

GS980MX Series

Stackable Multi-Gigabit Layer 3 Lite Ethernet Switches
AlliedWare Plus™

AT-GS980MX/10HSm

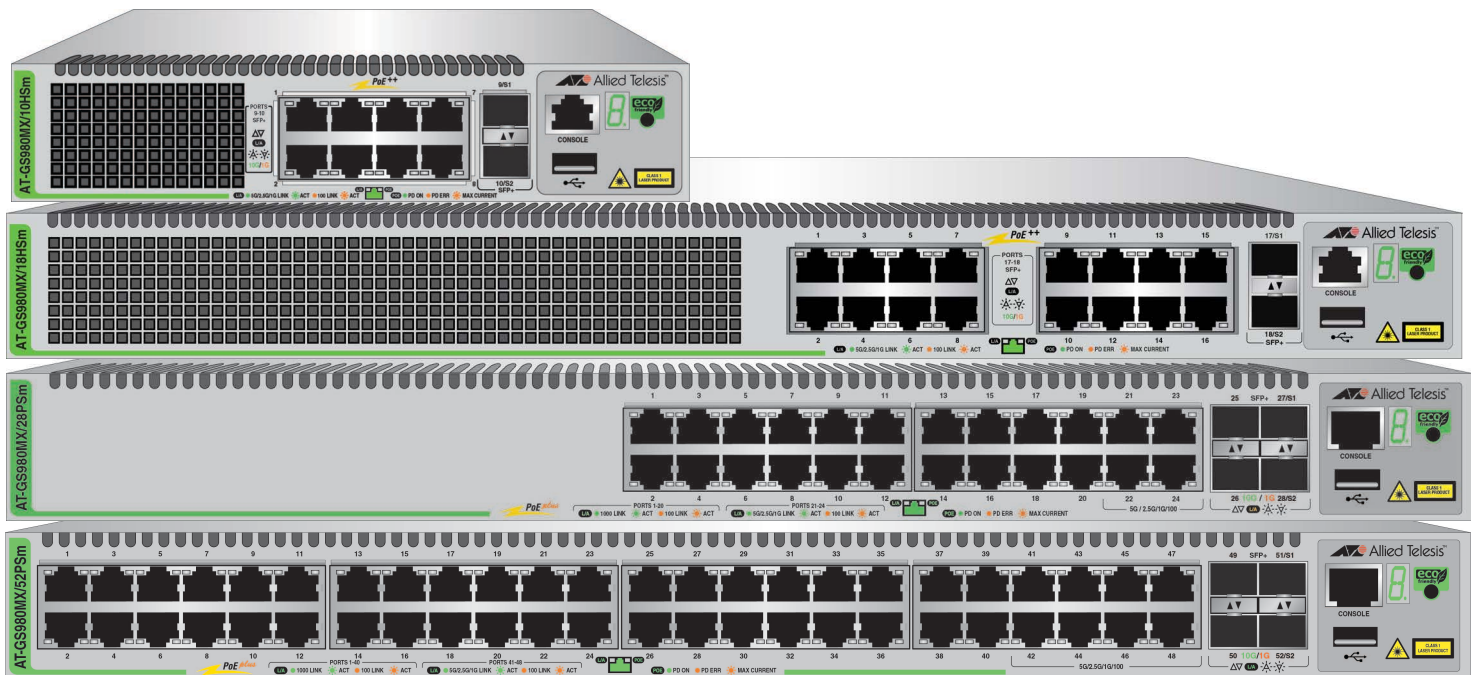
AT-GS980MX/18HSm

AT-GS980MX/28

AT-GS980MX/28PSm

AT-GS980MX/52

AT-GS980MX/52PSm



Installation Guide

For Standalone Switches and Virtual Chassis Stacking (VCStack™)

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U.S. Federal Communications Commission

Radiated Energy

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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EMC (Immunity): EN55035

Electrical Safety: EN62368-1 (TUV), UL 60950-1 (cUL_{US}), CSA-C22-2 No. 60950-1 (cUL_{US}), EN60825-1 (TUV), UL 62368-1



Laser Safety

EN60825

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Preface

This guide contains the installation instructions for the GS980MX Series of stackable Multi-Gigabit, Layer 3 Lite Ethernet switches. The instructions explain how to install the switches as standalone units or in a VCStack configuration. This preface contains the following sections:

- ❑ “How to Use This Installation Guide” on page 14
- ❑ “Document Conventions” on page 16
- ❑ “Product Documentation” on page 17
- ❑ “Translated Safety Statements” on page 18

This installation guide replaces the following documents:

- ❑ *GS980MX Series Installation Guide for Standalone Switches*
(PN: 613-002680)
- ❑ *GS980MX Series Installation Guide for Virtual Chassis Stacking*
(PN: 613-002681)

How to Use This Installation Guide

Installing Standalone Switches

Here are the steps and procedures to installing the switches as standalone units:

Step 1. Reviewing and Installing the Hardware

- ❑ Chapter 1, “GS980MX Series” on page 21
- ❑ Chapter 2, “Hardware Features” on page 29
- ❑ Chapter 3, “Beginning the Installation” on page 53
- ❑ Chapter 4, “Installing the Switch on a Table” on page 67
- ❑ Chapter 5, “Installing the Switch in an Equipment Rack” on page 71
- ❑ Chapter 6, “Installing the Switch on a Wall” on page 89

Step 2. Powering On and Configuring the Switch

- ❑ Chapter 7, “Powering On the Switch” on page 107
- ❑ Chapter 8, “Configuring the Switch for Standalone Operations” on page 115

Step 3. Cabling the Networking Ports

- ❑ Chapter 9, “Cabling the Networking Ports” on page 125

Installing a VCStack

Here are the steps and procedures to building a VCStack:

Step 1. Reviewing the Hardware and VCStack Overviews

- ❑ Chapter 2, “Hardware Features” on page 29
- ❑ Chapter 10, “Virtual Chassis Stacking Overview” on page 135

Step 2. Installing the Hardware

- ❑ Chapter 3, “Beginning the Installation” on page 53
- ❑ Chapter 4, “Installing the Switch on a Table” on page 67
- ❑ Chapter 5, “Installing the Switch in an Equipment Rack” on page 71
- ❑ Chapter 6, “Installing the Switch on a Wall” on page 89

Step 3. Building a VCStack

- ❑ Chapter 11, “Building the Trunk with 1/10G SFP+ Transceiver Ports” on page 161

-- or --

- ❑ Chapter 12, “Configuring a Master Switch to Use Multi-Gigabit 5G Ports as the Trunk” on page 173
- ❑ Chapter 13, “Configuring Member Switches to Use Multi-Gigabit 5G Ports as the Trunk” on page 191

Step 4. Cabling the Networking Ports

- ❑ Chapter 9, “Cabling the Networking Ports” on page 125

Document Conventions

This document uses the following conventions:

Note

Notes provide additional information.



Caution

Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.



Warning

Warnings inform you that performing or omitting a specific action may result in bodily injury.



Warning

Laser warnings inform you that an eye or skin hazard may exist due to the presence of a laser product.


Product Documentation

Hardware installation instructions and feature configuration guides are available on the Allied Telesis web site at www.alliedtelesis.com. Here are several of the available guides:


- ❑ This Hardware Installation Guide
- ❑ *Novice Guide to Networking with AlliedWare Plus*
- ❑ *Getting Started with the Device GUI on Switches*
- ❑ *Getting Started with the AlliedWare Plus Command Line Interface*
- ❑ *Command Reference: Switches Running AlliedWare Plus*
- ❑ *Solution Guide: Enterprise Networking Solutions*

The site also supplies overview and configuration guides for many of the individual features of the product.


Translated Safety Statements

Important: Safety statements with the  symbol are translated into multiple languages in **Translated Safety Statements** at alliedtelesisis.com/library/search.


- ❑ Übersetzte Sicherheitshinweise

Wichtig: Sicherheitshinweise mit dem -Symbol werden in **Translated Safety Statements** bei alliedtelesisis.com/library/search in mehrere Sprachen übersetzt.


- ❑ Declaraciones de seguridad traducidas

Importante: Las declaraciones de seguridad con el símbolo  se traducen a varios idiomas en **Translated Safety Statements** en alliedtelesisis.com/library/search.

- ❑ Consignes de sécurité traduites

Important: Les déclarations de sécurité avec le symbole  sont traduites en plusieurs langues en **Translated Safety Statements** sur alliedtelesisis.com/library/search.

- ❑ Dichiarazioni di sicurezza tradotte

Importante: Le dichiarazioni di sicurezza con il simbolo  sono tradotte in più lingue in **Translated Safety Statements** su alliedtelesisis.com/library/search.

- ❑ Översatta säkerhetsförklaringar

Viktig: Säkerhetsföreskrifter med -symbolen översätts till flera språk på **Translated Safety Statements** vid alliedtelesisis.com/library/search.

Section I

Hardware Overview and Installation

The chapters in this section contain product overview and hardware installation instructions:

- ❑ Chapter 1, “GS980MX Series” on page 21
- ❑ Chapter 2, “Hardware Features” on page 29
- ❑ Chapter 3, “Beginning the Installation” on page 53
- ❑ Chapter 4, “Installing the Switch on a Table” on page 67
- ❑ Chapter 5, “Installing the Switch in an Equipment Rack” on page 71
- ❑ Chapter 6, “Installing the Switch on a Wall” on page 89

Note

Refer to “How to Use This Installation Guide” on page 14 before beginning the installation.

Section I:

Chapter 1

GS980MX Series

This chapter identifies the switches in the following sections:

- ❑ “AT-GS980MX/10HSm Switch” on page 22
- ❑ “AT-GS980MX/18HSm Switch” on page 23
- ❑ “AT-GS980MX/28 Switch” on page 24
- ❑ “AT-GS980MX/28PSm Switch” on page 25
- ❑ “AT-GS980MX/52 Switch” on page 26
- ❑ “AT-GS980MX/52PSm Switch” on page 27

AT-GS980MX/10HSm Switch

The front and rear panels on the AT-GS980MX/10HSm Switch are shown in Figure 1.

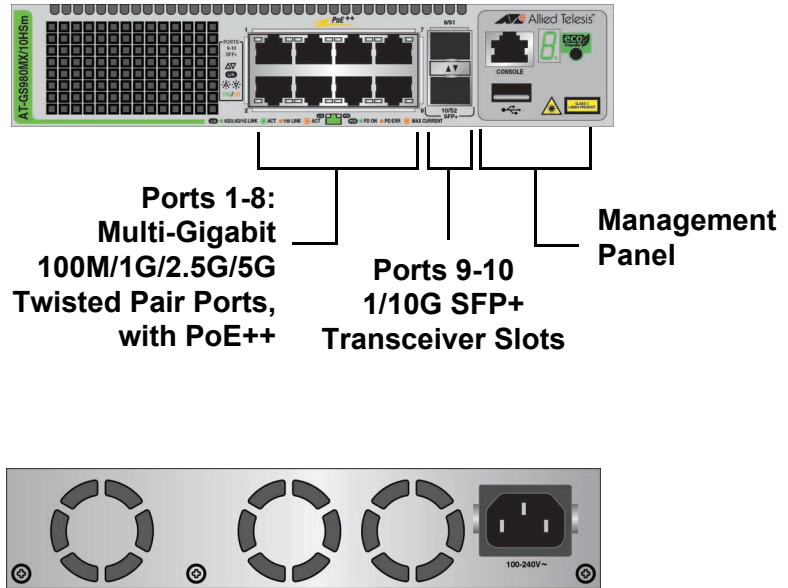


Figure 1. .AT-GS980MX/10HSm Switch

AT-GS980MX/18HSm Switch

The front and rear panels on the AT-GS980MX/18HSm Switch are shown in Figure 2.

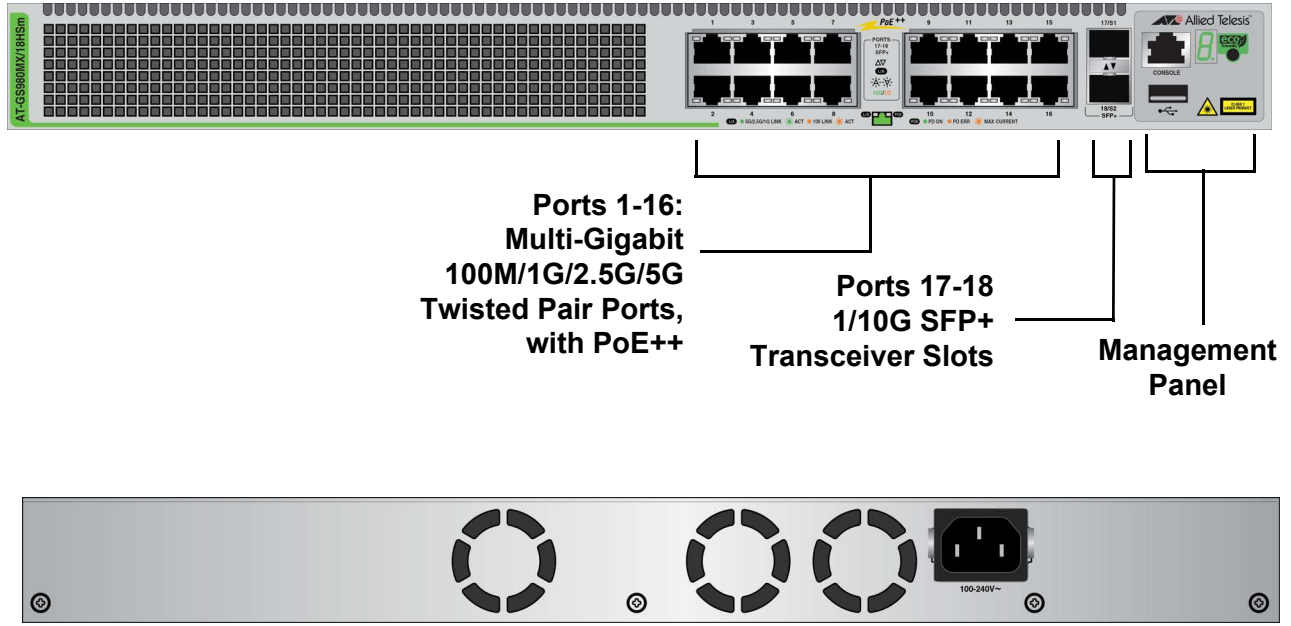


Figure 2. AT-GS980MX/18HSm Switch

AT-GS980MX/28 Switch

The front and rear panels on the AT-GS980MX/28 Switch are shown in Figure 3.

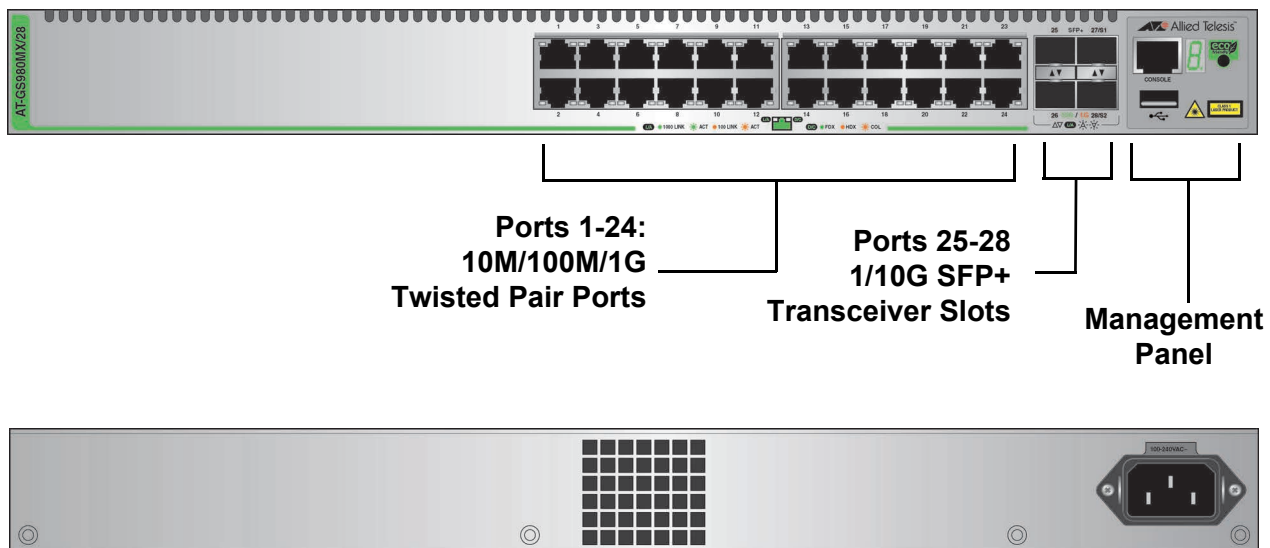


Figure 3. AT-GS980MX/28 Switch

AT-GS980MX/28PSm Switch

The front and rear panels on the AT-GS980MX/28PSm Switch are shown in Figure 4.

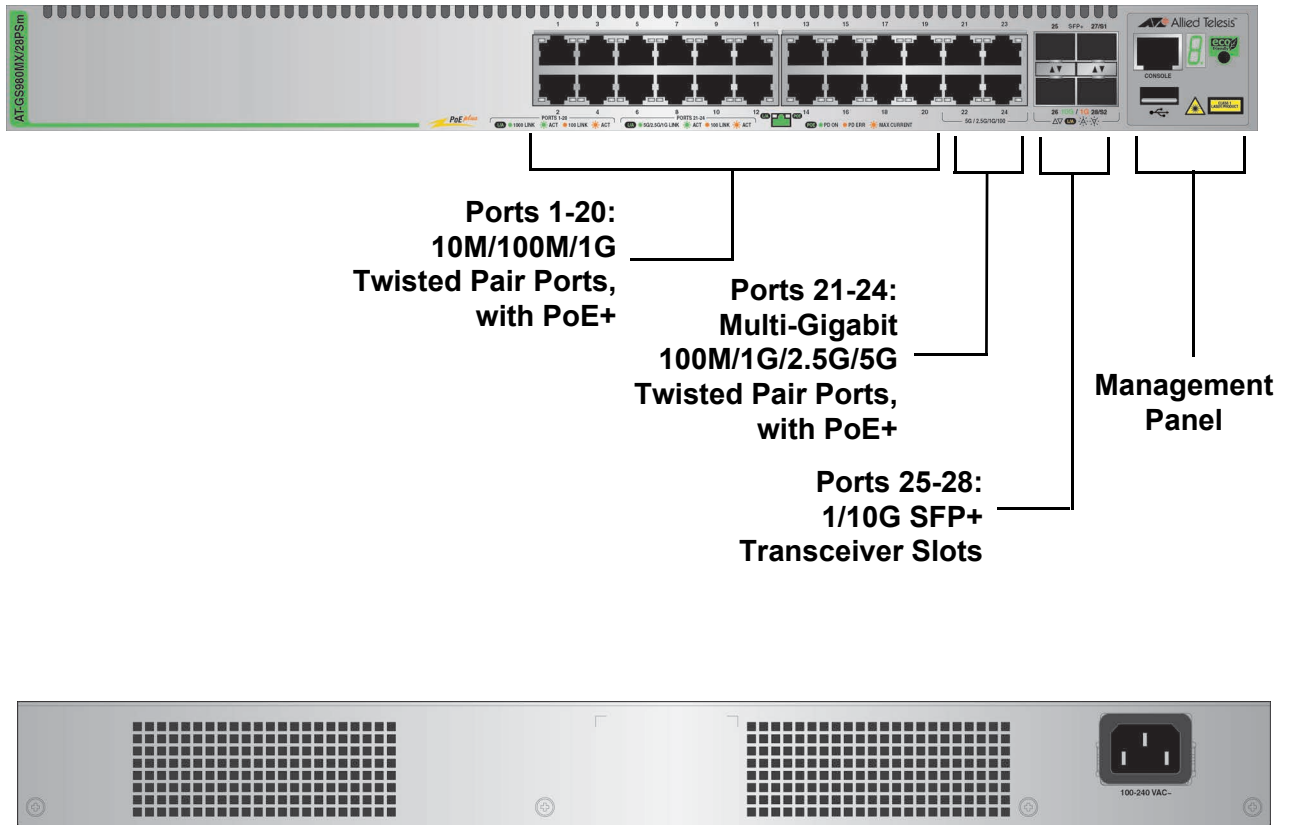


Figure 4. AT-GS980MX/28PSm Switch

AT-GS980MX/52 Switch

The front and rear panels on the AT-GS980MX/52 Switch are shown in Figure 5.

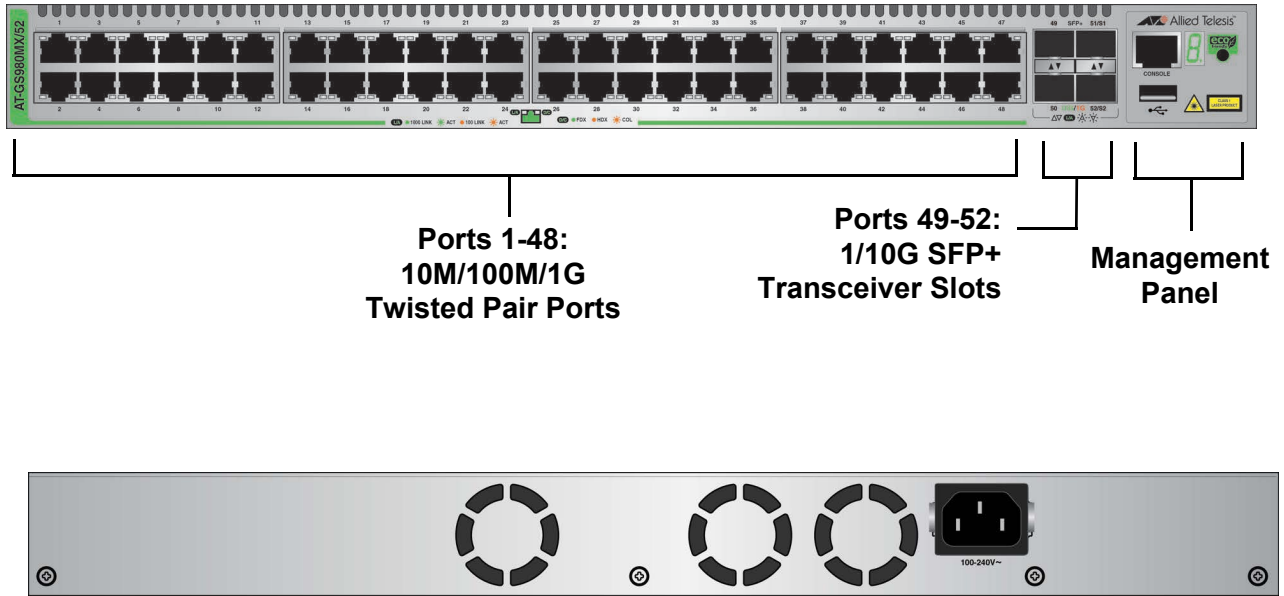


Figure 5. AT-GS980MX/52 Switch

AT-GS980MX/52PSm Switch

The front and rear panels on the AT-GS980MX/52PSm Switch are shown in Figure 6.

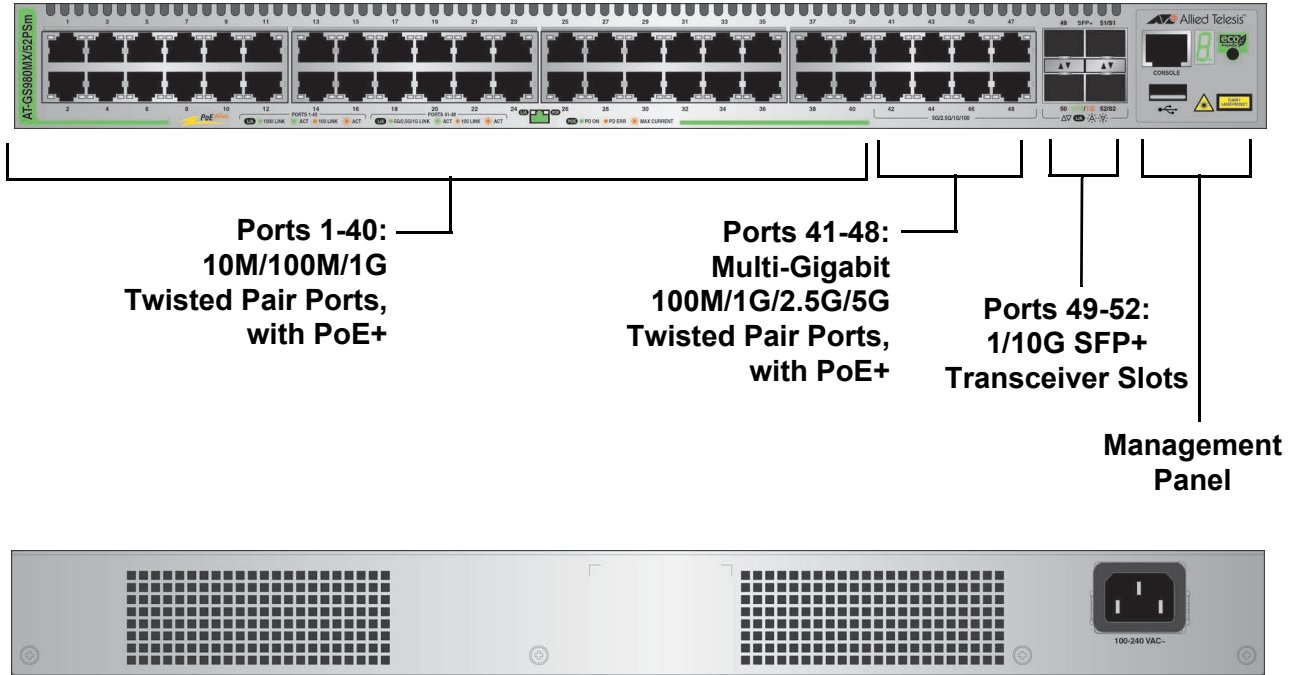


Figure 6. AT-GS980MX/52PSm Switch

Chapter 2

Hardware Features

This chapter contains the following sections:

- “Hardware Features” on page 30
- “Twisted Pair Ports” on page 33
- “Power Over Ethernet” on page 38
- “SFP+ Transceiver Ports” on page 43
- “Management Panel” on page 45
- “VCStack Feature” on page 49
- “Power Supply” on page 50
- “Software and Hardware Releases” on page 51

Hardware Features

The products in the Allied Telesis GS980MX Series are stackable Gigabit and Multi-Gigabit, Layer 3 Lite Ethernet switches. The following sections briefly list the hardware features:

Twisted Pair Ports

The switches in Table 1 support Multi-Gigabit 100M/1G/2.5G/5G twisted pair ports.

Table 1. 100M/1G/2.5G/5G Twisted Pair Ports

Switches	100M/1G/2.5G/5G Ports
AT-GS980MX/10HSm	1 to 8
AT-GS980MX/18HSm	1 to 16
AT-GS980MX/28PSm	21 to 24
AT-GS980MX/52PSm	41 to 48

The switches in Table 2 support 10M/100M/1G twisted pair ports.

Table 2. 10M/100M/1G Twisted Pair Ports

Switches	10M/100M/1G Ports
AT-GS980MX/28	1 to 24
AT-GS980MX/28PSm	1 to 20
AT-GS980MX/52	1 to 48
AT-GS980MX/52PSm	1 to 40

Common features of the twisted pair ports include:

- 100 meters (328 feet) maximum operating distance per port
- Auto-Negotiation for speed
- Half- or full duplex mode at 10/100M
- Full-duplex mode at 1G and higher speeds
- Auto-MDI/MDI-X at 10M/100M and higher speeds
- Port Link/Activity (L/A) and Duplex/Collision (D/C) LEDs

For further details, refer to “Twisted Pair Ports” on page 33.

Power Over Ethernet

The switches in Table 3 support PoE++ on the twisted pair ports.

Table 3. PoE++ Twisted Pair Ports

Switches	PoE++ Ports
AT-GS980MX/10HSm	1 to 8
AT-GS980MX/18HSm	1 to 16

The switches in Table 4 support PoE+ on the twisted pair ports.

Table 4. PoE+ Twisted Pair Ports

Switches	PoE+ Ports
AT-GS980MX/28PSm	1 to 24
AT-GS980MX/52PSm	1 to 48

For further details, refer to “Power Over Ethernet” on page 38.

SFP Transceiver Ports

The switches in the GS980MX Series have either two or four slots for 1G SFP or 10G SFP+ transceivers. Examples of 1G SFP transceivers include:

- ❑ SPSX and LR short or long distance transceivers using multi-mode or single mode fiber optic cable.
- ❑ SPEX transceivers with a maximum distance of two kilometers with multi-mode fiber optic cable.
- ❑ SPBD10 bidirectional transceivers for single mode fiber optic cable.

Examples of 10G SFP+ transceivers include:

- ❑ SP10TM transceiver with RJ-45 connector for links up to 20 meters at 10G with Category 6a or better twisted pair cable, or 100 meters at 1G.
- ❑ SP10SR, LR, and ZR series of short or long distance transceivers using multi-mode or single mode fiber optic cable.
- ❑ SP10TW series of direct attach cables in lengths of 1 meter and 3 meters.

Note

Industrial (-40 to 85° C) and extended (-40 to 105° C) temperature transceivers are available.

Note

SFP and SFP+ transceivers are purchased separately. For a current list of supported transceiver modules, refer to the *GS980MX Series Data Sheet*.

The SFP+ transceiver slots have the following restrictions:

- The transceiver slots do not support 100M transceivers.
- The transceiver slots support full-duplex mode only.

LEDs

The port LEDs are:

- Link/activity and PoE status LEDs on the twisted pair ports on PoE switches
- Link/activity and duplex mode LEDs on the twisted pair ports on non-PoE switches
- Link/activity LEDs on the SFP+ transceiver slots
- Switch ID number LED
- eco-friendly button turns off the LEDs to conserve electricity

Installation Options

The installation options are:

- Desk or tabletop
- 19-inch equipment rack
- Wooden or concrete wall

Management Software and Interfaces

The management software and interfaces are:

- AlliedWare Plus Management Software
- Local CLI management through the Console port
- Remote Telnet or Secure Shell CLI management
- Web-based graphical user interface
- SNMPv1, v2c, and v3
- Autonomous Management Framework™ Plus (AMF Plus)
- Vista Manager EX compatible
- AMF Security compatible
- IPFIX for exporting IP flow data

Twisted Pair Ports

The specifications of the twisted pair ports on the GS980MX Series are described in the following sections.

Speeds The speeds of the twisted pair ports are listed in Table 5.

Table 5. Twisted Pair Port Speeds

Switch	Ports	Speeds
AT-GS980MX/10HSm	1 - 8	100M/1G/2.5G/5G
AT-GS980MX/18HSm	1 - 16	100M/1G/2.5G/5G
AT-GS980MX/28	1 - 24	10M/100M/1G
AT-GS980MX/28PSm	1 - 20	10M/100M/1G
	21 - 24	100M/1G/2.5G/5G
AT-GS980MX/52	1 - 48	10M/100M/1G
AT-GS980MX/52PSm	1 - 40	10M/100M/1G
	41 - 48	100M/1G/2.5G/5G

Duplex Mode The twisted pair ports can operate in either half- or full-duplex mode at 10M or 100M, and full-duplex only at higher speeds.

The duplex mode of a port operating at 10M or 100M can be set manually using the management software or automatically with Auto-Negotiation (IEEE 802.3u), the default setting.

The speed and duplex mode settings of a port can be set independently of each other. For example in the case of a 10M/100M/1G port, it can be configured such that its speed is set manually while its duplex mode is established through Auto-Negotiation.

Note

Switch ports default to half-duplex mode when connected to 10M or 100M network devices that do not support Auto-Negotiation. If a network device supports full-duplex only, a duplex mode mismatch can occur, resulting in poor network performance. To prevent this, disable Auto-Negotiation and set the duplex mode manually on ports connected to 10M or 100M devices that support full-duplex only.

Wiring Configuration

The wiring configuration of a port operating at 10M or 100M can be MDI or MDI-X. The wiring configurations of a switch port and a network device connected with straight-through twisted pair cabling must be opposite, such that one device is using MDI and the other MDI-X. For example, a switch port must be set to MDI-X if it is connected to a network device set to MDI.

The wiring configurations of the ports can be set manually or automatically by the switch with auto-MDI/MDI-X (IEEE 802.3ab-compliant). This feature enables the switch to automatically negotiate with network devices to establish their proper settings.

The MDI and MDI-X settings do not apply when ports are operating at speeds of 1G or higher.

Cable Requirements

The minimum twisted pair cable requirements for various speeds are listed here:

- ❑ 10/100M: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.
- ❑ 1/2.5/5G: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.

Port Pinouts

Refer to Table 43 on page 224 for the port pinouts of the twisted pair ports.

LEDs

The twisted pair ports have two LEDs. The LEDs on switches that support PoE are link/activity (L/A) and PoE (PoE). Refer to Figure 7.

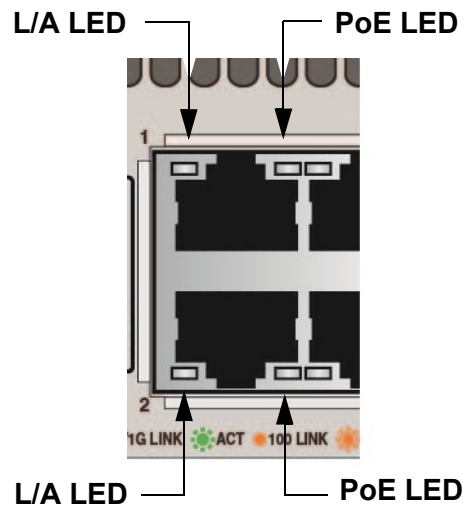


Figure 7. LEDs on Twisted Pair Ports on PoE GS980MX Switches

The LEDs on twisted pair ports on switches that are non-PoE are link/activity (L/A) and duplex mode/collisions (D/C). Refer to Figure 8.

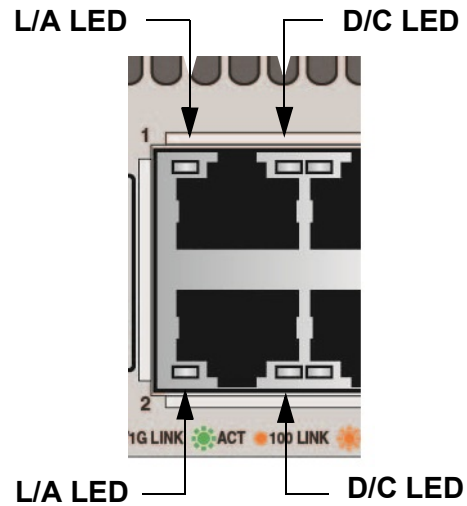


Figure 8. LEDs on Twisted Pair Ports on non-PoE GS980MX Switches

The following tables define the LED states. Table 6 defines the states of the L/A LEDs on the 10M/100M/1G twisted pair ports on these switches:

- ❑ AT-GS980MX/28 Switch - ports 1 to 24
- ❑ AT-GS980MX/28PSm Switch - ports 1 to 20
- ❑ AT-GS980MX/52 Switch - ports 1 to 48
- ❑ AT-GS980MX/52PSm Switch - ports 1 to 40

Table 6. L/A LEDs on 10M/100M/1G Twisted Pair Ports

State	Description
Solid Green	The port has established a 1G link to a network device.
Flashing Green	The port is transmitting or receiving data at 1G.
Solid Amber	The port has established a 10M or 100M link to a network device.
Flashing Amber	The port is transmitting or receiving data at 10M or 100M.

Table 6. L/A LEDs on 10M/100M/1G Twisted Pair Ports (Continued)

State	Description
Off	Possible causes of this state are: <ul style="list-style-type: none"> - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 7 defines the states of the D/C LEDs on twisted pair ports on these non-PoE switches:

- AT-GS980MX/28
- AT-GS980MX/52

Table 7. D/C LEDs on Twisted Pair Ports on non-PoE Switches

State	Description
Solid Green	The port is operating in full-duplex mode.
Solid Amber	The port is operating in half-duplex mode.
Flashing Amber	The port is operating in half-duplex mode with collisions.

Table 8 defines the states of the L/A LEDs on the Multi-Gigabit twisted pair ports on these switches:

- AT-GS980MX/10HSm Switch - ports 1 to 8
- AT-GS980MX/18HSm Switch - ports 1 to 16
- AT-GS980MX/28PSm Switch - ports 21 to 24
- AT-GS980MX/52PSm Switch - ports 41 to 48

Table 8. L/A LEDs on Multi-Gigabit Twisted Pair Ports

State	Description
Solid Green	The port has established a 1/2.5/5G link to a network device.
Flashing Green	The port is transmitting or receiving data at 1/2.5/5G.
Solid Amber	The port has established a 100M link to a network device.

Table 8. L/A LEDs on Multi-Gigabit Twisted Pair Ports (Continued)

State	Description
Flashing Amber	The port is transmitting or receiving data at 100M.
Off	Possible causes of this state are: <ul style="list-style-type: none"> - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Table 9 defines the states of the PoE LEDs on the twisted pair ports on the following switches:

- AT-GS980MX/10HSm Switch
- AT-GS980MX/18HSm Switch
- AT-GS980MX/28PSm Switch
- AT-GS980MX/52PSm Switch

Table 9. PoE LEDs on Twisted Pair Ports

State	Description
Solid Green	PD On - The switch is delivering power to a powered device connected to the port.
Solid Amber	PD Error - The switch has shut down PoE on the port because of a fault condition.
Flashing Amber	PD Max Current - The switch has detected a powered device on the port but is not delivering power to it because doing so would exceed its available power budget.
Off	No PD - This LED state can result from the following conditions: <ul style="list-style-type: none"> - The port is not connected to a powered device or the device is powered off. - The port is disabled in the management software. - PoE is disabled on the port. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Power Over Ethernet

The following switches in the GS980MX Series support PoE on their twisted pair ports:

- ❑ AT-GS980MX/10HSm
- ❑ AT-GS980MX/18HSm
- ❑ AT-GS980MX/28PSm
- ❑ AT-GS980MX/52PSm

PoE enables the switches to supply DC power to network devices over the same twisted pair cables that carry the network traffic.

