NETGEAR®

Hardware Installation Guide

24-Port or 48-Port Gigabit Ethernet Smart Switch with 2 dedicated SFP Ports and (for model GS748Tv6 only) 2 Copper/SFP Combo Ports

Models

GS724Tv6

GS748Tv6

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Trademarks

Revision History

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Contents

Chapter 1 Introduction

Overview..... 5
Features..... 5
Safety instructions and warnings..... 7

Chapter 2 Hardware Overview

Front panel model GS724Tv6..... 11
Front panel model GS748Tv6..... 11
LEDs model GS724Tv6..... 11
LEDs model GS748Tv6..... 12
Back panel model GS724Tv6..... 13
Back panel model GS748Tv6..... 14
RJ-45 ports for 10/100/1000M BASE-T Ethernet connectivity.... 14
SFP ports for fiber or copper connectivity..... 15
Reset button, Factory Defaults button, or combined button..... 15
  Restart (power-cycle) the switch..... 16
  Reset the switch to factory default settings..... 16

Chapter 3 Applications

Connect equipment in a business environment..... 18

Chapter 4 Installation

Step 1: Prepare the site..... 20
Step 2: Protect against electrostatic discharge..... 21
Step 3: Unpack the switch..... 21
Step 4: Mount or place the switch..... 23
  Mount the switch in a rack..... 23
  Place the switch on a flat surface..... 25
Optional Step 5: Install an SFP transceiver module..... 25
Step 6: Connect devices to the switch's RJ-45 ports..... 26
Step 7: Check the installation..... 27
Step 8: Apply AC power and check the LEDs..... 27
Step 9: Manage the switch..... 28

Chapter 5 Troubleshooting

Troubleshooting chart..... 31
Additional troubleshooting suggestions..... 32

1

Introduction

This hardware installation guide is for the following NETGEAR Smart switches with optional Remote/Cloud Management via Insight:

- **GS724Tv6**: This model is a 24-Port 10M/100M/1G Ethernet Smart Switch with 2 dedicated SFP ports and Remote/Cloud management capabilities.
- **GS748Tv6**: This model is a 48-Port 10M/100M/1G Ethernet Smart Switch with 2 dedicated SFP ports, 2 copper/SFP combo ports, and Remote/Cloud management capabilities.

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

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

- Overview
- Features
- Safety instructions and warnings

NOTE: For more information about the topics that are covered in this guide, visit the support website at netgear.com/support/.

NOTE: For switch documentation, visit netgear.com/support/download/ and enter your model number in the search box.

Overview

The switch provides twenty-four or forty-eight 10/100/1000BASE-T RJ-45 copper ports that support nonstop 10/100/1000M Layer 2 networks, including ethernet ports that support Layer 2+ and Lite Layer 3 features. Two additional ports can accept small form-factor pluggable (SFP) gigabit interface converters (GBICs) for 1G fiber or copper connectivity.

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. All ports can automatically negotiate to the highest speed, which makes the switch well-suited for a mixed environment with Fast Ethernet and Gigabit Ethernet.

Use Category 5e (Cat 5e) or higher-rated Ethernet cables terminated with RJ-45 connectors to make Gigabit connections.

For more information about application samples, see Applications on page 17.

Features

The switch supports the following key hardware features:

- 24 or 48 Gigabit Ethernet ports
  - Model GS724Tv6 provides 24 Gigabit Ethernet ports
  - Model GS748Tv6 provides 48 Gigabit Ethernet ports, two of which are copper/SFP combo ports
- Dedicated SFP fiber ports and copper/SFP combo ports:
  - Model GS724Tv6 provides two dedicated SFP ports
  - Model GS748Tv6 provides two dedicated SFP ports and two copper/SFP combo ports
- MAC table size of 16K
- Variable speed fan that can lower the noise level during low operating temperatures
- Acoustic fan noise, measured at 25°C, does not exceed 37.2 dBA for model GS748Tv6 (Model GS724Tv6 does not have a fan.)
- Full-duplex, nonblocking switch fabric
  - 52 Gbps (GS724Tv6)
  - 100 Gbps (GS748Tv6)
- Includes the following mounting hardware:

