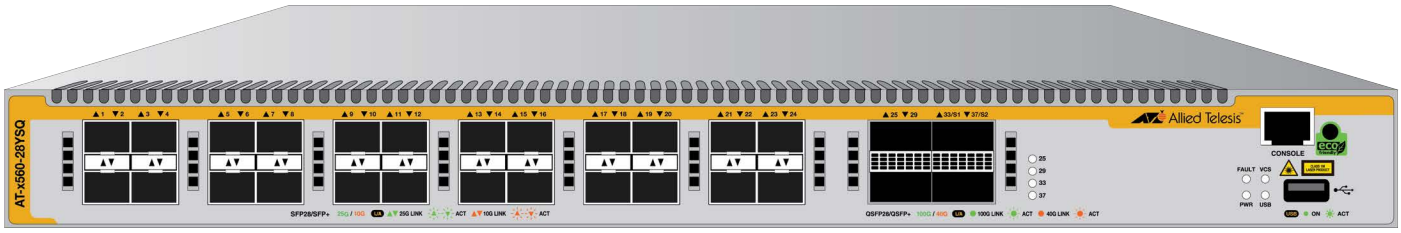
x560-28YSQ Switch

Layer 3 High Speed Stackable Access Switch

AlliedWare Plus™



Installation Guide

613-003410 Rev. A

Electrical Safety and Emissions Standards

This section contains the following:

US 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.

Note
Modifications or changes not expressly approved of by the manufacturer or the FCC, can void your right to operate this equipment.

Industry Canada

Radiated Energy

This Class A digital apparatus complies with Canadian ICES-003.

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

Emissions, Immunity and Electrical Safety Standards

Standard Compliance	RoHS compliant
Electrical Safety	UL62368-1 ($_{C}UL_{US}$) CE UKCA IEC62368-1 EN62368-1
Electro Magnetic Interference	FCC Class A ICE-003: 2020, Issue 7, Class A EN55032: 2015+A11: 2020, Class A CISPR 32: 2012 VCCI-CISPR 32: 2013, Class A RCM AS/NZS CISPR 32: 2015+A1: 2020, Class A UKCA

Warning
In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures. E70

Electro Magnetic Susceptibility	EN55035: 2017/A11: 2020 EN61000-4-2: 2009 EN61000-4.3: 2006 + A1: 2008 + A2: 2010 EN61000-4-4: 2012 EN61000-4-5: 2014 + A1:2017 EN61000-4-6: 2014 + AC: 2015 EN61000-4-8: 2010 EN61000-4-11: 2004 + A1: 2017 EN61000-3-2:2014 + EN61000-3-2: 2019 EN61000-3-3: 2013 + A1: 2019

Warning
Laser Safety: EN60825-1. L7

Power Supply Safety Compliance

Warning
This unit has more than one power input. To reduce the risk of electric shock, disconnect all power inputs before servicing the unit.

Translated Safety Statements

Important: The ∽ indicates that translations of the safety statement are available in the PDF document "**Translated Safety Statements**" posted on the Allied Telesis website at **alliedtelesis.com/support**.

Contents

Preface

This guide contains the installation instructions for the x560-28YSQ switch.

In addition to the installation instructions, this guide includes how to build a virtual stack with the Virtual Chassis Stacking (VCStack) feature.

This preface contains the following sections:

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.

Translated Safety Statements

Important: The ✍ indicates that translations of the safety statement are available in the PDF document **Translated Safety Statements** posted on the Allied Telesis website at **alliedtelesis.com/library/search**.

- Übersetzte Sicherheitserklärungen

  Wichtig: Das ✍ zeigt an, dass Übersetzungen der Sicherheitserklärung in den PDF-**Translated Safety Statements** auf der Allied Telesis-Website unter **alliedtelesis.com/us/en/library/search** verfügbar sind.

- Declaraciones de seguridad traducidas

  Importante: El ✍ indica que las traducciones de la declaración de seguridad están disponibles en las **Translated Safety Statements** en PDF publicadas en el sitio web de Allied Telesis en **alliedtelesis.com/us/en/library/search**.

- Consignes de sécurité traduites

  Important: Le symbole ✍ indique que les traductions de la déclaration de sécurité sont disponibles dans le PDF **Translated Safety Statements** publiées sur le site Web de Allied Telesis à l'adresse **alliedtelesis.com/us/en/library/search**.

- Dichiarazioni di sicurezza tradotte

  Importante: ✍ indica che le traduzioni della dichiarazione di sicurezza sono disponibili nelle **Translated Safety Statements** in PDF pubblicate sul sito Web di Allied Telesis all'indirizzo **alliedtelesis.com/us/en/library/search**.

- Översatta säkerhetsförklaringar

  Viktig: ✍ anger att översättningar av säkerhetsförklaringen finns tillgängliga i PDF-dokumentet **Translated Safety Statements** som publicerats på Allied Telesis webbplats på **alliedtelesis.com/us/en/library/search**.

Contacting Allied Telesis

For assistance with this product, contact Allied Telesis technical support at **www.alliedtelesis.com/support**.

Chapter 1
Overview

The chapter contains the following sections:

Overview

The x560-28YSQ switch is a Layer 3 stackable edge switch with SFP28/SFP+ ports supporting 1Gbps, 10Gbps, and 25Gbps and QSFP28/QSFP28+ ports supporting 40Gbps and 100Gbps. The switch comes with two power supply units (PSUs) pre-installed to provide power redundancy.

Figure 1 shows the front panel of the x560-28YSQ switch.

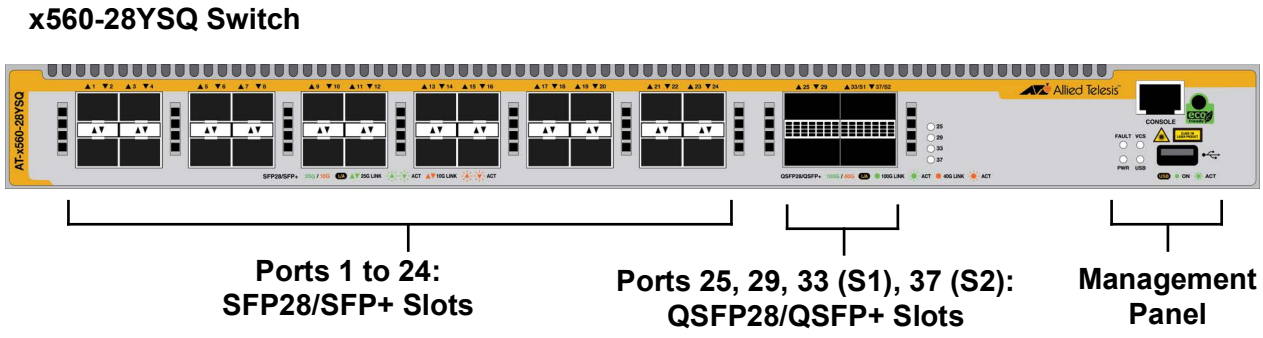


Figure 1. Front Panel of the x560-28YSQ Switch

The rear panel of the x560-28YSQ switch is shown in Figure 2.