PoE can make it easier to install networks. The selection of a location for a network device can be limited by whether there is a power source nearby. This often limits equipment placement or requires the added time and cost of having additional electrical sources installed. With PoE, you can install PoE-compatible devices wherever they are needed without having to worry about whether there are power sources nearby.

A device that provides PoE to network devices is referred to as *power sourcing equipment* (PSE). It functions as a central power source for other network devices. The GS980MX PoE Switches are power sourcing equipment.

Devices that receive their power from a PSE are called *powered devices* (PD). Examples include wireless access points, IP telephones, webcams, and even other Ethernet switches.

The GS980MX PoE Switches can automatically determine whether devices connected to their ports are powered devices. Ports that are connected to network nodes that are not powered devices (that is, devices that receive their power from another power source) function as regular Ethernet ports, without PoE. The PoE feature remains activated on the ports but no power is delivered to the devices.

PoE++ Switches

Table 10 lists the switches that support PoE++.

Table 10. PoE++ Switches

PoE++ Switches	PoE++ Ports	PoE Maximum Power Budget
AT-GS980MX/10HSm	1 to 8	500W
AT-GS980MX/18HSm	1 to 16	720W

Table 11 lists the PoE++ specifications.

Table 11. PoE++ Specifications

Specification	Description
Powered device classes	0 to 8
Supported PoE standards	<ul style="list-style-type: none"> – PoE (15.4 watts maximum) – PoE+ (30 watts maximum) – PoE++ (60 watts maximum) – PoE++ (90 watts maximum)
Mode wiring	<ul style="list-style-type: none"> – Classes 0-4 (Type 1 or 2 up to 30W): Mode A (MDI-x) – Classes 5-6 (Type 3 up to 45W/60W): Mode A (MDI-x) plus Mode B (MDI-x, MDI) – Classes 7-8 (Type 4 up to 75W/90W): Mode A (MDI-x) plus Mode B (MDI-x, MDI)

PoE+ Switches

Table 12 lists the switches that support PoE+.

Table 12. PoE+ Switches

PoE+ Switches	PoE+ Ports	PoE Maximum Power Budget
AT-GS980MX/28PSm	1 to 24	370W
AT-GS980MX/52PSm	1 to 48	370W

Table 13 lists the PoE+ specifications.

Table 13. PoE+ Specifications

Feature	Description
Powered device classes	0 to 4
Supported PoE standards	<ul style="list-style-type: none"> – PoE (15.4 watts maximum) – PoE+ (30 watts maximum)
Mode wiring	Classes 0-4 (Type 1 or 2 up to 30W): Mode A (MDI-x)

Powered Device Classes

Powered devices are grouped into the nine classes listed in Table 14. The classes are based on the power requirements of the devices. The AT-GS980MX/10HSm and AT-GS980MX/18HSm Switches support classes 0 to 8. The AT-GS980MX/28PSm and AT-GS980MX/52PSm Switches support classes 0 to 4.

Table 14. IEEE Powered Device Classes

Class	Maximum Power Output from a Switch Port	PD Power Range
0	15.4W	0.44W to 13.0W
1	4.0W	0.44W to 3.84W
2	7.0W	3.84W to 6.49W
3	15.4W	6.49W to 13.0W
4	30.0W	13.0W to 25.5W
5	45.0W	40.0W (4-pair)
6	60.0W	51.3W (4-pair)
7	75.0W	62.0W (4-pair)
8	90.0W	71.3W (4-pair)



Caution

When hot-swapping PoE PD Classes 5-8, the IC device can be damaged when the Ethernet cable is removed while supplying PoE power. To avoid damage, disable the port with the CLI or power off the unit before removing the cable. **E133**

Power Budgets

Table 15 lists the PoE power budgets of the switches:

Table 15. PoE Power Budgets

Switch	PoE Power Budgets
AT-GS980MX/10HSm	500W
AT-GS980MX/18HSm	720W
AT-GS980MX/28PSm	370W
AT-GS980MX/52PSm	370W

The number of powered devices the switches can support at one time will depend on their power requirements. For example, under normal operating conditions, the AT-GS980MX/28PSm and AT-GS980MX/52PSm Switches can support up to 12 Class 4 powered devices with the maximum 25.5W. As another example, the AT-GS980MX/10HSm Switch can support up to eight Class 6 powered devices with the maximum 51.3.5W or up to five Class 8 powered devices with the maximum of 71.3W.

Port Prioritization

The power requirements of the PoE devices determine the maximum number of devices the switch can support at one time. So long as the total power requirements of the power devices is less than the power budget of the switch, the switch can supply power to all the devices. But if the total power requirements exceed the power budget, the switch denies power to one or more ports using a mechanism referred to as port prioritization.

To determine whether the power requirements of the PoE devices you plan to connect to the switch exceed its power budget, refer to their documentation for their power requirements and add the requirements together. The switch should be able to power all the devices simultaneously as long as the total is below its power budget. If the total exceeds the available power budget, you should consider reducing the number of PoE devices so that all of the devices receive power. Otherwise, the switch powers a subset of the devices, based on port prioritization.

There are three priority levels:

- Critical
- High
- Low

Ports set to the Critical level, the highest priority level, are guaranteed power before any of the ports assigned to the other two priority levels. Ports assigned to the other priority levels receive power only if all the Critical ports are receiving power. Ports that are connected to your most critical powered devices must be assigned to this level. If there is not enough power to support all the ports set to the Critical priority level, power is provided to the ports based on port number, in ascending order.

The High level is the second highest level. Ports set to this level receive power only if all the ports set to the Critical level are already receiving power. If there is not enough power to support all of the ports set to the High priority level, power is provided to the ports based on port number, in ascending order.

The lowest priority level is Low. This is the default setting. Ports set to this level only receive power if all of the ports assigned to the other two levels are already receiving power. As with the other levels, if there is not enough power to support all of the ports set to the Low priority level, power is provided to the ports based on port number, in ascending order.

Power allocation is dynamic. Ports supplying power to powered devices can cease power transmission if the switch power budget is at maximum usage and new powered devices, connected to ports with higher priorities become active.

Wiring Implementation

The IEEE 802.3af standard defines two methods for delivering DC power over twisted pair cable by a switch to powered devices. These methods are known as Modes A and B, and identify the individual wires that carry the DC power within the cable from the switch to powered devices.

Twisted pair cabling typically consists of eight wires. With 100Base-TX devices, the wires connected to pins 1, 2, 3, and 6 on the RJ-45 connectors carry the network traffic while the wires connected to pins 4, 5, 7, and 8 are unused. At higher speeds, all eight wires are used to carry network data.

It takes four wires to deliver DC power to a powered device. With Mode A, power is delivered on pins 1, 2, 3, and 6. These are the same pins in 10Base-T and 100Base-TX devices that carry the network data. With Mode B, power is provided over the spare wires.

The AT-GS980MX/28PSm and AT-GS980MX/52PSm Switches support powered device Classes 0 to 4 up to 30W, using Mode A.

The wiring modes for the AT-GS980MX/10HSm and AT-GS980MX/18HSm Switches are as follows:

- ❑ Classes 0-4 (Type 1 or 2 up to 30W): Mode A (MDI-x)
- ❑ Classes 5-6 (Type 3 up to 45W/60W): Mode A (MDI-x) plus Mode B (MDI-x, MDI)
- ❑ Classes 7-8 (Type 4 up to 75W/90W): Mode A (MDI-x) plus Mode B (MDI-x, MDI)

Powered devices in classes 0 to 4 that comply with the IEEE 802.3af standard are required to support both Modes A and B. Legacy devices that do not comply with the standard will work with the switch if they are powered on pins 1, 2, 3, and 6.

SFP+ Transceiver Ports

1/10G SFP+ Transceivers

Table 16 list the ports on the switches that support 1/10G SFP+ transceivers.

Table 16. 1/10G SFP+ Transceiver Ports

Switch	1/10 G Transceiver Ports
AT-GS980MX/10HSm	9 and 10
AT-GS980MX/18HSm	17 and 18
AT-GS980MX/28	25 to 28
AT-GS980MX/28PSm	25 to 28
AT-GS980MX/52	49 to 52
AT-GS980MX/52PSm	49 to 52

See “SFP Transceiver Ports” on page 31 for a description and guidelines of the SFP+ transceivers.

Note

SFP+ transceivers are purchased separately. For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

LEDs

Each SFP+ transceiver slot has one link/activity LED. The LEDs are located between the slots. Refer to Figure 9.

Top Transceiver Slot LED Bottom Transceiver Slot LED

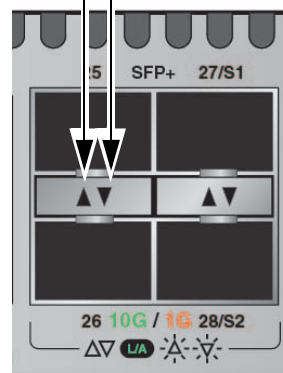


Figure 9. Link/Activity LEDs for the 1/10G SFP+ Transceiver Slots

The LEDs display link status and activity. The LED states are described in Table 17.

Table 17. Link/Activity LEDs for the 1/10G SFP+ Transceiver Slots

State	Description
Solid green	The transceiver has established a 10G link to a network device.
Flashing green	The transceiver is transmitting or receiving data in 10G.
Solid amber	The transceiver has established a 1G link to a network device.
Flashing Amber	The transceiver is transmitting or receiving data in 1G.
Off	Possible causes of this state are: <ul style="list-style-type: none"> - The slot is empty. - The transceiver has not established a link to a network device. - A non-supported module is installed. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button.

Management Panel

Figure 10 identifies the components on the management panel.

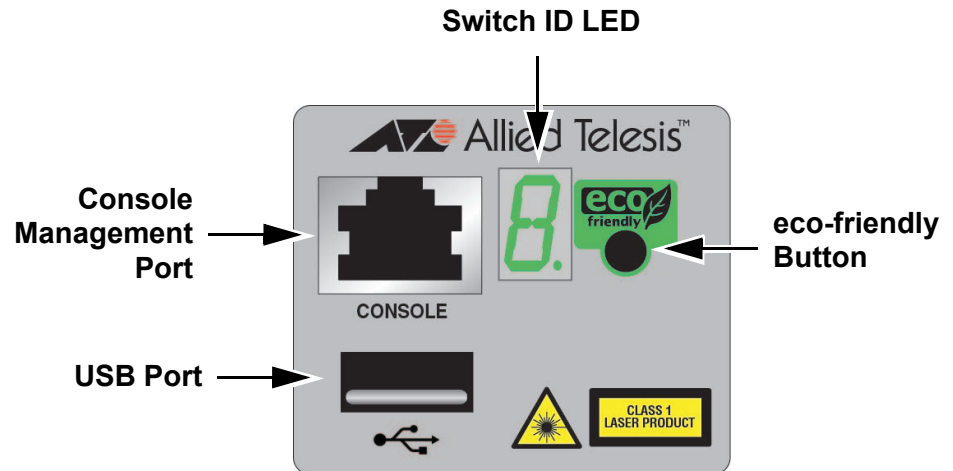


Figure 10. Management Panel

Eco-friendly Button

The eco-friendly button on the management panel is used to toggle the port LEDs on or off. You can turn off the LEDs to conserve electricity when you are not monitoring the device. You can also toggle the LEDs with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode of the command line interface of the AlliedWare Plus management software.

The switch is operating in a low power mode when the LEDs are turned off. Operating the switch in the low power mode does not interfere with the network operations of the device.

The management software on the switch has a command that blinks the LEDs so that you can quickly and easily identify a specific unit among the devices in an equipment rack. It is the FINDME command. The command works on the switch even if you turned off the LEDs with the eco-friendly button or NO ECOFRIENDLY LED command.

Note

Before checking or troubleshooting the network connections to the ports on the switch, you should always check that the LEDs are on by either pressing the eco-friendly button or issuing the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the Global Configuration mode in the command line interface.

Switch ID LED

Table 18 describes the possible states of the switch ID LED when the switch is not operating in the eco-friendly mode.

Table 18. Switch ID LED Definitions




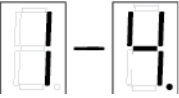


State	Description
	The switch is booting up.
	The switch is experiencing a fault condition. See below.
	The switch is operating as a standalone unit. It's ID number is 1, unless it was previously part of a VCStack.
	The switch is operating as part of a VCStack. The ID LED displays the switch's ID number. The range is 1 to 4 for a stack of GS980MX Switches.
	A flashing dot in the lower right corner indicates the switch is accessing its USB memory.
	The switch is not powered on.

Table 19 describes the states of the ID LED when the switch is operating in the eco-friendly mode.

Table 19. Switch ID LED Definitions in the Eco-friendly Mode



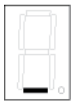
State	Description
	The switch is operating as a standalone unit.
	The switch is operating as the master switch of a VCStack.

Table 19. Switch ID LED Definitions in the Eco-friendly Mode (Continued)

State	Description
	The switch is a member switch of a VCStack.

The ID LED displays “F” for fault if or both one of the following conditions occurs:

- A cooling fan has failed.
- The switch is overheating and may shut down.

Note

You can use the Simple Network Management Protocol (SNMP) or the command line management interface to determine the type of fault or faults.

USB Port

The USB port on the management panel is used for the following functions:

- Store configuration files on flash drives.
- Restore configuration files to switches that have lost or corrupted settings.
- Configure replacement units by downloading configuration files from a flash drive.
- Update the AlliedWare Plus management firmware.

The port is USB 2.0-compatible.

Console Port

The Console port is RS232 serial management port with an RJ-45 style connector. You use the port to access the AlliedWare Plus management software on the switch to configure the feature settings or monitor status or statistics. This type of management is commonly referred to as local management because you have to be at the physical location of the switch. The switch does not need an IP address for local management.

To establish a local management session with the switch, use a management cable, such as the AT-VT-Kit3 management cable, to connect a terminal or a personal computer with a terminal emulation program to the Console port.

The Console port has the following settings:

- Default baud rate: 9,600 bps (range is 9,600 to 115,200 bps)
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Note

These settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulation program.

Note

For further instructions, refer to “VT-Kit3 Local Management Cable” on page 117 and “Starting a Local Management Session” on page 118.

VCStack Feature

You can use the switches as standalone units or join up to four units together with the VCStack feature. The switches of a VCStack act as a single virtual unit. They synchronize their actions so that switching operations (such as spanning tree protocols, virtual LANs, and static port trunks) span across all of the units and ports. Two advantages of stacks are:

- ❑ You can manage multiple units simultaneously, which can simplify network management.
- ❑ You have more flexibility in how you configure some of the features. For instance, a static port trunk on a standalone switch can consist of ports from the same switch. In contrast, a static trunk on a stack can have ports from different switches in the same stack.

Note

For further information, refer to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Power Supply

Pre-Installed AC Power Supply

The GS980MX Switches come with one pre-installed AC power supply. Refer to Appendix A, “Technical Specifications” on page 215 for the input voltage ranges.



Warning

The power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. *GE* E3

Note

Power supplies are not field-replaceable.

Software and Hardware Releases

Table 20 lists the software and hardware releases for the AlliedWare Plus operating software and GS980MX Switches.

Table 20. Software and Hardware Releases

Software Version	Hardware	VCStack
v5.4.8-2	AT-GS980MX/28PSm switch AT-GS980MX/28 switch	Allows stacks of up to four switches using the SFP/SFP+ transceiver ports for the stack trunk.
v5.4.9-2	Adds the following switches: AT-GS980MX/52PSm switch AT-GS980MX/52 switch	Allows stacks of up to four switches using the SFP/SFP+ transceiver ports for the stack trunk. Adds 10M/100M/1G twisted pair ports.
v5.5.0-2	Adds the following switch: AT-GS980MX/10HSm switch	Allows stacks of up to four switches using the SFP/SFP+ transceiver ports or the Multi-Gigabit 1/2.5/5G ports for the stack trunk.
v5.5.1-1.2	Adds the following switch: AT-GS980MX/18HSm switch	Allows stacks of up to four switches using the SFP/SFP+ transceiver ports or the 1/2.5/5G ports for the stack trunk.

Chapter 3


Beginning the Installation

The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 54
- “Choosing a Site for the Switch” on page 59
- “Unpacking the AT-GS980MX/10HSm Switch” on page 61
- “Unpacking the AT-GS980MX/18HSm Switch” on page 63
- “Unpacking the 28- and 52-Port GS980MX Switches” on page 64
- “Recording the Serial Number and MAC Address” on page 65

Reviewing Safety Precautions


Please review the following safety precautions before you begin to install the switches.

Important: Safety statements that have the  symbol are translated into multiple languages in the *Translated Safety Statements* document, which is available at www.alliedtelesis.com/translated-safety-statements.

Remarque: Les consignes de sécurité portant le symbole  sont traduites dans plusieurs langues dans le document *Translated Safety Statements*, disponible à l'adresse www.alliedtelesis.com/translated-safety-statements.



Warning

Class 1 Laser product.  L1



Warning

Laser Radiation.
Class 1M Laser product.



Warning

Do not stare into the laser beam.  L2




Warning

Do not look directly at the fiber optic ends or inspect the cable ends with an optical lens.  L6



Warning

To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the LAN cables.  E1

**Warning**

Do not work on equipment or cables during periods of lightning activity. ⚡ E2

**Warning**

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ E3

**Warning**

Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts. ⚡ E4

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. ⚡ E5

**Caution**

Air vents must not be blocked and must have free access to the room ambient air for cooling. ⚡ E6

**Warning**

Operating Temperatures. This product is designed for a maximum ambient temperature of 50° C. ⚡ E52

Note

All Countries: Install product in accordance with local and National Electrical Codes. ⚡ E8

**Warning**

Only trained and qualified personnel are allowed to install or replace this equipment. ⚡ E14



Caution

Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. *⌘* E21



Caution

Risk of explosion if battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Attention: Le remplacement de la batterie par une batterie de type incorrect peut provoquer un danger d'explosion. La remplacer uniquement par une batterie du même type ou de type équivalent recommandée par le constructeur. Les batteries doivent être éliminées conformément aux instructions du constructeur. *⌘* E22



Warning

Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading. *⌘* E25



Warning

The chassis may be heavy and awkward to lift. Allied Telesis recommends that you get assistance when mounting the chassis in an equipment rack. *⌘* E28

Note

Use dedicated power circuits or power conditioners to supply reliable electrical power to the device. *⌘* E27




Warning

This unit might have more than one power cord. To reduce the risk of electric shock, disconnect all power cords before servicing the unit. *⌘* E30


Note

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

 E35




Caution

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.  E36




Warning

Reliable earthing of rack-mounted equipment must be maintained. Particular attention must be given to supply connections other than direct connections to the branch circuits (e.g., use of power strips).  E37




Warning

To reduce the risk of electric shock, the PoE ports on this product must not connect to cabling that is routed outside the building where this device is located.  E40




Warning

This product may have multiple AC power cords installed. To de-energize this equipment, disconnect all power cords from the device.  E41




Caution

An Energy Hazard exists inside this equipment. Do not insert hands or tools into open chassis ports or plugs.  E44




Warning

This equipment must be installed in a Restricted Access location.  E45




Caution

The unit does not contain serviceable components. Please return damaged units for servicing.  E42



Warning

The temperature of an operational SFP or SFP+ transceiver may exceed 70° C (158° F). Exercise caution when removing or handling a transceiver with unprotected hands.  E43

Choosing a Site for the Switch

Please observe the following requirements and guidelines when choosing a site for the switch:

- ❑ The switch must be installed in a Restricted Access Location.
- ❑ The switch does not require an enclosure when installed in most indoor environments.
- ❑ Before installing the switch in an equipment rack, check that the rack is safely secured so that it will not tip over. Devices in a rack should be installed starting at the bottom, with the heavier devices near the bottom of the rack.
- ❑ Before installing the switch on a table, check that the table is level and stable.
- ❑ The power outlets should be located near the switch and be easily accessible.
- ❑ The site should allow for easy access to the ports on the front of the switch, so that you can easily connect and disconnect cables, and view the port LEDs.
- ❑ The site should allow for adequate air flow around the unit and through the cooling vents on the front and rear panels. (The ventilation direction is from front to back.)
- ❑ The site must not expose the switch to moisture or water.
- ❑ The site must be a dust-free environment.
- ❑ The site must have dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- ❑ Copper cabling should not be exposed to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, or fluorescent fixtures.
- ❑ Switch ports are suitable for intra-building connections, or where non-exposed cabling is required.
- ❑ When installing the switch in environments vulnerable to shock, seismic movement, and/or high vibration, Allied Telesis recommends the following:
 - All cables connected to the switch should be properly strain relieved to prevent cable tension from damaging the interface connectors during vibration.
 - If you are installing the switch on a wall, apply threadlocking adhesive (e.g., Loctite) to the screws that attach the wall mount brackets to the switch and also to the screws that attach the wall mount brackets to the wall.

Enclosure Requirements

If the device will be installed in an enclosure, review these additional guidelines:

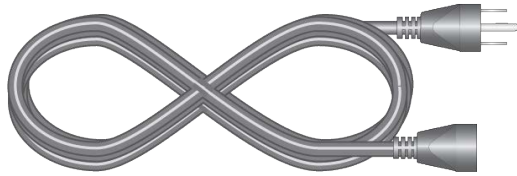
- ❑ The enclosure must be large enough for the switch and all other necessary equipment.
- ❑ Verify that the enclosure has adequate airflow to prevent overheating.
- ❑ The enclosure size must be determined by considering multiple factors, including the outside ambient temperature, total heat generated by the installed equipment, sealed or unsealed enclosure type, enclosure material, paint color, mounting method (wall, pole, ground, etc.), and sun exposure. The smaller the enclosure size, the higher the risk of the product overheating.
- ❑ The enclosure BTU/hour rating must be higher than the total BTU/hour values of equipment installed in the enclosure, over the expected operating temperature range. For the operating temperature range of the product, refer to Table 18 on page 87. For heat dissipation, refer to Table 21 on page 88.
- ❑ If you are installing the switch in a metal enclosure, the enclosure must be properly grounded to a protective earth ground following local electrical codes and the instructions in the manufacturer's installation guide.

Note

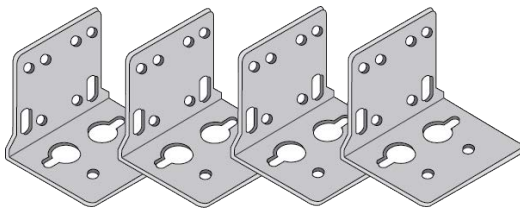
If the product overheats in an enclosure that was selected without taking into account the above factors, the warranty of the product might be voided. Consult Allied Telesis when assistance is needed.

Unpacking the AT-GS980MX/10HSm Switch

Figure 11 here and Figure 12 on page 62 list the items included with the AT-GS980MX/10HSm Switch.



One regional AC power cord

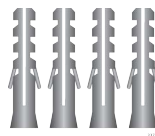


Four BRKT-J24 brackets for mounting the switch on a wall.



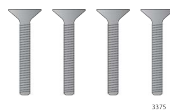
Sixteen screws for attaching the BRKT-J24 wall brackets to the switch.

Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)



Four anchors for concrete walls:

Length: 29.6mm (1.2 in.)
Diameter: 6.0mm (0.2 in.)

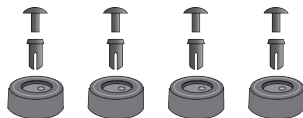


Four screws for wood or concrete walls:

Length: 32mm (1.3 in.)
Diameter: 4mm (0.2 in.)

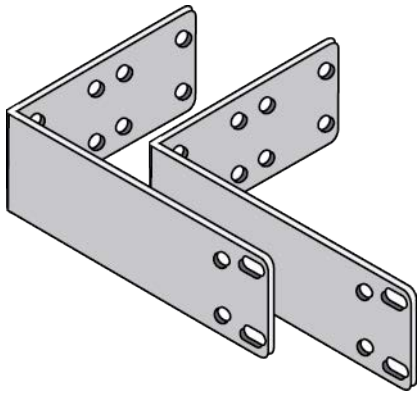


Power cord retaining clip

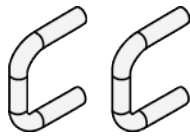


Four rubber bumper feet for table or desktop installation

Figure 11. AT-GS980MX/10HSm Switch Accessory Kit



Two RKMT-J14 brackets for installing the switch in an equipment rack



Two handles for the RKMT-J14 equipment rack brackets

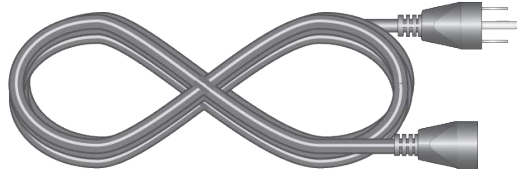


Four screws for attaching the handles to the RKMT-J14 equipment rack brackets:
Length: 6.0mm (0.2 in.)
Diameter: 3.0mm (0.1 in.)

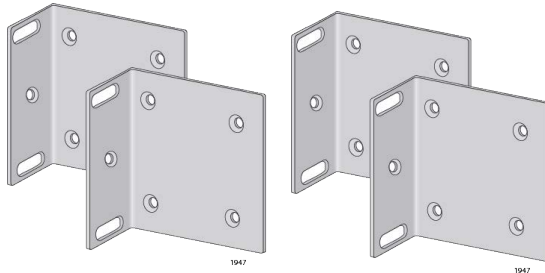
Figure 12. AT-GS980MX/10HSm Switch Accessory Kit (Continued)

Unpacking the AT-GS980MX/18HSm Switch

Figure 13 lists the items included with the AT-GS980MX/18HSm Switch.



One regional AC power cord



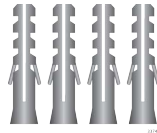
Four brackets for mounting the switch in an equipment rack or on a wall.



Sixteen screws for attaching the wall/equipment rack brackets to the switch.

Length: 6.0mm (0.2 in.)

Diameter: 4.0mm (0.2 in.)



Four anchors for concrete walls:

Length: 29.6mm (1.2 in.)

Diameter: 6.0mm (0.2 in.)



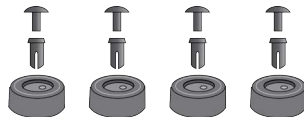
Four screws for wood or concrete walls:

Length: 32mm (1.3 in.)

Diameter: 4mm (0.2 in.)



Power cord retaining clip

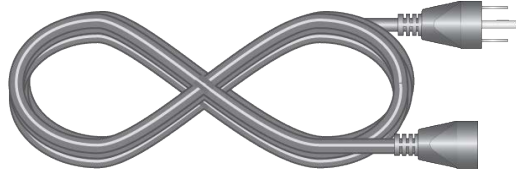


Four rubber bumper feet for table or desktop installation.

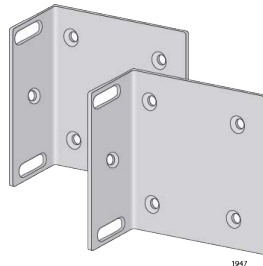
Figure 13. AT-GS980MX/18HSm Switch Accessory Kit

Unpacking the 28- and 52-Port GS980MX Switches

Figure 14 lists the items included with the 28- and 52-port GS980MX Switches.



One regional AC power cord



Two or four brackets, depending on the model, for mounting the switch in an equipment rack or on a wall.



Eight or sixteen screws, depending on model, for attaching the wall/equipment rack brackets:
Length: 6.0mm (0.2 in.)
Diameter: 4.0mm (0.2 in.)



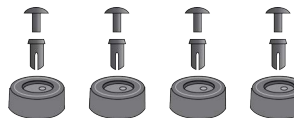
Two or four anchors for concrete walls:
Length: 29.6mm (1.2 in.)
Diameter: 6.0mm (0.2 in.)



Two or four screws for wood or concrete walls depending on model:
Length: 32mm (1.3 in.)
Diameter: 4mm (0.2 in.)



One power cord retaining clip

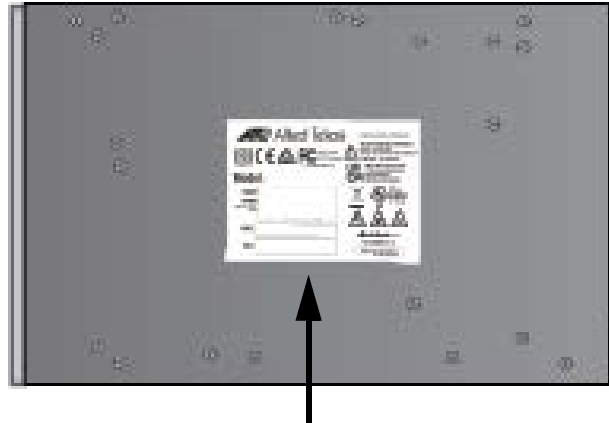


Four rubber bumper feet

Figure 14. 28- and 52-port Switches Accessory Kit Items

Recording the Serial Number and MAC Address

The serial number and MAC address of the switch are located on a label on the bottom panel. Refer to Figure 15. You should record the numbers for your records before installing the device.



**Serial number and MAC
address labels**

Figure 15. Serial Number and MAC Address Labels

Note

You can also view the serial number and MAC address of the switch with the management software.

Chapter 4

Installing the Switch on a Table

This chapter contains the instructions for installing the switch on a table or desktop.



Warning

Switches should not be stacked on a table or desktop. They could present a physical safety hazard if you need to move or replace switches. ⚡ E91



Warning

The switch is heavy. Always ask for assistance when moving or lifting the device so as to avoid injuring yourself or damaging the equipment.

The switch comes with four bumper feet in the accessory kit. The feet, which are reusable, are used when installing the switch on a table. If they are already assembled, disassemble them by removing the rivets and rivet housings from the bumper feet. Refer to Figure 16.

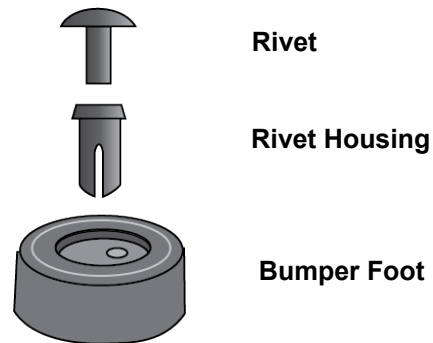


Figure 16. Parts of the Bumper Feet

The holes in the base of the switch for the bumper feet are shown in Figure 17.

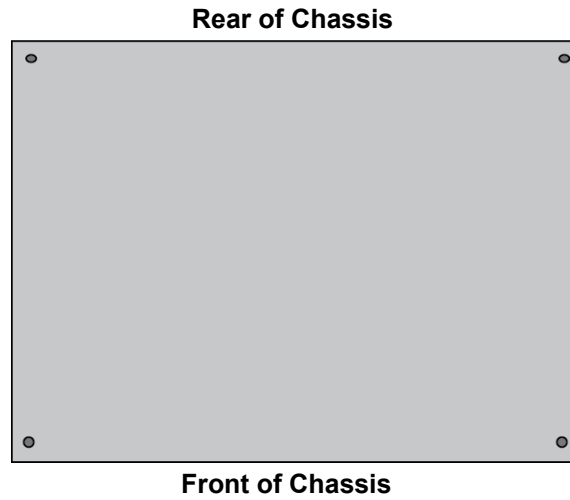


Figure 17. Holes for Bumper Feet

Note

The following procedure assumes that you have already reviewed the information and performed the procedures in Chapter 3, "Beginning the Installation" on page 53.

To install the switch on a table, perform the following procedure:

1. Place the switch upside down on a table.
2. Insert a rivet housing into a bumper foot. Refer to Figure 18.

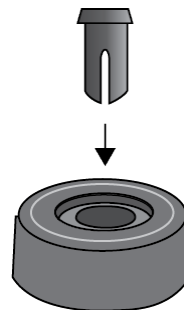


Figure 18. Inserting the Rivet Housing into the Bumper Foot

3. Place the bumper foot with rivet housing onto one of the holes in the base of the switch. Refer to Figure 19.

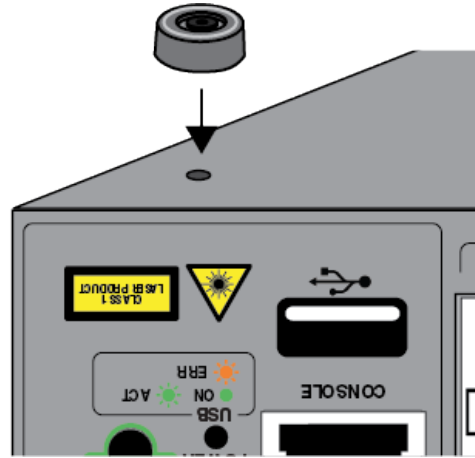


Figure 19. Placing the Bumper Foot on a Base Corner Hole

4. Insert the rivet to secure the bumper foot to the base. Refer to Figure 20.

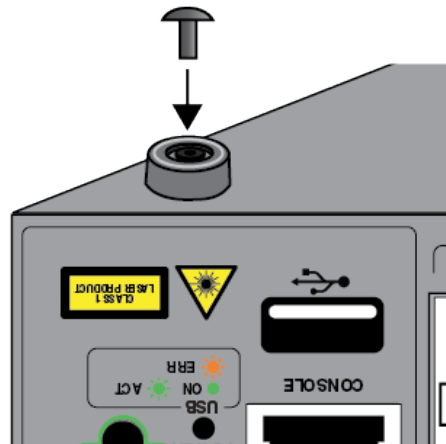


Figure 20. Inserting the Rivet into the Bumper Foot

5. Repeat steps 2 to 4 to install the remaining bumper feet.
6. Turn the switch over and place it on a flat, secure desk or table, leaving ample space around it for ventilation.
7. Do one of the following:
 - If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Chapter 5

Installing the Switch in an Equipment Rack

This chapter contains instructions for installing the switch in an equipment rack. This chapter contains the following section:

- ❑ “Overview of Installing the AT-GS980MX/10HSm Switch in an Equipment Rack” on page 72
- ❑ “Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J14 Brackets” on page 74
- ❑ “Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J15 Bracket” on page 79
- ❑ “Installing the 18-, 28-, and 52-port GS980MX Switches in an Equipment Rack” on page 84

Overview of Installing the AT-GS980MX/10HSm Switch in an Equipment Rack

You can install the AT-GS980MX/10HSm Switch in a 19-inch equipment rack two ways. One way is with the RKMT-J14 brackets that come with the switch. Refer to Figure 21.



Figure 21. AT-GS980MX/10HSm Switch and RKMT-J14 Brackets

For installation instructions, refer to “Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J14 Brackets” on page 74.

You can also install the switch in an equipment rack with the optional RKMT-J15 bracket. Refer to Figure 22.

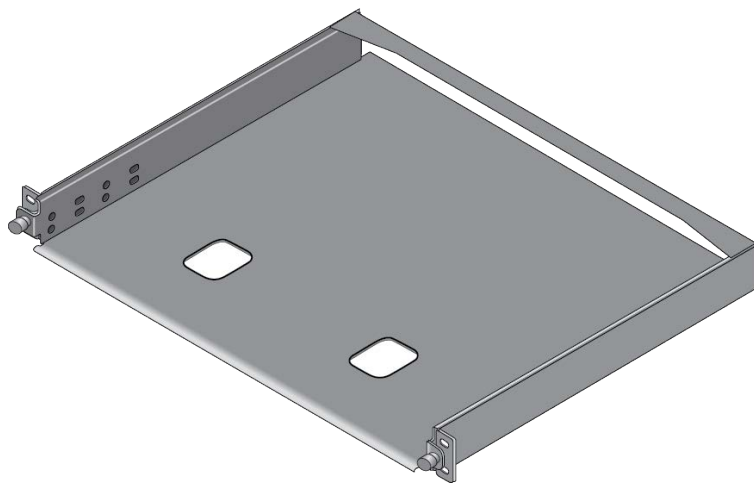


Figure 22. RKMT-J15 Bracket

**Caution**

Stability Hazard - The rack may tip over causing serious personal injury. Before extending the rack to the installation position, read the installation instructions. Do not put any load on the slide-rail mounted equipment in the installation position. Do not leave the slide-rail mounted equipment in the installation position. ⚡ **E134**

The bracket lets you install two AT-GS980MX/10HSm Switches side-by-side. Refer to Figure 23.



Figure 23. AT-GS980MX/10HSm Switches and RKMT-J15 Bracket

Note

The RKMT-J15 Bracket is purchased separately.

For installation instructions, refer to “Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J15 Bracket” on page 79.

Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J14 Brackets

This section contains the procedure for installing the AT-GS980MX/10HSm Switch in a standard 19-inch equipment rack, with the RKMT-J14 Brackets included with the switch.

Required Items

The following items are required to install the switch in an equipment rack with the RKMT-J14 Brackets:

- Two RKMT-J14 equipment rack brackets (included with the switch)
- Eight M4x6mm bracket screws (included with the switch)
- Four M3x6mm screws (included with the switch)
- Two bracket handles (included with the switch)
- Cross-head screwdriver (not provided)
- Four standard equipment rack screws (not provided)

Switch Orientations in the Equipment Rack

The switch has two sets of four screw holes on the left and right sides for attaching the RKMT-J14 Brackets. Refer to Figure 24.