  - 19-inch rack-mount kit for rack installation
  - Four rubber footpads for tabletop installation
- Full compatibility with IEEE standards:
  - IEEE 802.3 Ethernet
  - IEEE 802.3i 10BASE-T
  - IEEE 802.3u 100BASE-T
  - IEEE 802.3ab 1000BASE-T
  - IEEE 802.3z Gigabit Ethernet 1000BASE-SX/LX
  - IEEE 802.1Q VLAN tagging
  - IEEE 802.3x Full-duplex flow control
  - IEEE 802.3ad Link aggregation (LAG with LACP)
  - IEEE 802.1ab LLDP
  - IEEE 802.1p Class of Service (QoS)
  - IEEE 802.1D Spanning Tree Protocol (STP)
  - IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
  - IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
  - IEEE 802.1x RADIUS network access control
  - IEEE 802.3az Energy Efficient Ethernet (EEE)
- AutoSensing and autonegotiating capabilities for all ports.
- Auto Uplink™ technology is supported on all ports.
- Automatic address learning function to build the packet-forwarding information table. The table contains up to 16K Media Access Control (MAC) addresses.
- Store-and-forward transmission to remove bad packets from the network.
- Active flow control to minimize packet loss and frame drops.
- Half-duplex backpressure control.
- Per-port status LEDs and system status LEDs.
- NETGEAR green power-saving features:
  - Energy efficiency mode that fully conforms to the IEEE802.3az 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 and humidity-controlled environment.

  Note the following:

  - For more information about the environment in which this product must operate, see the environmental specifications in the appendix or the data sheet.
  - If you want to connect the product to a device located outdoors, the outdoor device must be properly grounded and surge protected, and you must install an Ethernet surge protector inline between the indoor product and the outdoor device. Failure to do so can damage the product.

    WARNING: Before connecting the product to outdoor cables or devices, see https://kb.netgear.com/000057103 for additional safety and warranty information.

  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 product documentation. Some devices should never be opened.
  - If applicable to your product, 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 power outlet, and then replace the part or contact your trained service provider:
  - Depending on your product, 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 the product away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on your product components, and never operate the product in a wet environment. If the product 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 product. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with approved equipment.
- If applicable to your product, 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 product 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 product, use only a supplied power adapter or approved power cable:

  If your product uses a power adapter:
  - 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 product uses a power cable:

  - 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 power outlets.
- If applicable to your product, 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.

The chapter includes the following sections:

- Front panel model GS724Tv6
- Front panel model GS748Tv6
- LEDs model GS724Tv6
- LEDs model GS748Tv6
- Back panel model GS724Tv6
- Back panel model GS748Tv6
- RJ-45 ports for 10/100/1000M BASE-T Ethernet connectivity
- SFP ports for fiber or copper connectivity
- Reset button, Factory Defaults button, or combined button

Front panel model GS724Tv6

The switch offers twenty-four 10/100/1000BASE-T RJ-45 copper ports numbered 1 through 24, accompanied by two dedicated SFP ports (25F and 26F). The front panel of the GS724Tv6 switch is in the figure below.

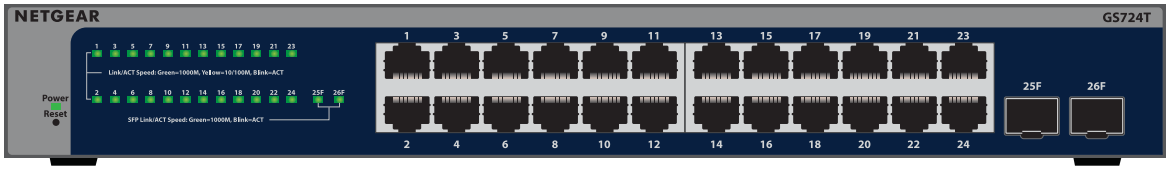


Figure 1. Front panel model GS724Tv6

Front panel model GS748Tv6

The switch offers forty-eight 10/100/1000BASE-T RJ-45 copper ports numbered 1 through 48, two of which are copper/SFP combo ports (47F and 48F), and two dedicated SFP ports (49F and 50F). The front panel of the GS748Tv6 switch is shown in the figure below.

NOTE: Remove any transceiver modules from the combo ports before using them as RJ-45 ports with an Ethernet cable. The other way around too, remove any Ethernet cables from the combo ports before using the ports with any transceiver modules.