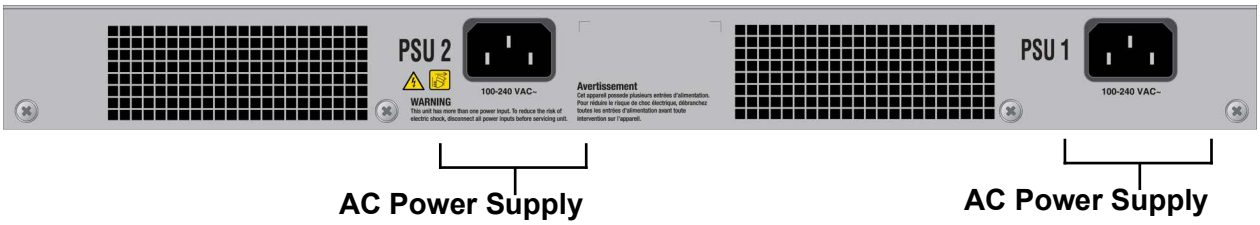


Figure 2. Rear Panel of the x560-28YSQ Switch

Features

The main features of the switch are listed here.

Hardware Features

The switch has the following hardware features:

- 24 SFP28/SFP+ transceiver or direct attach cable slots
- Four QSFP28/QSFP+ transceiver or direct attach cable slots
- Console port
- USB port
- eco-friendly button
- LEDs
- Two power supply units

Virtual Chassis Stacking (VCStack)

The VCStack feature enables you to link together two x560-28YSQ switches into a virtual stack so that they function as a single networking unit.

For the instructions to build a virtual stack with the VCStack feature, see Chapter 2, “Virtual Chassis Stacking” on page 27.

SFP Slots

The x560-28YSQ switch is equipped with 24 SFP28/SFP+ slots and four QSFP28/QSFP+ slots.

Here are guidelines for transceivers and direct attach cables for the SFP slots:

- SFP transceivers and direct attach cables are sold separately.
- For a list of supported transceivers and direct attach cables, see the product’s data sheet at www.alliedtelesis.com.
- When using a Fiber Optic Small-Form Pluggable (SFP) module, ensure it is IEC 60825-1 certified and Class 1 Laser Product.

SFP28/SFP+ Slots

The SFP28/SFP+ ports support the following speed:

- 1Gbps
- 10Gbps
- 25Gbps

QSFP28/QSFP+ Slots

The QSFP28/QSFP+ ports support the following speed:

- 40Gbps
- 100Gbps

Management Software and Interfaces

Here are the management software and interfaces:

- AlliedWare Plus™ management software
- Command line interface, available locally through the Console port or remotely over the network.

Management Methods

You can manage the switch as follows:

- Command line interface (CLI) accessed locally through the Console port or remotely using Telnet or SSH.
- Remote management with Vista Manager
- Remote access with SNMPv1, v2c, or v3.

Management Panel

The management panel has the following features:

- Console port
- USB port
- eco-friendly button
- System LEDs

For more information, see “Management Panel” on page 24.

Note
The eco-friendly mode can be turned on or off with the `ECOFRIENDLY LED` or `NO ECOFRIENDLY LED` command in the Command Line Interface.

Power Supply

The x560-28YSQ switch comes with two pre-installed PSUs that supply system power. The two PSUs support dual-redundancy.

See “Power Specifications” on page 126. A power cord and retaining clip are included with the switch.

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

Note
The power supply is not field-replaceable.

FANs

The switch has ventilation fans located on the back panel. The airflow direction of the fan is from front to back, drawing air out of the switch.

Problems with the fans are displayed with the Fault LED. See Table 1 on page 20.

Note
The fan is not field-replaceable.

LEDs

This section describes the LEDs on the switch.

LEDs for the Management Panel

The switch has the LEDs for the power, system, VCS, and USB information on the management panel. The LEDs on the management panel are shown in Figure 3 and the states of the LEDs are described in Table 1.

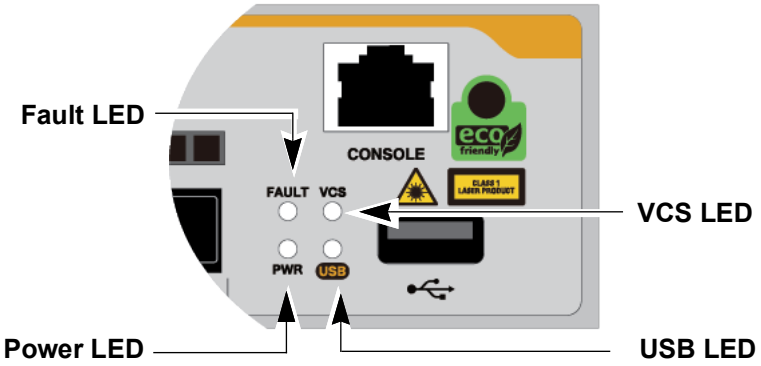


Figure 3. LEDs on the Management Panel

Table 1. LEDs on the Management Panel

LED	State	Description
Fault	Solid Red	The switch is booting up.
	Flashing Red (Once)	The system or fan is having an error.
	Flashing Red (Six flashes in two seconds)	The temperature exceeds the threshold.
	Off	The switch is operating normally or powered off.
PWR	Solid Green	The switch receiving power and operating normally.
	Off	The power is off.
VCS	Solid Green	The switch is a VCS master.
	Off	Possible causes of this state are: - The switch is a VCS member. - VCS is disabled.

Table 1. LEDs on the Management Panel (Continued)

LED	State	Description
USB	Solid Green	A USB flash drive is attached.
	Flashing Green	Information is being written or read on the attached USB flash drive.
	Flashing Amber	The USB flash drive has an error during writing or reading.
	Off	No USB is attached.

LEDs for SFP28/SFP+ Slots

The slots for the SFP28/SFP+ transceivers and direct attach cables have one link and activity status LED per each port. See Figure 4.