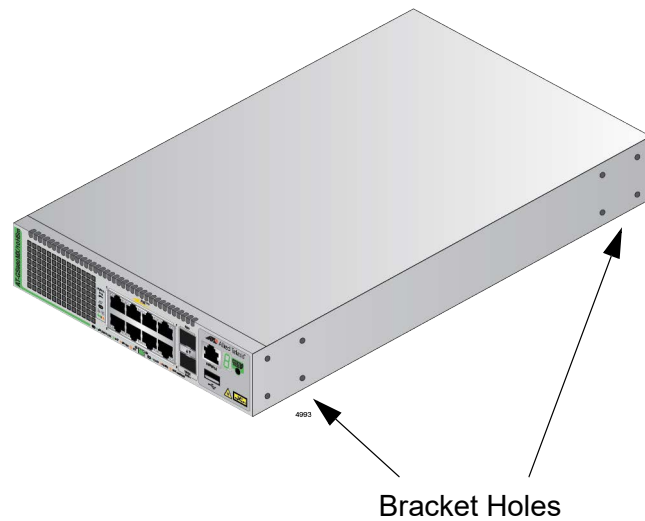


Figure 24. Bracket Holes

The brackets also have two sets of four holes. Refer to Figure 25 on page 75.

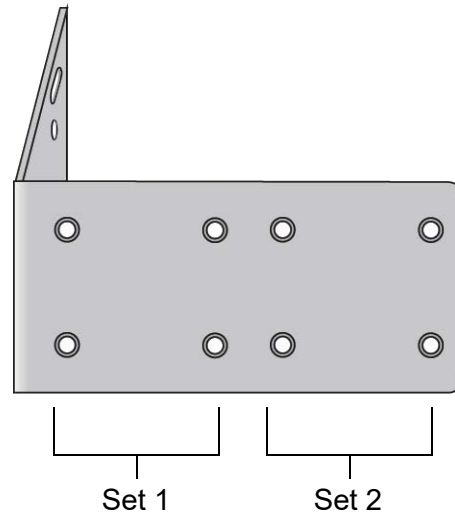


Figure 25. RKMT-J14 Bracket Holes

You can use the different sets of holes on the switch and brackets to install the switch in the equipment rack in a variety of orientations. You can install it with the front panel flush with, extending in front of, or recessed behind the front of the equipment rack. The illustrations in Figure 26 show the switch orientations with the front panel facing the front of the equipment rack.

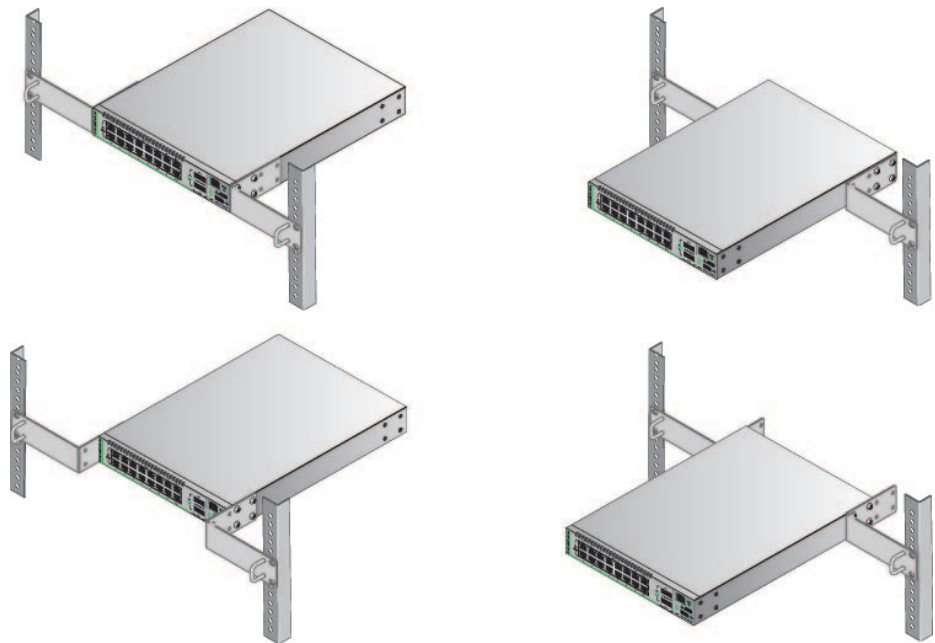


Figure 26. AT-GS980MX/10HSm Switch Positioned with the Front Panel Facing the Front of the Equipment Rack

You can also orient the AT-GS980MX/10HSm Switch with the rear panel facing the front of the equipment rack. Refer to Figure 27.

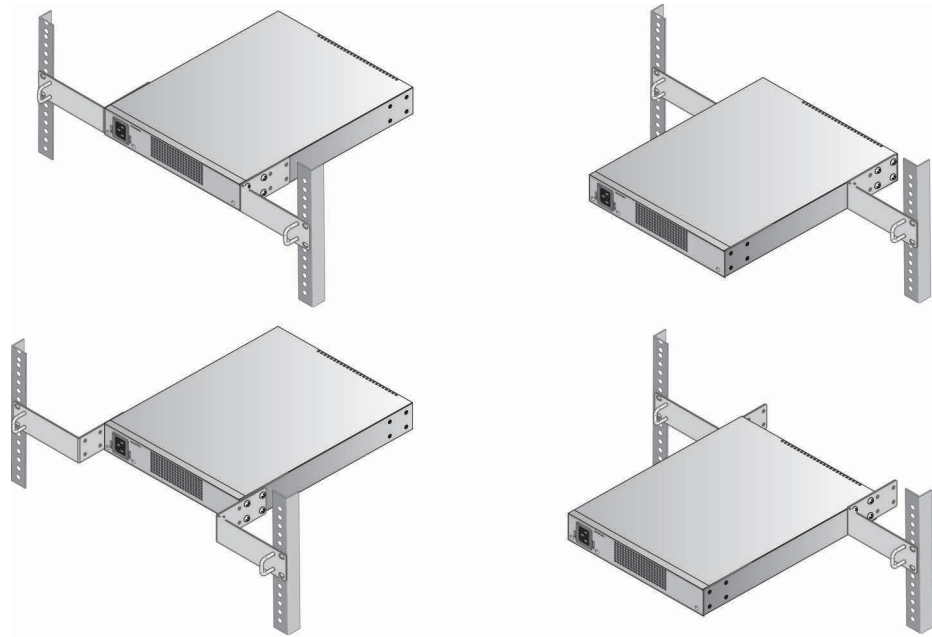


Figure 27. AT-GS980MX/10HSm Switch Positioned with the Rear Panel Facing the Front of the Equipment Rack

Installing the Switch

If you have not chosen an orientation for the switch in the equipment rack, review “Switch Orientations in the Equipment Rack” on page 74.

Please review the installation guidelines in “Choosing a Site for the Switch” on page 59 before installing the switch in an equipment rack.



Caution

The chassis may be heavy and awkward to lift. Allied Telesis recommends that you get assistance when mounting the chassis in an equipment rack. *E28*

To install the AT-GS980MX/10HSm Switch in a 19-inch equipment rack with the RKMT-J14 Brackets, perform the following procedure:

1. Attach the two handles to the RKMT-J14 Brackets using the four M3x6mm screws included with the switch. Refer to Figure 28 on page 77.

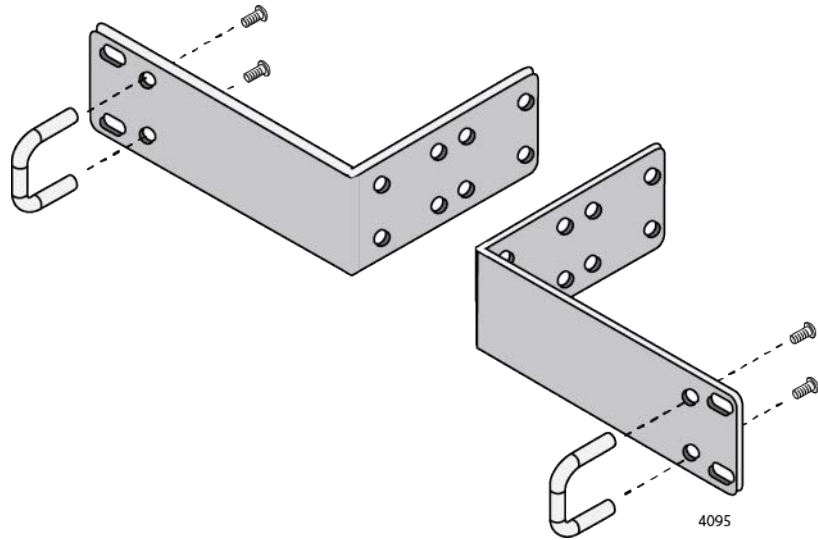


Figure 28. Attaching the Handles to the RKMT-J14 Brackets

2. Place the switch on a level, secure surface.
3. Attach the two brackets to the sides of the switch in the selected position, using the eight M4x6mm screws included with the unit. (Refer to Figure 26 on page 75 and Figure 27 on page 76.) The illustration in Figure 29 shows the installation of the brackets such that the front panel of the switch is even with the front of the equipment rack.

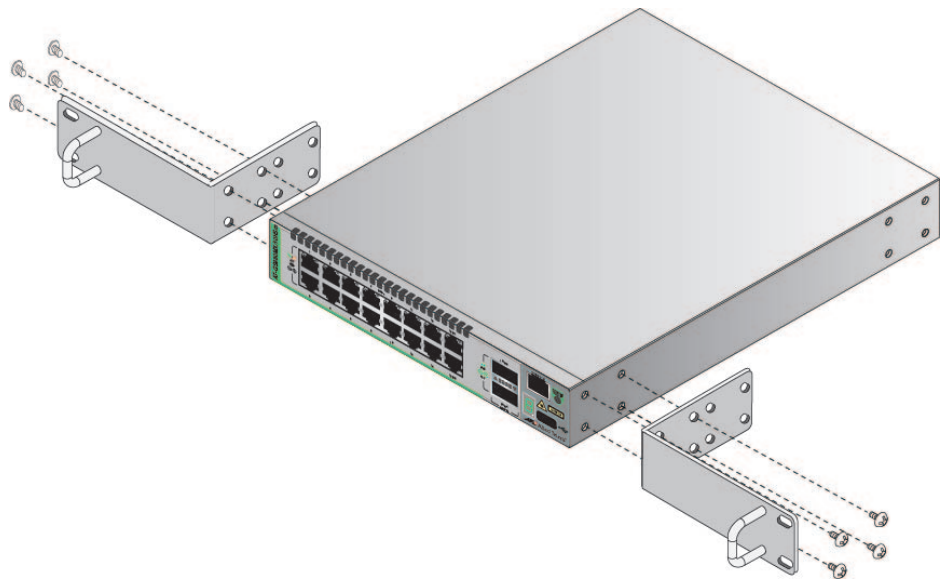


Figure 29. Attaching the RKMT-J14 Brackets to the AT-GS980MX/10HSm Switch

4. Have another person hold the switch at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 30.

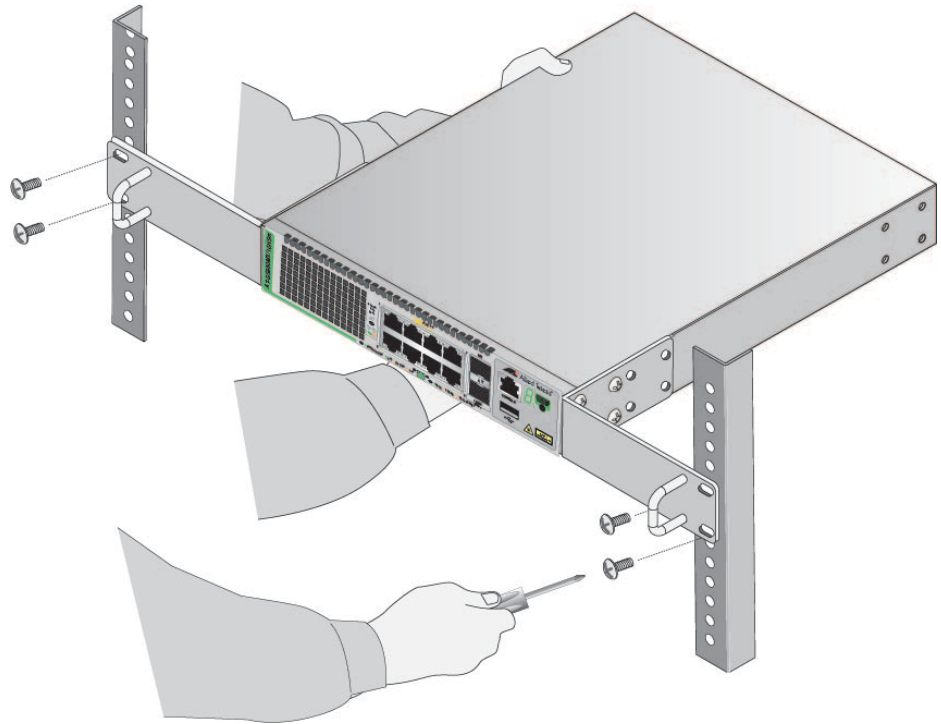


Figure 30. Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J14 Brackets

5. Do one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Installing the AT-GS980MX/10HSm Switch in an Equipment Rack with the RKMT-J15 Bracket

This section contains the procedure for installing the AT-GS980MX/10HSm Switch in a standard 19-inch equipment rack with the optional RKMT-J15 Bracket.



Caution

Stability Hazard - The rack may tip over causing serious personal injury. Before extending the rack to the installation position, read the installation instructions. Do not put any load on the slide-rail mounted equipment in the installation position. Do not leave the slide-rail mounted equipment in the installation position. *⚠* **E134**

Required Items

The following items are required to install the AT-GS980MX/10HSm Switch in an equipment rack with the RKMT-J15 Bracket:

- One RKMT-J15 equipment rack-mount bracket (sold separately)
- Four M4x6mm bracket screws (included with the RKMT-J15)
- Cross-head screwdriver (not provided)
- Flat-head screwdriver (not provided)
- Four standard equipment rack screws (not provided)

Note

If the rubber feet have been attached to the device, remove them.

Installing the Switch

To install the AT-GS980MX/10HSm Switch in a 19-inch equipment rack with the RKMT-J15 Bracket, perform the following procedure:

1. Have another person hold the RKMT-J15 Bracket at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 31 on page 80.

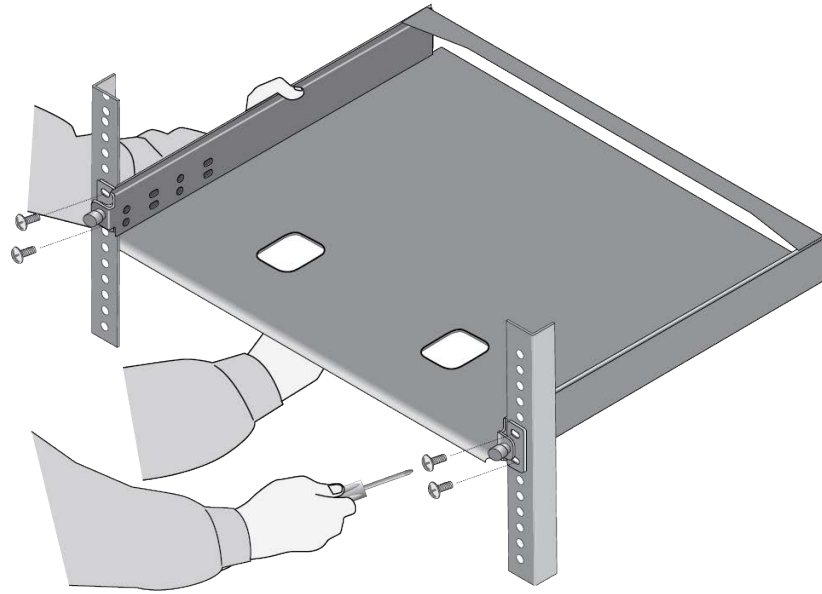


Figure 31. Installing the RKMT-J15 Bracket in the Equipment Rack

2. Loosen the two thumbscrews on the front of the bracket. Refer to Figure 32.

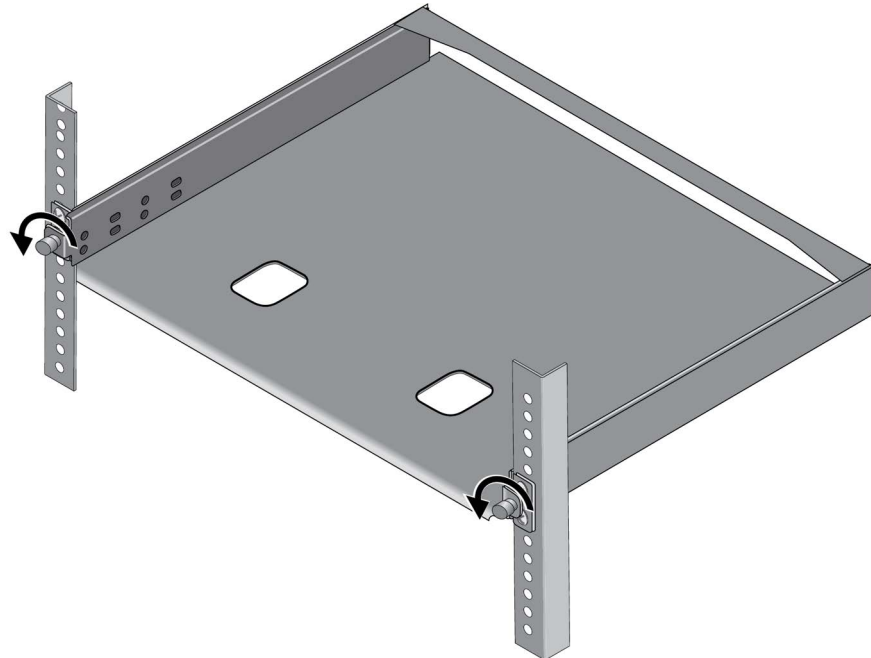


Figure 32. Loosening the Two Thumbscrews on the Front of the RKMT-J15 Bracket

- Slide out the bracket tray. Refer to Figure 33.

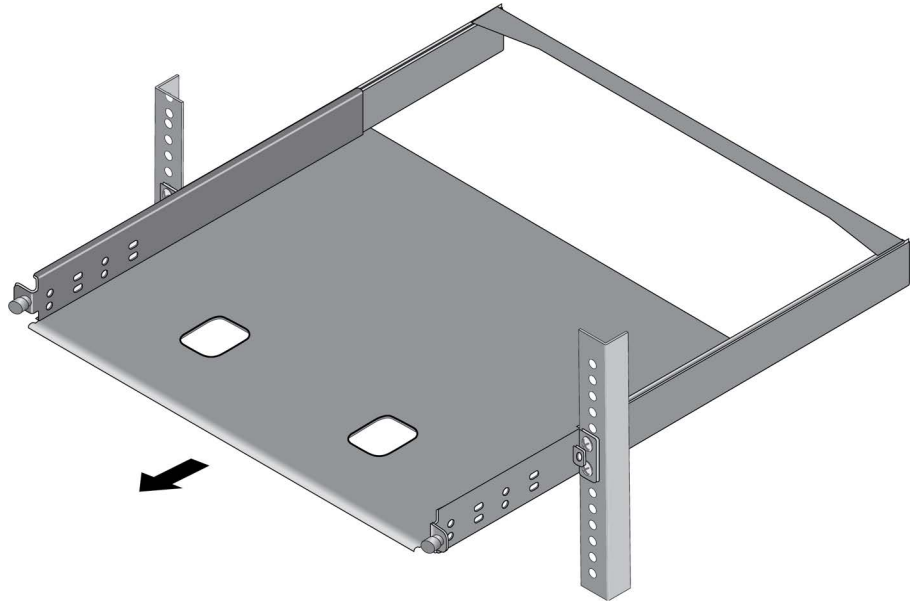


Figure 33. Sliding Out the Bracket of the RKMT-J15

- Place the AT-GS980MX/10HSm Switch on one side of the bracket. Align the front panel with the front edge of the bracket. If you are installing only one switch, you may install it on either the left or right side. Refer to Figure 34.

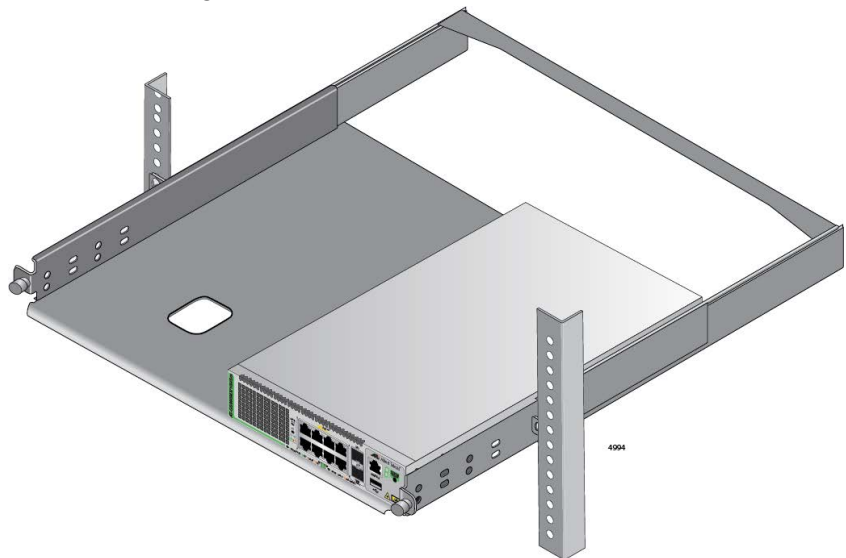


Figure 34. Placing the AT-GS980MX/10HSm Switch in the RKMT-J15 Bracket

5. Install two M4x6mm screws included with the RKMT-J15 using the first set of holes to secure the switch to the bracket. Refer to Figure 35.

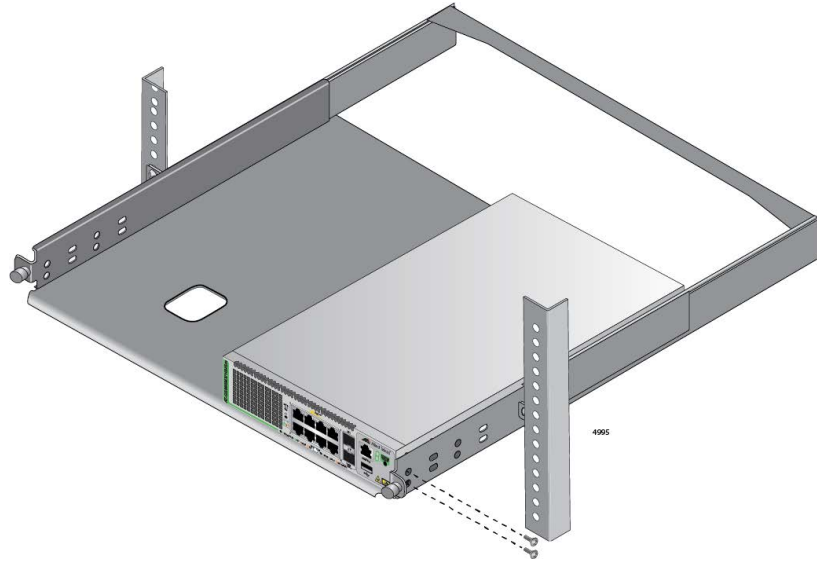


Figure 35. Securing the AT-GS980MX/10HSm Switch to the RKMT-J15 Bracket

6. To install a second switch in the bracket, repeat steps 4 and 5.
7. Slide in the bracket tray. Refer to Figure 36.

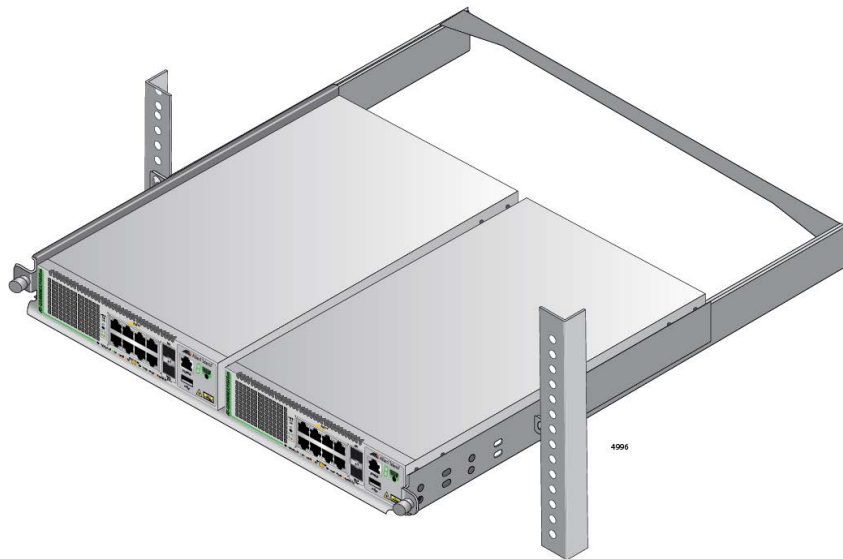


Figure 36. Sliding in the RKMT-J15 Bracket

8. Tighten the two thumbscrews to secure the bracket to the rack. Refer to Figure 37.

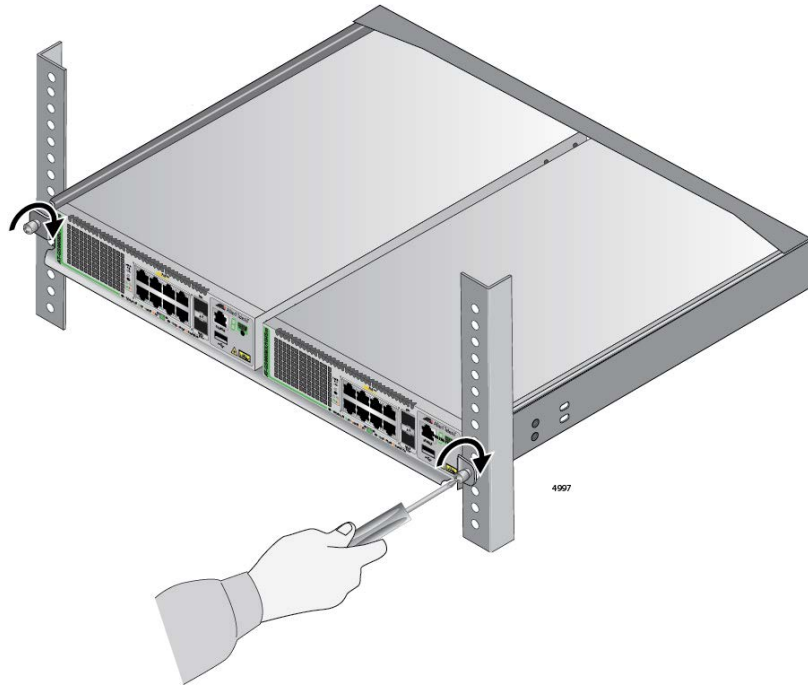


Figure 37. Tightening the Two Thumbscrews on the RKMT-J15 bracket.

9. Do one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Installing the 18-, 28-, and 52-port GS980MX Switches in an Equipment Rack

This section contains the procedure for installing the following GS980MX Switches in a standard 19-inch equipment rack using the brackets supplied with the unit:

- AT-GS980MX/18HSm
- AT-GS980MX/28
- AT-GS980MX/28PSm
- AT-GS980MX/52

Required Items

The following items are required to install the switch in an equipment rack:

- Two equipment rack brackets (included with the switch)
- Eight M4x6mm bracket screws (included with the switch)
- Cross-head screwdriver (not provided)
- Four standard equipment rack screws (not provided)

Switch Orientations in the Equipment Rack

The switch has two sets of four screw holes on the left and right sides, for attaching the brackets. Refer to Figure 38.

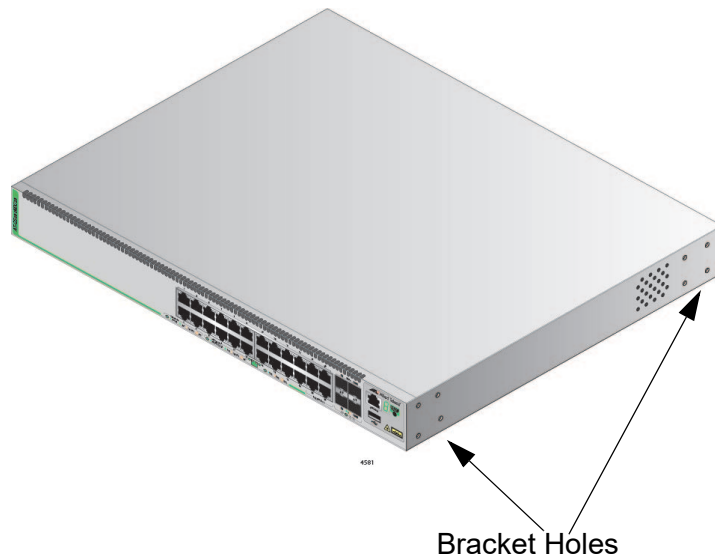


Figure 38. Bracket Holes on the Switch

You can use the different sets of holes on the switch to install the switch in the equipment rack in a variety of orientations. You can install it with the front panel flush with, extending in front of, or recessed behind the front of the equipment rack. Refer to Figure 39.

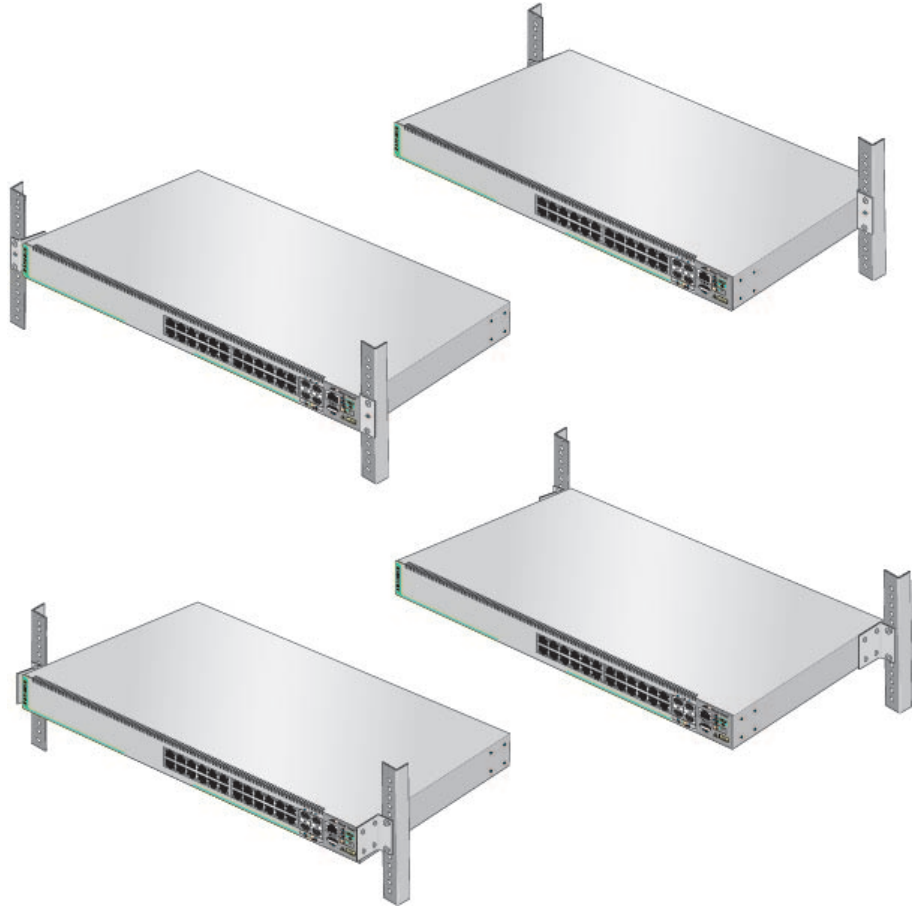


Figure 39. 18-, 28-, and 52-port Switches Positioned in an Equipment Rack

Installing the Switch

If you have not chosen an orientation for the switch in the equipment rack, review “Switch Orientations in the Equipment Rack” on page 84.

Please review the installation guidelines in “Choosing a Site for the Switch” on page 59 before installing the switch in an equipment rack.



Caution

The chassis can be heavy and awkward to lift. Allied Telesis recommends that you get assistance when mounting the chassis in an equipment rack. *GS* E28

To install an 18-, 28-, or 52-port GS980MX Switch in a 19-inch equipment rack, perform the following procedure:

1. Place the switch on a level, secure surface.
2. Attach the two brackets to the sides of the switch in the selected position, using the eight M4x6mm screws supplied with the unit. The illustration in Figure 40 shows the installation of the brackets such that the front panel of the switch is even with the front of the equipment rack.

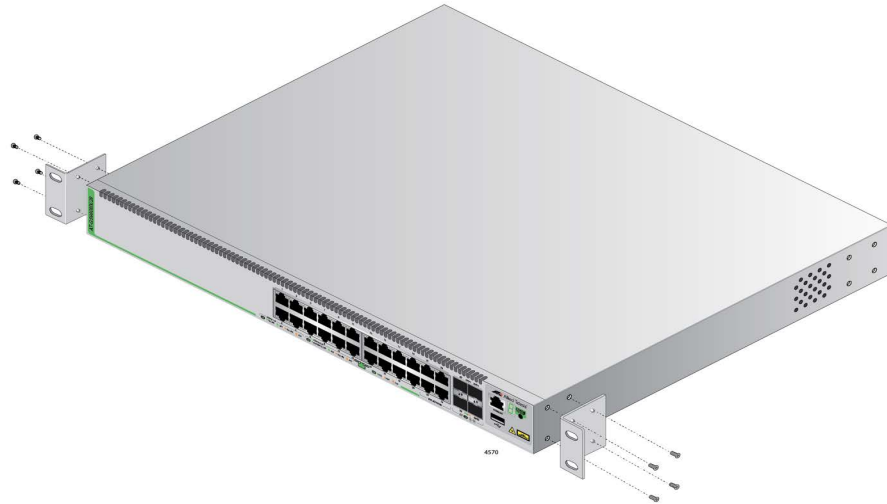


Figure 40. Example of Attaching the Brackets to the Switch

3. Have another person hold the switch at the desired location in the equipment rack while you secure it using four standard equipment rack screws (not provided). Refer to Figure 41.

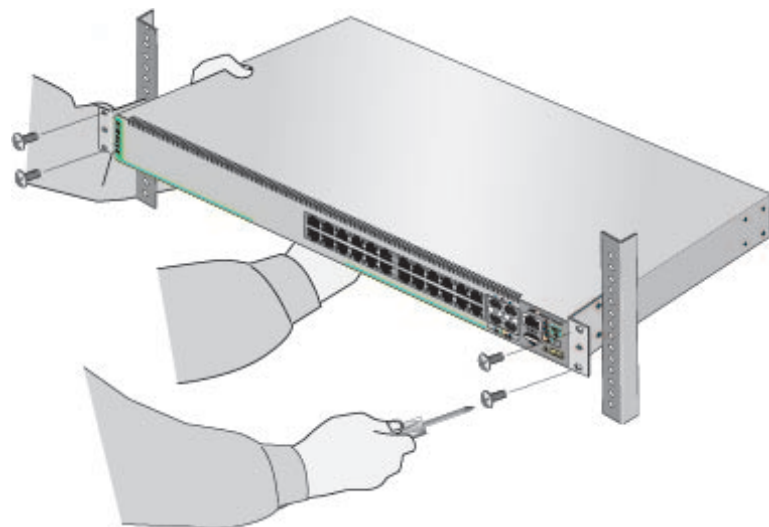


Figure 41. Installing the Switch in an Equipment Rack

4. Do one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Chapter 6

Installing the Switch on a Wall

The procedures in this chapter are listed here:

- ❑ “Switch Orientations on a Wall” on page 90
- ❑ “Installation Guidelines” on page 92
- ❑ “Tools and Material” on page 93
- ❑ “Plywood Base for a Wall with Wooden Studs” on page 95
- ❑ “Installing a Plywood Base” on page 96
- ❑ “Installing the Switch on a Plywood Base” on page 97
- ❑ “Installing the Switch on a Concrete Wall” on page 102

Switch Orientations on a Wall

The AT-GS980MX/28 and AT-GS980MX/28PSm Switches can be installed on a wall with the front panel facing up, left or right, as shown in Figure 42. Do not install the switches with the front panel facing down.