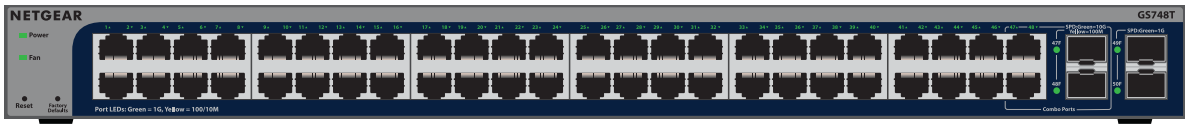


Figure 2. Front panel model GS748Tv6

LEDs model GS724Tv6

This section describes the LEDs on the front panel of the GS724Tv6 switch.

Table 1. Front panel LEDs

LED	Description
Power LED	**Off**: Power is not being supplied to the switch. **Solid green**: The switch is powered on and operating normally. **Solid yellow**: The switch is booting.
RJ-45 port LED Link, speed, and activity for Ethernet ports 1 to 24	**Off**: No link is established. **Solid green**: A valid 1 Gbps link is established. **Blinking green**: The port is transmitting or receiving packets at 1 Gbps. **Solid yellow**: A valid 10 Mbps or 100 Mbps link is established. **Blinking yellow**: The port is transmitting or receiving packets at 10 Mbps or 100 Mbps.
Fiber port LED Link and activity for SFP fiber ports 25F and 26F	**Off**: No SFP module link is established. **Solid green**: A valid 1 Gbps link is established. **Blinking green**: The SFP fiber port is transmitting or receiving packets at 1 Gbps.

LEDs model GS748Tv6

This section describes the LEDs on the front panel of the GS748Tv6 switch.

Table 2. Front panel system LEDS

LED	Description
Power LED	**Off**: Power is not being supplied to the switch. **Solid green**: The switch is powered on and operating normally. **Solid yellow**: The switch is booting.
Fan LED	**Off**: The fan is operating normally. **Solid yellow**: The fan has failed.

Table 3. Front panel port LEDS

Port	LED	Description
1-48 10/100/1000 Mbps Copper ports 2 LEDs per port	LINK/ACT SPD	**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 Mbps or 100 Mbps link is established. **Blinking yellow**: The port is transmitting or receiving packets at 10 Mbps or 100 Mbps.
Combo SFP port 47F-48F	LINK/ACT/SPD	**Off**: No SFP module link is established **Solid green**: A valid 1000 Mbps SFP module link is established. **Blinking green**: The port is transmitting or receiving packets at 1000 Mbps. **Solid yellow**: A valid 100 Mbps SFP module link is established. **Blinking yellow**: The port is transmitting or receiving packets at 100 Mbps. If the media for ports 47 and 48 changes to copper, the port LED for the SFP combo ports changes to off.
SFP port 49F-50F	LINK/ACT/SPD	**Off**: No SFP module link is established **Solid green**: A valid 1 Gbps SFP module link is established. **Blinking green**: The port is transmitting or receiving packets at 1 Gbps.

Back panel model GS724Tv6

The back panel provides a Kensington lock and AC power receptacle. (The switch integrates a fixed, internal power supply.)

The following figure shows the back panel.

Figure 3. Back panel model GS724Tv6

Back panel model GS748Tv6

The back panel provides a Kensington lock and AC power receptacle. (The switch integrates a fixed, internal power supply.)

The following figure shows the back panel.

Figure 4. Back panel model GS748Tv6

RJ-45 ports for 10/100/1000M BASE-T Ethernet connectivity

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

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

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.

SFP ports for fiber or copper connectivity

To enable fiber or additional copper connections on the switch, SFP ports accommodate standard small form-factor pluggable (SFP) gigabit interface converters (GBICs, also referred to as transceiver modules) for 1G or 100M fiber connectivity. GBICs are sold separately from the switch.

Ports 25F and 26F on the GS724Tv6 switch and ports 47F-50F on the GS748Tv6 switch support the following NETGEAR SFP transceiver modules:

Table 4. Supported Modules: Transceivers

Model	Description
AGM731F	SFP transceiver 1000BASE-SX
AGM732F	SFP transceiver 1000BASE-LX
AGM734	SFP transceiver 1000BASE-T
AFM735-10000S (GS748Tv6 only, for combo port only)	SFP transceiver 100BASE-FX SFP LC GBIC

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

Reset button, Factory Defaults button, or combined button

Model GS724Tv6 provides a recessed, dual-function **Reset/Factory Defaults** button on the front panel. Depending on how long you press the button, the button lets you restart (power-cycle) the switch or reset it to factory defaults.