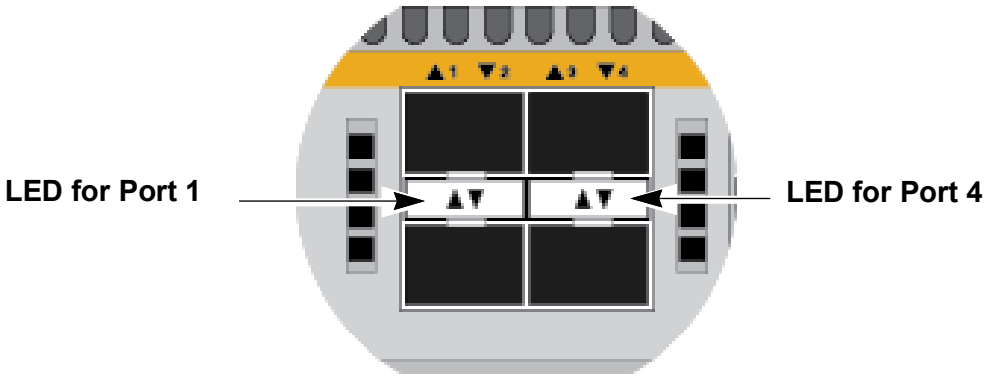


Figure 4. LEDs for SFP28/SFP+ Transceiver/Direct Attach Cable Slots

The states of the LEDs are defined in Table 2.

Table 2. Link and Activity LEDs for SFP28/SFP+ Ports

State	Description
Solid Green	The port has established a 25Gbps link to a network device.
Flashing Green	The port is transmitting or receiving data at 25Gbps.
Solid Amber	The port has established a 1Gbps or 10Gbps link to a network device.
Flashing Amber	The port is transmitting or receiving data at 1Gbps or 10Gbps.

Table 2. Link and Activity LEDs for SFP28/SFP+ Ports (Continued)

State	Description
Off	Possible causes of this state are listed here: - The slot is empty. - The port has not established a link to a network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button in the management panel or the `NO ECOFRIENDLY LED` command in the command line interface.

LEDs for QSFP28/QSFP+ Slots

The slots for the QSFP28/QSFP+ transceiver and direct attach cable have one link and activity status LED for each slot. See Figure 5.

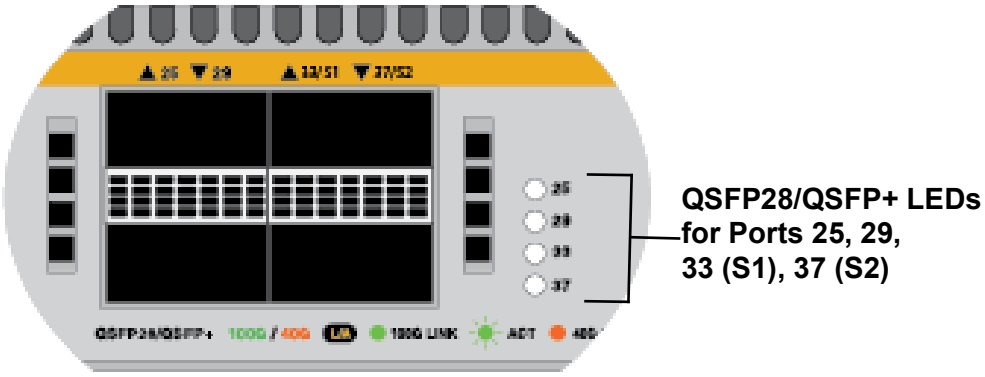


Figure 5. LEDs for QSFP28/QSFP+ Slots

The states of the LEDs are defined in Table 3.

Table 3. Link and Activity LEDs for QSFP28/QSFP+ Ports

State	Description
Solid Green	The port has established a 100Gbps link to a network device.
Flashing Green	The port is transmitting or receiving data at 100Gbps.
Solid Amber	The port has established a 40Gbps link to a network device.
Flashing Amber	The port is transmitting or receiving data at 40Gbps.

Table 3. Link and Activity LEDs for QSFP28/QSFP+ Ports

State	Description
Off	Possible causes of this state are listed here: - The slot is empty. - The port has not established a link to a network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button in the management panel or the `NO ECOFRIENDLY LED` command in the command line interface.

Management Panel

The components on the management panel for the switch are identified in Figure 6.

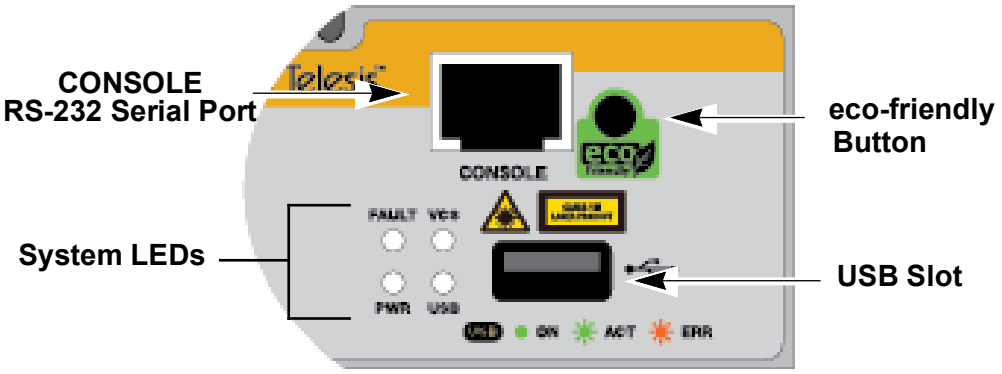


Figure 6. Management Panel for the Switch

USB Port

You can use the USB port with a flash drive for the following functions:

- Provide a centralized network backup location for Autonomous Management Framework.
- Store backup copies of configuration files.
- Transfer configuration files between switches that are to have similar configurations.
- Store or transfer log files.
- Store or transfer debug files (for example, the output of the `SHOW TECH-SUPPORT` command).
- Boot the AlliedWare Plus operating system and master configuration file from the flash drive.

Note
Using a flash drive with the switch is optional.

Console (RS-232) Port

Use the Console Port to conduct local management sessions with the switch. Local management sessions require a terminal or PC with a terminal emulation program, and a management cable. The switch does not need an IP address for local management sessions because they are not conducted over a network. For instructions, refer to “Starting a Local Management Session” on page 107.

eco-friendly Button

Use the eco-friendly button on the management panel to turn the LEDs on or off.

Designating Ports in the Command Line Interface

The individual ports on the switch are identified with the PORT parameter in the command line interface of the AlliedWare Plus management software. The format of the parameter is shown in Figure 7.

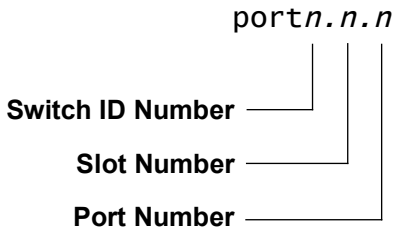


Figure 7. PORT Parameter in the Command Line Interface

The three parts of the PORT parameter are described in Table 4.

Table 4. PORT Parameter Format

Number	Description
Switch ID Number	Identifies the switch's unique ID number in VCStack. In the standalone mode, the switch ID number is always 1.
Slot Number	The slot number for the ports on the switch is 0.
Port Number	Identifies a port number.