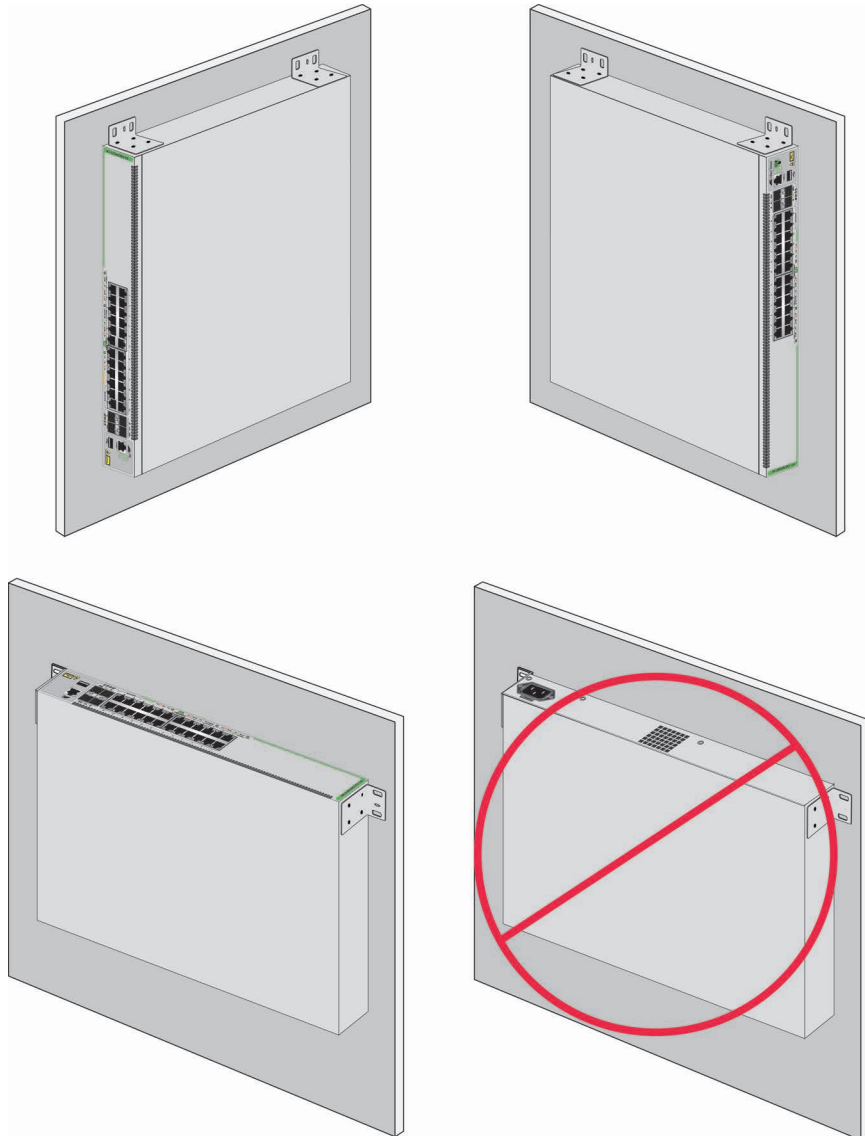


Figure 42. Positioning the AT-GS980MX/28 and AT-GS980MX/28PSm Switches on a Wall

Note

The AT-GS980MX/28 and AT-GS980MX/28PSm Switches require two wall brackets. The AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches are heavier and require four wall brackets.

The AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches can be installed on a wall with the front panel facing left or right. Do not install the switches with the front panel facing up or down. Refer to Figure 43.

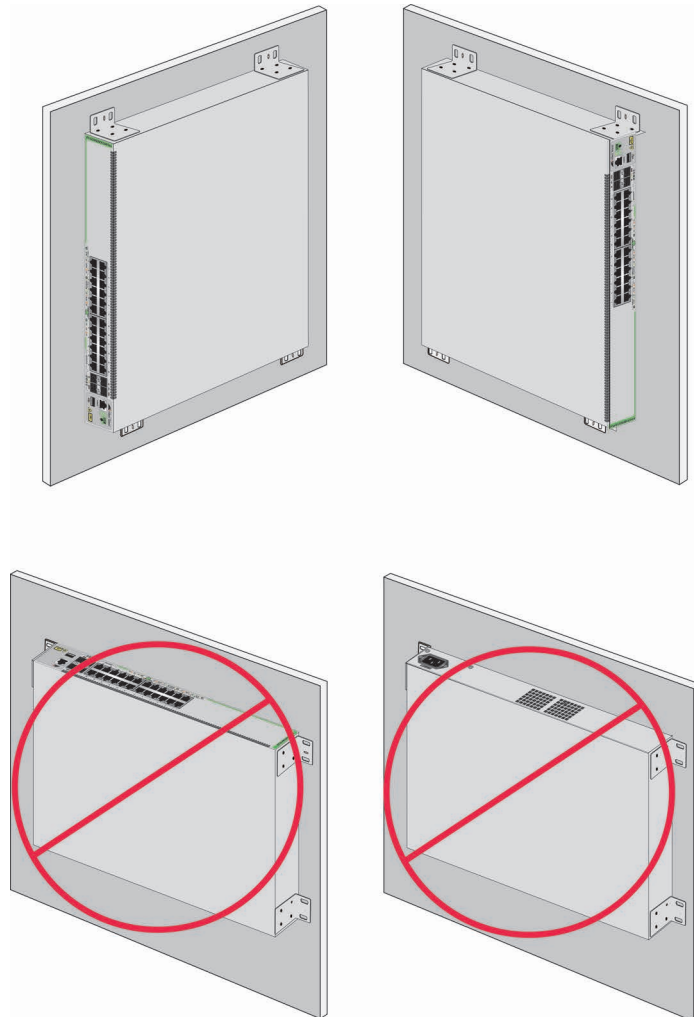


Figure 43. Positioning the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches on a Wall

Installation Guidelines

The following guidelines apply to installing the switch on a wall:

- ❑ Install the switch on a wall that has wooden studs or on a concrete wall.
- ❑ If you are installing the switch on a wall with wooden studs, use a plywood base to support the switch. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 95. A plywood base is not required for a concrete wall.
- ❑ Do not install the switch on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.
- ❑ Do not install the switch on sheetrock or similar material. Sheetrock is not strong enough to safely support the device.



Warning

The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.



Warning

The device should be installed on a wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. *ES* E105

Tools and Material

The following tools and material are required for installing the switch on a wall.

Included with the switches:

- ❑ Wall/equipment rack brackets:
 - Two brackets for the AT-GS980MX/28 and AT-GS980MX/28PSm Switches
 - Four brackets for the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches
- ❑ Screws for attaching the wall/equipment rack brackets to the switch:
 - Eight screws for AT-GS980MX/28 and AT-GS980MX/28PSm Switches
 - Sixteen screws for AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches

Length: 6 mm (0.2 in.) Diameter: 4 mm (0.16 in.)

- ❑ Anchors for wood or concrete walls:
 - Two anchors for the AT-GS980MX/28 and AT-GS980MX/28PSm Switches
 - Four anchors for the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches

Length: 29.6 mm (1.2 in.) Diameter: 6 mm (0.2 in.)

- ❑ Screws for wood or concrete walls:
 - Two screws for the AT-GS980MX/28 and AT-GS980MX/28PSm Switches
 - Four screws for the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52, and AT-GS980MX/52PSm Switches

Length: 32 mm (1.3 in.) Diameter: 4 mm (0.16 in.)


- ❑ One power cord retaining clip.

Items not included with the switches:

- ❑ Cross-head screwdriver.
- ❑ Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring.
- ❑ Drill and 1/4-inch carbide drill bit (for a concrete wall). Refer to “Installing the Switch on a Concrete Wall” on page 102.
- ❑ Plywood base (if you are installing the switch on a wall with wooden studs). Refer to “Plywood Base for a Wall with Wooden Studs” on page 95 for illustrations.
- ❑ Four screws for attaching the plywood base to the wall.



Caution

The supplied screws and anchors might not be appropriate for all walls. A qualified building contractor should determine the hardware requirements for your wall prior to installing the switch.  E88

Plywood Base for a Wall with Wooden Studs

If you are installing the switch on a wall that has wooden studs, use a plywood base for the device. (A plywood base is not required for a concrete wall.) Refer to Figure 44.

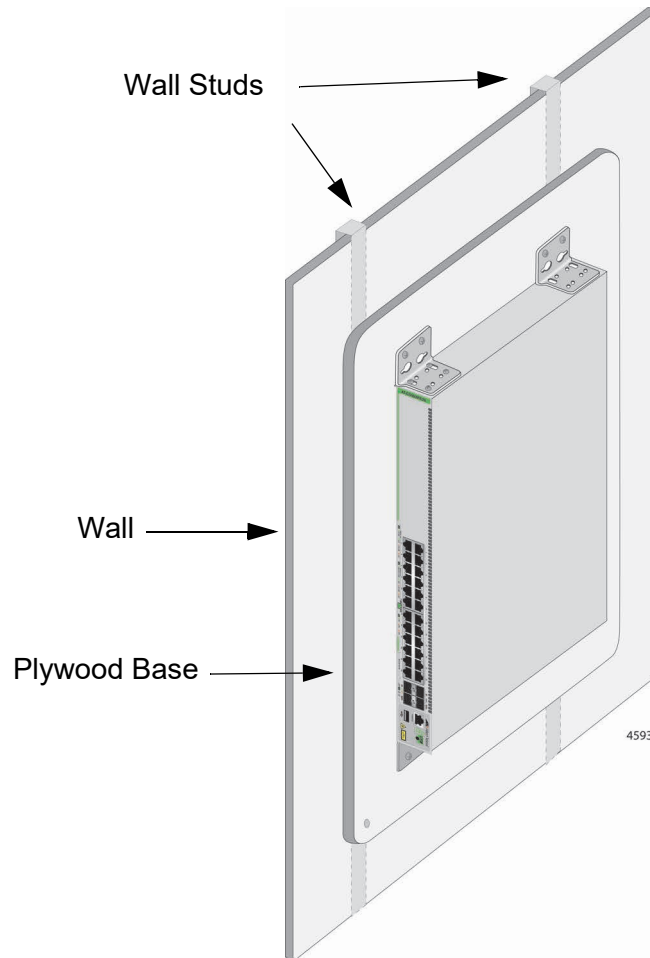


Figure 44. Switch on the Wall with a Plywood Base

Mount the plywood base to two studs in the wall. The recommended minimum dimensions of the plywood base switch are:

- ❑ Width: 55.9 centimeters (22 inches)
- ❑ Height: 61.0 centimeters (24 inches)
- ❑ Thickness: 2.5 centimeters (1 inch)

The dimensions assume the wall studs are 41 centimeters (16 inches) apart. You might need to adjust the width of the base if the distance between the studs in your wall is different than the industry standard.

Installing a Plywood Base

A plywood base is recommended when installing the switch on a wall that has wooden studs. Refer to “Plywood Base for a Wall with Wooden Studs” on page 95. Consult a qualified building contractor for installation instructions for the plywood base. The installation guidelines are listed here:

- ❑ Use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- ❑ Attach the base to two wall studs with a minimum of four screws.
- ❑ The selected wall location for the base must provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation. Refer to Figure 45.

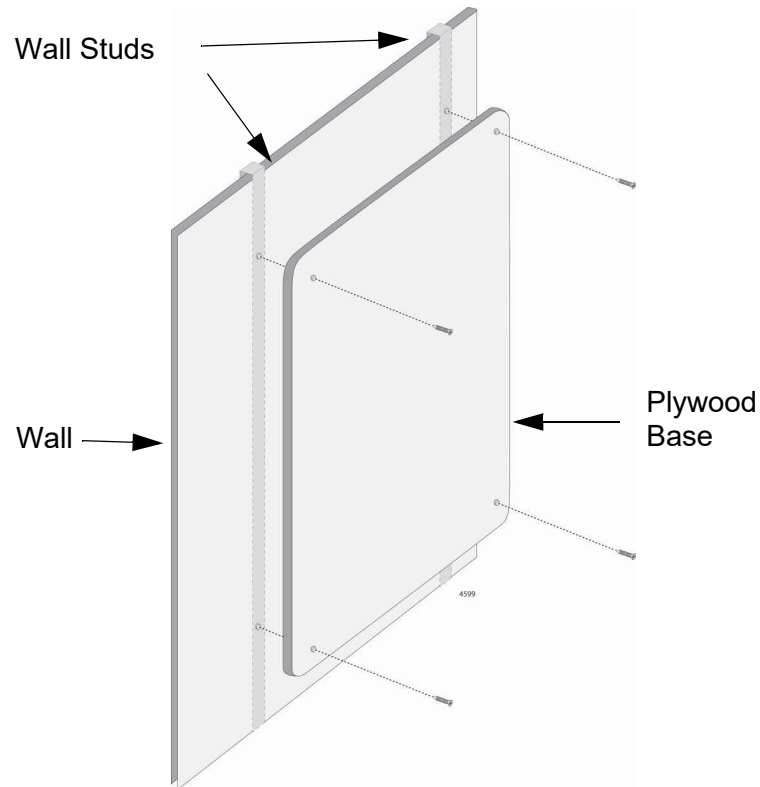


Figure 45. Installing the Plywood Base

Installing the Switch on a Plywood Base

After the plywood base for the switch has been installed on the wall, install the switch. See “Reviewing Safety Precautions” on page 54 and “Choosing a Site for the Switch” on page 59 before performing this procedure. Allied Telesis recommends a minimum of two people for this procedure.

**Warning**

The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.

**Warning**

The device should be installed on the wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. *GS* E105

Note

If the plastic feet have been installed, you must remove them to install the switch on a plywood base.

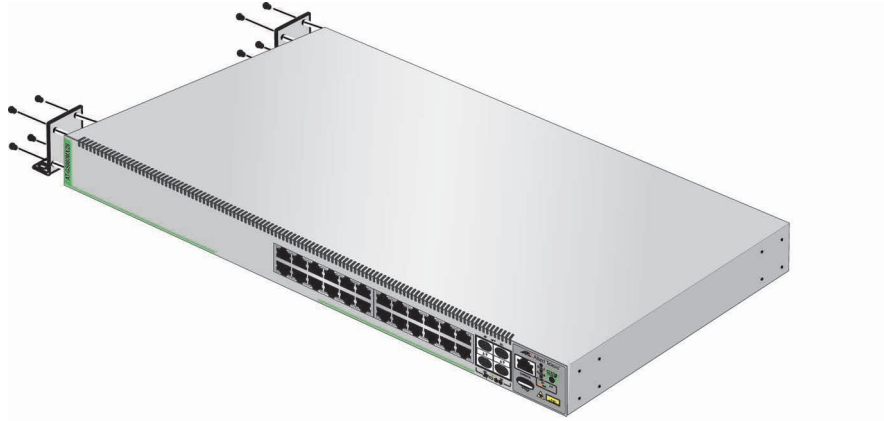
To install the switch on a plywood base, perform the following procedure:

1. Place the switch on a table.
2. For the AT-GS980MX/28 and AT-GS980MX/28PSm switches, install two wall/equipment rack brackets to the sides of the unit with the eight M4x6mm screws included with the switch. Refer to Figure 46 on page 98. For the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 and AT-GS980MX/52PSm switches, install four wall/equipment rack brackets to the sides of the unit with the sixteen M4x6mm screws included with the switch. Refer to Figure 47 on page 99.

Note

The AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 and AT-GS980MX/52PSm switches require four brackets to be installed due to their weights. Whereas, the AT-GS980MX/28 and AT-GS980MX/28PSm switches only require two brackets because they are lighter.

Brackets positions
to install the switch with
the front panel on the left.



Brackets positions
to install the switch with
the front panel on the right.

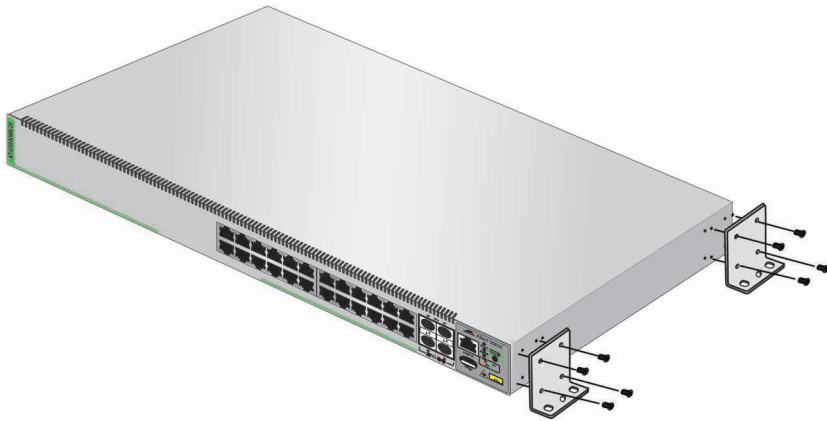


Figure 46. Installing Two Brackets on the AT-GS980MX/28 or AT-GS980MX/28PSm Switch

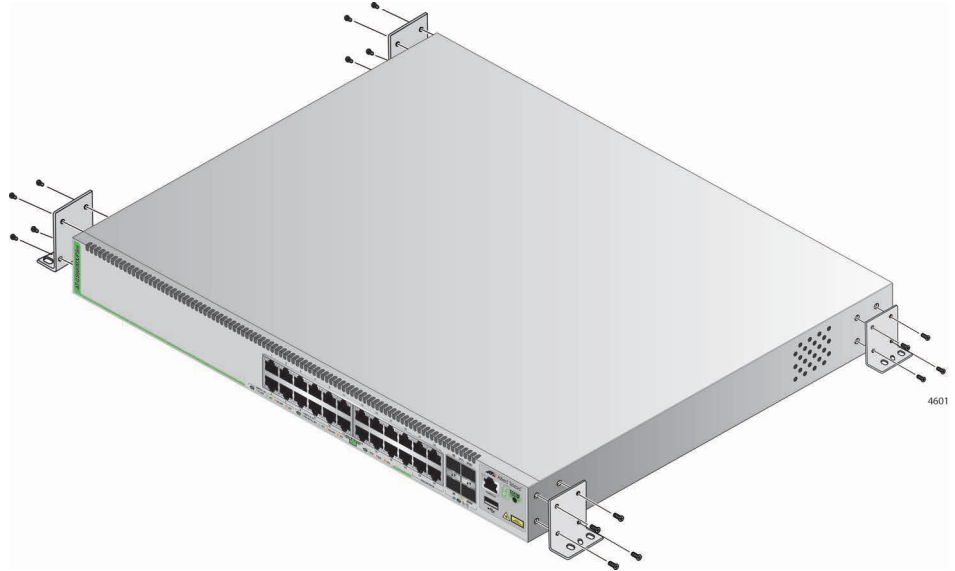


Figure 47. Installing Four Brackets on the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 or AT-GS980MX/52PSm Switch

3. After attaching the brackets, have another person hold the switch on the plywood base on the wall while you secure it with the M4x32.3mm screws included with the switch. Refer to Figure 48 on page 100 for the AT-GS980MX/28 or AT-GS980MX/28PSm Switch or Figure 49 on page 101 for the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 or AT-GS980MX/52PSm Switch.

Follow these guidelines as you position the switch on the wall:

- Position it so that the front panel is facing left or right. Refer to Figure 42. Do not install it with the front panel facing up or down.
- Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow for ventilation.

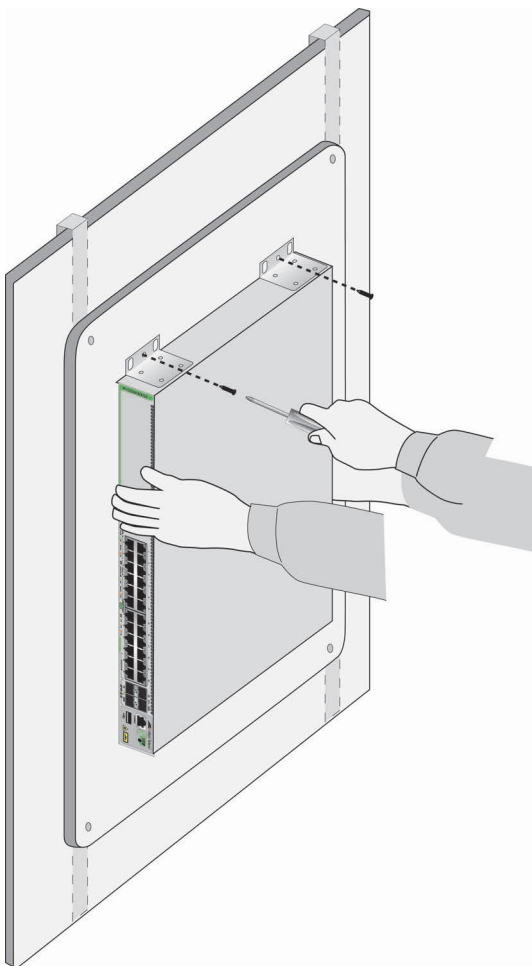


Figure 48. Securing the AT-GS980MX/28 or AT-GS980MX/28PSm Switch to the Plywood Base

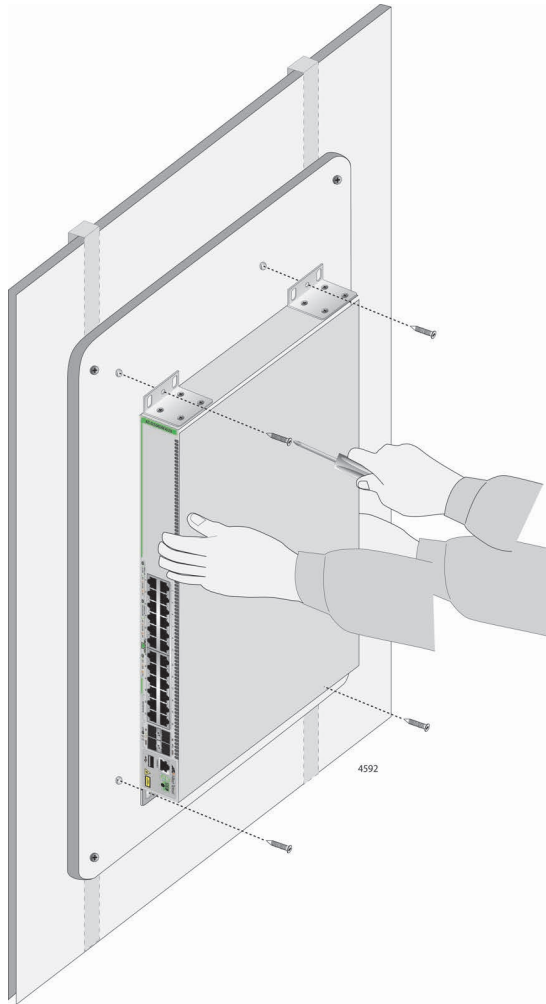


Figure 49. Securing the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 or AT-GS980MX/52PSm Switch to the Plywood Base

4. Do one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Installing the Switch on a Concrete Wall

This section contains the instructions for installing the switch on a concrete wall. Please review the information in the following sections before performing the procedure:

- “Switch Orientations on a Wall” on page 90
- “Installation Guidelines” on page 92



Warning

The device is heavy. Always ask for assistance before moving or lifting it to avoid injuring yourself or damaging the equipment.



Warning

The device should be installed on the wall by a qualified building contractor. Serious injury to yourself or others or damage to the equipment can result if it is not properly fastened to the wall. *SW*
E105

Note

If the plastic feet have been installed, you must remove them to install the switch on a concrete wall.

To install the switch on a concrete wall, perform the following procedure:

1. Place the switch on a table.
2. For the AT-GS980MX/28 or AT-GS980MX/28PSm Switch, install two wall/equipment rack brackets to the sides of the unit with the eight M4x6mm screws included with the switch. Refer to Figure 46 on page 98. For the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/52 or AT-GS980MX/52PSm Switch, install four wall/equipment rack brackets to the sides of the unit with the 16 M4x6mm screws included with the switch. Refer to Figure 47 on page 99.
3. After attaching the brackets, have another person hold the switch on the concrete wall at the selected location for the device while you use a pencil or pen to mark the wall with the locations of the four screw holes in the four brackets (one screw per bracket). Refer to Figure 50 on page 103.

4. Follow these guidelines as you position the switch on the wall:
 - Position it so that the front panel is facing left or right. Refer to Figure 42 on page 90. Do not install the switch with the front panel facing up or down.
 - Provide sufficient space from other devices or walls so that you can access the front and back panels, and for adequate air flow and ventilation.

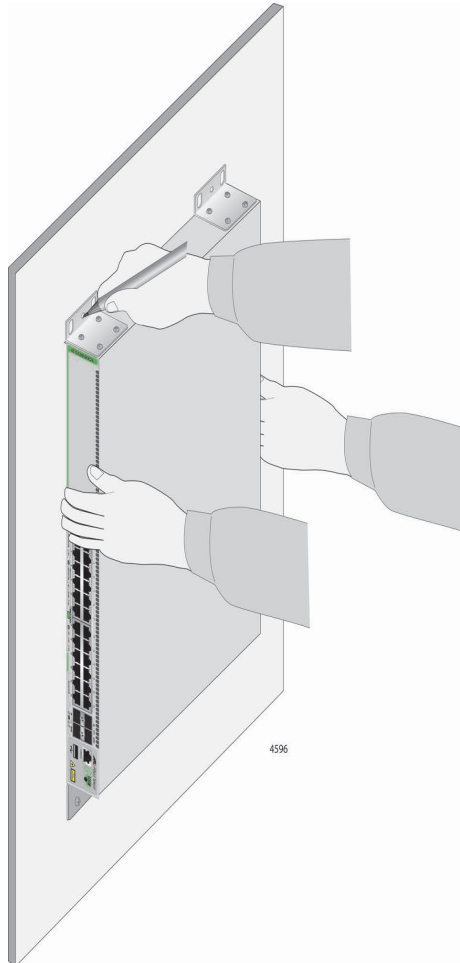


Figure 50. Marking the Locations of the Bracket Holes on a Concrete Wall

5. Place the switch on a table.
6. Use a drill and a 1/4-inch carbide drill bit to pre-drill the holes you marked in step 3. Please review the following guidelines:
 - Prior to drilling, set the drill to hammer and rotation mode. The modes break up the concrete and clean out the hole.
 - Clean out the holes with a brush or compressed air.

7. Insert the anchors into the holes.
8. Have another person hold the switch at the selected wall location while you secure it to the wall with the M4x32mm screws provided. Refer to Figure 51.

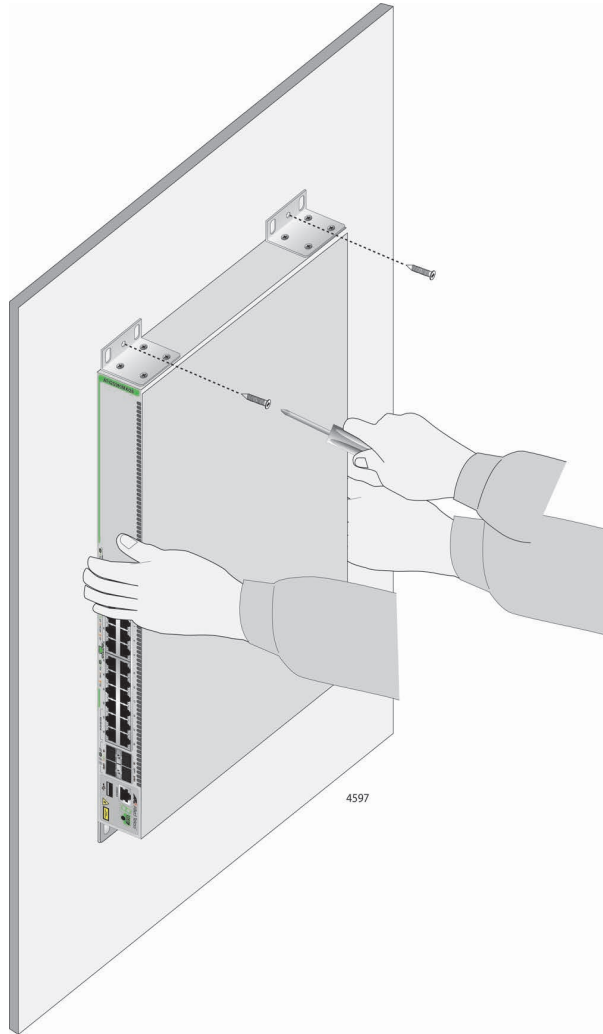


Figure 51. Installing the Switch on a Concrete Wall

9. Do one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 7, “Powering On the Switch” on page 107 and Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are installing a VCStack, install the other switches of the stack and then go to Chapter 10, “Virtual Chassis Stacking Overview” on page 135.

Section II

Configuring and Verifying a Standalone Switch

The chapters in this section are:

- ❑ Chapter 7, “Powering On the Switch” on page 107
- ❑ Chapter 8, “Configuring the Switch for Standalone Operations” on page 115
- ❑ Chapter 9, “Cabling the Networking Ports” on page 125

Section II:

Chapter 7

Powering On the Switch

This chapter contains the following procedures:

- “Powering On the Switch” on page 108
- “Monitoring the Initialization Processes” on page 111

Powering On the Switch

Before powering on the switch, review the information in “Power Specifications” on page 221 for the power specifications.



Warning

The power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ E3

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. ⚡ E5

The power cord retaining clip that comes with the switch protects the power cord from being accidentally unplugged from the unit.

To power on the switch, perform the following procedure:

1. Install the power cord retaining clip on the AC power connector on the rear panel of the switch. Refer to Figure 52.

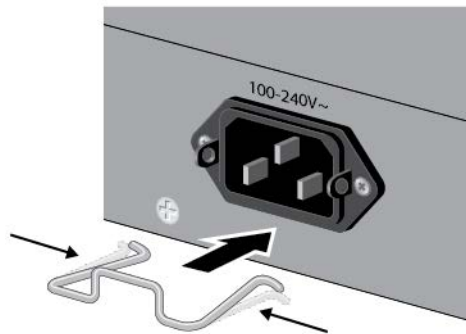


Figure 52. Installing the Power Cord Retaining Clip

2. Connect the AC power cord to the AC power connector on the rear panel. Refer to Figure 53 on page 109.

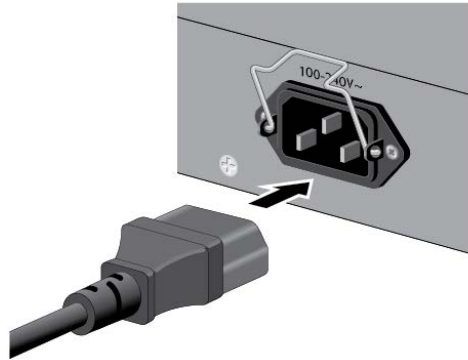


Figure 53. Connecting the AC Power Cords

3. Lower the power cord retaining clip to secure the cord to the switch. Refer to Figure 54.

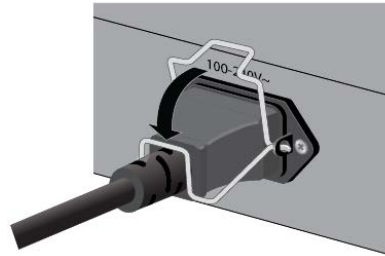


Figure 54. Lowering the Power Cord Retaining Clips

4. Connect the power cord to an appropriate AC power source. Refer to Figure 55 on page 109.

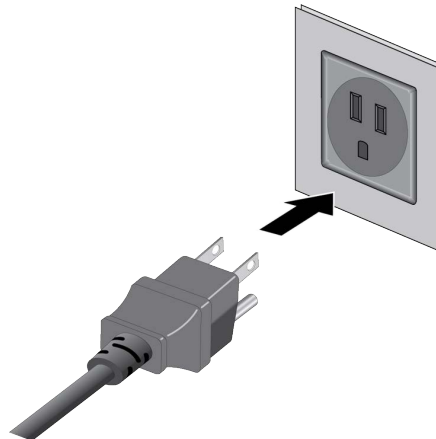


Figure 55. Connecting the Power Cord to an AC Power Source

Note

The illustration shows a North American power cord. Your power cords may be different.



Warning

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. *ES* E3

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. *ES* E5

To monitor the switch as it initializes the management software, go to “Monitoring the Initialization Processes” on page 111.

5. Wait two minutes for the switch to initialize its management software, and then go to one of the following:
 - ❑ If you are installing a standalone switch, go to Chapter 8, “Configuring the Switch for Standalone Operations” on page 115.
 - ❑ If you are building a VCStack with the default 1/10Gbps SFP+ trunk ports, go to Chapter 11, “Building the Trunk with 1/10G SFP+ Transceiver Ports” on page 161.
 - ❑ If you are building a VCStack with multi-speed 5Gbps ports, go to either Chapter 12, “Configuring a Master Switch to Use Multi-Gigabit 5G Ports as the Trunk” on page 173 or Chapter 13, “Configuring Member Switches to Use Multi-Gigabit 5G Ports as the Trunk” on page 191.

Monitoring the Initialization Processes

It takes about two minutes for the switch to initialize its management software programs and features, and load the default configuration. You can monitor the bootup sequence by connecting a terminal or computer with a terminal emulator program to the Console port. (The Console port settings are provided in “Starting a Local Management Session” on page 118.) The switch displays the messages in Figure 56 through Figure 58 on the Console port as it initializes the management software.

```

Bootloader 7.0.6-devel loaded
Press <Ctrl+B> for the Boot Menu
Loading flash:GS980MX 5.5.1-1.2 rel
Verifying release... OK
Booting...
Starting base/first...           [ OK ]
Mounting virtual filesystems... [ OK ]

      _____
     /          \ / /_____\
    /  \          / / |_____|
   /    \        / /  |_____|
  /      \      / /   \_____/
 /_____\  \  \ / /_____\

Allied Telesis Inc.
AlliedWare Plus (TM) v5.5.1-1.2
Current release filename: GS980MX 5.5.1-1.2-rc1.rel...
Built: Tue Jan 19 01:57:50 UTC 2021
Mounting static filesystems...   [ OK ]
Attaching to /dev/mtd0...        [ OK ]
Mounting file system...          [ OK ]
Checking for last gasp debug output... [ OK ]
Checking NVS filesystem...       [ OK ]
Mounting NVS filesystem...       [ OK ]
Initializing random number generator... [ OK ]
Starting base/hwrandom...        [ OK ]
Starting base/jitterentropy-rngd... [ OK ]
Starting base/dbus...            [ OK ]
Starting base/linux...           [ OK ]
Starting base/syslog...          [ OK ]

```

Figure 56. Switch Initialization Messages

```

Starting base/loopback... [ OK ]
Starting base/poe_done... [ OK ]
Starting base/portmapper... [ OK ]
Received event syslog.done
Starting base/modules... [ OK ]
Received event modules.done
Starting base/reboot-stability... [ OK ]
Checking system reboot stability... [ OK ]
Starting base/apteryx... [ OK ]
Starting base/crond... [ OK ]
Starting base/appmond... [ OK ]
Starting base/clockcheck... [ OK ]
Starting network/execd... [ OK ]
Starting base/inet... [ OK ]
Received event apteryx.done
Starting hardware/early_host_info... [ OK ]
Starting base/alfred... [ OK ]
Starting base/kernond... [ OK ]
Starting base/apteryx-sync... [ OK ]
Starting base/logconf... [ OK ]
Received event apteryx-sync.done
Starting hardware/platformd... [ OK ]
Starting hardware/plugman... [ OK ]
Starting hardware/timeout... [ OK ]
Starting hardware/hardware-done... [ OK ]
Received event board.inserted
Received event hardware.done
Starting base/external-media... [ OK ]
Starting network/startup... [ OK ]
Starting network/hostcfg... [ OK ]
Received event hostcfg.done
Starting network/cmplplatformd... [ OK ]
Starting base/eventwatch... [ OK ]
Starting network/startup... [ OK ]
Starting hardware platform_eventd... [ OK ]
Starting network/licd... [ OK ]
Starting network/stackd... [ OK ]
Starting network/election.timeout... [ OK ]
Starting network/corosync... [ OK ]
Received event network.enabled

```

Figure 57. Switch Initialization Messages (Continued)

```
Initializing HA processes:  
atmf_agentd, execd, exfx, hostd, atmfd, auth, epsr  
hsl, imi, imiproxyd, lldpd, loopprot, mstp, nsm  
pim6d, ripngd, rmon, sflowd, vrrpd, bgpd, irdpd  
lacp, ospf6d, ospfd, pdmd, pimd, ripd, udldd
```

```
Received event network.initialized
```

```
Assigning Active workload to HA processes:  
hsl, irdpd, lacpd, loopprot, mstpd, nsm, ospfd  
ripd, rmond, sflowd, vrrpd, authd, epsrd, imi  
imiproxyd, lldpd
```

```
Received event network.activated
```

```
Loading default configuration
```

```
..
```

```
done!
```

```
Received event network.configured
```

Figure 58. Switch Initialization Messages (Continued)

Chapter 8

Configuring the Switch for Standalone Operations

This chapter contains the following procedures:

- ❑ “Determining the Standalone or Stacking Status of the Switch” on page 116
- ❑ “VT-Kit3 Local Management Cable” on page 117
- ❑ “Starting a Local Management Session” on page 118
- ❑ “Disabling the VCStack Feature” on page 120
- ❑ “Saving Your Changes and Rebooting the Switch” on page 122
- ❑ “Specifying Ports in the Command Line Interface for Standalone Switches” on page 123


Determining the Standalone or Stacking Status of the Switch

After powering on the switch and waiting two minutes for it to initialize the management software, examine the switch ID LED on the front panel. If the LED is displaying the number “1” or higher, the VCStack feature is enabled on the unit. You need to disable it to use the switch in standalone mode. For instructions, start with “Starting a Local Management Session” on page 118. The VCStack feature is enabled by default.

If the LED is displaying “0”, the VCStack feature is already disabled and the switch is operating as a standalone unit. Go to Chapter 9, “Cabling the Networking Ports” on page 125.



Caution

You must reset the switch to disable the VCStack feature. Some network traffic can be lost if the device is already connected to a live network.  E89

Note

The initial management session of the switch must be from the Console port.

VT-Kit3 Local Management Cable

Local management of the switch is performed through the serial Console port on the front panels of the switches, using a VT100 terminal or a VT100 terminal emulator and a management cable.

The optional VT-Kit3 management cable, shown in Figure 59, is available from Allied Telesis.



