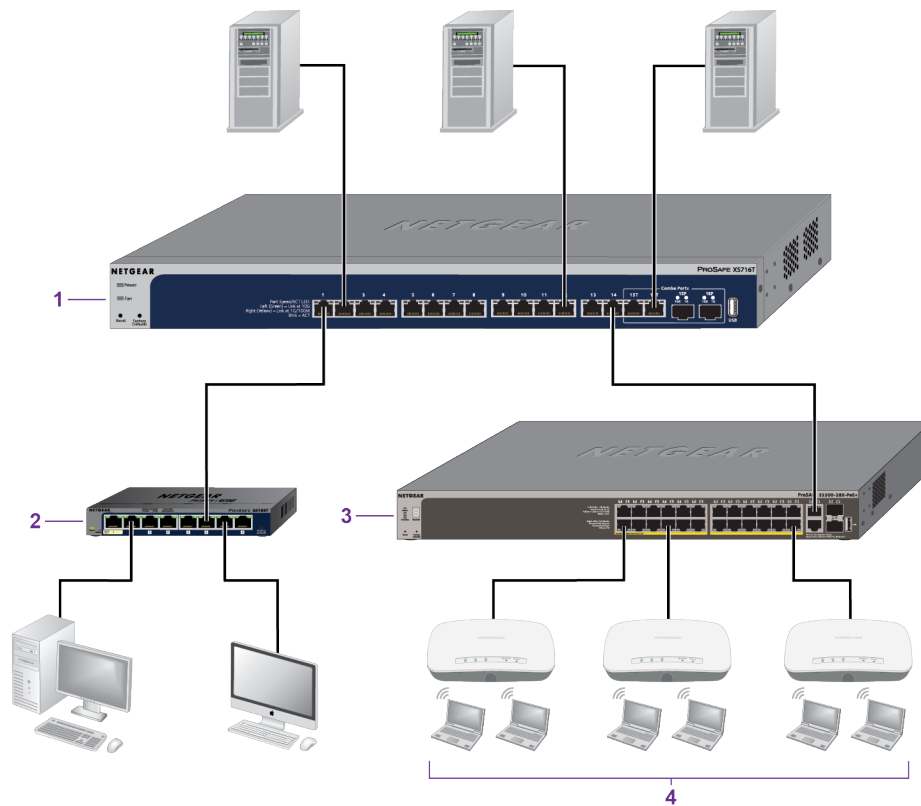

Figure 8. Backbone switching

Numbers	Description
1	XS716T (or XS708T or XS712Tv2) switch
2	GS108T switch
3	S3300-28X-PoE+ switch

Numbers	Description
4	Wireless access points

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.
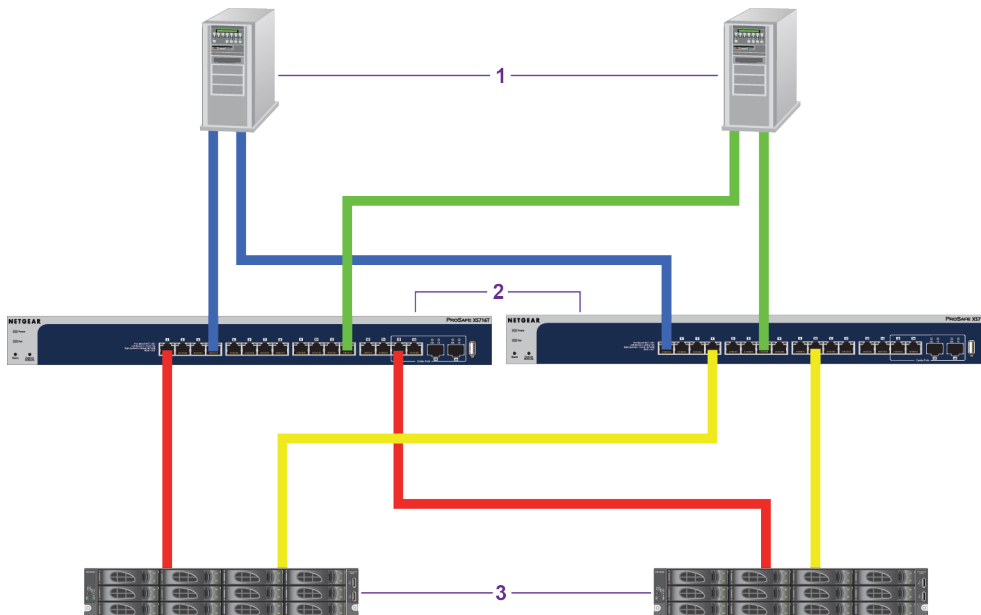

Figure 9. High-speed network storage switching in a redundant configuration

Numbers	Description
1	Virtual machines or servers
2	XS716T (or XS708T or XS712Tv2) switch
3	ReadyNAS

5

Troubleshooting

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

- <u>Troubleshooting chart</u>
- <u>Additional troubleshooting suggestions</u>

Troubleshooting chart

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

Table 5. Troubleshooting chart

Symptom	Possible Cause	Possible Solution
The 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.
A combined speed and activity LED is off when the port is connected to a device.	The 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.
A 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 switch local browser interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.

Table 5. Troubleshooting chart (Continued)

Symptom	Possible Cause	Possible Solution
A segment or device is not recognized as part of the network.	One or more devices are not properly connected, or the 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 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. After you connect to the switch local browser interface, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
A unit is linked to a stack but does not join the stack.	The stacking ports of the new unit are configured differently from the stack, or the unit is configured as a standalone unit.	Remove the unit from the stack. Use the switch local browser interface to configure the unit as a stackable unit, with combo links used as the stacking ports.

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 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 power from the switch and then reconnect the power. If the problem continues, contact NETGEAR technical support. For more information, visit the support website at netgear.com/support.

- **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.