Examples for the PORT Parameter on Base Ports

Here are examples of the PORT parameter in the INTERFACE command for switches in a stack.

The first example enters the port Interface mode for port 11 in a switch with ID 1:

```
awplus> enable
awplus# configure terminal
awplus(config)# interface port1.0.11
```

This example enters the port Interface mode for port 4 to 7 in a switch with ID 2:

```
awplus(config)# interface port2.0.4-2.0.7
```

Note
You must include the PORT parameter when identifying individual ports, and omit it from the last port when specifying ranges.

This example enters the port Interface mode for port 10 in a switch with ID 1 and port 18 in a switch with ID 2:

```
awplus(config)# interface port1.0.10,port2.0.18
```

Chapter 2

Virtual Chassis Stacking

The sections in this chapter are listed here:

Overview

The Virtual Chassis Stacking (VCStack) feature enables you to link together x560-28YSQ switches into a virtual stack so that they function as a single networking unit.

The feature provides the following benefits:

- Simplifies management - You can manage the devices as a single unit, rather than individually. Your local and remote management sessions automatically give you management access to all the switches.
- Reduces IP addresses - A stack requires only one IP address for remote management access, reducing the number of IP addresses you have to assign to network devices. The one address gives you management access to all the stack units.
- Adds feature flexibility and resiliency - Stacking gives you more flexibility in how you can configure some features. For instance, you can create port aggregations using ports from different switches, rather than ports from only one switch. By distributing the ports of an aggregation across multiple switches, you increase its resiliency because the aggregation can continue to function, though at a reduced bandwidth, even if a switch in a stack stops functioning.

Stacking Guidelines

Before configuring a stack, read the guidelines here.

Stacking Guidelines

Here are general stacking guidelines:

- A stack may consist of up to four x560-28YSQ switches.
- Up to four QSFP28/QSFP+ ports per switch can be designated as trunk ports. The QSFP28/QSFP+ ports must be configured as 100Gbps trunk ports.
- Up to eight SFP28/SFP+ ports per switch can be designated as trunk ports. The QSFP28/QSFP+ ports must be configured as 25Gbps trunk ports.
- You can choose any ports on the switches to build a stack trunk; however, trunk ports must consist of ports of one type: all SFP28/SFP+ ports or all QSFP28/QSFP+ ports. A stack trunk cannot have a combination of these ports.
- Once ports are designated as members of the trunk, they cannot be used as regular networking ports. For more information, see “Stack Trunk Guidelines” on page 29.
- The VCStack feature comes standard with the AlliedWare Plus operating software. No additional software or license is required.
- The default setting for the VCStack feature on the x560-28YSQ switch is enabled. To disable or enable VCStack, see “STACK ENABLE” on page 73. Disabling or enabling VCStack requires rebooting the switch.
- The switches must have the same optional features licenses. If you purchased optional features for the switches, you should install them before assembling the stack.
- You should *not* pre-configure the features of the switches, such as virtual LANs and spanning tree, before building the stack. The configuration settings are likely to be discarded once the switches begin operating as a stack.

Stack Trunk Guidelines

The switches of a stack are connected with a physical network link called the stack trunk. Here are general trunk guidelines:

- The two highest numbered ports, ports 33 and 37, are designated as trunk ports by default.
- To remove the trunk port function from ports, use the `NO STACKPORT` command in the AlliedWare Plus operating system. To designate trunk ports with the `STACKPORT` command. See “STACKPORT” on page 72.
- The trunk ports must be configured as 25Gbps or 100Gbps.

- The fiber optic transceivers or direct attach cables of a trunk must be from Allied Telesis. Transceivers or direct attach cables from other network equipment providers might not perform properly as trunks. For a list of supported transceivers and direct attach cables, visit the Allied Telesis web site at www.alliedtelesis.com.
- If a trunk fails for any reason, the switches operate as stand-alone devices.
- Allied Telesis recommends using the same ports for the trunk on the switches in a stack trunk and connecting together the same ports in the switches, if possible. This practice makes managing or troubleshooting a trunk easier.
- Allied Telesis recommends choosing consecutive ports, for example, ports 1 to 2. This practice makes managing or troubleshooting a trunk easier.

You can choose the ports of a trunk from the following groups:

- “SFP28/SFP+ Ports for a Stack Trunk” on page 31
- “QSFP28/QSFP+ Ports for a Stack Trunk” on page 33

Trunk Ports Examples

The SFP28/SFP+ ports 1 to 24 or QSFP28/QSFP+ ports 25, 29, 33, and 37 on the x560-28YSQ switch can be used as trunk ports.

Note
Ports 1 to 24 of the x560-28YSQ switch supports 10Gbps and 25Gbps; however, a trunk must operate at 25Gbps in Auto-Negotiation.

SFP28/SFP+ Ports for a Stack Trunk

Figure 8 shows an example of two units for VCStack with ports 1 and 2 for a stack trunk. Here are the general properties:

- The stack consists of two x560-28YSQ switches and each switch uses two SFP28/SFP+ ports as truck ports.
- The cables in a trunk must be all the same type: all fiber optic cables, direct attach cables, or copper cables.
- Each port operates at 25Gbps speed.
- The switches use the same consecutive ports, 1 and 2.

Note
The trunk ports do not have to be consecutive, nor do they have to be the same ports on the two switches. But following the recommendations can make trunk management easier.

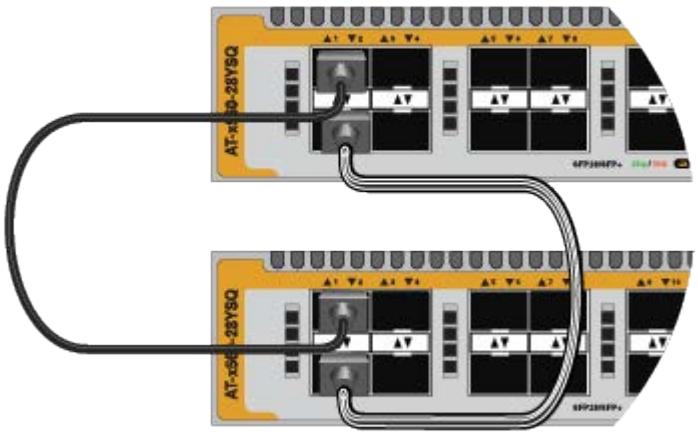


Figure 8. Example Stack of Two x560-28YSQ Switches

Another example of VCS stack using SFP28/SFP+ ports. Figure 9 shows an example of four units for VCStack with ports 1 to 4 for a stack trunk. Here are the general properties:

- The stack consists of four x560-28YSQ switches and each switch uses four SFP28/SFP+ ports as truck ports.
- The cables in a trunk must be all the same type: all fiber optic cables, direct attach cables, or copper cables.
- Each port is configured as 25Gbps speed.
- The switches use the same consecutive ports 1 to 4.