Figure 59. VT-Kit3 Management Cable

The cable has two connectors:

- ❑ One USB-A male connector that connects to a USB port on your management workstation.
- ❑ One RJ-45 serial port that connects to the Console on the front panels of the switches with a straight-through Ethernet cable. Refer to Figure 60.

Note

The VT-Kit3 management cable is sold separately.



Figure 60. Local Management Session of the Switch with the VT-Kit3 Management Cable

Starting a Local Management Session

Local management sessions of the switch are conducted through the Console port on the front panel, and require the following items:

- ❑ VT100 terminal or a VT100 terminal emulator program
- ❑ Management cable

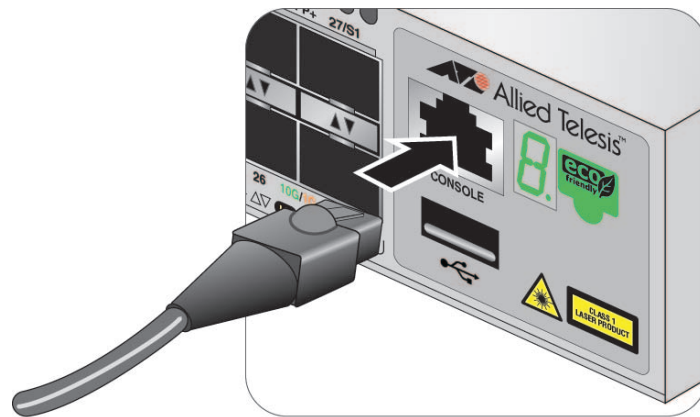
The following procedure assumes you are using the VT-Kit3 management cable, described in “VT-Kit3 Local Management Cable” on page 117.

Note

This procedure assumes you have already installed the software driver for the VT-Kit3 management cable on your management workstation. The driver is available on the Allied Telesis website at www.alliedtelesis.com. For instructions, refer to the *VT-Kit3 Management Cable Installation Guide* on the Allied Telesis website.

To start a local management session on the switch with the VT-Kit3 management cable, perform the following procedure:

1. Connect a straight-through Ethernet cable to the Console port on the switch.



4578

Figure 61. Connecting a Straight-through Ethernet Cable to the Console Port

2. Connect the other end of the straight-through Ethernet cable to the RJ45 port on the VT-Kit3 management cable.
3. Connect the male USB port on the VT-Kit3 management cable to a USB port on your management workstation.

4. Configure the terminal or terminal emulator program as follows:
 - Default baud rate: 9,600 bps (range is 9,600 to 115,200 bps)
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None

Note

The port settings are for a DEC VT100 or ANSI terminal, or an equivalent terminal emulator program.

5. Press Enter.

You are prompted for a user name and password.

6. When prompted, type a user name and password to log on the switch. If this is the first management session, enter “manager” as the user name and “friend” as the password. The user name and password are case sensitive.

The local management session starts when the User Exec mode prompts.

```
awp1us>
```

Note

The User Exec mode is the first level in the command mode interface. For complete information on the modes and commands, refer to the *Command Reference: GS980MX Series Running AlliedWare Plus v5.5.1* at www.alliedtelesis.com/library.


7. Do one of the following:
 - To use the switch as a standalone unit, perform “Disabling the VCStack Feature” on page 120.
 - To configure the switch as the master of a stack, start with “Reviewing the Configuration Steps for the Master Switch” on page 179.
 - To configure the switch as a member of a stack, start with “Reviewing the Configuration Steps for Member Switches” on page 192.

Disabling the VCStack Feature

If you plan to use the switch as a standalone unit, you should disable the VCStack feature so that you can use the last two SFP+ ports as regular Ethernet ports instead as trunk ports.



Caution

Disabling the VCStack feature requires resetting the switch. Some network traffic may be lost if the switch is connected to a live network.  E89

To disable the VCStack feature, perform the following procedure:

1. Start a local management session on the switch. For instructions, refer to “Starting a Local Management Session” on page 118.
2. To display the status of the VCStack feature on the switch, at the User Exec mode prompt, type the command SHOW STACK.

```
awplus> show stack
Virtual Chassis Stacking summary information
ID      Pending ID  MAC address      Priority  Status  Role
1       -             eccd:6dd1:64a2  128     Ready   Active Master
Operational Status          Standalone Unit
Stack MAC address          eccd:6dd1:64a2
awplus>
```

Figure 62. SHOW STACK Command

3. If the Operational Status of the switch is “Stacking Hardware Disabled,” the VCStack feature is already disabled on the unit. If this is the case, go to Chapter 9, “Cabling the Networking Ports” on page 125.

If the Operational Status is “Standalone Unit” as shown in Figure 62, the VCStack feature is active on the unit. (The “Standalone Unit” status means the switch is functioning as a stack of one switch.) You must disable the feature to use the switch as a standalone unit. Continue with the next step.

4. Move to the Global Configuration mode by typing the commands ENABLE and CONFIGURE TERMINAL.

```
awplus> enable
awplus# configure terminal
Enter configuration commands, one per line. End with CNTL/Z
awplus(config)#
```

Figure 63. Moving to the Global Configuration Mode

5. To disable the VCStack feature, type the command NO STACK <id> ENABLE in the following format:

```
no stack <id> enable
```

The *id* parameter is the ID number of the switch, displayed on the ID LED. Replace the *id* parameter with the number on the ID LED. For example, if the ID number of the switch is 1, the default value, enter the command as follows:

```
awplus(config)# no stack 1 enable
warning; This will disable the stacking hardware on member-1.
Are you sure you want to continue? (y/n):
```

Figure 64. Disabling VCStack Verification

6. To disable VCStack on the switch type Y, or type N to cancel the procedure.

```
awplus(config)#18:04:12 awplus vcs[2119]: Deactivating
Stacking Ports on stack member 1.
```

Figure 65. Disabling VCStack

7. Press the Enter key to re-display the Global Configuration mode prompt.
8. Go to “Saving Your Changes and Rebooting the Switch” on page 122.

Saving Your Changes and Rebooting the Switch

After disabling the VCStack feature, save your configuration changes and reboot the switch. Changes to the status of the VCStack feature do not take affect until after you reboot the unit.

To save your configuration changes and reboot the switch, perform the following procedure:

1. Type the EXIT command to return to the Privileged Exec mode from the Global Configuration mode.

```
awplus(config)# exit
awplus#
```

Figure 66. Returning to the Privileged Exec Mode

2. To save your change in the configuration file, type the command WRITE.

```
awplus# write
Building configuration ...
[OK]
awplus#
```

Figure 67. Saving the Changes with the WRITE Command

If this is the initial management session, the switch automatically creates the Default.cfg configuration file and stores the change in the file.

3. To reboot the switch, type the command REBOOT.
4. To confirm, type “Y” for yes.
5. Wait two minutes for the switch to initialize the management software and then examine the Switch ID LED again. The switch is ready for normal network operation as a standalone unit if its ID number is “0.” If the number is not “0,” repeat the procedures in this chapter, being sure to save your configuration changes with the WRITE command.
6. Go to Chapter 9, “Cabling the Networking Ports” on page 125.

Specifying Ports in the Command Line Interface for Standalone Switches

The individual ports on the switches are specified in the command line interface with the PORT parameter. The format of the parameter is shown in Figure 68.

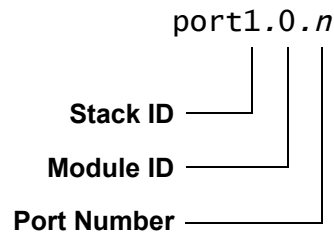


Figure 68. PORT Parameter in the Command Line Interface

The three parts of the PORT parameter are described in Table 21.

Table 21. PORT Parameter Format

Number	Description
Stack ID	Designates the switch's ID number. <ul style="list-style-type: none"> <input type="checkbox"/> For a standalone switch, the correct value is "1". Do not enter 0, the value displayed on the Switch ID LED. <input type="checkbox"/> For a VCStack, this number is a switch's unique ID number in the stack. This is the number displayed on the Switch ID LED.
Module ID	Designates the module number of a port. The GS980MX Switches do not have modules, Consequently, this value is always 0 (zero).
Port Number	Designates a port number.

The following is an example of the PORT parameter on a standalone switch. It uses the INTERFACE command to enter the Port Interface mode for ports 25 and 26:

```
awplus> enable
awplus# configure terminal
awplus(config)# interface port1.0.25,port1.0.26
```

Note

For instructions on the command line interface and the PORT parameter, refer to the *Command Reference: GS980MX Series Running AlliedWare Plus v5.5.1* at www.alliedtelesis.com/library.

Chapter 9

Cabling the Networking Ports

This chapter contains the following procedures:

- ❑ “Cabling Twisted Pair Ports” on page 126
- ❑ “Guidelines to Handling SFP and SFP+ Transceivers” on page 127
- ❑ “Installing SFP or SFP+ Transceivers” on page 128
- ❑ “Installing SP10TW Direct Connect Twinax Cables” on page 130

Cabling Twisted Pair Ports

Here are the guidelines to cabling the twisted pair ports on the switches:

- ❑ The minimum twisted pair cable requirements are as follows:
 - 10/100M ports: Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.
 - 1/2.5/5G ports: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.
 - 10G ports: Standard TIA/EIA 568-C-compliant Category 6a unshielded cabling.
- ❑ PoE is enabled by default on the ports on the PoE GS980MX Switches.
- ❑ The connectors on the cables must fit snugly into the ports, and the tabs must lock the connectors into place.
- ❑ The default speed setting for the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- ❑ The ports must be set to the default setting of Auto-Negotiation to operate at 1G and higher.
- ❑ The ports support full-duplex only when operating at 1G and higher. The ports support half- and full-duplex when operating at 10/100M.
- ❑ Do not attach cables to ports of static or Link Aggregation Control Protocol (LACP) port trunks until after you configure the trunks on the switch. Otherwise, the ports will form network loops that can adversely affect network performance.

Guidelines to Handling SFP and SFP+ Transceivers

Review the following guidelines before installing SFP or SFP+ transceivers in the switches:

- ❑ The transceivers are hot-swappable. You can install them while the switch is powered on.
- ❑ For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.
- ❑ The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.
- ❑ Install a transceiver before connecting the fiber optic cable.
- ❑ Unnecessary removal and insertion of a transceiver can lead to premature failure.



Caution

Transceivers can be damaged by static electricity. Be sure to observe all standard electrostatic discharge (ESD) precautions, such as wearing an antistatic wrist strap, to avoid damaging the devices. *ES* E92

Installing SFP or SFP+ Transceivers

This section contains installation instructions for SFP or SFP+ transceivers on the following ports:

- ❑ Ports 9 and 10 on the AT-GS980MX/10HSm switch
- ❑ Ports 17 and 18 on the AT-GS980MX/18HSm switch
- ❑ Ports 25 and 28 on the AT-GS980MX/28 or AT-GS980MX/28PSm switch
- ❑ Ports 49 and 52 on the AT-GS980MX/52 or GS980MX/52PSm switch

The following illustrations show a transceiver with a duplex LC connector. The connectors on your transceivers may be different.

To install transceivers, perform the following procedure:

1. Select a port for the transceiver.
2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. If you are installing the transceiver in a top port, position the transceiver with the Allied Telesis label facing up. If you are installing the transceiver in a bottom port, position the transceiver with the label facing down. Refer to Figure 69.

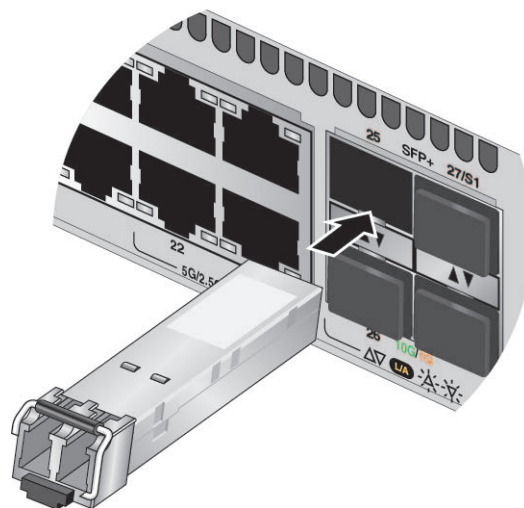


Figure 69. Installing an SFP Transceiver

4. Slide the transceiver into the port until it clicks into place.

Note

If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat steps 1 through 5 to install the remaining transceivers in the switch.

5. Verify the position of the handle on the transceiver. If the transceiver is in a top port, the handle must be in the upright position, as shown in Figure 70. If the transceiver is in a bottom port, the handle must be in the down position.

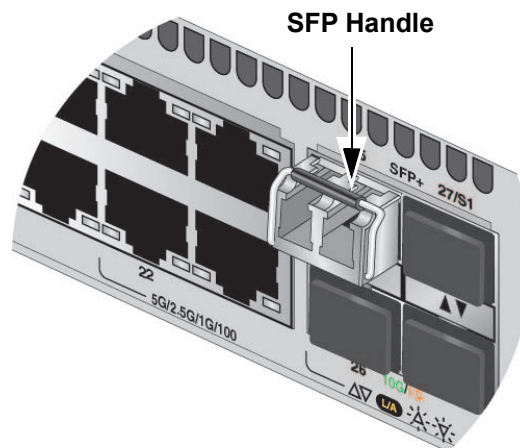


Figure 70. Positioning the SFP or SFP+ Handle in the Upright Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 71. The connector on the cable must fit snugly into the port, and the tab must lock the connector into place.

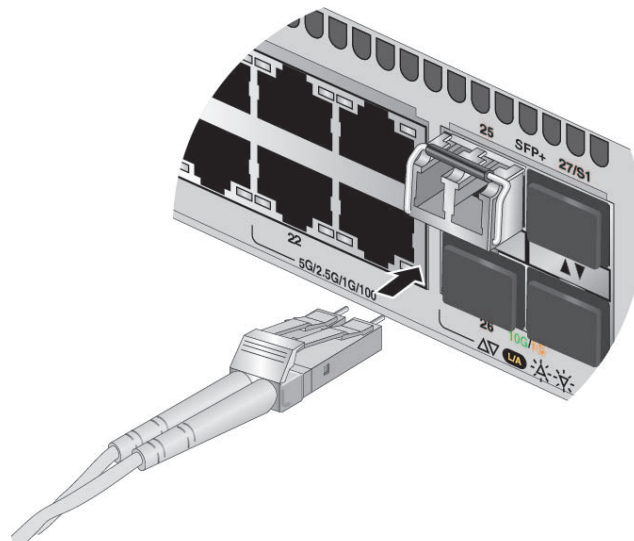


Figure 71. Connecting a Fiber Optic Cable to an SFP or SFP+ Transceiver

7. Repeat this procedure to install additional transceivers.

Installing SP10TW Direct Connect Twinax Cables

Table 22 lists the 1/10G SFP+ transceiver ports that support the SP10TW direct connect twinax cable:

Table 22. 1/10G SFP+ Transceiver Ports

Switch	1/10 G Transceiver Ports
AT-GS980MX/10HSm	9 and 10
AT-GS980MX/18HSm	17 and 18
AT-GS980MX/28	25 to 28
AT-GS980MX/28PSm	25 to 28
AT-GS980MX/52	49 to 52
GS980MX/52PSm	49 to 52

The cables are an economical way to add 10G connections over short distances. They have SFP+ transceivers on both ends and come in lengths of 1 and 3 meters.

To install SP10TW cables in the switch, perform the following procedure:

1. Select a port for the transceiver.
2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. To install the transceiver in a port in the top row, position the transceiver with the Allied Telesis label facing up. To install the transceiver in a port in the bottom row, position the transceiver with the label facing down. Refer to Figure 72.

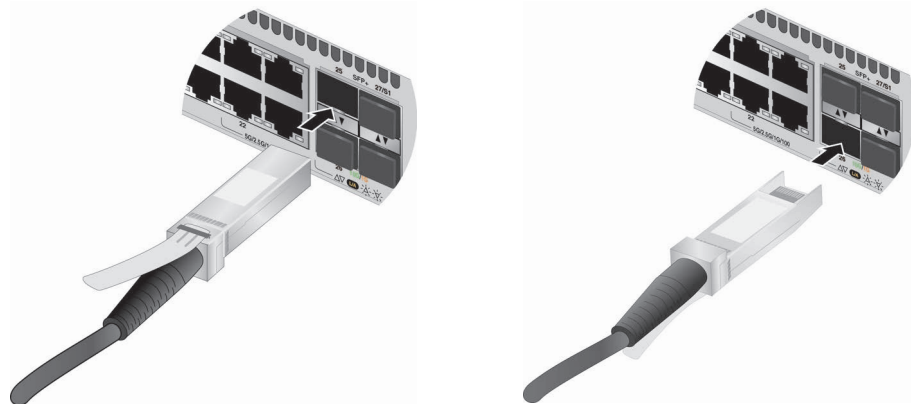


Figure 72. Installing SP10TW Cables

4. Slide the transceiver into the port until it clicks into place.
5. Connect the other end of the cable into an SFP+ port on another network device.
6. Repeat this procedure to install additional transceivers.

Note

To remove the connector and cable from the port, gently push on the connector, pull on the release tab, and slide the connector from the port.

Section III

Building a VCStack

The chapters in this section contain an overview of the VCStack feature and the procedures for configuring the switches for a stack:

- ❑ Chapter 10, “Virtual Chassis Stacking Overview” on page 135
- ❑ Chapter 11, “Building the Trunk with 1/10G SFP+ Transceiver Ports” on page 161
- ❑ Chapter 12, “Configuring a Master Switch to Use Multi-Gigabit 5G Ports as the Trunk” on page 173
- ❑ Chapter 13, “Configuring Member Switches to Use Multi-Gigabit 5G Ports as the Trunk” on page 191

Section III:

Chapter 10

Virtual Chassis Stacking Overview

The sections in this chapter are listed here:

- ❑ “Overview” on page 136
- ❑ “General Stacking Guidelines” on page 137
- ❑ “Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports” on page 139
- ❑ “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147
- ❑ “Invalid Stack Trunks” on page 151
- ❑ “Master and Member Switches” on page 153
- ❑ “Switch ID Numbers” on page 155
- ❑ “Optional Feature Licenses” on page 156
- ❑ “Planning the Stack” on page 157
- ❑ “Stacking Worksheet” on page 158

Note

For more information on VCStack, refer to the *Virtual Chassis Stacking (VCStack) Feature Overview and Configuration Guide* and *Stacking Introduction and Stacking Commands* chapters in the *Command Reference: GS980MX Series Running AlliedWare Plus v5.5.1* at www.alliedtelesis.com/library.

Overview

The VCStack feature connects multiple GS980MX Switches into a single, virtual networking unit. Benefits of the VCStack feature include:

- ❑ Simplifies management - You can manage the devices of the stack as a single unit, rather than individually. Your local and remote management sessions give you management access to all the switches in the stack.
- ❑ Reduces IP addresses - A stack requires only one IP address for remote management access, thereby reducing the number of IP addresses you have to assign to network devices.
- ❑ Adds feature flexibility and resiliency - A stack gives you flexibility in the available configurations of features. For example, you can create port aggregators of ports from different switches in a stack, rather than from only one switch. Distributing the ports of an aggregator across two or more switches in a stack increases its resiliency because it can continue to function, though at a reduced bandwidth, even if one of the switches stops functioning.
- ❑ Reduces protocol requirements - Building a stack might eliminate the need to configure some protocols, such as the Virtual Router Redundancy Protocol or Spanning Tree Protocol.

General Stacking Guidelines

Note

The following discussions apply to AlliedWare Plus v5.5.1 or later. Earlier versions of the operating system have different trunk rules and restrictions.

Here are the general guidelines to building a VCStack of GS980MX Switches:

- ❑ A stack can have up to four GS980MX Switches.
- ❑ A stack can consist of different GS980MX switch models.
- ❑ A stack of GS980MX Switches cannot contain other stacking switches, such as x930 or x950 Switches.
- ❑ The VCStack feature is included as standard with the AlliedWare Plus management software. No additional software or license is required.
- ❑ Stacking is enabled by default on GS980MX Switches.
- ❑ The switches of a stack are connected together with a stack trunk, consisting of a minimum of two ports per switch.
- ❑ The default trunk ports are the following two SFP+ transceiver ports:
 - AT-GS980MX/10HSm: 9 and 10
 - AT-GS980MX/18HSm: ports 17 and 18
 - AT-GS980MX/28 and AT-GS980MX/28PSm: ports 27 and 28
 - AT-GS980MX/52 and AT-GS980MX/52PSm: ports 51 and 52
- ❑ You can increase the bandwidth and resiliency of the stack by adding these SFP+ transceiver ports in the default trunk.
 - AT-GS980MX/28 and AT-GS980MX/28PSm: ports 25 and 26
 - AT-GS980MX/52 and AT-GS980MX/52PSm: ports 49 and 50
 - AT-GS980MX/10HSm and AT-GS980MX/18HSm do not have additional SFP+ ports
- ❑ A trunk of SFP+ transceiver ports can consist of either 1G SFP or 10G SFP+ transceivers.

Note

Previous versions of this guide incorrectly stated that even though the SFP+ transceiver ports supported both 1G and 10G transceivers, a stack trunk required 10G transceivers. The correction is stack trunks support both 1G and 10G transceivers.

- ❑ The links of a trunk must be direct connections between switches. There cannot be any networking devices, such as a media converters or other Ethernet switches, between two trunk ports.
- ❑ Stack trunks on the AT-GS980MX/10HSm, AT-GS980MX/18HSm, AT-GS980MX/28PSm, and AT-GS980MX/52PSm Switches can also be built with the multi-speed 5G ports.
- ❑ A stack trunk can be either linear or ring. Ring is recommended because it adds redundancy, enabling a stack to continue to function even if a trunk link fails.

Table 23 lists the possible trunk ports for a stack.

Table 23. VCStack Trunk Ports

Switch	Default Trunk Ports: 1/10G SFP+ Transceiver Ports	Additional Trunk Ports: 1/10G SFP+ Transceiver Ports	Optional Trunk Ports: 5G twisted pair ports)
AT-GS980MX/10HSm	9/S1,10/S2	None	1-8
AT-GS980MX/18HSm	17/S1, 18/S2	None	1-16
AT-GS980MX/28	27/S1, 28/S2	25, 26	None
AT-GS980MX/28PSm	27/S1, 28/S2	25, 26	21-24
AT-GS980MX/52	51/S1, 52/S2	49, 50	None
AT-GS980MX/52PSm	51/S1, 52/S2	49, 50	41-44, 45-48

Note

For further information, refer to “Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports” on page 139 and “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147.

Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports

Here are the guidelines to using 1/10G SFP+ transceiver ports as the stack trunk:

- ❑ A trunk of 1/10G SFP+ transceiver ports can have a maximum of four ports per switch.
- ❑ Here are the default 1/10G SFP+ trunk ports:
 - AT-GS980MX/10HSm: ports 9 to 10
 - AT-GS980MX/18HSm: ports 17 and 18
 - AT-GS980MX/28PSm and AT-GS980MX/28: ports 25 to 28
 - AT-GS980MX/52PSm and AT-GS980MX/52: ports 49 to 52
- ❑ 1/10G SFP+ transceivers and direct attach cables used for a stack trunk must be from Allied Telesis. Switches might not form a stack with transceivers from other network equipment providers. For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

Note

Transceivers are purchased separately.

Note

Previous versions of the *GS980MX Series VCStack Installation Guide* stated that the switches did not support 1G transceivers as VCStack trunk ports. That is incorrect. The switches support 1G or 10G transceivers as trunk ports.

- ❑ The default trunk ports can be used as regular networking ports by disabling the VCStack feature and using the switch as a standalone unit, or by using the multi-speed 5G ports for the trunk. Refer to “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147.
- ❑ A stack trunk can have fiber optic and SP10TW direct connect cables in the same stack.

Examples of trunks built with the default 1/10G SFP+ transceiver ports are illustrated in the following figures.

Figure 73 illustrates stacks of AT-GS980MX/10HSm Switches using the default SFP+ ports 9 and 10 as the trunk.

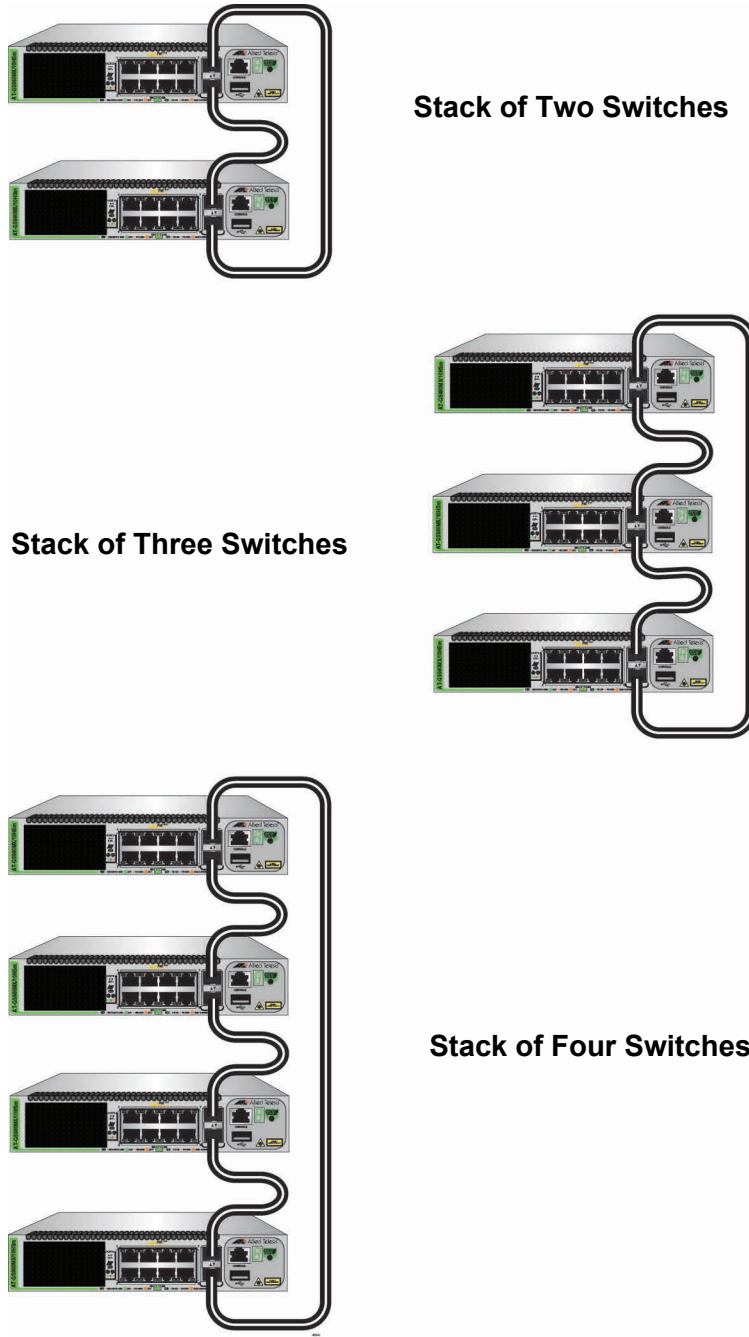


Figure 73. Stacks of AT-GS980MX/10HSm Switches Using the Default 1/10 G SFP+ Transceiver Ports 9 and 10

Figure 74 illustrates stacks of AT-GS980MX/18HSm Switches using the default SFP+ ports 17 and 18 as the trunk.

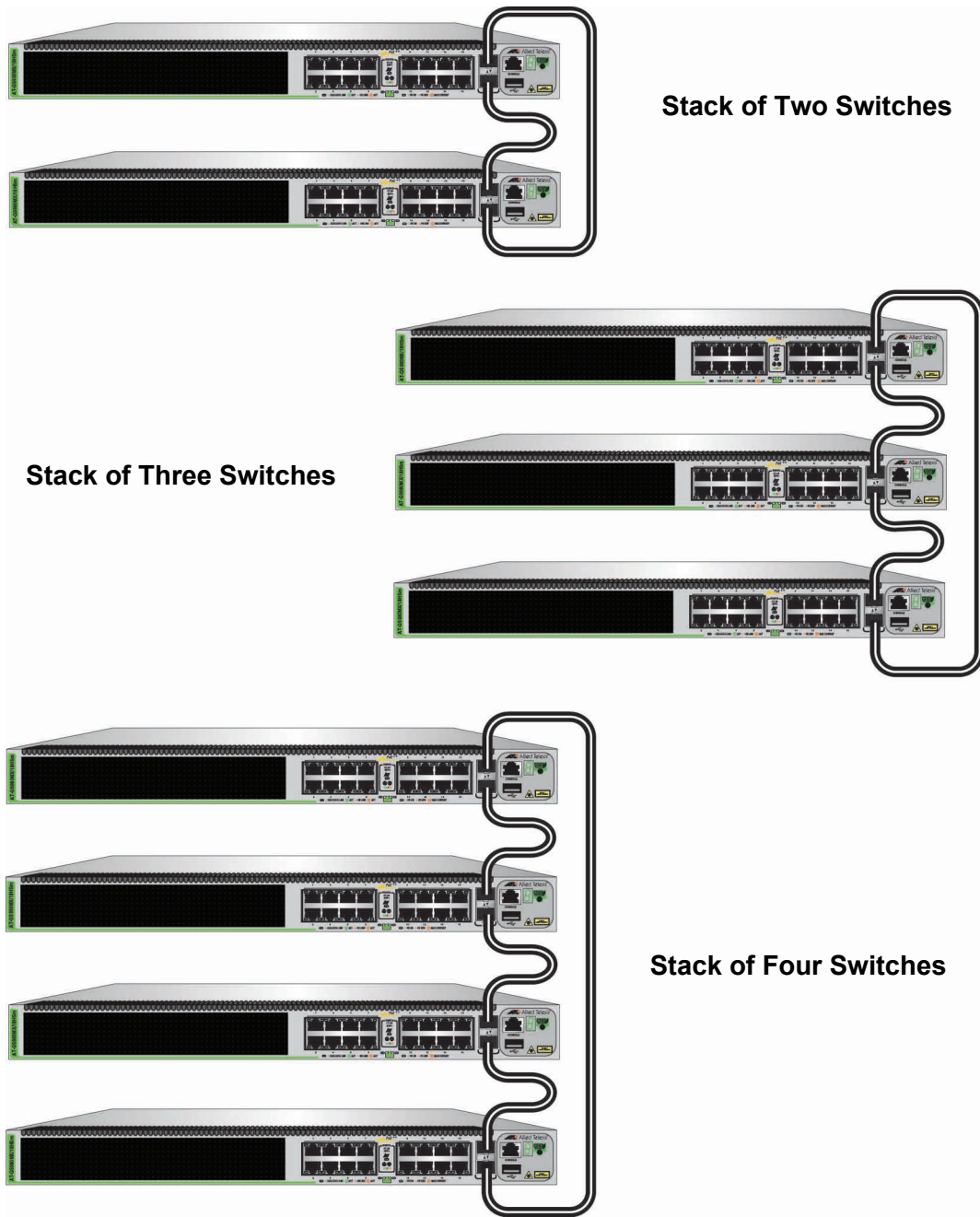


Figure 74. Stacks of AT-GS980MX/18HSm Switches Using the Default 1/10G SFP+ Transceiver Ports 17 and 18

Figure 75 illustrates stacks of AT-GS980MX/28 or AT-GS980MX/28PSm Switches using the default SFP+ ports 27 and 28 as the trunk.

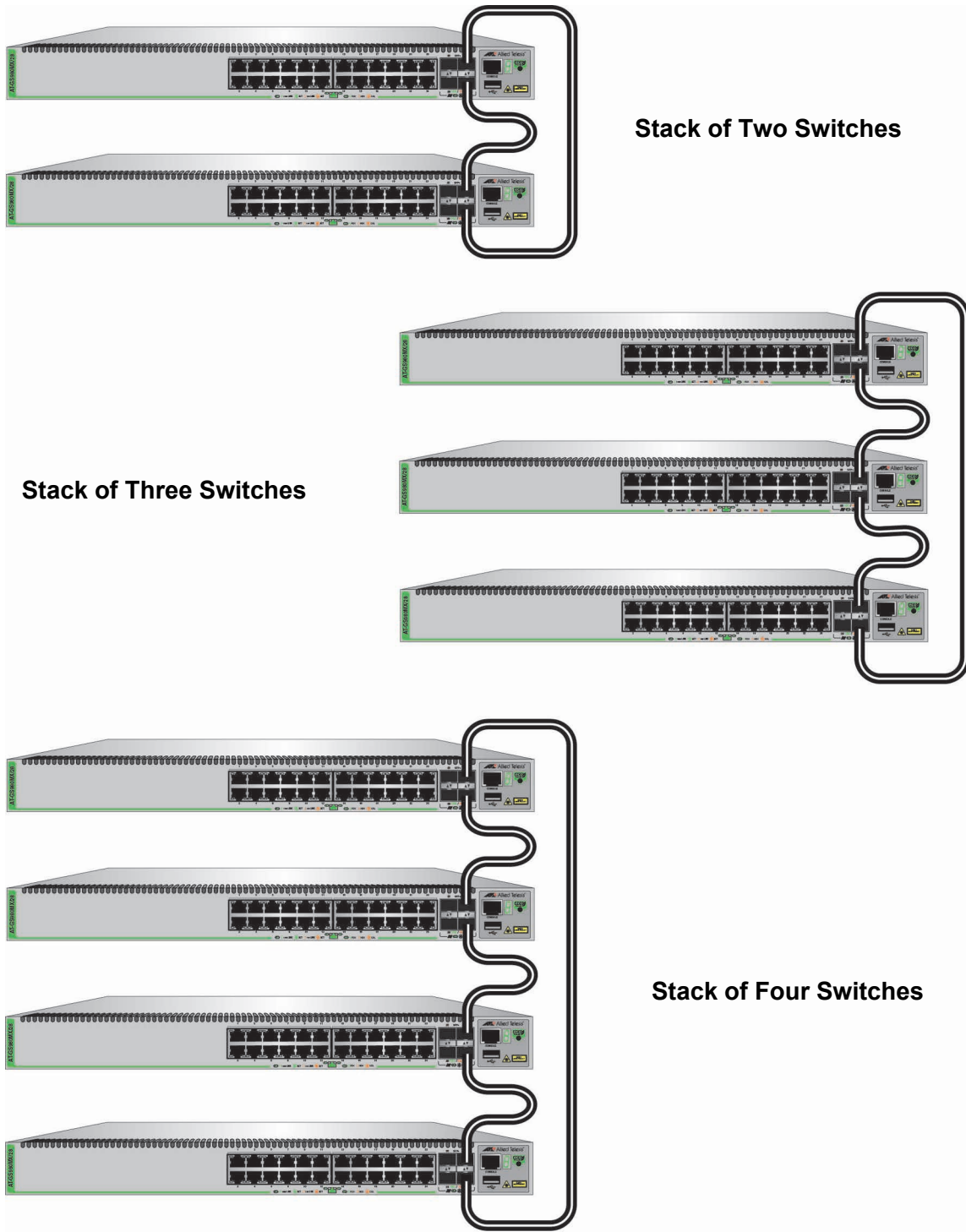


Figure 75. Stacks of AT-GS980MX/28 or AT-GS980MX/28PSm Switches Using the Default 1/10G SFP+ Transceiver Ports 27 and 28

Figure 76 illustrates stacks of AT-GS980MX/52 or AT-GS980MX/52PSm Switches using the SFP+ ports 51 and 52 as the trunk.