Model GS748Tv6 provides individual **Reset** and **Factory Defaults** buttons.

For more information, see the following sections.

NOTE: Before you restart or reset the switch, be sure to first export and save the configuration file, so that you can restore the current switch configuration settings if needed.

Restart (power-cycle) the switch

NOTE: We recommend that you export and save the configuration file before you restart the switch.

To restart the switch using the Reset/Factory Defaults button (model GS724Tv6) or Reset button (model GS748Tv6):

1. Insert a tool such as a straightened paper clip into the opening.
2. Press the **Reset** button for less than 2 seconds.

   CAUTION: Do not press the button for more than 2 seconds!

   During the restart process, the Power LED lights yellow.

Reset the switch to factory default settings

Use this procedure to erase all settings and reset the switch to factory defaults.

NOTE: We recommend that you export and save the configuration file before you reset the switch.

To use the Reset/Factory Defaults button (model GS724Tv6) or Factory Defaults button (model GS748Tv6) to reset the switch to factory default settings:

1. Insert a tool such as a straightened paper clip into the opening.
2. Press the **Factory Defaults** button for more than 5 seconds.

   During the reset process, the Power LED lights yellow.

3

Applications

This chapter includes the following sections:

- Connect equipment in a business environment

Connect equipment in a business environment

The following figure shows an example of how you can connect equipment (servers, laptops, storage devices, access points) to the switch in a business environment, providing up to 1 Gbps speed to your business devices.

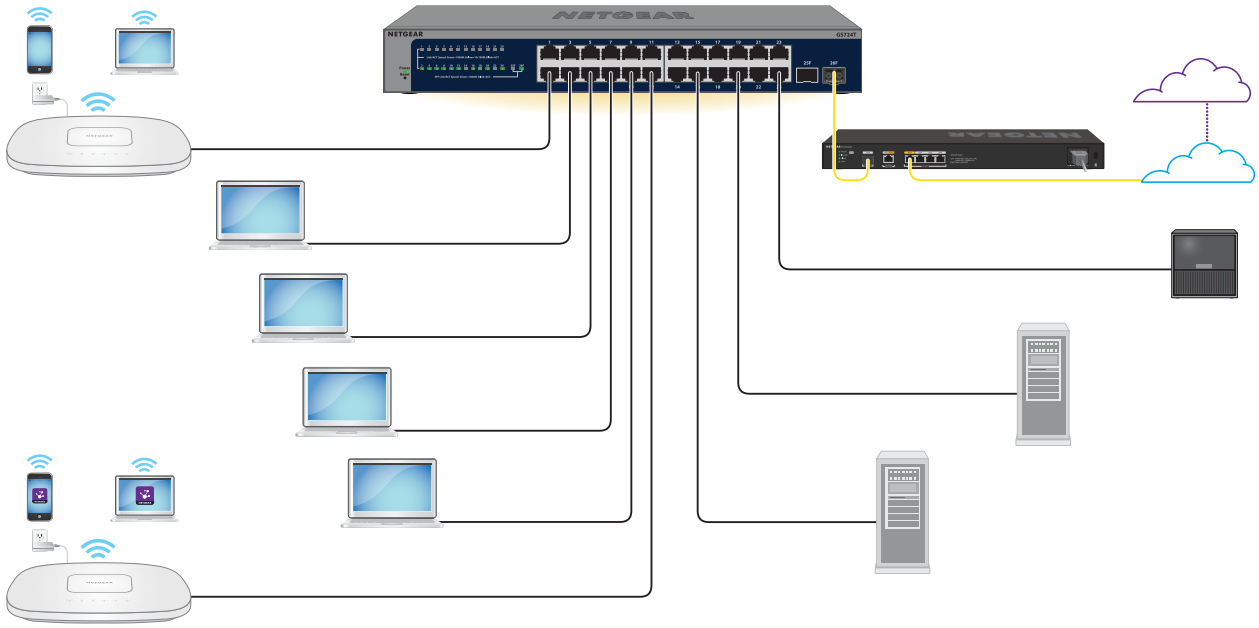


Figure 5. Sample business use case

In this figure, the following applies:

- Port 2 is connected to an access point. Connected to this access point are a smartphone and tablet.
- Ports 4, 6, 8, and 10 are connected to wired desktop computers.
- Port 12 is connected to an access point. Connected to this access point are a smartphone with the Insight app (optional) and a tablet with access to the Insight Cloud Portal (optional)
- Ports 16 and 20 are connected to servers.
- Port 24 is connected to a network-attached storage (NAS) system.
- Port 26F is connected to a network router, which is connected to the Internet and the Insight cloud (optional).