Note
The trunk ports do not have to be consecutive, nor do they have to be the same ports on the two switches. But following the recommendations can make trunk management easier.

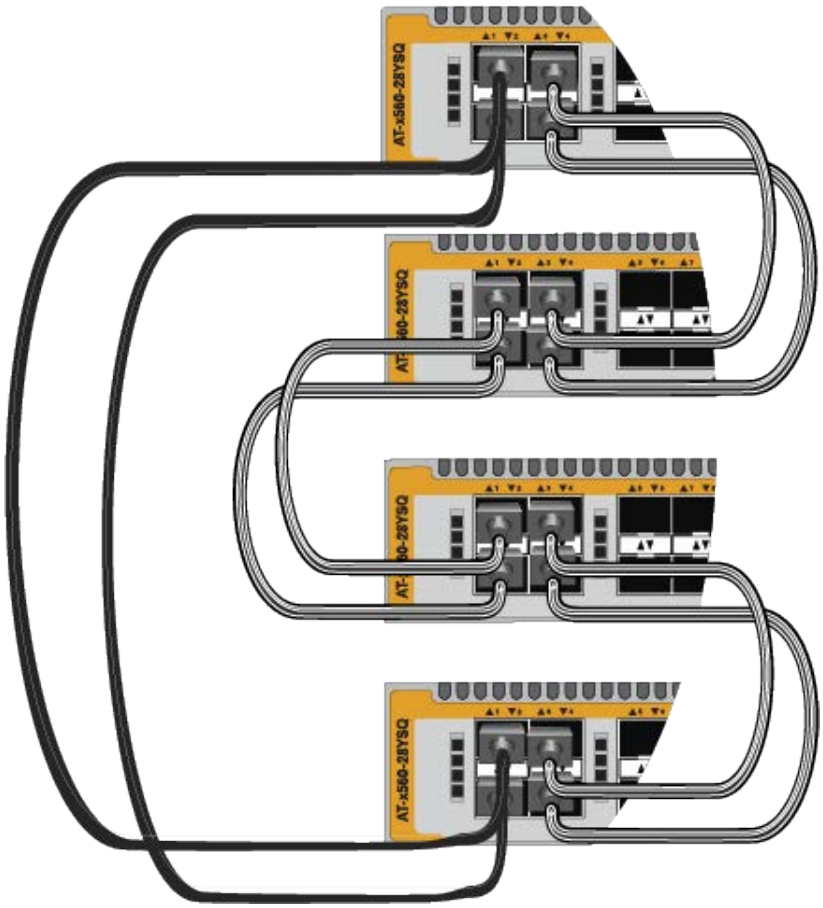


Figure 9. Example Stack of Four x560-28YSQ Switches

QSFP28/QSFP+ Ports for a Stack Trunk

Figure 10 shows an example of VCStack with ports 33 (S1) and 37 (S2) as a stack trunk. Here are the general properties:

- The stack consists of two x560-28YSQ switches and each switch uses two QSFP28/QSFP+ ports as truck ports.
- The cables in a trunk must be all the same type: all fiber optic cables, or direct attach cables.
- Each port operates at 100Gbps speed.
- The switches use ports 33 (S1) and 37 (S2).

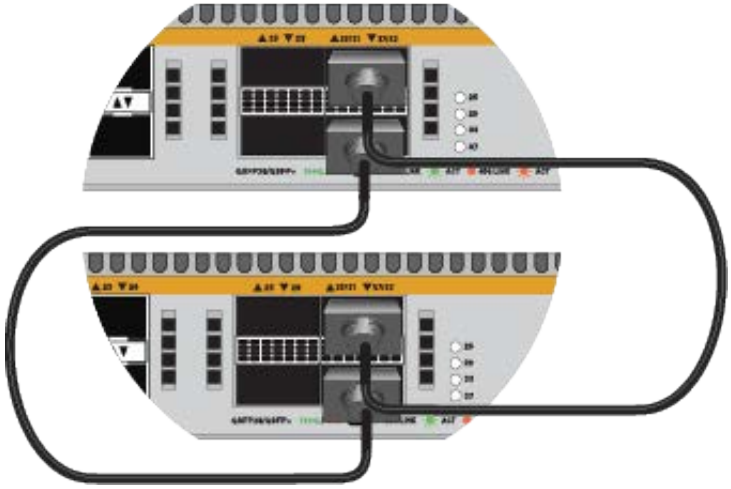


Figure 10. Stack Trunk Examples with QSFP28/QSFP+ Ports

Master and Member Switches

One switch of a stack functions as a master switch. Its main functions are listed here:

- Coordinate and monitor stack operations.
- Verify that the switches are using the same version of management software. It automatically downloads its management software over the stacking cables to switches with different software versions.
- Verify that the switches have different ID numbers. It automatically assigns new ID numbers to resolve conflicts where two switches have the same ID number.

The other switches are called member switches.

Selection of the Master Switch

The switches of the stack designate the master switch during the initialization process, when they are powered on or reset. They base the selection of the master switch on the following parameters:

- Stack priority numbers
- MAC addresses

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

If the switches have the same priority values, the selection of the master switch is based on their MAC addresses. 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 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 powered on.

Switch ID Numbers

Each switch must have an ID number. The default is 1. You can assign the numbers yourself or let the master switch assign the numbers automatically when you first power on the stack.

You use the ID numbers to identify the individual ports and switches when configuring the devices with the commands in the management software. For further information, refer to “Designating Ports in the Command Line Interface” on page 25.

The ID numbers are also used to identify the parameter settings that are stored in the configuration file. When the stack is reset or power cycled, the switches uses the ID numbers in the commands in the configuration file to determine which parameter settings belong to which switch.

Caution

You should not change the ID numbers of the switches after you begin configuring the parameter settings. Otherwise, the stack might apply parameter settings to the wrong devices when you reset or power cycle it. E79

The switches do not use the ID numbers to select the master switch. The selection of the master switch is based on the priority numbers and MAC addresses.

Optional Feature Licenses

The x560-28YSQ switch comes with the AlliedWare Plus management software and a base set of features that are available as soon as you install the device. Additional features and capabilities might be included with the operating system, but can be access only after they are unlocked with optional feature licenses from Allied Telesis. Contact your authorized reseller or distributor for a list of optional features licenses for this product.

Here are the guidelines to feature licenses for a stack of the x560-28YSQ switch:

- The VCStack feature is part of the base features of the switch. It does not require an optional feature license.
- You can install feature licenses while the switches are operating as stand-alone units or as a stack.
- When ordering feature licenses for the switches of a stack, you must order one license for each switch.
- Switches can form a stack even if they have different feature licenses; however, the additional features are only available on those switches with the licenses. The stack generates a warning message if it detects that the switches do not have the same optional feature licenses.