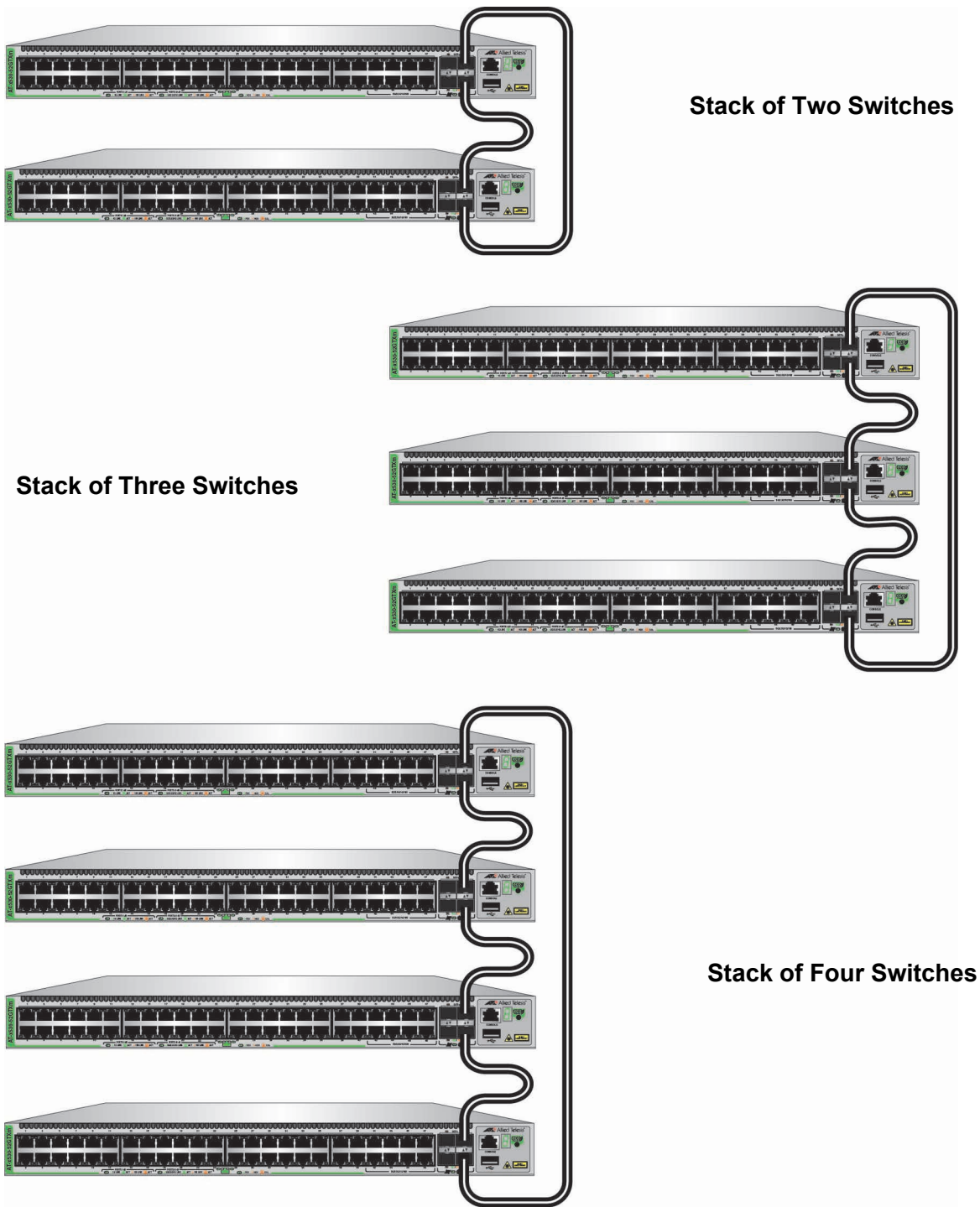


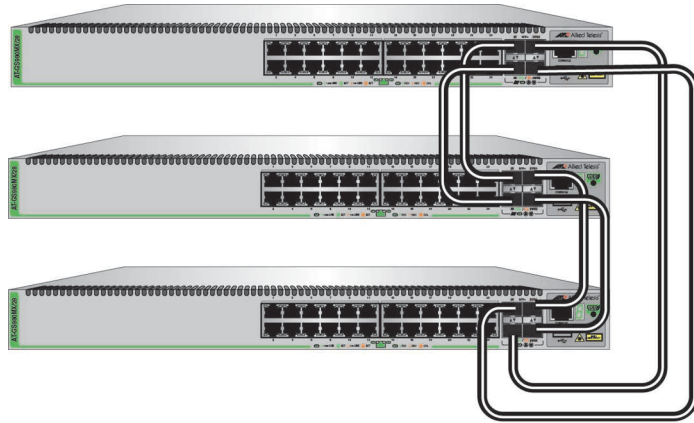
Figure 76. Stacks of AT-GS980MX/52 or AT-GS980MX/52PSm Switches Using the Default 1/10G SFP+ Transceiver Ports 51 and 52

The bandwidth of the default trunk can be increased on the 28-port and 52-port GS980MX Switches by adding one or two additional SFP+ transceiver ports, listed here, to the trunk:

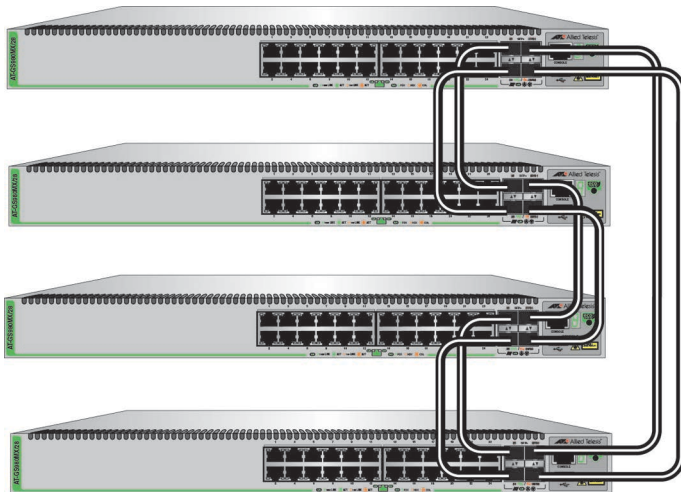
- ❑ AT-GS980MX/28PSm and AT-GS980MX/28: ports 25 and 26.
- ❑ AT-GS980MX/52PSm and AT-GS980MX/52: ports 49 and 50.

Figure 77 shows examples of stacks using all four SFP+ ports for the stack trunk.

Stack of Three Switches



4631



4630

Stack of Four Switches

Figure 77. Stack Trunks of SFP+ Transceiver Ports 25 to 28

Stacks can have different GS980MX Series models. Figure 78 illustrates two examples.

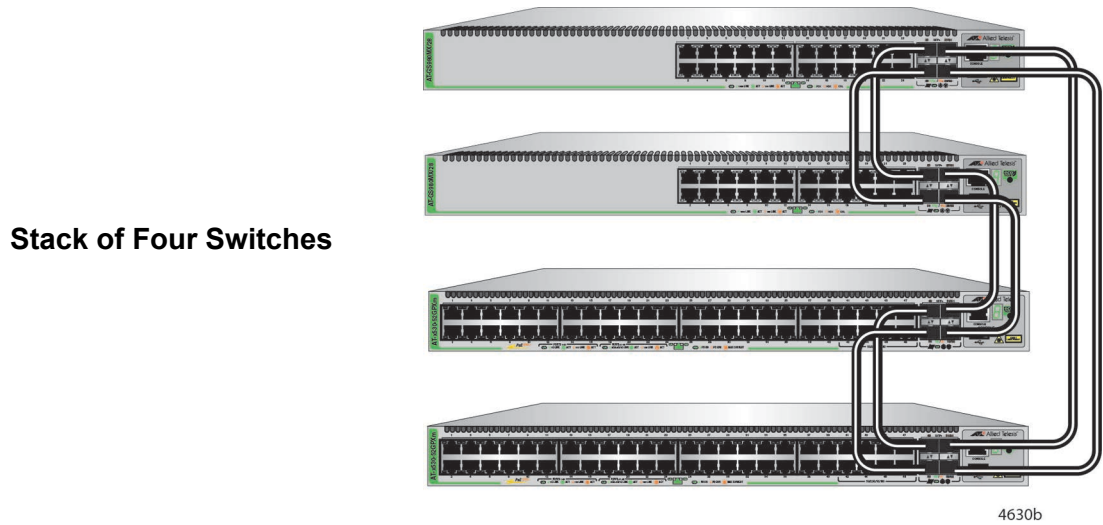
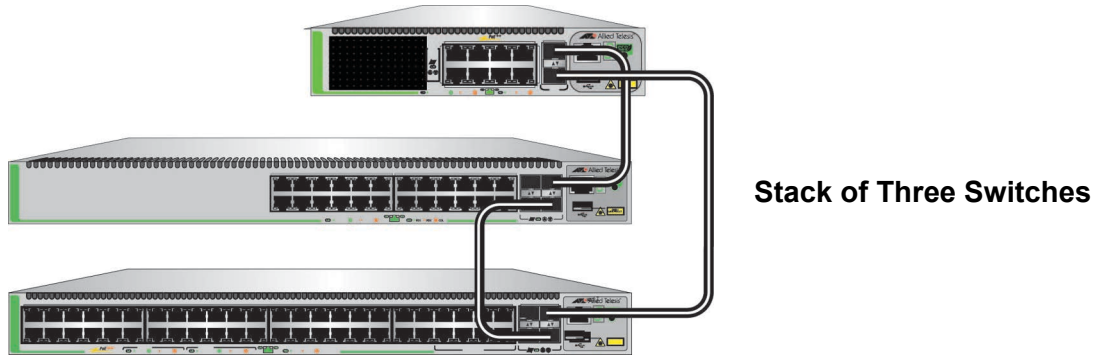


Figure 78. Stacks of Different GS980MX Series Models Using the SFP+ Transceiver Ports for the Trunk

Stack trunks can have both 10G SFP+ fiber optic transceivers and SP10TW direct attach cables. An example is illustrated in Figure 79.

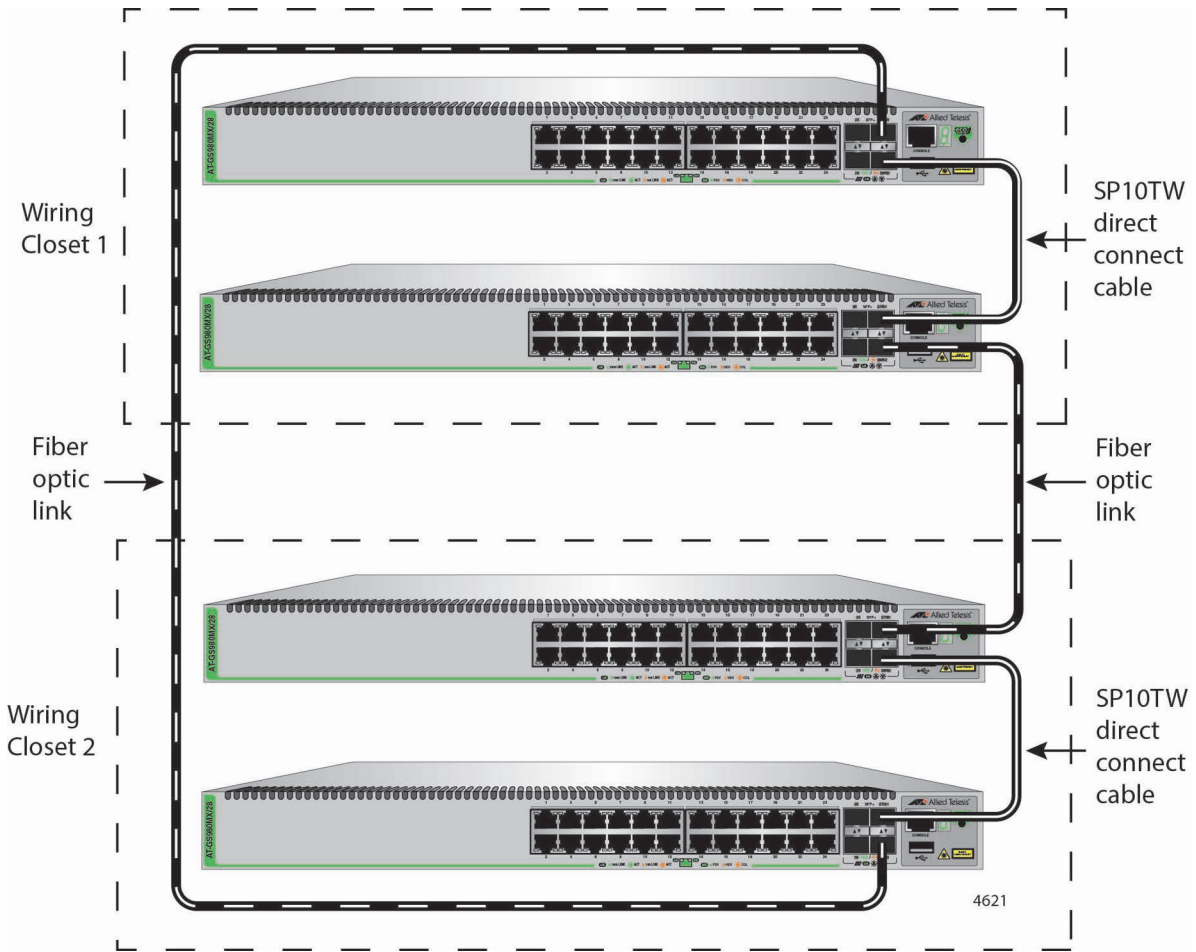


Figure 79. Stack Trunk with Both 10G SFP+ Fiber Optic Transceivers and SP10TW Direct Connect Cables

Guidelines for Stack Trunks of Multi-speed 5G Ports

If you prefer to use the 1/10G SFP+ transceiver ports on the GS980MX Switches for other functions, you can instead use the multi-speed 5G ports on the following switches for the trunk:

- ❑ AT-GS980MX/10HSm
- ❑ AT-GS980MX/18HSm
- ❑ AT-GS980MX/28PSm
- ❑ AT-GS980MX/52PSm

Here are the guidelines:

- ❑ A stack can have up to four GS980MX Switches.
- ❑ A trunk of the multi-speed 5G ports can have up to four ports per switch. The more multi-speed 5G ports in a trunk, the greater its bandwidth and resiliency.
- ❑ Here are the multi-speed 5G ports on the switches.
 - AT-GS980MX/10HSm: ports 1 to 8
 - AT-GS980MX/18HSm: ports 1 to 16
 - AT-GS980MX/28PSm: ports 21 to 24
 - AT-GS980MX/52PSm: ports 41 to 44 or 45 to 48
- ❑ The multi-speed 5G ports on the AT-GS980MX/52PSm Switch are divided into two groups: ports 41 to 44 and ports 45 to 48. The ports of a trunk must be from the same group.
- ❑ A stack containing one or more AT-GS980MX/28 or AT-GS980MX/52 Switches cannot use multi-speed 5G ports for the trunk, because they do not have multi-speed ports. A stack with those switches must use the 1/10G SFP+ ports for the trunk.
- ❑ When possible, you should use the same multi-speed 5G ports on all the switches of a stack. This is not a requirement, but it can make managing and troubleshooting the stack easier.
- ❑ You designate the stack ports with the STACKPORT command.
- ❑ Once ports are designated as trunk ports, you cannot view or change their parameter settings.

Figure 80 on page 148 illustrates stacks of two switches using the multi-speed 5G ports for the trunk, with two, three, and four links per switch.

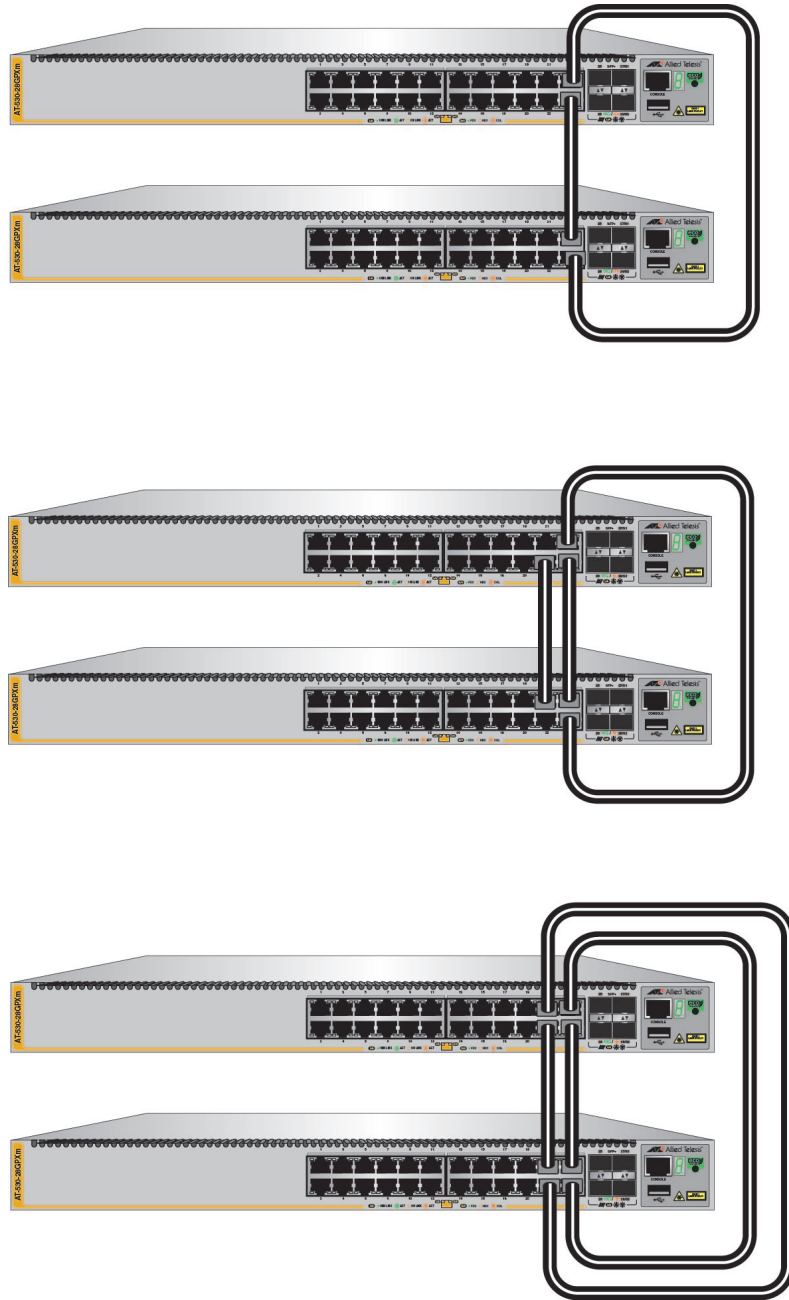


Figure 80. Trunks of Multi-speed 5G Ports for Stacks of Two AT-GS980MX/28PSm Switches

A trunk of multi-speed 5G ports for a stack of three GS980MX Switches can have two or four ports per switch. The example in Figure 81 has AT-GS980MX/28PSm Switches.

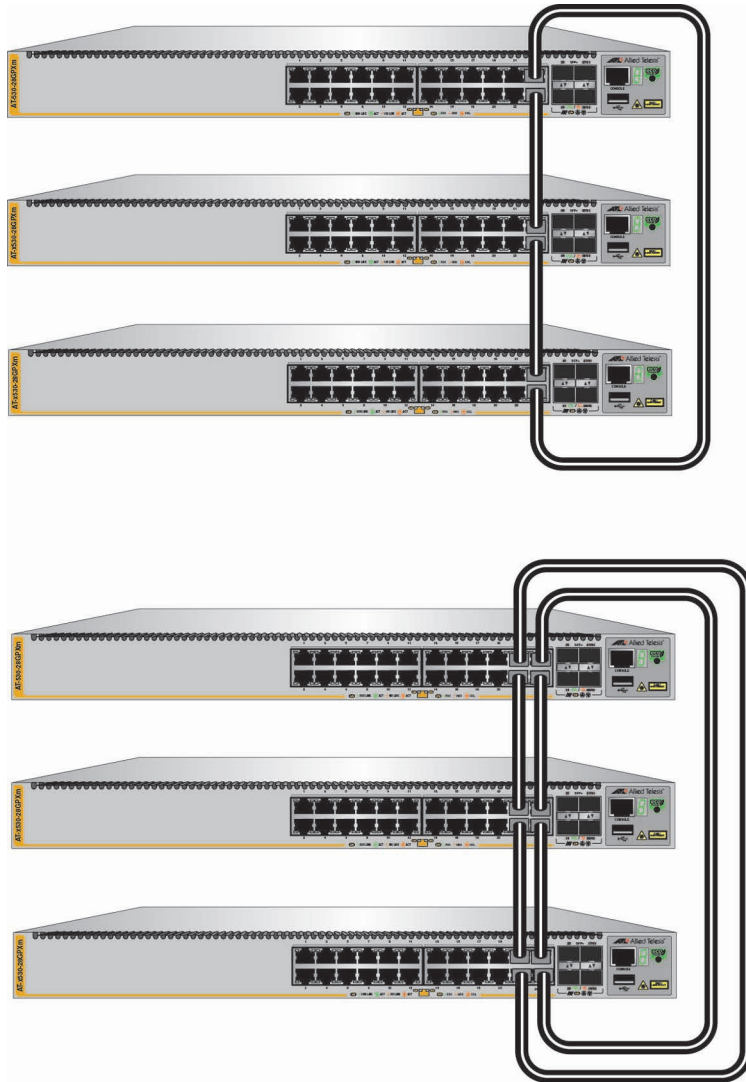


Figure 81. Trunks of Multi-speed 5G Ports for Stacks of Three GS980MX Switches

A trunk of multi-speed 5G ports for stacks of four switches can also have two or four ports per switch. Refer to Figure 82.

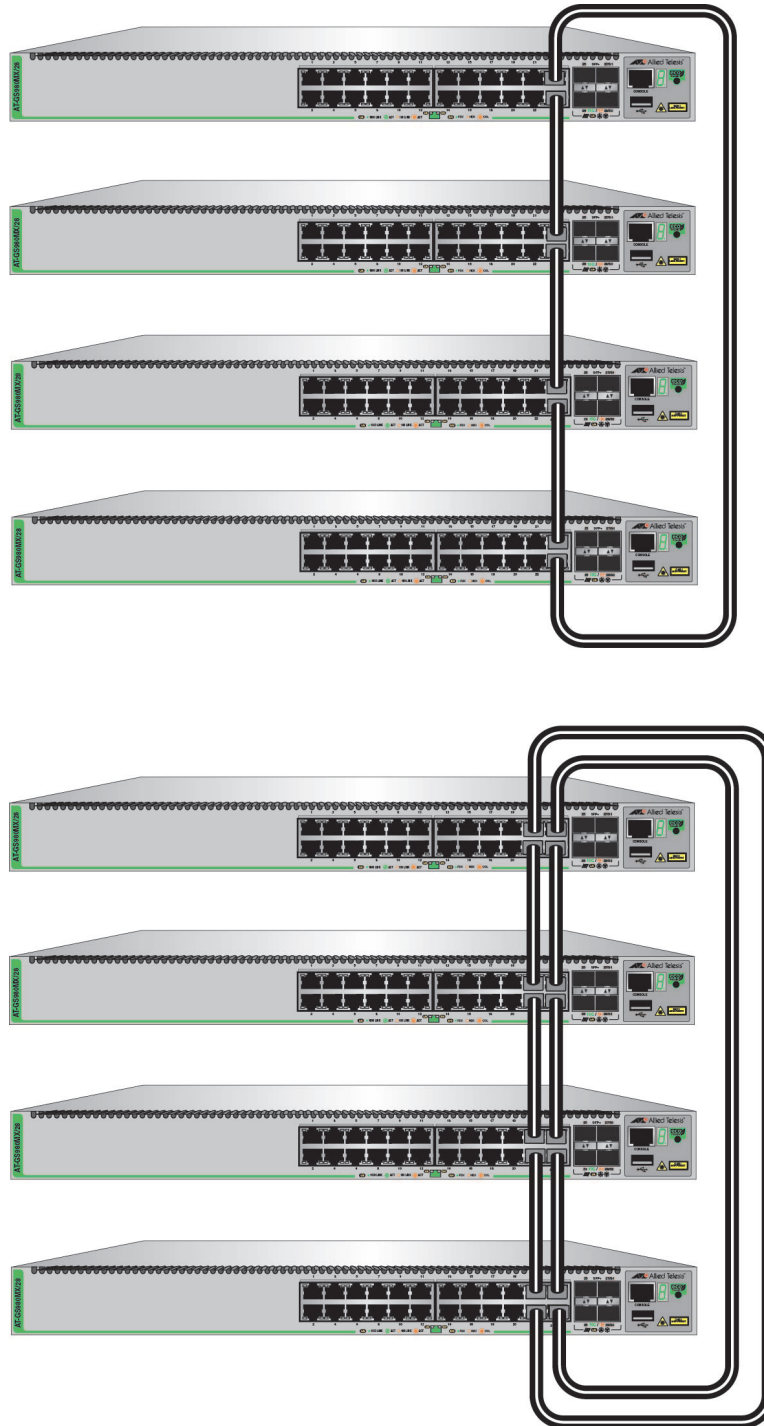


Figure 82. Trunks of Multi-speed 5G Ports for Stacks of Four GS980MX Switches

Invalid Stack Trunks

The following are examples of different types of invalid stack trunks.

Stack trunks must be direct links between trunk ports. There cannot be any intermediary networking devices, such as media converters, Ethernet switches, or routers, between trunk ports. Figure 83 is an example of this type of invalid trunk.

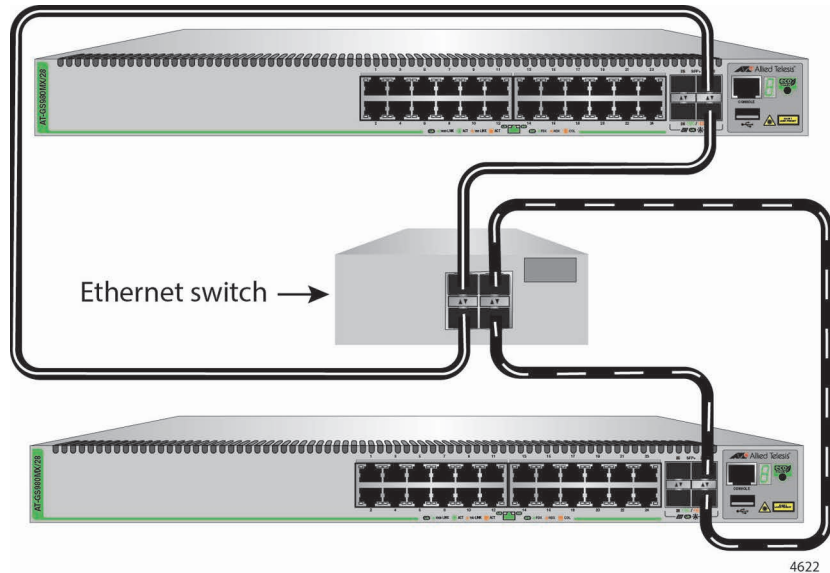


Figure 83. Invalid Stack Trunk with an Intermediary Networking Device

Trunks must have a minimum of two ports used per switch. Figure 84 is an example of an invalid stack trunk with one port used per switch.

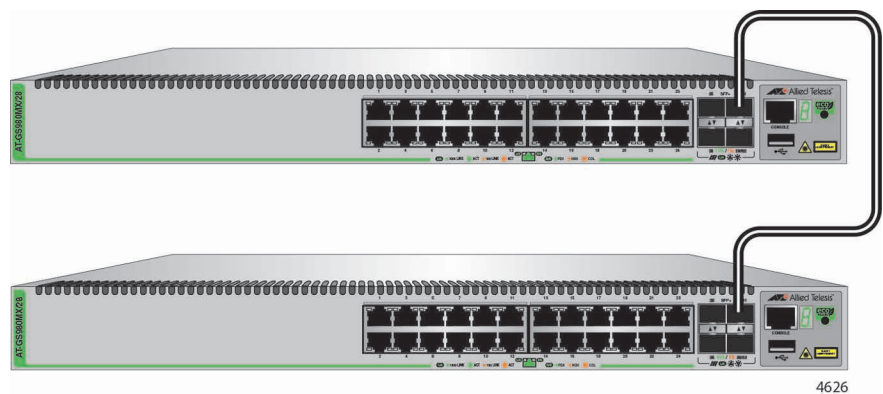
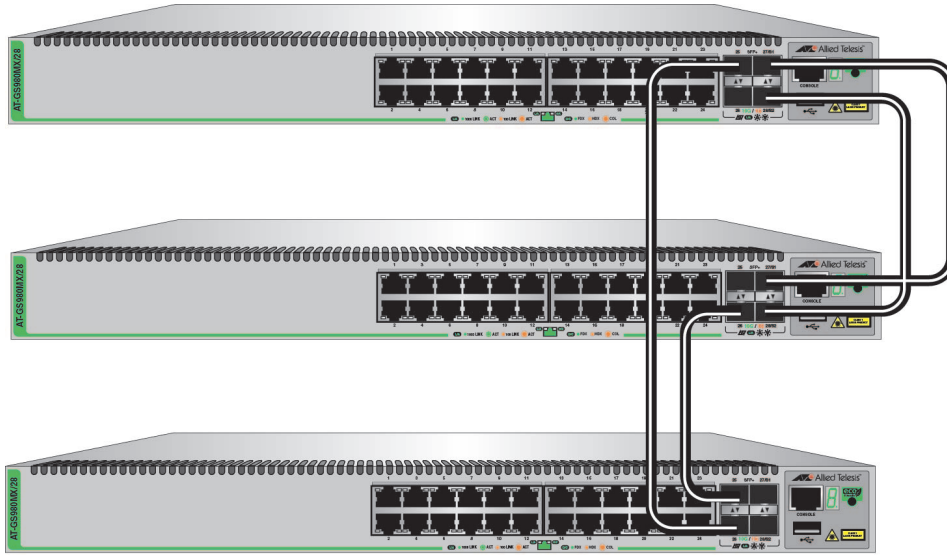


Figure 84. Invalid Stack Trunk with One Port Per Switch

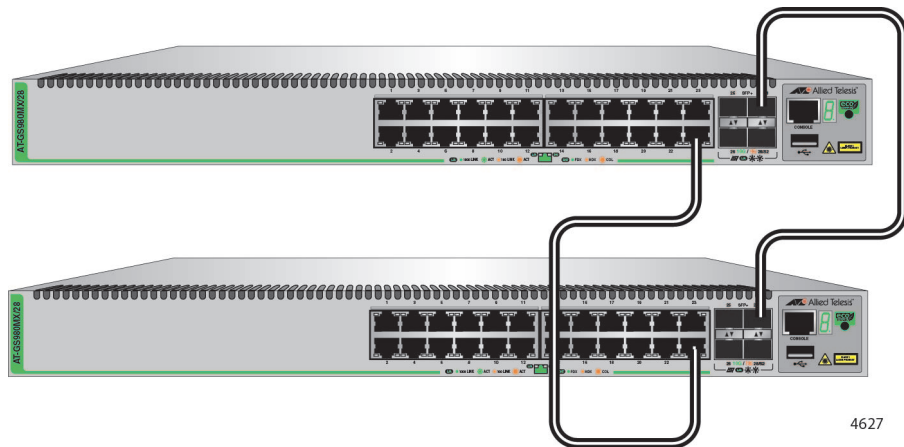
Trunks must have the same number of physical links between switches. Figure 85 is invalid because the top and middle switches are connected with two links while the top and middle switches are connected to the bottom switch with only one link each.



4628

Figure 85. Invalid Stack Trunk with Different Numbers of Links

Trunks cannot have both 5G and 10G links. Figure 86 shows an example of an invalid stack trunk because it uses both types of ports.



4627

Figure 86. Invalid Stack Trunk with Different Port Types

Master and Member Switches

A stack has one master switch. The other switches are member switches. The main functions of the master switch are listed here:

- ❑ Coordinate and monitor stack operations.
- ❑ Configure the parameter settings of the switches using its configuration file in flash memory, whenever the stack is reset or powered on.
- ❑ Verify that the switches are using the same version of management software. It automatically downloads its management software to the member switch over the stacking cables if the member switch has a different version of the management software.
- ❑ Verify that the switches have different ID numbers. It automatically assigns new ID numbers to resolve situations where two or more switches have the same ID number.
- ❑ Verify that the stacking transceivers are from Allied Telesis and they are cabled correctly.

The parameter settings of the switches of the stack are stored in configuration files in the flash memories of the master and member switches. Each file contains all the settings for the switches in the stack. The switches update the files with the latest parameter settings whenever you issue the WRITE command to save your changes.

When you reset or power on the stack, the master switch uses the configuration file in its flash memory to restore its own parameter settings, as well as the parameter settings of the member switches. A member switch uses its configuration file to restore parameter settings only if the master switch is removed or fails, and it becomes the new master switch of the stack.

Selection of the Master Switch

The switches of a stack select the master switch during the initialization process, which they perform whenever they are powered on or reset. The master switch is selected using the following parameters:

- ❑ Stack priority number
- ❑ MAC address

The stack priority number is an adjustable value of 0 to 255. The lower the number, the higher the priority. The switch with the lowest priority number (highest priority) becomes the master switch of a stack. The default priority value is 128.

When switches have the same priority values, they compare their MAC addresses to select the master switch. As with the priority value, the lower the MAC address, the higher the priority. The switch with the lowest MAC address becomes the master switch.

If you power on the stack for the first time without adjusting the priority values, the master switch is selected based on the MAC addresses if the units are powered on simultaneously. If you power on the switches one at a time, the master switch is the first switch to be powered on.

You can set the priority values of the switches either before or after you build the stack. Changing the values after the stack is operating does not change the parameter settings of the stack or the ID numbers of the devices.

Switch ID Numbers

Each switch in a stack must have a unique ID number. The range is 1 to 4 for a stack of GS980MX Switches. The default value is 1.

The ID numbers are displayed on the ID LEDs on the front panels of the units. You can assign the numbers yourself or let the master switch assign the numbers automatically when you initially power on the stack.

You use the ID numbers to identify the individual switches and ports when configuring the devices with the commands in the AlliedWare Plus management software.

The ID numbers are also used to identify the parameter settings of the switches in the configuration files. When the stack is reset or power cycled, the master switch uses the ID numbers to identify the devices to which the parameter settings belong.



Caution

Do not change the ID numbers of the switches after configuring the parameter settings of the stack. Otherwise, the parameter settings might be applied to the wrong devices when you reset or power cycle the stack. *See* E79

Note

The switches do not use the ID numbers to select the master switch. The selection of the master switch is based on their priority numbers and MAC addresses, as explained in “Selection of the Master Switch” on page 153.

Note

The master switch of a stack does not have to have the ID number 1. It can have any ID number.

Optional Feature Licenses

The GS980MX Switches come with the AlliedWare Plus operating system and a base set of features that are available as soon as you install the devices. Allied Telesis offers additional features and capabilities for the switches. They come with the AlliedWare Plus operating system, but have to be unlocked before you can use them. Unlocking optional features requires licenses from Allied Telesis. For a list of optional feature licenses for the product, refer to its product sheet on the Allied Telesis web site.

Here are the guidelines to feature licenses for a stack of GS980MX Switches:

- ❑ The VCStack feature is part of the base features of the switch. It does not require a feature license.
- ❑ You can install feature licenses while the switches are operating as standalone units or a stack.
- ❑ When ordering feature licenses for the switches of a stack, you must order one license for each switch.
- ❑ The switches will form a stack even if they have different feature licenses. However, the additional features will only be available on those switches that have the licenses. The stack generates a warning message if it detects that the switches do not have the same feature licenses. To resolve the issue, you can use the REMOTE-LOGIN command to log onto the individual switches in a stack to install new licenses. For more information, refer to the *Software Reference for GS980MX Series Switches, AlliedWare Operating System* from www.alliedtelesis.com.

Planning the Stack

Here are factors to consider when planning a stack:

- ❑ How many GS980MX switches will be in the stack? The maximum is four switches.
- ❑ Have you selected the stack ports for the trunk? Refer to “Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports” on page 139 and “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147.
- ❑ If you will be using the 1/10G transceiver ports for the trunk, have you determined the required number of transceivers or SP10TW direct attach cables?
- ❑ Have you selected a master switch? This can be any switch. If the switches have different versions of the AlliedWare Plus management software, the master switch should have the most recent version. Refer to “Selection of the Master Switch” on page 153.
- ❑ Have you selected ID numbers in the range of 1 to 4 for the switches? You can control the ID number assignments by the order in which you initially power on the switches, or you can have the switches assign the numbers automatically. For background information, refer to “Switch ID Numbers” on page 155.
- ❑ Have you already connected network cables to the trunk ports? If so, you should disconnect them before configuring the switches for stacking.

Stacking Worksheet

Configuring and maintaining a stack may be easier if you use the worksheet in Table 24.

Table 24. Stacking Worksheet

Switch	Switch Model/ Location	ID	Priority	AW+ Version Number	Trunk Ports
Master		1	1		
Member		2	2		
Member		3	3		
Member		4	4		

The worksheet columns are described in Table 25.

Table 25. Stacking Worksheet Columns

Column	Description
Switch Model/ Location	Use this column to write down the model names and physical locations (e.g., buildings or equipment rooms) of the switches of the stack. The information can be useful in locating the switches if they are in different locations.
ID	Each switch in a stack has to have a unique ID number in the range of 1 to 4. They display the numbers on the ID LEDs on the front panels. You use the numbers to configure the individual ports. Allied Telesis recommends assigning the ID 1, the default value, to the master switch. You should decide ahead of time, before beginning the configuration procedures, the ID assignments of the switches.

Table 25. Stacking Worksheet Columns (Continued)

Column	Description
Priority	<p>When the switches of a stack are reset or powered on, they perform an initialization process that involves, in part, choosing the master switch. The selection is based on their priority numbers and MAC addresses. The former is an adjustable parameter with a range of 0 to 255 and a default value of 128. The lower the value, the higher the priority. Thus, the switch with the lowest value becomes the stack master.</p> <p>If switches have the same priority number, the master is selected based on their MAC addresses. Again, as with priority numbers, the lower the MAC address, the higher the priority.</p> <p>Allied Telesis recommends setting each switch's priority value to match its ID value. This is to ensure that the switch you have chosen to be the master unit will function in that role. Additionally, it will make it possible for you to know the order in which the switches assume the master role if the primary master should fail or be powered off.</p>
AW+ Version Number	<p>This column is for writing down the version numbers of the AlliedWare Plus management software on the switches. The switches might not be able to form the stack if they have different versions. The configuration instructions explain how to view the version numbers. If they have different versions, you should update them to the most recent release before building the stack.</p>
Trunk Ports	<p>This column is for the trunk ports. This will be the default ports or the optional trunk ports. You must choose the ports before beginning the configuration procedures.</p>

Chapter 11

Building the Trunk with 1/10G SFP+ Transceiver Ports

This chapter contains the following procedures:

- ❑ “Introduction” on page 162
- ❑ “Installing the Power Cord Retaining Clip” on page 163
- ❑ “Powering On the Switches Individually” on page 164
- ❑ “Powering On the Switches Simultaneously” on page 168
- ❑ “Verifying the Stack” on page 170
- ❑ “Adding SFP+ Transceiver Ports to the Stack Trunk” on page 171

Introduction

This chapter contains instructions on building a stack using the 1/10G SFP+ transceiver ports in Table 26 as the trunk.