4

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: Mount or place the switch
- Optional Step 5: Install an SFP transceiver module
- Step 6: Connect devices to the switch's RJ-45 ports
- Step 7: Check the installation
- Step 8: Apply AC power and check the LEDs
- Step 9: Manage the switch

Step 1: Prepare the site

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

Table 5. Site requirements

Characteristics	Requirements
Mounting	**Desktop installation**: Provide a flat table or shelf surface. Use the four self-adhesive rubber footpads included with the switch. **Rack-mount installation**: 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	Install 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%, noncondensing. **Ventilation**: Do not restrict airflow by covering or obstructing air inlets on the sides of the switch. Keep at least 2 inches (5 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 figures show the package contents for the two model switches.

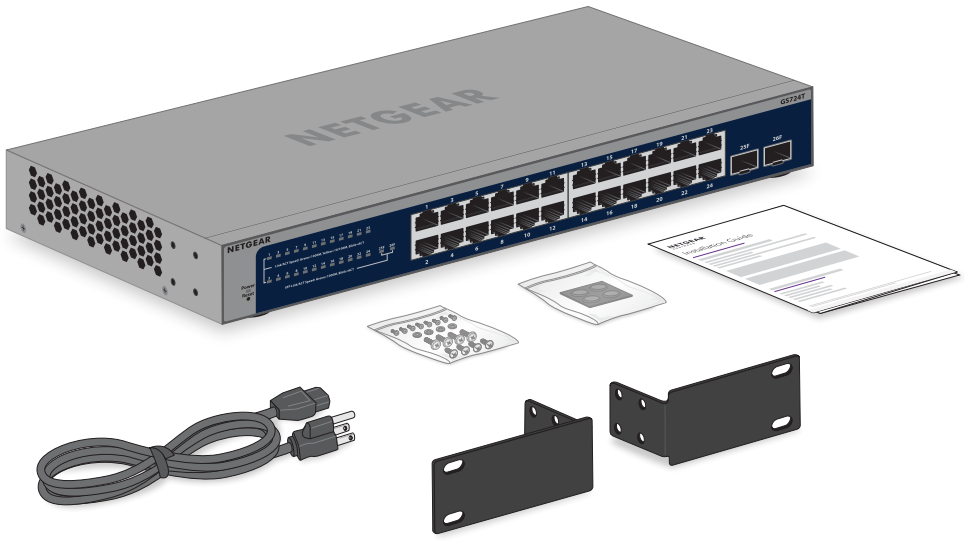


Figure 6. Switch package contents for model GS724Tv6

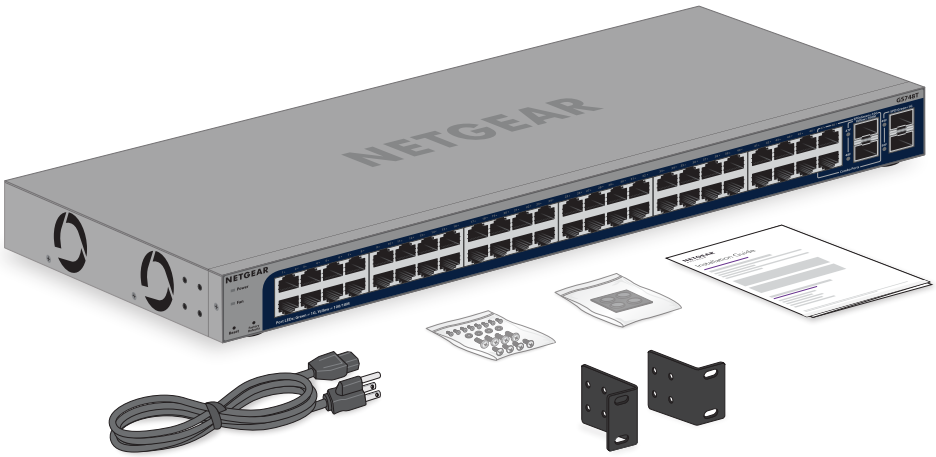


Figure 7. Switch package contents for model GS748Tv6

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

To check the package contents:

1. Place the container on a clean flat surface, and cut all straps securing the container.
2. Unpack the hardware from the boxes by carefully removing the hardware and placing it on a secure and clean surface.
3. Remove all packing material.
4. Verify that the package contains the following items:
   - Switch
   - Power cord (varies by region)
   - Brackets for rack mounting
     - GS724Tv6 includes wide brackets
     - GS748Tv6 includes narrow brackets
   - Screws for rack mounting
   - Rubber footpads for tabletop installation
   - Rubber protection caps, which are already installed in the SFP sockets. If you install an SFP transceiver module, you must remove the cap from the SFP socket.
   - Installation guide

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

Step 4: Mount or place the switch

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

Mount the switch in a rack

To install the switch in a rack, you need the rack-mount brackets and screws 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 the mounting brackets to the rack.

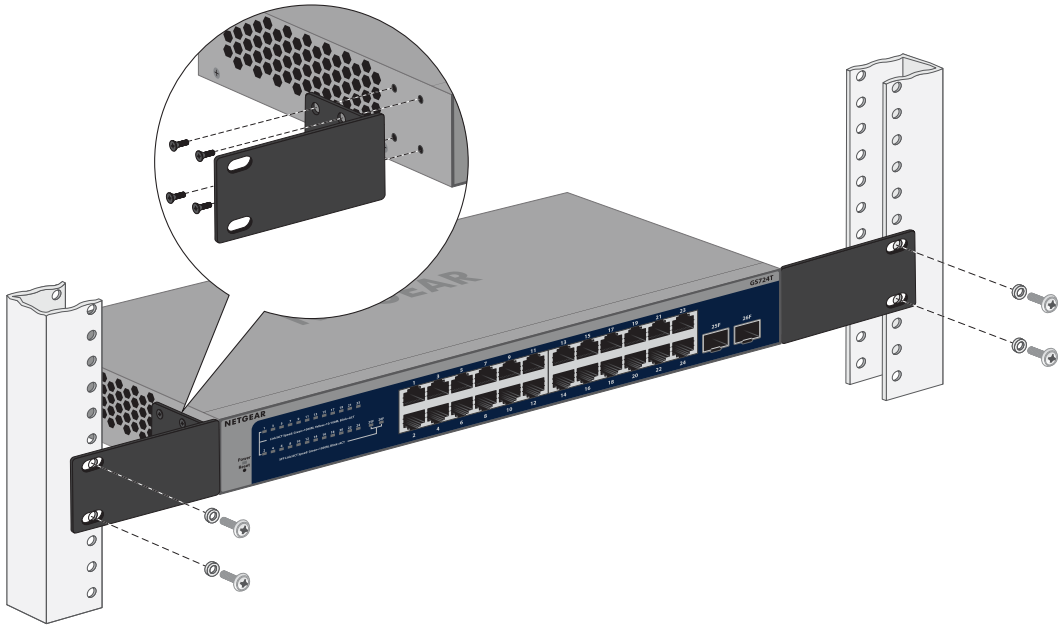


Figure 8. GS724Tv6 rack mount

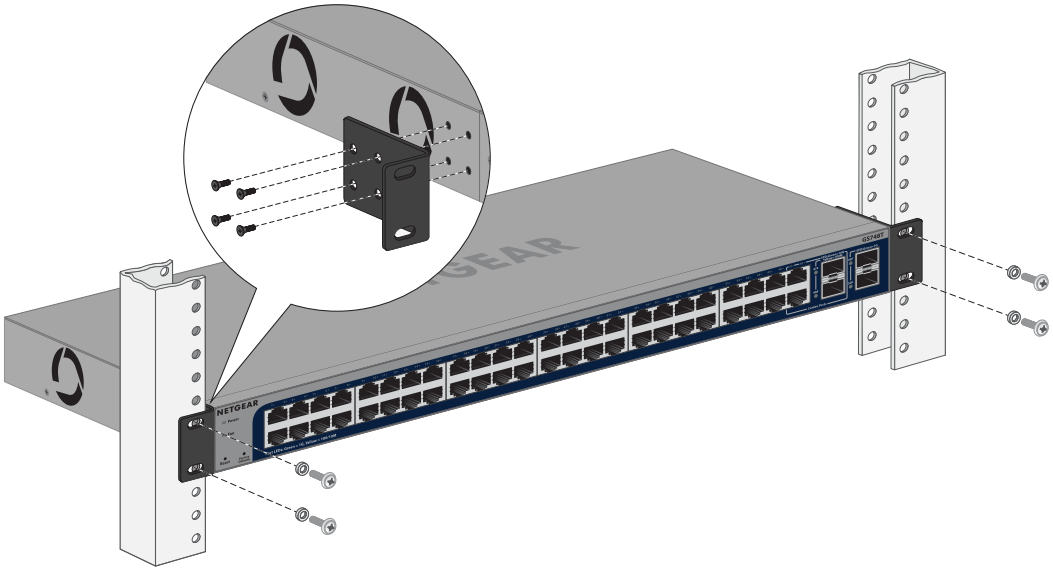


Figure 9. GS748Tv6 rack mount

Place 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.

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.

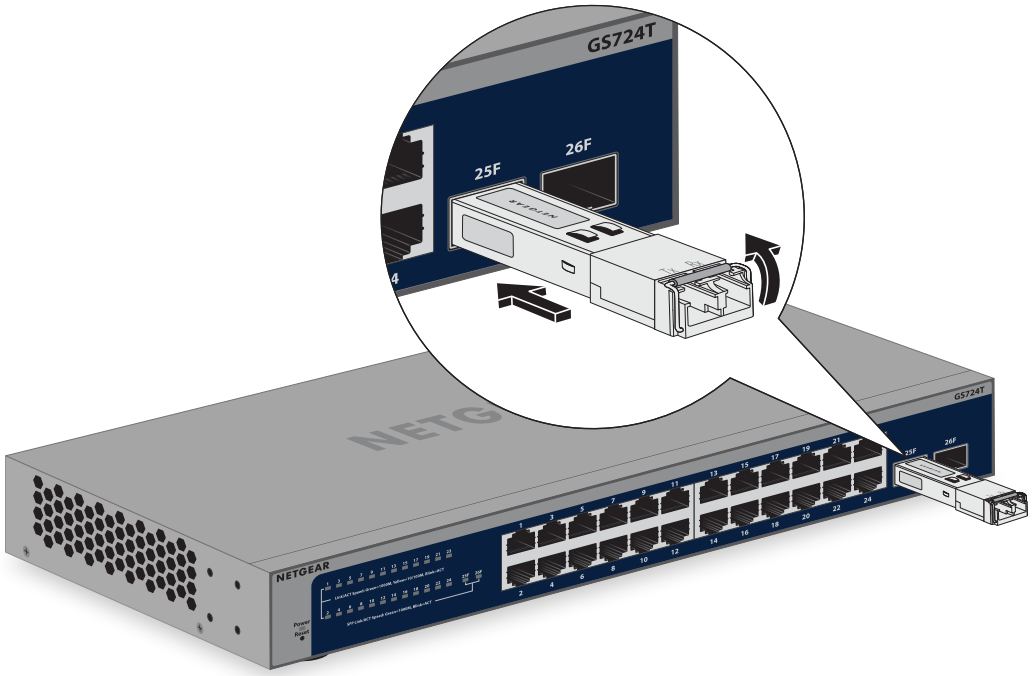
To install an SFP transceiver module:

1. Insert the transceiver module into the SFP port.

   Use ports 25F or 26F (GS724Tv6) or ports 47F-50F (GS748Tv6).

CAUTION: Be sure that you insert the module the correct way into the port. There is only one way to insert the module. If it does not fit, you might be holding the module upside down. Do not force the module into the port.

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



Step 6: 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 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. Attach devices to the switch.
2. Verify that all cables are installed correctly.

Step 7: 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 again 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 AC power and check the LEDs

The switch does not provide an on/off 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 that might turn off power to the switch.

To apply AC 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 front panel of the switch light correctly.

   When you apply power, the Power LED on the switch front panel lights and the ports LEDs for attached devices light. For information about the LEDs, see LEDs model GS724Tv6 on page 11 and LEDs model GS748Tv6 on page 12.

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

Step 9: Manage the switch

The switch is a plug-and-play device that starts switching as soon as you plug it into power and your network.