Planning a Stack

Here are questions you need to answer before building or configuring a stack:

- How many switches will be in the stack? AlliedWare Plus supports stacks of two switches.
- Which switch will be the master switch? Refer to “Master and Member Switches” on page 34. It can be any switch.
- Which ports can be the trunk ports on the switches? Refer to “Stack Trunk Guidelines” on page 29.
- What will be the ID number of the member switch? Refer to “Switch ID Numbers” on page 35. The master switch should be given ID 1, the default value.
- Have you already connected network cables to the trunk ports? If so, disconnect cables or direct attach cables before configuring the switches for stacking. You may install the transceivers before configuring the switches for stacking.

Note
Cabling the trunk ports before activating and configuring the VCStack feature may result in loops in your network topology, which can cause poor network performance.

Stacking Worksheet

The worksheet in Table 5 is to assist you in configuring and maintaining a stack.

Table 5. Stacking Worksheet

Switch	Location	Firmware Version[1]	Switch ID	Priority	Trunk Ports	Port Speed
Master			1	1		
Member			2	2		
Member			3	3		
Member			4	4		

1. AlliedWare Plus version number.

The worksheet columns are described in Table 6.

Table 6. Stacking Worksheet Columns

Column	Description
Location	Record the physical locations of the switches, such as their buildings or equipment rooms.
Firmware Version	Use this column to record 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. Switches that have different versions should be updated to the most recent release before you build the stack. The configuration instructions explain how to view the version numbers.

Table 6. Stacking Worksheet Columns (Continued)

Column	Description
Switch ID	Each switch in a stack has to have a unique ID number: 1, 2, 3 or 4. Use the ID numbers to configure the individual ports. Allied Telesis recommends assigning the ID 1, the default value, to the master switch.
Priority	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. 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. **Note** 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 indeed function in that role. It will also 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.
Trunk Ports	Enter the trunk port numbers. You should choose the ports before beginning the configuration procedures. Refer to "Stack Trunk Guidelines" on page 29.
Port Speed	Record the transceiver or direct attach cable speeds 25Gbps (SFP28/SFP+ ports) or 100Gbps (QSFP28/QSFP+ ports).

Table 7 is an example of a completed worksheet for planning a stack with four switches.

Table 7. Example of a Completed Stack Worksheet

Switch	Location	Firmware Version	Switch ID	Priority	Trunk Ports	Port Speed
Master	Bldg 2A rm:304	v5.4.9-0	1	1	1.0.1 1.0.2 1.0.3. 1.0.4	25G
Member	Bldg 2A rm:304	v5.4.9-0	2	2	2.0.1 2.0.2 2.0.3. 2.0.4	25G
Member	Bldg 2A rm:304	v5.4.9-0	3	3	3.0.1 3.0.2 3.0.3. 3.0.4	25G
Member	Bldg 2A rm:304	v5.4.9-0	4	4	4.0.1 4.0.2 4.0.3. 4.0.4	25G

Chapter 3

Beginning the Installation

The chapter contains the following sections:

Reviewing Safety Precautions

Please review the following safety precautions before beginning the installation procedure.

Note
Safety statements that have the ☞ symbol are translated into multiple languages in the *Translated Safety Statements* document at **www.alliedtelesis.com/support**.

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
Laser Safety: EN60825-1. ☞ L7

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
This unit has more than one power input. To reduce the risk of electric shock, disconnect all power inputs before servicing the unit.

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° degrees 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

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

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 should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuits (e.g., use of power strips). E37

Warning
This equipment shall 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, SFP+, SFP28, QSFP+ or QSFP28 transceiver may exceed 70° C (158° F). Exercise caution when removing or handling transceivers with unprotected hands.

Warning
Switches should not be stacked on top of one another on a table or desktop because that could present a personal safety hazard if you need to move or replace switches. E91

Warning
The device is heavy. Always ask for assistance when moving or lifting it to avoid injuring yourself or damaging the equipment. E122

Warning
This unit has more than one power input. To reduce the risk of electric shock, disconnect all power inputs before servicing unit.

Choosing a Site for the Chassis

Observe these site requirements.

- If you are installing the device in an equipment rack, check that the rack is safely secured so that it will not tip over. Devices should be installed in the rack starting at the bottom, with the heavier devices near the bottom of the rack.
- The power outlet should be located near the chassis 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, with the fan(s) on the back panel drawing the air out of the unit.
- The site should not expose the switch to moisture or water.
- The site should be a dust-free environment.
- The site should include dedicated power circuits or power conditioners to supply reliable electrical power to the network devices.
- Switch ports are suitable for intra-building connections, or where non-exposed cabling is required.
- Do not install the device in a wiring or utility box that has inadequate airflow because it might overheat and fail.

Unpacking the Box and Verifying the Contents

The first step to install the switch is to unpack the shipping box. Here are the guidelines:

Warning
The device is heavy. Always ask for assistance before moving or lifting it to avoid injure yourself or damage the equipment. E122

- If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.
- Store the packaging material in a safe location. Use the original shipping material if you need to return the device to Allied Telesis.

Unpack the box and remove the switch. Verify and inspect the contents. Table 8 shows the contents of the shipping box except a switch.

Table 8. Accessory Kit

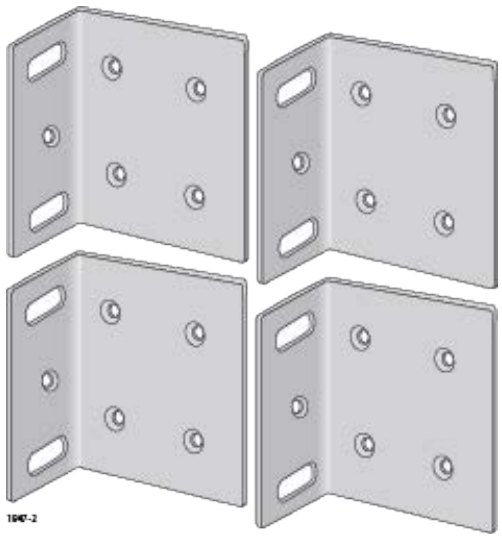
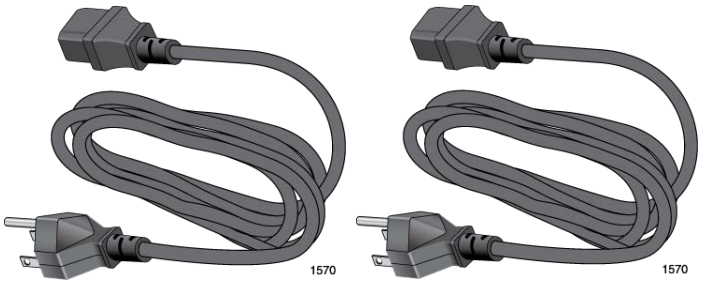
Item	Contents
Four brackets for 19-inch rack-mount and wall-mount	
16 M3x6mm screws for the brackets	
Four bumper feet with rivets	