Table 26. Default 1/10G SFP+ Transceiver Trunk Ports

Switch	Trunk Ports
AT-GS980MX/10HSm	9 and 10
AT-GS980MX/18HSm	17 and 18
AT-GS980MX/28	27 and 28
AT-GS980MX/28PSm	27 and 28
AT-GS980MX/52	51 and 52
AT-GS980MX/52PSm	51 and 52

Note

For background information, refer to “General Stacking Guidelines” on page 137 and “Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports” on page 139.

This procedure does not require any configuration steps because the stacking feature is enabled by default and the 1/10G SFP+ ports in Table 26 are already designated as the trunk. To build the stack, you cable the transceiver ports and power on the switches.

There are two procedures:

- ❑ To control the assignment of the switch ID numbers yourself, perform “Powering On the Switches Individually” on page 164. The numbers are assigned in the order in which you power on the units.
- ❑ To have the switches assign the ID numbers automatically, perform “Powering On the Switches Simultaneously” on page 168.

After the ID numbers are assigned, you may change them with the `STACK_RENUMBER` command, described in the *Command Reference: GS980MX Series Running AlliedWare Plus v5.5.1*.



Caution

Do not change the ID numbers of the switches after configuring their parameter settings. Otherwise, the stack might assign configuration settings to the wrong units.

Installing the Power Cord Retaining Clip

The switch comes with a power cord retaining clip that protects the power cord from being accidentally unplugged from the unit. To install the power cord retaining clip on the AC power connector on the rear panel of the switch, refer to Figure 87.

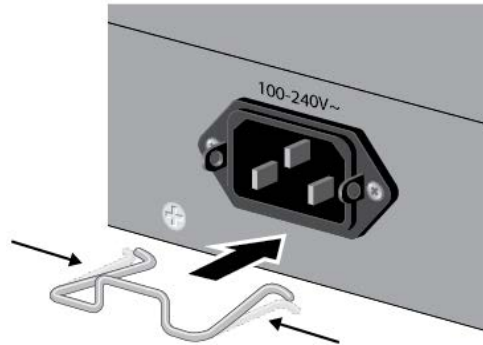


Figure 87. Installing the Power Cord Retaining Clip

Note

Go to “Powering On the Switches Individually” on page 164 or “Powering On the Switches Simultaneously” on page 168.

Powering On the Switches Individually

This procedure explains how to control the assignment of the ID numbers of the switches by powering on the units one at a time during the initial power-on sequence. The first switch is assigned ID number 1, the next unit is assigned ID number 2, and so on. This procedure is useful when the switches are installed in the same equipment rack and you want to number them in sequence, such as from top to bottom, to make them easier to identify. After the ID numbers are assigned, the switches retain their assignments even if you power off or reset the stack.

During the first power on sequence, the first switch to be powered on becomes the master switch of the stack. However, If you do not change the priority values of the units, the next time you reset or power cycle the stack the units use their MAC addresses to select the master switch. This might result in a different switch being assigned that role. However, this does not affect their ID number assignments, the configuration of the switches, or the manner in which you manage the stack.

This procedure assumes the following:

- ❑ This is the initial power-on sequence of the stack.
- ❑ You cabled the following 1/10G SFP+ ports on the switches to form the stack trunk.
 - AT-GS980MX/10HSm: ports 9 and 10
 - AT-GS980MX/18HSm: ports 17 and 18
 - AT-GS980MX/28 and AT-GS980MX/28PSm: ports 27 and 28
 - AT-GS980MX/52 and AT-GS980MX/52PSm: ports 51 and 52
- ❑ The ID numbers are set to the default 1.
- ❑ All the switches are powered off.

To monitor the power on sequence, you can connect a terminal or computer with a terminal emulator program to the Console port on the switch you intend to power on first. Refer to “Starting a Local Management Session” on page 118

Note

Before powering on the switch, refer to “Power Specifications” on page 221.

To control the assignment of the ID numbers when powering on the switches of the stack for the first time, perform the following procedure:

1. If you have not already cabled the default 1/10G SFP+ trunk ports do so now. For background information, refer to “Guidelines for Stack Trunks of 1/10G SFP+ Transceiver Ports” on page 139. For cabling instructions, refer to “Installing SFP or SFP+ Transceivers” on page 128 or “Installing SP10TW Direct Connect Twinax Cables” on page 130.
2. Power on the switch you want assigned ID number 1 by connecting its power cord to the AC connector on the back panel and. Refer to Figure 88.

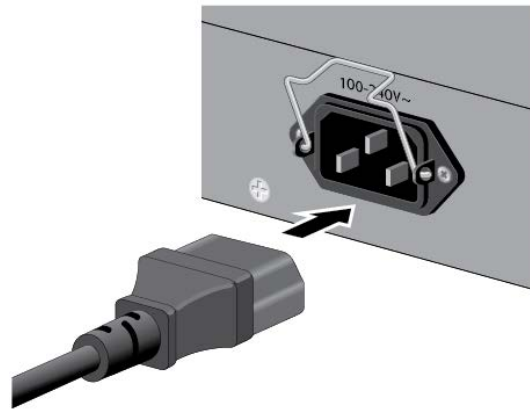


Figure 88. Plugging in the AC Power Cord to the Switch

3. Lower the power cord retaining clip to secure the cords to the switch. Refer to Figure 89.

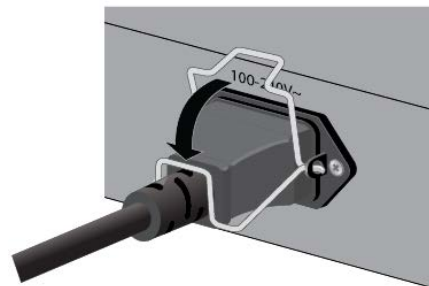


Figure 89. Lowering the Power Cord Retaining Clip

4. Connect the power cord to an appropriate power source. Refer to “Power Specifications” on page 221 for the power specifications of the switches.

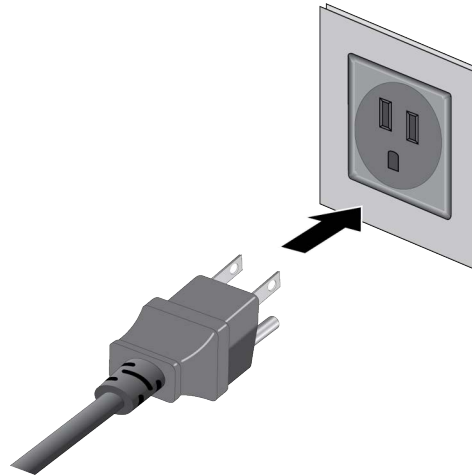


Figure 90. Plugging in the AC Power Cord to an AC Source

Note

The illustration shows a North American power cord. Your power cord may be different.



Warning

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ E3

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. ⚡ E5

5. Wait one minute for the switch to initialize its management software.

The switch should be displaying the number 1 on its ID LED.

6. Repeat step 1 through 4 to power on the switch to be assigned ID number 2.
7. Wait two minutes for the new switch to join the stack as a member.

As the new switch boots up, the first switch, which has the ID number 1 and is the master switch of the stack, notifies the new switch that its current ID number is already being used and that it should change its number to the next available number, which is 2. The new switch responds by automatically changing its ID number to 2 and reboots. So the new switch is actually booting up twice, once with the default ID

number 1 and again with its new ID number 2, which is why it takes two minutes before the device becomes a full member of the stack.

8. If there is a third switch, power it on and wait two minutes for it to join the stack as a member with the ID number 3.
9. If there is a fourth switch, power it on and wait two minutes for it to join the stack as a member with the ID number 4.

At this point, the stack is operational.

The ID numbers are automatically stored in special files in the flash memories of the switches and are retained by the devices even if you reset or power cycle the stack.

To continue with the installation, go to “Starting a Local Management Session” on page 118 and “Verifying the Stack” on page 170.

Powering On the Switches Simultaneously

If you want the switches of the stack to use their MAC addresses to automatically assign their ID numbers during the initial power-on sequence, power them on simultaneously, rather than one at a time as in the previous procedure. The switches perform the following steps:

- ❑ They initialize their management software and compare their MAC addresses.
- ❑ The switch with the lowest address becomes the master switch of the stack.
- ❑ The master switch assigns itself the ID number 1.
- ❑ The master switch assigns ID numbers to the other switches.
- ❑ The other switches reset and initialize their management software again, with their new ID numbers.

This procedure assumes the following:

- ❑ This is the first power-on sequence of the stack.
- ❑ You cabled the default trunk ports on the switches to form the stack trunk. Refer to Table 26 on page 162.
- ❑ All the switches are powered off.

Note

You can monitor the power-on sequence by connecting a terminal or computer with a terminal emulator program to the Console port on any of the switches. For instructions, refer to “Starting a Local Management Session” on page 118.

Note

Before powering on a switch, refer to “Power Specifications” on page 221 for the power specifications of the switches.

To have the switches automatically assign the ID numbers, perform the following procedure:

1. Power on all the switches in the stack at the same time.

Connect the power cords to the connectors on the back panels and to the appropriate power sources, as shown in Figure 88 on page 165 and Figure 90 on page 166. Refer to “Power Specifications” on page 221 for the power specifications of the switches.



Warning

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. ⚡ E3

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. ⚡ E5

2. Lower the retaining hooks to secure the power cords to the switches. Refer to Figure 89 on page 165.
3. Wait three to four minutes for the switches to select a master switch and to assign the ID numbers.

At this point, the stack is operational. The ID numbers are automatically stored in special files in the flash memories of the switches and are retained by the devices even if you reset or power cycle the stack.

To continue with the installation, go to “Starting a Local Management Session” on page 118 and “Verifying the Stack” on page 170.

Verifying the Stack

To verify that the switches successfully formed the stack, perform the following procedure:

1. Start a local management session on any switch in the stack. Refer to “Starting a Local Management Session” on page 118.
2. From the User Exec mode, type the SHOW STACK command:

```
awplus> show stack
```

The following example illustrates a stack of three switches:

```
awplus> show stack
Virtual Chassis Stacking summary information
ID      Pending ID      MAC address      Priority  Status  Role
1       -                e01a:ea20:8011  128     Ready  Active Master
2       -                e01a:ea20:8012  128     Ready  Member
3       -                e01a:ea20:8902  128     Ready  Member
Operational Status      Normal operations
```

Consider the following:

- ❑ The command should list all switches in the stack. If the list is incomplete, refer to Chapter 14, “Troubleshooting” on page 207.
- ❑ The Status field should be displaying “Ready.” If the field is displaying “Not all stack ports are up,” one or more stacking ports are not being used or cannot establish links with their counterparts. For more information, refer to Chapter 14, “Troubleshooting” on page 207.
- ❑ The priority values will be 128, the default value. The switches use the priority values to select the master switch. For background information, refer to “Selection of the Master Switch” on page 153.

Note

There is no relationship between the ID numbers of the switches and the selection of the master switch. Consequently, the active master in the SHOW STACK command might not have the ID number 1.

3. Do one of the following:
 - ❑ To add additional SFP+ ports to the trunk, perform “Adding SFP+ Transceiver Ports to the Stack Trunk” on page 171.
 - ❑ To change the priority values of the switches, go to “STACK PRIORITY” on page 177. This procedure is optional.
 - ❑ Otherwise, go to Chapter 9, “Cabling the Networking Ports” on page 125 to complete the installation.

Adding SFP+ Transceiver Ports to the Stack Trunk

You can increase the resiliency and bandwidth of the default 1/10G trunk by adding the following SFP+ transceiver ports to the trunk:

- ❑ AT-GS980MX/28 and AT-GS980MX/28PSm: ports 25 and 26
- ❑ AT-GS980MX/52 and AT-GS980MX/52PSm: ports 49 and 50

The procedure assumes the following:

- ❑ You performed the procedures earlier in this chapter to power on and verify the stack with the default SFP+ transceiver ports as the trunk.
- ❑ The additional SFP+ ports are not cabled. If there are cables connected to the ports, remove them before performing the procedure.

Note

This procedure does not apply to the AT-GS980MX/10HSm and AT-GS980MX/18HSm Switches because they have only two SFP+ transceiver ports. A trunk of SFP+ transceiver ports for a stack that has either or both of these switches can have only two ports per switch.

To add SFP+ ports to the stack trunk, perform the following procedure:

Table 27. Adding SFP+ Ports to the Stack Trunk

Step	Description and Command
1	Start a local management session on any switch in the stack. Refer to “Starting a Local Management Session” on page 118.
2	Move to the Privileged Exec mode with the ENABLE command. awplus> enable
3	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.

Table 27. Adding SFP+ Ports to the Stack Trunk (Continued)

Step	Description and Command
4	<p>Use the INTERFACE command to enter the port Interface modes of the SFP+ ports to add to the trunk. This example enters the port interface modes of ports 25 and 26 on AT-GS980MX/28 and AT-GS980MX/28PSm Switches in a stack of two switches:</p> <pre>awplus(config)# interface port1.0.25-1.0.26,port2.0.25-2.0.26</pre> <p>This example enters the port Interface modes for ports 49 and 50 on AT-GS980MX/52 and AT-GS980MX/52PSm Switches, also in a stack of two switches:</p> <pre>awplus(config)# interface port1.0.49-1.0.50,port2.0.49-2.0.50</pre>
5	<p>Designate the SFP+ ports as stacking ports with the STACKPORT command.</p> <pre>awplus(config-if)# stackport</pre> <p>% Save the config and restart the system for this change to take effect.</p>
6	<p>Return to the Global Configuration mode.</p> <pre>awplus(config-if)# exit</pre>
7	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
8	<p>Enter the WRITE command to save your change.</p> <pre>awplus# write Building configuration ... [OK]</pre>
9	<p>Power off the switches of the stack.</p>
10	<p>Insert 1/10G SFP+ transceivers in the ports and cable the transceivers.</p>
11	<p>Power on the switches.</p>
12	<p>Wait three minutes for the switches to initialize their management software and form the stack.</p>
13	<p>Repeat “Verifying the Stack” on page 170.</p>
14	<p>Go to Chapter 9, “Cabling the Networking Ports” on page 125.</p>

Chapter 12

Configuring a Master Switch to Use Multi-Gigabit 5G Ports as the Trunk

This chapter contains instructions on how to configure the master switch of a stack to use the Multi-Gigabit 5G ports as the stack trunk instead of the default 1/10G SFP+ ports. These instructions apply to the following switches:

- ❑ AT-GS980MX/10HSm
- ❑ AT-GS980MX/18HSm
- ❑ AT-GS980MX/28PSm
- ❑ AT-GS980MX/52PSm

Note

These instructions do not apply to AT-GS980MX/28 and AT-GS980MX/52 Switches because they do not have Multi-Gigabit 5G ports. A stack containing those switches must use the 1/10G SFP+ ports for the trunk.

The chapter contains the following sections:

- ❑ “Introduction” on page 174
- ❑ “Command Summary” on page 175
- ❑ “Reviewing the Configuration Steps for the Master Switch” on page 179
- ❑ “Stacking Worksheet Example” on page 181
- ❑ “Configuring the Master Switch - Part 1” on page 182
- ❑ “Configuring the Master Switch – Part II” on page 186
- ❑ “Verifying the Master Switch” on page 188
- ❑ “What to Do Next” on page 190

Note

For background information, refer to “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147:

Introduction

Here are the general steps to building a stack with Multi-Gigabit 5G ports as the trunk ports:

1. Fill in “Stacking Worksheet” on page 158.
2. Review the configuration commands in “Command Summary” on page 175 and “Reviewing the Configuration Steps for the Master Switch” on page 179
3. Perform “Configuring the Master Switch - Part 1” on page 182.
4. Perform “Configuring the Master Switch – Part II” on page 186
5. Review “Reviewing the Configuration Steps for Member Switches” on page 192
6. Perform “Configuring Member Switches - Part I” on page 194.
7. Perform “Configuring Member Switches – Part II” on page 197.
8. Perform “Powering on the Stack” on page 202.
9. Perform “Verifying the Stack” on page 203.

Review the following information before performing the instructions:

- You should perform the procedures in the order presented here.
- Choose the master switch before beginning the procedure. It can be any of the switches.
- Allied Telesis recommends assigning the master switch the ID number 1 and priority 1. Refer to “Master and Member Switches” on page 153.
- Select the Multi-Gigabit 5G ports for the trunk. For background information, refer to “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147.
- If you have already connected network cables to the ports of the stack trunk, disconnect them before continuing. You should cable the ports after configuring the switches for stacking.

Note

Cabling the ports of the stack trunk before configuring the switches can result in loops in your network topology, which can cause poor network performance.

Command Summary

The following sections briefly describe the commands for configuring the Multi-Gigabit 5G ports as the trunk ports of the master and member switches of the stack. After reviewing the commands, go to “Stacking Worksheet Example” on page 181 and “Configuring the Master Switch - Part 1” on page 182 to begin the configuration procedures.

STACKPORT

This command designates ports as members of the stack trunk. It is performed in the Interface mode of the selected ports. After you enter the command, the designated ports stop functioning as regular Ethernet ports and function instead as members of the stack trunk.

In the case of the GS980MX Switches, you will use the command to designate Multi-Gigabit 5G as trunk ports. Refer to Table 23 on page 138 for a list of the Multi-Gigabit 5G trunk ports.

The following are examples of the command:

This example designates Multi-Gigabit 5G ports 7 and 8 on the AT-GS980MX/10HSm Switch as the stack trunk. It assumes the switch has the ID 1:

```
awplus(config)# interface port1.0.7-1.0.8
awplus(config-if)# stackport
```

This example designates Multi-Gigabit 5G ports 15 and 16 on the AT-GS980MX/18HSm Switch as the stack trunk. It assumes the switch has the ID number 2:

```
awplus(config)# interface port2.0.15-2.0.16
awplus(config-if)# stackport
```

This example designates the Multi-Gigabit 5G ports 23 to 24 on the AT-GS980MX/28PSm Switch as the stack trunk. It assumes the switch has the ID number 3:

```
awplus(config)# interface port3.0.23-3.0.24
awplus(config-if)# stackport
```

This example designates the Multi-Gigabit 5G ports 47 and 48 on the AT-GS980MX/52PSm Switch as the stack trunk. It assumes the switch has the ID number 4:

```
awplus(config)# interface port4.0.47-4.0.48
awplus(config-if)# stackport
```

NO STACKPORT

The NO STACKPORT command is used to remove the trunk function from ports and return them to regular Ethernet networking ports. You must perform this command to remove the trunk function from the 1/10G SFP+ ports if you plan to use the Multi-Gigabit 5G ports as the trunk. You can also use this command if you inadvertently assign the trunk function to the wrong ports.

The command is performed in the Interface mode of the ports.

This example removes the stacking function from the 1/10G SFP+ default trunk ports 9 and 10 on the AT-GS980MX/10HSm Switch. It assumes the switch has the ID number 1:

```
awplus(config)# interface port1.0.9-1.0.10
awplus(config-if)# no stackport
```

This example removes the stacking function from the 1/10G SFP+ default trunk ports 17 and 18 on the AT-GS980MX/18HSm Switch. It assumes the switch has the ID number 2.

```
awplus(config)# interface port2.0.17-2.0.18
awplus(config-if)# no stackport
```

This example removes the stacking function from the 1/10G SFP+ default trunk ports 27 and 28 on the AT-GS980MX/28PSm Switch. It assumes the switch has the ID number 3.

```
awplus(config)# interface port3.0.27-3.0.28
awplus(config-if)# no stackport
```

This example removes the stacking function from the 1/10G SFP+ default trunk ports 47 and 48 on the AT-GS980MX/52PSm Switch. It assumes the switch has the ID number 4.

```
awplus(config)# interface port4.0.47-4.0.48
awplus(config-if)# no stackport
```

STACK ENABLE

This command activates the VCStack feature on the switch. You will probably not have to perform this command because the default setting for the feature on the switch is enabled. However, if for any reason the feature is disabled, you can enable it by entering the STACK ENABLE command in the Global Configuration mode. Here is the command:

```
awplus(config)# stack enable
```

**NO STACK
ENABLE**

To disable the VCStack feature to use the switch as a standalone unit, enter the NO STACK ENABLE command, shown here:

```
awplus(config)# no stack <switch_id> enable
```

The *switch_id* variable is the ID number of the switch. This example disables the VCStack feature on a switch with the ID 1, the default value:

```
awplus(config)# no stack 1 enable
```

**STACK
PRIORITY**

This command assigns priority numbers to the switches of the stack. The switches use the numbers to select the master switch when they are powered on or reset. The lower the number the higher the priority. The unit with the lowest number becomes the master. If the switches have the same priority value, they use their MAC address to determine the master. As with priority numbers, the lower the MAC address, the higher the priority. A switch can have only one priority number.

Allied Telesis recommends setting a switch's priority number to match its ID number. For example, the switch with ID 1 should be assigned priority 1, switch with ID 2 should be assigned priority 2, and so on. This will make it possible for you to know which switch will be the master switch, and the order in which the member switches will assume the master switch role in the event the master switch is taken off-line. This is not required, but it can make managing and troubleshooting the stack easier.

The STACK PRIORITY command is found in the Global Configuration mode and has the following format:

```
stack <switch_id> priority <priority_number>
```

The variables are defined here:

- ❑ *switch_id* – This is the ID number of the switch. The range is 1 to 4. You can specify only one ID number.
- ❑ *priority_number* – This is the new priority number for the switch. You can specify only one number. The range is 0 to 255. The default is 128.

This example assigns the priority 1 to the switch with ID 1:

```
awplus(config)# stack 1 priority 1
```

This example assigns the priority 2 to the switch with ID 2:

```
awplus(config)# stack 2 priority 2
```

STACK RENUMBER

Each switch in a stack must have a unique ID number. You use the numbers to identify the different switches when configuring them with the AlliedWare Plus management software. The range is 1 to 4. The default is 1. Allied Telesis recommends that the master switch of the stack use the default value. The number is set on the member switches with the STACK RENUMBER command. Here is the format:

```
stack <current_switch_id> renumber <new_switch_id>
```

The variables are defined here:

- ❑ `current_switch_id` – This is the current ID number of the switch. You can specify only one ID number.
- ❑ `new_switch_id` – This is the new ID number for the switch. You can specify only one number. The range is 1 to 4. The default is 1.

Note

Changing the ID number requires resetting the switch.

This example changes a switch ID from 1, the default, to 2:

```
awplus(config)# stack 1 renumber 2
```

SWITCH PROVISION

To ensure that the first power-on of the stack is successful, Allied Telesis recommends adding the member switches as provisioned switches to the master switch so that it is aware of the member switches prior to forming the stack. This involves using the SWITCH PROVISION command. Here is the format of the command:

```
switch <switch_id> provision <switch_name>
```

The values for the `switch_name` variable are listed here:

- ❑ AT-GS980MX/10HSm: GS980MX-10
- ❑ AT-GS980MX/18HSm: GS980MX-18
- ❑ AT-GS980MX/28PSm: GS980MX-28
- ❑ AT-GS980MX/52PSm: GS980MX-52

This example adds the AT-GS980MX/10HSm Switch as a provisioned member switch with the ID 2 to the master switch:

```
awplus(config)# switch 2 provision GS980MX-10
```

This example adds the AT-GS980MX/28PSm Switch as a provisioned member switch with the ID 3 to the master switch:

```
awplus(config)# switch 3 provision GS980MX-28
```

Reviewing the Configuration Steps for the Master Switch

This section reviews the steps and commands for configuring the master switch to use Multi-Gigabit 5G as the trunk in a VCStack. Note the following:

- ❑ Refer to “Command Summary” on page 175 for description of the commands and their usage.
- ❑ Cabling the ports of the stack trunk before configuring the switches can result in loops in your network topology, which can cause poor network performance.
- ❑ The procedures require resetting the member switch twice. Some network traffic will be lost if the switches are already connected to an active network.
- ❑ The procedures should be performed in the order presented here.

The procedure for configuring the master switch to use Multi-Gigabit 5G ports as the trunk ports has two parts. Here are the general steps to Part I:

1. Start a local management session on the switch.
2. Display the hardware status and management software version number with the `SHOW SYSTEM ENVIRONMENT` and `SHOW VERSION INSTALLED` commands, respectively, in the Privilege Exec mode.
3. Enable the VCStack feature with the `STACK ENABLE` command in the Global Configuration mode. You will probably not have to perform this step because the default setting for the feature is enabled.
4. Assign the master switch the priority 1 with the `STACK PRIORITY` command in the Global Configuration mode to ensure its selection as the master switch when the switches of the stack are powered on.
5. Remove the stacking function from the 1/10G SFP+ transceiver ports on the master switch with the `NO STACKPORT` command.
6. Designate the Multi-Gigabit 5G ports as the trunk ports on the master switch with the `STACKPORT` command.
7. Save your changes with the `WRITE` command in the Privileged Exec mode.
8. Reboot the switch with the `REBOOT` command.

Here are the general steps to Part II for configuring the master switch:

1. Start a new local management session.
2. Use the SWITCH PROVISION command to add the member switches as provisioned units to the master switch to ensure the master switch knows about the member switches when the stack is powered on.
3. Use the NO STACKPORT command to remove the stacking function from the 1/10G SFP+ transceiver ports on the provisioned member switches.
4. Use the STACKPORT command to designate the Multi-Gigabit 5G ports as the trunk ports on the provisioned member switches.
5. Save your changes with the WRITE command in the Privilege Exec mode.
6. Reboot the master switch with the REBOOT command.
7. Start a new local management session.
8. Enter the SHOW STACK and SHOW RUNNING-CONFIG commands to verify the changes.

Stacking Worksheet Example

The Stacking Worksheet Example below for a stack of three switches is used in the following procedures to illustrate the commands to configuring the master switch.

Table 28. Stacking Worksheet Example

Switch	Switch Model/ Location	ID	Priority	AW+ Version Number	Trunk Ports: SFP+ or 5G Ports
1. Master	AT-GS980MX/ 28PSm bldg. 101, rm 14	1	1		23, 24
2. Member	AT-GS980MX/ 18HSm bldg. 101, rm. 23	2	2		15, 16
3. Member	AT-GS980MX/ 10HSm bldg. 101, rm. 23	3	3		7, 8
4. Member	none	4	4		

Configuring the Master Switch - Part 1

To configure the master switch to use 5G ports for the stack trunk, perform the procedure in Table 29.

Table 29. Configuring the Master Switch for 5G Trunk Ports – Part I

Step	Description and Command
1	Install the power cord retaining clip on the master switch. Refer to “Powering On the Switch” on page 108.
2	Power on the master switch and wait two minutes for it to initialize the AlliedWare Plus management software. Refer to “Powering On the Switch” on page 108.
3	Start a local management session. Refer to “Starting a Local Management Session” on page 118.
4	Enter the ENABLE command to move to the Privileged Exec mode. awplus> enable awplus#
Steps 5 to 7 display the status of the switch hardware and the version number of the AlliedWare Plus management software.	
5	Verify that the switch hardware is operating correctly by entering the SHOW SYSTEM ENVIRONMENT command. All components should have the status Ok. awplus# show system environment Environment Monitoring Status Stack member 1: Resource ID: 1 Name: AT-GS980MX-18 ID Sensor (Units) Reading Low Limit High Limit Status 1 Fan: Fan 1 (RPM) 5980 4800 - ok 2 voltage: 1.0V (Volts) 1.040 0.891 1.090 ok . .

Table 29. Configuring the Master Switch for 5G Trunk Ports – Part I (Continued)

Step	Description and Command
6	<p>Display the version number of the AlliedWare Plus operating software on the switch by entering the SHOW VERSION command. Write down the version number in your worksheet from Table 24, “Stacking Worksheet” on page 158. After viewing the version numbers on all the switches, you will compare them to confirm they all have the same version. Switches with different versions will have to be updated.</p> <pre>awplus# show version Current software ----- Software version : value Build date : value</pre>
7	<p>Move to the Global Configuration mode with the CONFIGURE TERMINAL command.</p> <pre>awplus# configure terminal awplus(config)#</pre>
<p>Step 8 enables the VCStack feature on the switch. You probably do not need to perform this step because the feature is enabled by default. If the Switch ID LED is displaying “0”, perform the step. Otherwise, go to step 8.</p>	
8	<p>Activate VCStack on the switch with the STACK ENABLE command.</p> <pre>awplus(config)# stack enable % Automatically enabling 'stack virtual-mac' to minimize disruption from failovers. % Please check that the new MAC 0000.cd37.0431 is unique within the network. % Save the config and restart the system for this change to take effect.</pre>
<p>Step 9 assigns priority 1 to the switch with the STACK PRIORITY command, so that it functions as the master unit of the stack.</p>	
9	<p>Assign priority 1 to the switch with the STACK PRIORITY.</p> <pre>awplus(config)# stack 1 priority 1</pre>
<p>Steps 10 to 11 remove the stacking function from the default stacking ports so that they function as regular networking ports. The default stacking ports are the last two 1/10G SFP+ transceiver ports on the switch.</p>	

Table 29. Configuring the Master Switch for 5G Trunk Ports – Part I (Continued)

Step	Description and Command
10	<p>Enter the Interface modes of the default SFP+ trunk ports in the master switch with the INTERFACE command. Here is the command for the example AT-GS980MX/28PSm master switch in Table 28, “Stacking Worksheet Example” on page 181:</p> <pre>awplus(config)# interface port1.0.27-1.0.28 % port1.0.27 is currently configured as a stack-port. Use caution when altering its config. % port1.0.28 is currently configured as a stack-port. Use caution when altering its config.</pre>
11	<p>Remove the stacking function from the ports and designate them as regular networking ports with the NO STACKPORT command:</p> <pre>awplus(config-if)# no stackport % Save the config and restart the system for this change to take effect.</pre>
Steps 12 and 13 designate Multi-Gigabit 5G ports as the trunk ports.	
12	<p>Enter the Interface modes of the Multi-Gigabit 5G ports to be the trunk ports. The stack ports for the example AT-GS980MX/28PSm master switch in Table 28, “Stacking Worksheet Example” on page 181, will be the Multi-Gigabit 5G ports 23 and 24. Here is the command:</p> <pre>awplus(config-if)# interface port1.0.23-1.0.24</pre>
13	<p>Designate the ports as the trunk with the STACKPORT command:</p> <pre>awplus(config-if)# stackport % Save the config and restart the system for this change to take effect.</pre>
The remaining steps save your changes.	
14	<p>Return to the Global Configuration mode with the EXIT command:</p> <pre>awplus(config-if)# exit</pre>
15	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
16	<p>Enter the WRITE command to save your changes. If this is the first management session, the switch adds the configuration file DEFAULT.CFG to its flash memory, for storing your configuration changes.</p> <pre>awplus# write Building configuration ... [OK]</pre>

Table 29. Configuring the Master Switch for 5G Trunk Ports – Part I (Continued)

Step	Description and Command
17	Reboot the switch with the REBOOT command. awplus# reboot reboot system? (y/n):
18	Type “Y” for yes.
19	Wait two minutes for the switch to reboot and then go to “Configuring the Master Switch – Part II” on page 186.

Configuring the Master Switch – Part II

In Part II, you add the member switches as provisioned units to the master switch and designate their 5G trunk ports. Adding member switches as provisioned devices ensures that the master switch is aware of them during the first stack power-on. The procedure assumes you are continuing directly from the previous procedure.

Table 30. Configuring the Master Switch for 5G Stacking Ports – Part II

Step	Description and Command
1	Start a new local management session on the master switch. Refer to “Starting a Local Management Session” on page 118.
2	Enter the ENABLE command to move to the Privileged Exec mode. awplus> enable awplus#
3	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.
Step 4 adds the member switches as provisioned switches on the master switch with the SWITCH PROVISION command, so that the master switch is aware of the switches when the stack is powered on for the first time. For background information, refer to “SWITCH PROVISION” on page 178.	
4	Add the member switches to the master switch as provisioned switches with the SWITCH PROVISION command, assigning each a unique ID number, in the range of 2 to 4. Here are the commands for the two member switches in the “Stacking Worksheet Example” on page 181: awplus(config)# switch 2 provision GS980MX-18 awplus(config)# switch 3 provision GS980MX-10
Steps 5 and 6 use the NO STACKPORT command to remove the stacking function from the default stacking ports on the provisioned member switches.	
5	Enter the port Interface modes of the default 1/10G SFP+ stacking ports on the provisioned member switches. Here are the commands for the two member switches in the “Stacking Worksheet Example” on page 181: awplus(config)# interface port2.0.17-2.0.18,port3.0.9-3.0.10

Table 30. Configuring the Master Switch for 5G Stacking Ports – Part II (Continued)

Step	Description and Command
6	Enter the NO STACKPORT command to remove the stacking function from the ports to convert them into regular Ethernet ports: <pre>awplus(config-if)# no stackport % Save the config and restart the system for this change to take effect.</pre>
Steps 7 and 8 add the stacking function to the Multi-Gigabit 5G ports on the provisioned member switches.	
7	Enter the Interface modes of the 5G ports to be used as the stack trunk on the provisioned member switches. Refer to your worksheet for the trunk ports. Here are the commands for the two member switches in the “Stacking Worksheet Example” on page 181: <pre>awplus(config)# interface port2.0.15-2.0.16,port3.0.7-3.0.8</pre>
8	Designate the ports as stacking ports with the STACKPORT command. <pre>awplus(config-if)# stackport % Save the config and restart the system for this change to take effect.</pre>
Steps 9 to 15 save your changes on the master switch and reboot it.	
9	Return to the Global Configuration mode. <pre>awplus(config-if)# exit</pre>
10	Return to the Privileged Exec mode. <pre>awplus(config)# exit</pre>
11	Enter the WRITE command to save your changes. <pre>awplus# write Building configuration ... [OK]</pre>
12	Restart the switch with the REBOOT command. <pre>awplus# reboot reboot system? (y/n):</pre>
13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize the management software.
15	Go to “Verifying the Master Switch” on page 188.

Verifying the Master Switch

Perform the steps in Table 31 to confirm the configuration of the master switch.

Table 31. Verifying the Master Switch

Step	Description and Command
1	Start a new local management session on the master switch.
2	Move to the Privileged Exec mode with the ENABLE command. awplus> enable
3	<p>Enter the SHOW STACK command. Here is an example of the display:</p> <pre>awplus# show stack Virtual Chassis Stacking summary information ID Pending ID MAC address Priority Status Role 1 - e01a.ba56.c208 1 Ready Active Master 2 - - - - Provisioned 3 - - - - Provisioned 4 - - - - -</pre> <p>Operational status Standalone unit Stack MAC address e01a.ba56.c208</p> <p>Check the display for the following:</p> <ul style="list-style-type: none"> - Switch ID 1 is the master switch. - The master switch should have the priority 1. If it does not, repeat “Configuring the Master Switch - Part 1” on page 182. Be sure to perform the STACK PRIORITY command and to save your changes with the WRITE command. - The other ID entries are for the provisioned member switches. There should be one entry for each member switch that will be in the stack. Their fields are empty because the master switch is not yet part of a stack. If the table does not include these fields, repeat “Configuring the Master Switch – Part II” on page 186. Be sure to perform the SWITCH PROVISION command and to save your changes with the WRITE command. - The Operational Status should be Standalone Unit, indicating that stacking is enabled, but that the unit is operating as a stack of one switch. If the status is Stacking Hardware Disabled, the stacking feature is disabled. Repeat “Configuring the Master Switch - Part 1” on page 182. Be sure to perform the STACK ENABLE command and to save your changes with the WRITE command.

Table 31. Verifying the Master Switch (Continued)

Step	Description and Command
4	<p>Enter the SHOW RUNNING-CONFIG command to display the running configuration of the master switch. You should use the display to confirm that you designated the correct 5G trunk ports for the master and member switches. The display should contain INTERFACE PORT commands that identify the ports and are followed by STACKPORT commands. Here is the output for the “Stacking Worksheet Example” on page 181:</p> <pre> interface port1.0.23-1.0.24 stackport . interface port2.0.15-2.0.16 stackport . interface port3.0.7-3.0.8 stackport </pre>
5	Go to “What to Do Next” on page 190.

What to Do Next

After configuring the master switch, do the following:

1. Power off the switch by disconnecting its AC power cords from the AC power sources. Refer to Figure 91.

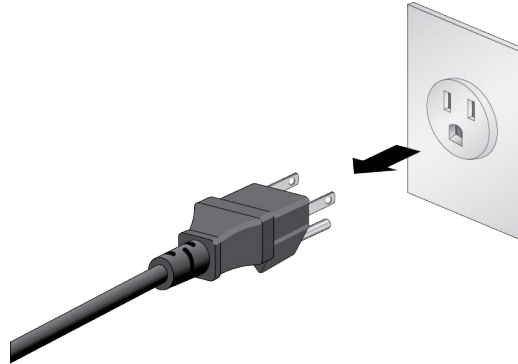


Figure 91. Powering Off the Switch

2. Configure the member switches by referring to Chapter 13, “Configuring Member Switches to Use Multi-Gigabit 5G Ports as the Trunk” on page 191.
3. After configuring the master and member switches, cable the ports of the trunk on all the switches. Refer to “Cabling Twisted Pair Ports” on page 126.
4. Power on the master and member switches of the stack. Refer to “Powering on the Stack” on page 202.
5. Verify that the switches formed the stack. Refer to “Verifying the Stack” on page 203
6. Cable the networking ports. Refer to Chapter 9, “Cabling the Networking Ports” on page 125.