After you complete the initial log-in procedure, you can configure the switch using the local browser UI. If you are an Insight Premium or Insight Pro user, after you complete the initial log-in procedure, you can also change the management mode so that you can finish configuring the switch using the Insight Cloud Portal or Insight app.

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.

Management options

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

- **NETGEAR Insight app and Insight Cloud Portal**: If you set the management mode of the switch to *NETGEAR Insight Mobile App and Insight Cloud Portal*, you can use the following applications to manage the switch remotely:
  - **Insight Cloud Portal**: As an Insight Premium or Insight Pro subscriber, you can use the NETGEAR Insight Cloud Portal to set up the switch in the network; perform remote setup; configure, manage, and monitor the switch; analyze the switch and network usage; and, if necessary, troubleshoot the switch and the network.
  - **NETGEAR Insight app**: With the Insight app, you can discover the switch on the network and add it to a network location. You can then set up the switch in the network, and manage and monitor the switch remotely from your tablet or smartphone. You can choose from four methods to add the switch to the Insight app: You can scan your network for the switch, scan the QR code of the switch, scan the barcode of the switch, or add the serial number of the switch.

  For more information about NETGEAR Insight, visit netgear.com/insight. The Insight Cloud Portal and Insight app have embedded help and are documented in multiple knowledge base articles that you can access by visiting netgear.com/support.
- **Device user interface (UI)**: By default, the management mode of the switch is set to *Directly Connect to Web Browser Interface*, which lets you access the device UI. In this mode, you can change all settings of the switch.

  For more information about the device UI, see the user manual, which you can download by visiting netgear.com/support/download.

NOTE: If you plan to use the NETGEAR Insight Cloud Portal or Insight app to manage the switch, we recommend that you do not use the device UI to change settings that are *Insight manageable* because they would not be synchronized with Insight or to the network location and other devices to which you assigned the switch. We recommend that use the Insight Cloud Portal or Insight app to change *Insight manageable* settings.

Changing the management mode

By default, the management mode is set to *Directly Connect to Web Browser Interface* (which is the same as the device UI). Note the following about changing the management mode:

- **Changing to NETGEAR Insight Mobile App and Insight Cloud Portal mode**: The first time that you change to this mode, the switch is set to factory default settings so that you can manage the switch using the Insight Cloud Portal or the Insight app. However, if you added the switch to a network on the Insight Cloud Portal or Insight app before, all Insight-manageable device settings revert to the configuration in the Insight cloud, including the switch password (that is, the password is reset to the Insight network password).

  NOTE: If you use the NETGEAR Insight Cloud Portal or Insight app, you can temporarily change the management mode of the switch back to *Directly Connect to Web Browser Interface* and access the device UI for settings that are not Insight-manageable. You might want to do this for tasks such as integrating with an existing network of devices that are not managed through Insight, and for debugging purposes. When you are done, you can change the management mode back to *NETGEAR Insight Mobile App and Insight Cloud Portal*.

- **Changing back to Directly Connect to Web Browser Interface mode**: The *NETGEAR Insight Mobile App and Insight Cloud Portal* management mode is disabled and the current Insight-manageable device settings are saved to the Insight cloud. Any changes that you make using the *Directly Connect to Web Browser Interface* management mode are not saved to the cloud server.

5

Troubleshooting

This chapter provides information about troubleshooting the switch.

The chapter includes the following sections:

- Troubleshooting chart
- Additional troubleshooting suggestions

Troubleshooting chart

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

Table 6. Troubleshooting chart

Symptom	Possible Cause	Possible Solution
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.
The port LED for a port is off although the port is connected to a powered-on 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 network loop (redundant path) was created, causing a broadcast storm.	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 device UI, you can configure the Spanning Tree Protocol (STP) to prevent network loops.
A segment or device is not recognized as part of the network.	One or more devices are not properly connected, or cabling does not meet Ethernet guidelines.	• Verify that the cabling is correct. • Make sure that all connectors are securely positioned in the required ports. It is possible that equipment was accidentally disconnected.
The port LEDs for all connected ports are blinking continuously 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 device UI, 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**: 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.
- **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 Ethernet ports negotiate speed, duplex mode, and flow control if the attached device supports autonegotiation.
- **Switch integrity**: If necessary, verify the integrity of the switch by restarting it. To restart 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/.