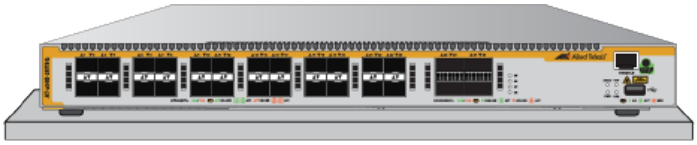
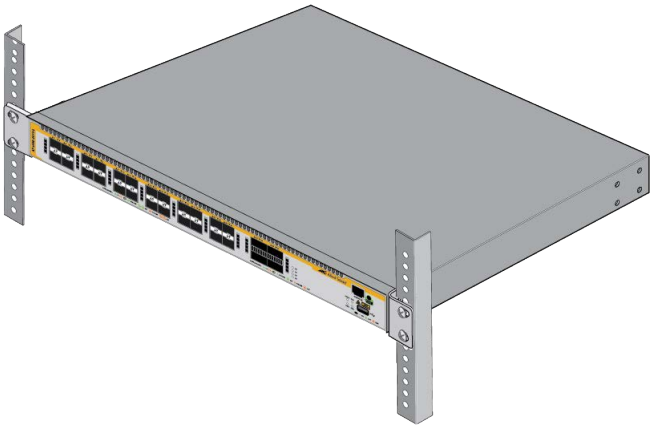
Table 8. Accessory Kit (Continued)

Item	Contents
Two Power cords	
Power cord retaining clip	

Installation Options

The Installation options of the x560-28YSQ switch are shown in Table 9.

Table 9. Installation Options

	x560-28YSQ
Tabletop	 The switch's bottom must face the tabletop.
19-inch Rack	 The switch's bottom must face down.
Wall	 ❒ The switch's front panel must be face sideway. ❒ The switch's bottom must face the wall.

Installation Instructions

Here is a list of installation instructions to follow:

- To install the switch on a table, go to Chapter 4, “Installing the Switch on a Table” on page 51.
- To install the switch on a wall, go to Chapter 6, “Installing the Switch on a Wall” on page 61.
- To install the switch on an equipment rack, go to Chapter 5, “Installing the Switch in an Equipment Rack” on page 55.

Chapter 4

Installing the Switch on a Table

The sections in this chapter are listed here:

Installing the x560-28YSQ Switch on a Table

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

Note
Before installing the switch on the table, see Chapter 3, “Beginning the Installation” on page 41.

1. Disassemble the bumper feet by removing the rivets and rivet housings from the bumper feet. See Figure 11.

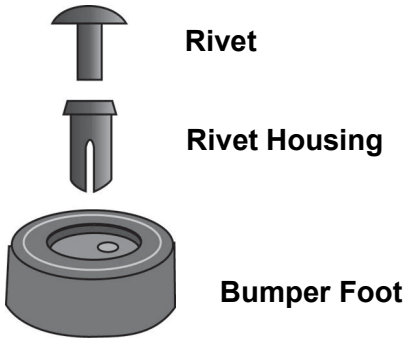


Figure 11. Parts of the Bumper Feet

2. Place the switch upside down on a table.
3. Inset a rivet housing into a bumper foot shown in Figure 12.

   You have four bumper foot units total.

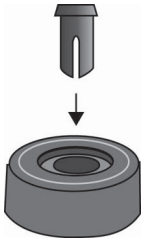


Figure 12. Inserting the Rivet Housing into the Bumper Foot

4. Place a rivet housing and bumper foot unit onto a hole at each corner shown in Figure 13 on page -53. The switch has four holes.

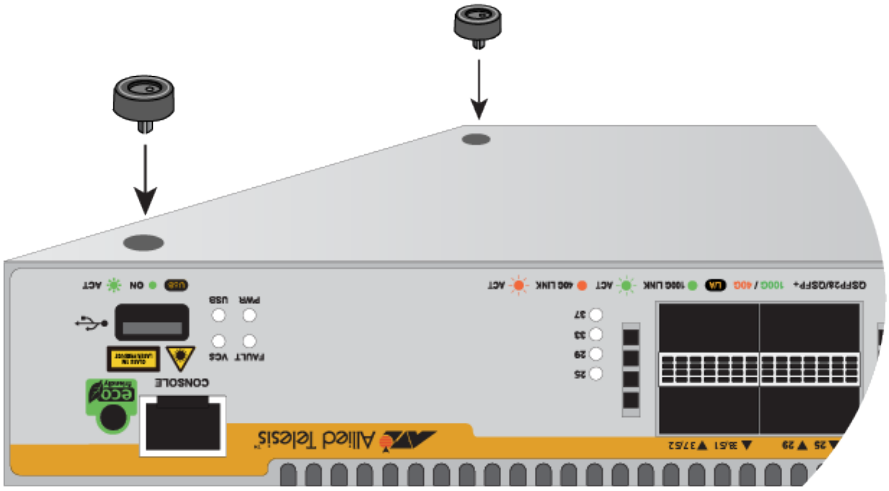


Figure 13. Placing the Bumper Foot Units on Base Corner Holes

5. Insert the rivet to secure the bumper foot to the base. See Figure 14.

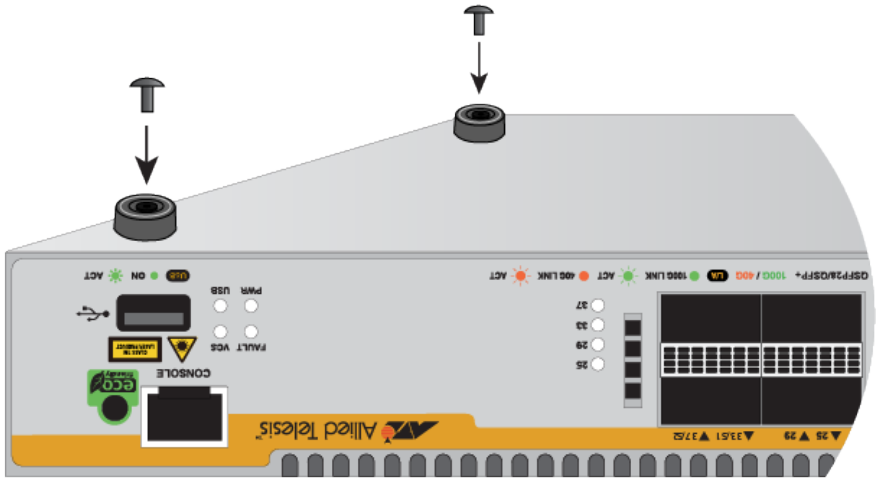


Figure 14. Inserting the Rivet into the Bumper Foot

6. Turn the switch over and place it on a flat, secure desk or table, leaving ample space around it for ventilation.

7. Go to one of the following procedures:

   - Chapter 11, “Cabling the Networking Ports” on page 111.
   - For Stacking, Chapter 7, “Configuring the Master Switch” on page 71.