Chapter 13

Configuring Member Switches to Use Multi-Gigabit 5G Ports as the Trunk

This chapter contains instructions on how to configure the following GS980MX Series to be members in a VCStack, and to use Multi-Gigabit 5G ports as the stack trunk:

- ❑ AT-GS980MX/10HSm
- ❑ AT-GS980MX/18HSm
- ❑ AT-GS980MX/28PSm
- ❑ AT-GS980MX/52PSm

Note

This chapter does not apply to the AT-GS980MX/28 and AT-GS980MX/52 Switches because those switches do not have Multi-Gigabit 5G ports. A stack containing those switches must use the default 1/10G SFP+ transceiver ports for the trunk.

This chapter contains the following sections:

- ❑ “Reviewing the Configuration Steps for Member Switches” on page 192
- ❑ “Configuring Member Switches - Part I” on page 194
- ❑ “Configuring Member Switches – Part II” on page 197
- ❑ “Verifying Member Switches” on page 200
- ❑ “What to Do Next” on page 201
- ❑ “Powering on the Stack” on page 202
- ❑ “Verifying the Stack” on page 203

Reviewing the Configuration Steps for Member Switches

This section reviews the steps and commands for configuring member switches to use Multi-Gigabit 5G as the trunk in a VCStack. Note the following:

- ❑ Refer to “Command Summary” on page 175 for description of the commands and their usage.
- ❑ Cabling the ports of the stack trunk before configuring the switches can result in loops in your network topology, which can cause poor network performance.
- ❑ The procedures require resetting the member switch twice. Some network traffic will be lost if the switches are already connected to an active network.
- ❑ The procedures should be performed in the order presented here.

The procedure for configuring member switches for stacking is divided into two parts. The general steps to Part I are listed here:

1. Start a local management session on the member switch.
2. View the hardware status and management software version number with the `SHOW SYSTEM ENVIRONMENT` and `SHOW VERSION INSTALLED` commands in the Privilege Exec mode.
3. Enable the VCStack feature with the `STACK ENABLE` command in the Global Configuration mode. You will probably not have to perform this step because the default setting for the feature is enabled.
4. Assign an ID number in the range of 2 to 4 to the member switch with the `SWITCH RENUMBER` command in the Global Configuration mode.

Note

Changing a member switch’s ID does not delete the default ID 1 from its configuration. Instead, the member switch retains it and uses default ID 1 for the provisioned master switch.

5. Save your changes with the `WRITE` command in the Privilege Exec mode.
6. Restart the switch with the `REBOOT` command.

Here are the general steps to Part II:

1. Start a new local management session on the switch.
2. Assign the member switch a priority number equal to its ID number, with the `STACK PRIORITY` command in the Global Configuration mode.
3. Remove the stacking function from the default 1/10G stacking ports, with the `NO STACKPORT` command.
4. Designate the ports of the stack trunk on both the member switch and the provisioned master switch with the `STACKPORT` command in the port Interface mode.
5. Save your changes with the `WRITE` command in the Privilege Exec mode.
6. Restart the switch with the `REBOOT` command.
7. Start a new local management session.
8. Verify the changes with the `SHOW STACK` and `SHOW RUNNING-CONFIG` command.

Configuring Member Switches - Part I

Note

The following procedures assume you have filled out the “Stacking Worksheet” on page 158.

The instructions for configuring member switches are divided into two parts. You do the following in Part I:

- Display the hardware status and management software version number.
- Enable VCStack.
- Set the switch’s ID number.

To perform part I of configuring a member switch, perform the procedure in Table 32.

Table 32. Configuring a Member Switch – Part I

Step	Description and Command
1	Install the power cord retaining clip on the switch. Refer to “Powering On the Switch” on page 108
2	Power on a member switch and wait two minutes to initialize its management software. Refer to “Powering On the Switch” on page 108.
3	Start a local management session. Refer to “Starting a Local Management Session” on page 118.
4	Enter the ENABLE command to move from the User Exec mode to the Privileged Exec mode. awplus> enable
5	Verify that the switch hardware is operating correctly, with the SHOW SYSTEM ENVIRONMENT command. All components should have the status Ok. awplus# show system environment Environment Monitoring Status Overall Status: Normal Resource ID: 1 Name: GS980MX/10 ID Sensor (Units) Reading Low Limit High Limit Status 1 Fan: Fan 1 (RPM) 5980 4800 - ok 2 Voltage: 1.0V (Volts) 1.040 0.891 1.090 ok .

Table 32. Configuring a Member Switch – Part I (Continued)

Step	Description and Command
6	Display the version number of the AlliedWare Plus operating software on the member switch by entering the SHOW VERSION INSTALLED command. Write down the version number in the worksheet in Table 24, “Stacking Worksheet” on page 158. After viewing the version numbers on all the switches, you will compare them to confirm they all have the same version. Switches with different versions will have to be updated.
7	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.
Step 8 enables the VCStack feature on the switch. You will probably not have to perform the step because the feature is enabled by default. If the Switch ID LED is displaying “0”, perform the step. Otherwise, go to step 9.	
8	Activate VCStack on the switch with the STACK ENABLE command. awplus(config)# stack enable % Automatically enabling ‘stack virtual-mac’ to minimize disruption form failovers. % Please check that the new MAC 0000.cd37.0431 is unique within the network. % Save the config and restart the system for this change to take effect.
Steps 9 to 11 set the member switch’s ID number and save your changes.	
9	Set the ID number of the member switch with the STACK RENUMBER command. If you are using the worksheet on Table 24 on page 158, refer there for the ID numbers. This example assigns the ID number 2 to the member switch. awplus(config)# stack 1 renumber 2 % warning: the new ID will not become effective until the stack-member reboots. % warning: the boot configuration may now be invalid.
10	Return to the Privileged Exec mode. awplus(config)# exit
11	Enter the WRITE command to save your change. If this is the first management session, the switch adds the configuration file DEFAULT.CFG to flash memory, for storing your configuration changes. awplus# write Building configuration ... [OK]
Steps 12 through 15 reboot the switch and confirm its new ID number.	

Table 32. Configuring a Member Switch – Part I (Continued)

Step	Description and Command
12	Restart the switch with the REBOOT command. <pre>awplus# reboot reboot system? (y/n): awplus#</pre>
13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.
15	Check the ID LED on the front panel and do one of the following: <ul style="list-style-type: none"> - If the ID LED is displaying the switch’s new ID number, go to “Configuring Member Switches – Part II,” next. - If the ID LED is displaying a different number, repeat this procedure. Be sure to correctly enter the STACK RENUMBER command and to save your changes with the WRITE command.
16	Go to “Configuring Member Switches – Part II” on page 197.

Configuring Member Switches – Part II

This section contains the second part of the procedure to configuring member switches. The instructions explain how to configure the following parameters:

- ❑ Set the priority number. For background information, refer to “Selection of the Master Switch” on page 153.
- ❑ Remove the stacking function from the default 1/10G default trunk ports.
- ❑ Designate the Multi-Gigabit 5G ports to be the stack trunk. For background information, refer to “Guidelines for Stack Trunks of Multi-speed 5G Ports” on page 147.

To perform Part II to configuring a member switch, perform the procedure in Table 33.

Table 33. Configuring a Member Switch – Part II

Step	Description and Command
1	Start a new local management session on the member switch. Refer to “Starting a Local Management Session” on page 118.
2	Enter the ENABLE command to move from the User Exec mode to the Privileged Exec mode. awplus> enable
Steps 3 and 4 set the switch’s priority value to be the same as its ID number.	
3	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.
4	Assign a priority value to the switch equal to its ID number, with the STACK PRIORITY. This example assigns priority 2 to a member switch with the ID 2: awplus(config)# stack 2 priority 2
Steps 5 and 6 remove the trunk function from the default 1/10G SFP+ trunk ports on the member switch.	

Table 33. Configuring a Member Switch – Part II (Continued)

Step	Description and Command
5	<p>Enter the port Interface modes of the default 1/10G trunk ports on the member switch. This example uses “2. Member AT-GS980MX/18HSm” member in the “Stacking Worksheet Example” on page 181. Its default trunk ports are 17 and 18:</p> <pre>awplus(config)# interface port2.0.17-2.0.18 % port1.0.17 is currently configured as a stack-port. Use caution when altering its config. % port1.0.18 is currently configured as a stack-port. Use caution when altering its config.</pre>
6	<p>Enter the NO STACKPORT command to remove the trunk function from the 1/10G SFP+ ports to convert them into regular Ethernet ports:</p> <pre>awplus(config-if)# no stackport % Save the config and restart the system for this change to take effect.</pre>
Steps 7 and 8 designate Multi-Gigabit 5G ports as the trunk ports on the member switch.	
7	<p>Enter the Interface modes of the Multi-Gigabit 5G ports to be the trunk ports on the member switch. This command example assumes the switch is the “2. Member AT-GS980MX/18HSm” in “Stacking Worksheet Example” on page 181:</p> <pre>awplus(config-if)# interface port2.0.15-2.0.16</pre>
8	<p>Designate the ports as the stack trunk with the STACKPORT command.</p> <pre>awplus(config-if)# stackport % Save the config and restart the system for this change to take effect.</pre>
The remaining steps save your changes and reboot the switch.	
9	<p>Return to the Global Configuration mode.</p> <pre>awplus(config-if)# exit</pre>
10	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
11	<p>Save your changes with the WRITE command.</p> <pre>awplus# write Building configuration ... [OK]</pre>
12	<p>Restart the switch.</p> <pre>awplus# reboot reboot system? (y/n):</pre>

Table 33. Configuring a Member Switch – Part II (Continued)

Step	Description and Command
13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.
15	Go to “Verifying Member Switches” on page 200.

Verifying Member Switches

Perform the steps in Table 34 to confirm the configuration of a member switch.

Table 34. Verifying Member Switches

Step	Description and Command
1	Start a local management session. Refer to “Starting a Local Management Session” on page 118.
2	Move to the Privileged Exec mode. awplus> enable
3	<p>Enter the SHOW STACK DETAIL command. Examine the display for the entry that has the ID number of the member switch. This example is for a member switch with ID 2:</p> <pre>awplus# show stack detail . . Stack member 2: ----- ID 2 MAC address e01a:ea20:8011 Last role change Thur Nov 23 21:15:20 2020 Product type GS980MX-10 Role Active Master Status Ready Priority 2 Host name awplus S/W version auto synchronization On Resiliency link status Not configured Stack port2.0.7 status Down Stack port2.0.8 status Down . .</pre> <p>Examine the entry for the following:</p> <ul style="list-style-type: none"> - The “Priority” value should be the same as the switch’s ID number. If they are not the same, perform the STACK PRIORITY command in “Configuring Member Switches – Part II” on page 197. Be sure to save your changes with the WRITE command. - The “Stack port status” fields should identify the Multi-Gigabit 5G ports of the trunk. If they identify the wrong ports, such as the default ports 9 and 10 on the AT-GS980MX/10HSm Switch, repeat “Configuring Member Switches – Part II” on page 197. (The status of the ports is Down because the stack ports are not cabled yet.)
4	Go to “What to Do Next” on page 201.

What to Do Next

After configuring a member switch, do the following:

1. Power off the switch by disconnecting its AC power cord from the AC power source.
2. Repeat this procedure to configure all member switches.
3. If you have not configured the master switch, refer to Chapter 12, “Configuring a Master Switch to Use Multi-Gigabit 5G Ports as the Trunk” on page 173.
4. Cable the 5G ports of the trunk on the master and member switches. Refer to “Cabling Twisted Pair Ports” on page 126.
5. Power on the master and member switches of the stack. Refer to “Powering on the Stack” on page 202.
6. Verify that the switches successfully formed the stack by performing “Verifying the Stack” on page 203.
7. Cable the networking ports, as explained in Chapter 9, “Cabling the Networking Ports” on page 125.

Powering on the Stack

After configuring the master and member switches, you are ready to cable the 5G ports of the trunk and power on the stack for the first time. (If you want to monitor the power-on sequence, connect a terminal or computer with a terminal emulator program to the Console port on any of the switches).

To power on the stack for the first time, perform the following procedure:

1. Verify that the master and member switches are powered off.
2. Cable the 5G ports of the stack trunk on the switches. Refer to “Cabling Twisted Pair Ports” on page 126.
3. Power on all switches at the same time or within thirty seconds of each other. Refer to “Powering On the Switch” on page 108.

Refer to “Power Specifications” on page 221 for the power specifications of the switches.



Warning

Power cord is used as a disconnection device. To de-energize equipment, disconnect the power cord. *⚡* E3

Note

Pluggable Equipment. The socket outlet shall be installed near the equipment and shall be easily accessible. *⚡* E5

4. Wait two to three minutes for the switches to form the stack.
5. Go to “Verifying the Stack” on page 203.

Verifying the Stack

To verify the stack, perform the following procedure:

1. Start a local management session on any switch in the stack. Refer to “Starting a Local Management Session” on page 118.
2. From the User Exec mode, enter the SHOW STACK command:

```
awplus> show stack
```

An example of the command for a stack of three switches is shown in Figure 92.

```
awplus> show stack
Virtual Chassis Stacking summary information
ID      Pending ID      MAC address      Priority  Status  Role
1       -                e01a:ea20:8011  1        Ready   Active Master
2       -                e01a:ea20:8023  2        Ready   Backup Member
3       -                e01a:ea20:9a45  3        Ready   Backup Member
Operational Status      Normal operations
Stack MAC address       e01a:ea20:8011
```

Figure 92. SHOW STACK Command

Review the following items:

- The command should list all the switches. If the list is incomplete, refer to Chapter 14, “Troubleshooting” on page 207.
 - The Operational Status field should be “Normal operations” to indicate that all the stacking ports are operating normally.
 - If the Operational Status field is displaying “Not all stack ports are up,” one or more stacking ports are not being used or cannot establish links with their counterparts. For more information, refer to Chapter 14, “Troubleshooting” on page 207.
3. Go to Chapter 9, “Cabling the Networking Ports” on page 125, to complete the installation.

Section IV

Troubleshooting the Switch

- Chapter 14, “Troubleshooting” on page 207

Section III:

Chapter 14

Troubleshooting

This chapter contains troubleshooting suggestions for the switch in the following sections:

- ❑ “Switch Does Not Power On” on page 208
- ❑ “All Copper and SFP Port LEDs are Off” on page 209
- ❑ “No Link Over Copper Cable to a Network Device” on page 210
- ❑ “No Link Over Fiber Optic Cable to a Network Device” on page 211
- ❑ “No Power to a PoE Network Device” on page 212
- ❑ “Switch Powers Off or Operates Intermittently” on page 214

Note

For further assistance, please contact Allied Telesis Technical Support at www.alliedtelesis.com/support.

Switch Does Not Power On

If all the port and system LEDs are off and the fans are off, try the following:

- ❑ Verify that the AC power source is powered on.
- ❑ Verify that the AC power cord is securely connected to the switch and the AC power source.
- ❑ Connect another device to the AC power source to verify that the power source has power.
- ❑ Replace the power cord with a new power cord.
- ❑ Test the output voltage from the AC power source to determine whether it is within the normal operating range and that it is stable. For the power requirements of the switch, refer to “Power Specifications” on page 221.
- ❑ Try connecting the switch to another power source. If the switch operates properly with the new power source, then the problem is with the original power source. If the switch fails to operate with the new power source, then the problem may be with the switch. Replace the switch.
- ❑ The switch may have overheated. Refer to “Switch Powers Off or Operates Intermittently” on page 214.

All Copper and SFP Port LEDs are Off

Try the following:

- ❑ The switch may be operating in the eco-friendly mode. Try pressing the eco-friendly button. You can also toggle the LEDs off or on with the ECOFRIENDLY LED and NO ECOFRIENDLY LED commands in the command line interface in the AlliedWare Plus management software.
- ❑ Review “Switch Does Not Power On” on page 208 and Review “Switch Powers Off or Operates Intermittently” on page 214.

No Link Over Copper Cable to a Network Device

If a copper port on the switch is connected to a network device, but its Link/Activity LED is off, the port and network device have not established a link. Try the following:

- ❑ Verify that the network device connected to the copper port is powered on and operating properly.
- ❑ Verify that the copper cable is securely connected to the ports on the switch and the remote network device.
- ❑ If the network device operates at 2.5G or 5G, verify that it is connected to one of the multi-speed ports on the switch. Refer to Table 5 on page 33.
- ❑ Use the switch's management software to confirm that the copper port is enabled.
- ❑ If the remote network device is a managed device, use its management firmware to confirm that its copper port is enabled.
- ❑ Try connecting another network device to the copper port with a different copper cable. If the copper port is able to establish a link, then the problem is either with the previous network device or network cable.
- ❑ Verify that the copper cable does not exceed 100 meters (328 feet).
- ❑ Verify that you are using the appropriate category of cable. Cable requirements are listed in "Cable Requirements" on page 34.
- ❑ Verify that the port is connected to the correct cable.

Note

A 1G, 2.5G, or 5G connection may require five to ten seconds to establish a link.

No Link Over Fiber Optic Cable to a Network Device

A 1G SFP or 10G SFP+ fiber optic transceiver cannot establish a link with a remote network device. Try the following:

- ❑ Verify that the SFP+ transceiver is fully inserted in the transceiver slot in the switch.
- ❑ Verify that the fiber optic cable is securely connected to the port on the SFP+ transceiver and the remote network device.
- ❑ Verify that the remote network device is power on and is operating normally.
- ❑ Verify that the operating specifications of the fiber optic ports on the SFP+ transceiver and remote network device are compatible. A transceiver's operating specification are included with the module.
- ❑ Verify that the correct type of fiber optic cabling is being used.
- ❑ Verify that the SFP+ transceiver is connected to the correct fiber optic cable.
- ❑ Try connecting another network device to the SFP+ transceiver with a different cable. If the SFP+ transceiver successfully establishes a link to the remote device, then the problem is with the previous device or cable.
- ❑ Use the switch's management software to confirm that the SFP+ slot is enabled.
- ❑ If the remote network device is a managed device, use its management firmware to confirm that its port is enabled.
- ❑ Test the attenuation of both directions on the fiber optic cable with a fiber optic tester to determine whether the optical signal is too weak or strong.
- ❑ If the problem is with a bi-directional SFP+ transceiver, refer to its data sheet to verify that its transmission and reception frequencies are opposite to the bi-directional port in the remote device. For example, a bi-directional transceiver that transmits and receives at 1310nm and 1550nm, respectively, has to be connected to a remote fiber optic port that transmits and receives at 1550nm and 1310nm, respectively. Two bi-directional ports that transmit and receive at the same frequencies will not establish a link.

No Power to a PoE Network Device

The switch is not providing power to a PoE network device. Try the following:

- ❑ Verify that the network device is connected to a GS980MX Switch that supports PoE. Refer to “Power Over Ethernet” on page 38.
- ❑ If the network device requires PoE++, verify that the switch supports PoE++. Refer to “PoE++ Switches” on page 38.
- ❑ Verify that the switch supports the PoE class of the network device. Refer to “Powered Device Classes” on page 40.
- ❑ If the port’s PoE LED is steady green, the switch is supplying power to the network device.
- ❑ If the port’s PoE LED is steady amber, the switch is not supplying power to the network device because of an error condition. An error condition can occur if the device is requiring more power than its device class, or there is a terminal short in the network cable or connector.
- ❑ If the port’s PoE LED is blinking amber, the switch is not supplying power to the network device because it does not have sufficient unallocated power to supply to the network device.
- ❑ Review the PoE network device’s documentation for its wiring mode. The mode specifies the pins on the RJ-45 port on which the device receives power. There are two modes, Mode A and Mode B. In Mode A, the switch delivers power to the powered devices on pins 1, 2, 3, and 6 on the RJ-45 port, the same pins that carry the network traffic. Mode B defines pins 4, 5, 7, and 8 as the power carriers.

For PoE+ devices (classes 0 to 4), the GS980MX Switches support Mode A, but not Mode B. Most powered devices are designed to accept power by either mode, but some legacy devices may only support one mode. Review the device’s documentation or data sheet to confirm that it supports Mode A. The switch cannot support legacy devices that support only Mode B.

For PoE++ devices (classes 5 to 8), the PoE++ GS980MX Switches support both Mode A and Mode B.

- ❑ Verify that you are using the appropriate category of copper cable. Refer to “Cable Requirements” on page 34.
- ❑ Try connecting the powered device to a different port on the switch.

Establish an AlliedWare Plus management session with the switch and try the following:

- ❑ Verify that the switch has not reached its maximum power budget supporting other PoE devices by entering the `SHOW POWER-INLINE` command in the User Exec or Privileged Exec mode. The switch cannot support additional PoE devices if it has reached its maximum power budget. Maximum power budgets are listed in Table 15 on page 40.
- ❑ Verify that PoE is enabled on the port with the `SHOW POWER-INLINE INTERFACE` command or `SHOW POWER-INLINE INTERFACE DETAIL` command. The default setting for PoE is enabled.
- ❑ Verify that the PoE power setting for the port has not been reduced to a value below the power requirements of the device.

Switch Powers Off or Operates Intermittently

A switch that unexpectedly powers off or functions intermittently may be overheating. Try the following:

- ❑ Verify that the location of the switch allows for adequate airflow and cooling.
- ❑ If the switch is installed in a wiring box or closet, verify that there is adequate ventilation to maintain cooling.
- ❑ Verify that there are no obstructions blocking the fans on the rear panel of the switch.
- ❑ Verify that the ambient temperature of the installation site is within the operating range of the switch. Refer to “Environmental Specifications” on page 220.
- ❑ There may be a problem with the AC power source or the switch itself. Review “Switch Does Not Power On” on page 208.

If the switch is still operating, try these additional steps:

- ❑ Use the `SHOW SYSTEM ENVIRONMENT` command to verify that the fans are operating correctly.
- ❑ Use the `SHOW SYSTEM ENVIRONMENT` command in the Privileged Exec mode to verify that the input voltage from the power source to the switch is stable and within the approved operating range. The unit will shut down if the input voltage fluctuates above or below the approved operating range.

Appendix A

Technical Specifications

This appendix contains the following sections:

- "Physical Specifications" on page 216
- "Environmental Specifications" on page 220
- "Power Specifications" on page 221
- "Certifications" on page 223
- "RJ-45 Twisted Pair Port Pinouts" on page 224
- "RJ-45 Style Serial Console Port Pinouts" on page 225
- "USB Port" on page 226

Physical Specifications

Dimensions

Table 35 lists the dimensions of the switches. Figure 93 through Figure 98 on page 218 illustrate the dimensions of the switches.

Table 35. Product Dimensions

Model	Dimension (W x H x D)
AT-GS980MX/10HSm	21.03 cm x 4.24 cm x 36.14 cm (8.28 in. x 1.67 in. x 14.23 in.)
AT-GS980MX/18HSm	44.05 cm x 4.37 cm x 25.53 cm (17.34 in. x 1.72 in. x 10.5 in.)
AT-GS980MX/28	44.05 cm x 4.37 cm x 32.26 cm (17.344 in. x 1.72 in. x 12.7 in.)
AT-GS980MX/28PSm	44.05 cm x 4.37 cm x 42.06cm (17.344 in. x 1.72 in. x 16.56 in.)
AT-GS980MX/52	44.05 cm x 4.37 cm x 32.26 cm (17.344 in. x 1.72 in. x 12.7 in.)
AT-GS980MX/52PSm	44.05 cm x 4.37 cm x 42.06 cm (17.344 in. x 1.72 in. x 16.56 in.)

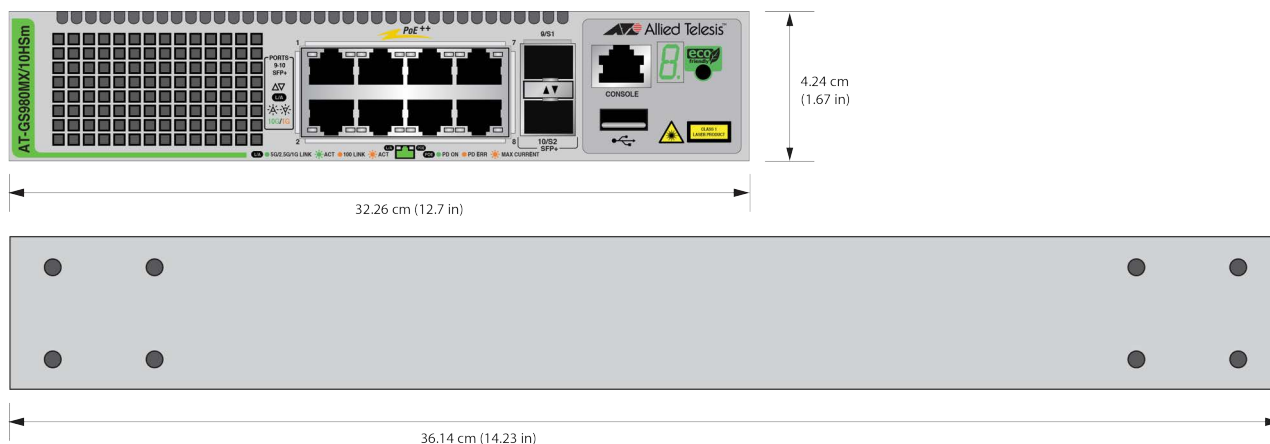


Figure 93. Dimensions of the AT-GS980MX/10HSm Switch

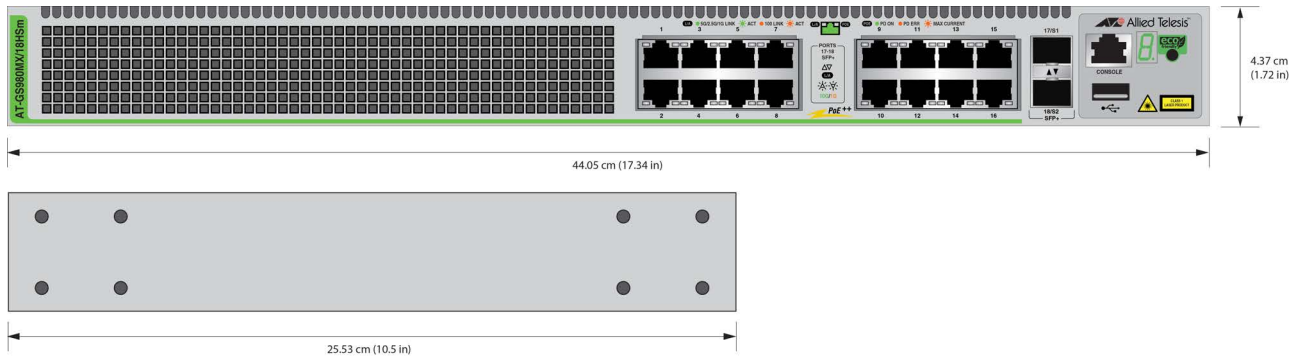


Figure 94. Dimensions of the AT-GS980MX/18HSm Switch

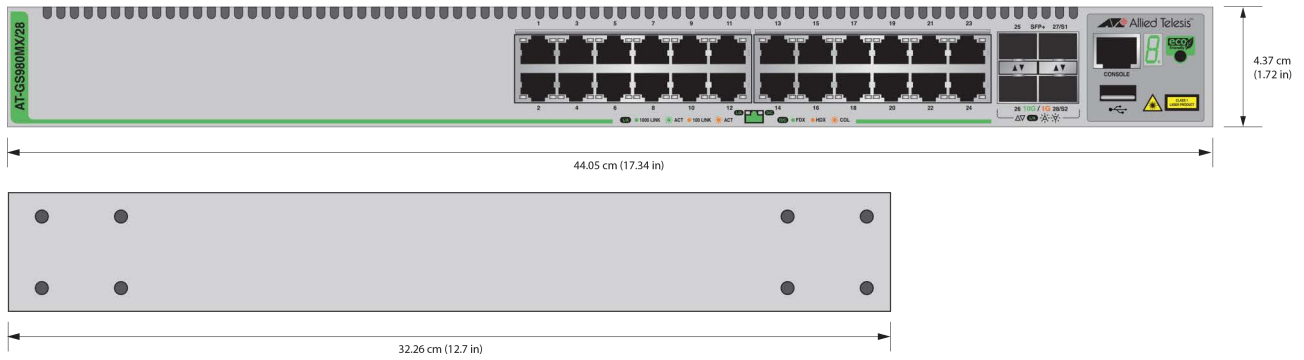


Figure 95. Dimensions of the AT-GS980MX/28 Switch

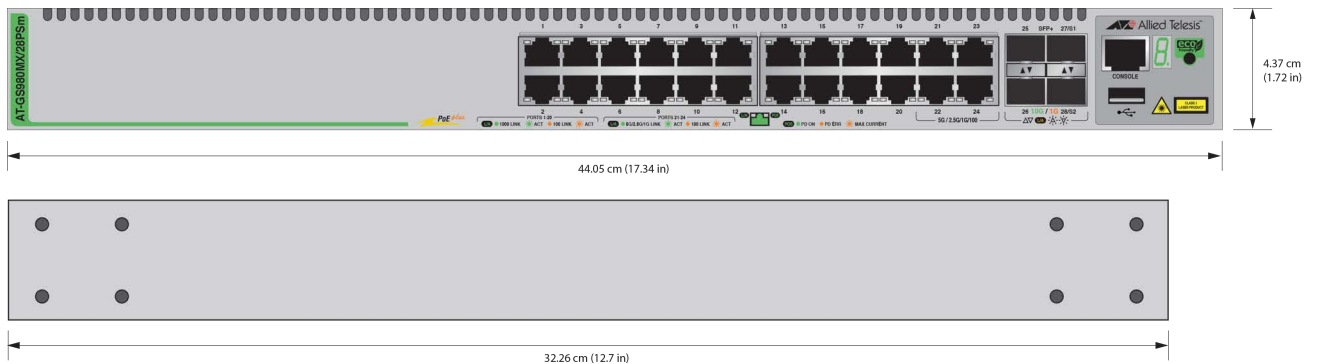


Figure 96. Dimensions of the AT-GS980MX/28PSm Switch

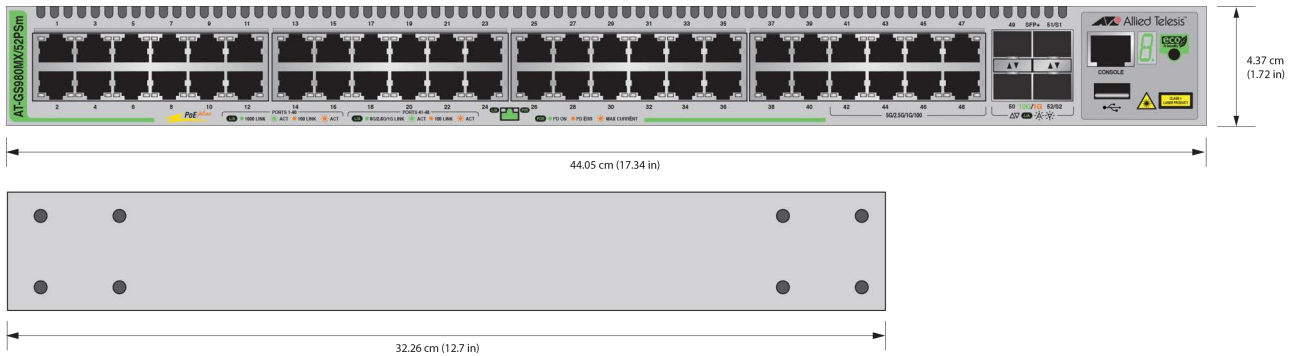


Figure 97. Dimensions of the AT-GS980MX/52 Switch

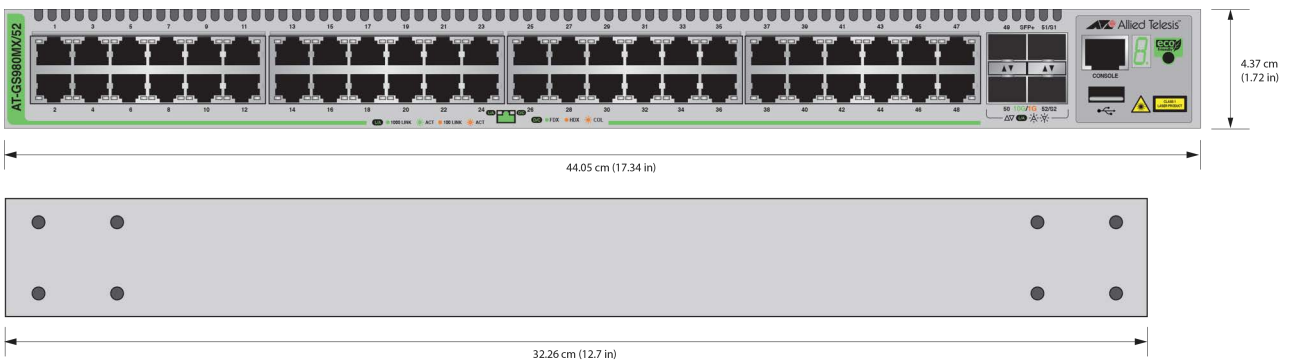


Figure 98. Dimensions of the AT-GS980MX/52PSm Switch

Weights

Table 36 lists the weights of the switches.

Table 36. Product Weights

AT-GS980MX/10HSm	3.20 kg (7.00 lb)
AT-GS980MX/18HSm	4.28 kg (9.45 lb)
AT-GS980MX/28	4.12 kg (9.09 lb)
AT-GS980MX/28PSm	5.60 kg (12.35 lb)
AT-GS980MX/52	4.67 kg (10.5 lb)
AT-GS980MX/52PSm	6.09 kg (13.7 lb)

Ventilation

Table 37 lists the ventilation requirements.

Table 37. Ventilation Requirements

Recommended Minimum Ventilation on All Sides	10 cm (4.0 in)
--	----------------

Environmental Specifications

Table 38 lists the environmental specifications of the switches.

Table 38. Environmental Specifications

Operating Temperature Range	0° C to 50° C (32° F to 122° F)
Storage Temperature	-25° C to 70° C (-13° F to 158° F)
Operating Humidity	5% to 90% noncondensing
Storage Humidity	5% to 95% noncondensing
Maximum Operating Altitude	3,000 m (9,842 ft)
Maximum Nonoperating Altitude	4,000 m (13,100 ft)
Product Noise Level	More than 42 dB @ 30C or less
Installation Requirement	Tabletop, wall or rack mount

Power Specifications

This section contains the maximum power consumption values, input voltages, and heat dissipation values.

Maximum Power Consumption

Table 39 lists the maximum power consumptions for the switches.

Table 39. Maximum Power Consumptions

AT-GS980MX/10HSm	523 W
AT-GS980MX/18HSm	869 W
AT-GS980MX/28	39 W
AT-GS980MX/28PSm	510 W
AT-GS980MX/52	60 W
AT-GS980MX/52PSm	530 W

Input Voltages

Table 40 lists the input voltages for the switches.

Table 40. Input Voltages

AT-GS980MX/10HSm	100-240 VAC, 50/60 Hz, 8 A
AT-GS980MX/18HSm	100-240 VAC, 50/60 Hz, 10 A
AT-GS980MX/28	100-240 VAC, 50/60 Hz, 1 A
AT-GS980MX/28PSm	100-240 VAC, 50/60 Hz, 6 A
AT-GS980MX/52	100-240 VAC, 50/60 Hz, 1 A
AT-GS980MX/52PSm	100-240 VAC, 50/60 Hz, 6 A

Heat Dissipations

Table 41 lists the heat dissipations for the switches.

Table 41. Heat Dissipations

AT-GS980MX/10HSm	2116 BTU/hr
AT-GS980MX/18HSm	3105.5 BTU/hr
AT-GS980MX/28	133 BTU/hr
AT-GS980MX/28PSm	1740 BTU/hr
AT-GS980MX/52	205 BTU/hr
AT-GS980MX/52PSm	1809 BTU/hr

Certifications

Table 42 lists the product certificates.

Table 42. Product Certifications

EMI (RFI Emissions)	FCC Class A, EN55032 Class A, EN61000-3-2, EN61000-3-3, VCCI Class A, RCM
EMC (Immunity)	EN55035
Electrical and Laser Safety	EN62368-1 (TUV), UL 60950-1 (cULUS), CSA-C22-2 No. 60950-1 (cULUS), EN60825-1 (TUV), UL 62368-1
Compliance Marks	CE, cULUS, TUV
RoHS and WEEE	Complies with RoHS 6 Complies with China RoHS

RJ-45 Twisted Pair Port Pinouts

Figure 99 illustrates the pin layout of the RJ-45 connectors for the twisted pair ports.

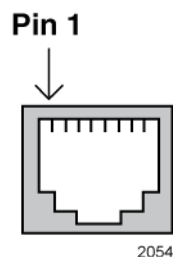


Figure 99. RJ-45 Socket Pin Layout (Front View)

Table 43 lists the pin signals.

Table 43. Pin Signals for the Twisted Pair Ports

Pin	100M MDI Signal	100M MDI-X Signal	1/2.5/5G Signal
1	TX+	RX+	Bi-directional pair A+
2	TX-	RX-	Bi-directional pair A-
3	RX+	TX+	Bi-directional pair B+
4	Not used	Not used	Bi-directional pair C+
5	Not used	Not used	Bi-directional pair C-
6	RX-	TX-	Bi-directional pair B-
7	Not used	Not used	Bi-directional pair D+
8	Not used	Not used	Bi-directional pair D-

RJ-45 Style Serial Console Port Pinouts

Table 44 lists the pin signals of the RJ-45 style serial console port.

Table 44. RJ-45 Style Serial Console Port Pin Signals

Pin	Signal
1	RTS#
2	Not used
3	Transmit Data
4	Ground
5	Ground
6	Receive Data
7	Not used
8	CTS

USB Port

Table 45 lists the pin signals of the USB port.

Table 45. USB Port Pin Signals

Pin	Signal
1	+5V
2	DATA-
3	DATA+
4	NC
5	GND