Chapter 5

Installing the Switch in an Equipment Rack

This chapter contains instructions for installing the switch in a standard 19-inch equipment rack. The procedures in this chapter are:

Overview of Installing the Switch in an Equipment Rack

The x560-28YSQ switch can be installed in a 19-inch equipment rack with the brackets that come with the switch.

Here are guidelines for installing the switch on an equipment rack:

- Before installing the switch, review the information and perform the procedures in Chapter 3, “Beginning the Installation” on page 41.
- Use two brackets that come with the switch.
- You must install the switch with its front panel level with the front of the equipment rack. See Figure 15 as an example.

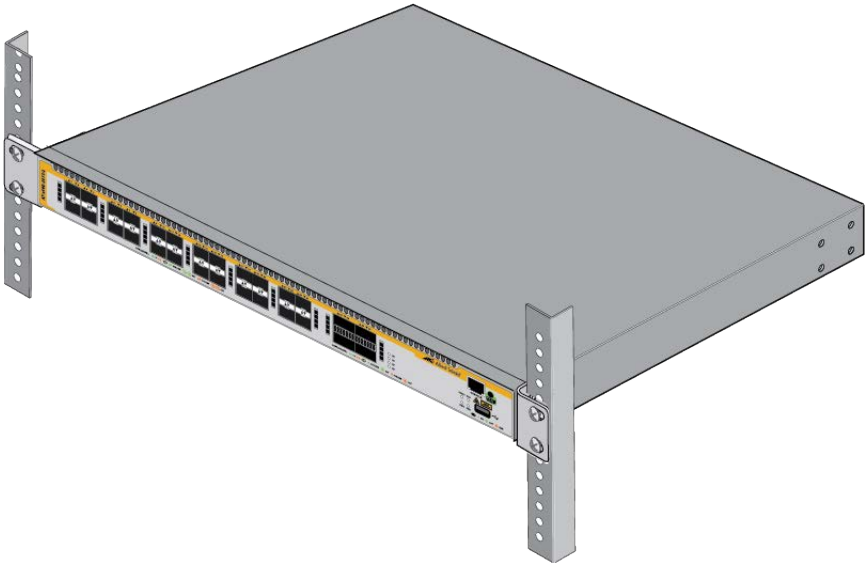


Figure 15. Correct Switch Orientation in an Equipment Rack

Removing the Bumper Feet

The bumper feet included with the switch should not be used when installing the device in an equipment rack. If they are already installed, remove the bumper feet.

To remove the bumper feet:

1. Place the switch upside down on a level, secure surface.
2. Use a small flat-head screwdriver to gently pry the rivet from the bumper feet. See Figure 16.

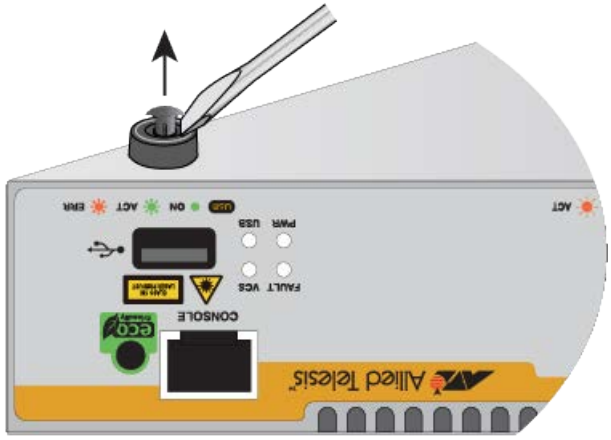


Figure 16. Removing the Bumper Feet

3. Remove the rivet and bumper feet from the switch.
4. Turn the switch back over.
5. Go to“Installing the Switch in a Rack” on page 58.

Installing the Switch in a Rack

When installing the switch in a 19-inch equipment rack, use two out of four brackets that come with the switch.

Required Items

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

- ❒ Two brackets (includes with the switch)
- ❒ Eight M3x6 mm bracket screws (included with the switch)
- ❒ Four standard equipment rack screws (not provided)
- ❒ Cross-head screwdriver (not provided)

Installing the Switch in a Rack

To install the switch in a 19-inch equipment rack, perform the following procedure:

1. Review “Reviewing Safety Precautions” on page 42 and “Choosing a Site for the Chassis” on page 46.

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

2. Place the switch on a level, secure surface.
3. If the bumper feet are attached to the switch, go to “Removing the Bumper Feet” on page 57.
4. Attach the rack mount brackets to the sides of the switch with the eight M3x6 screws as shown in Figure 17.

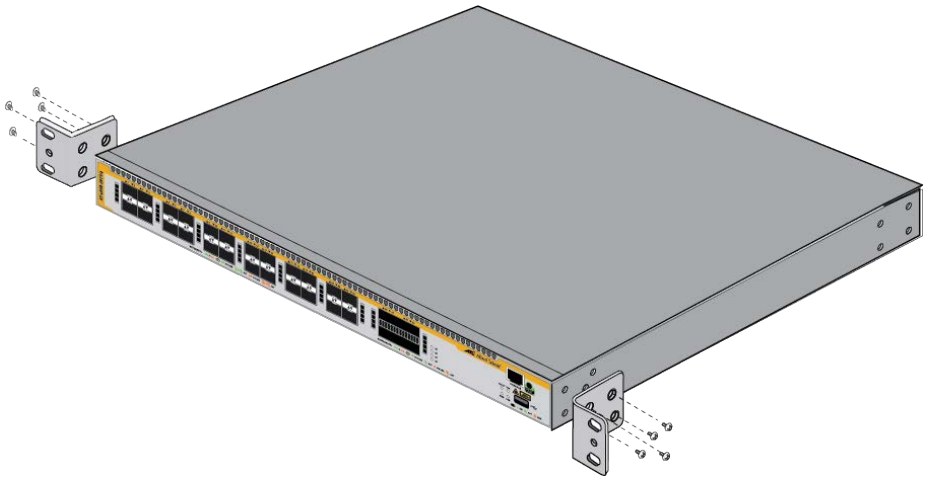


Figure 17. Attaching the Rack Mount Brackets

5. Tighten the eight screws to attach the rack mount brackets to the switch.

6. Have another person hold the switch in the equipment rack while you secure it using standard rack screws (not provided). See Figure 18.

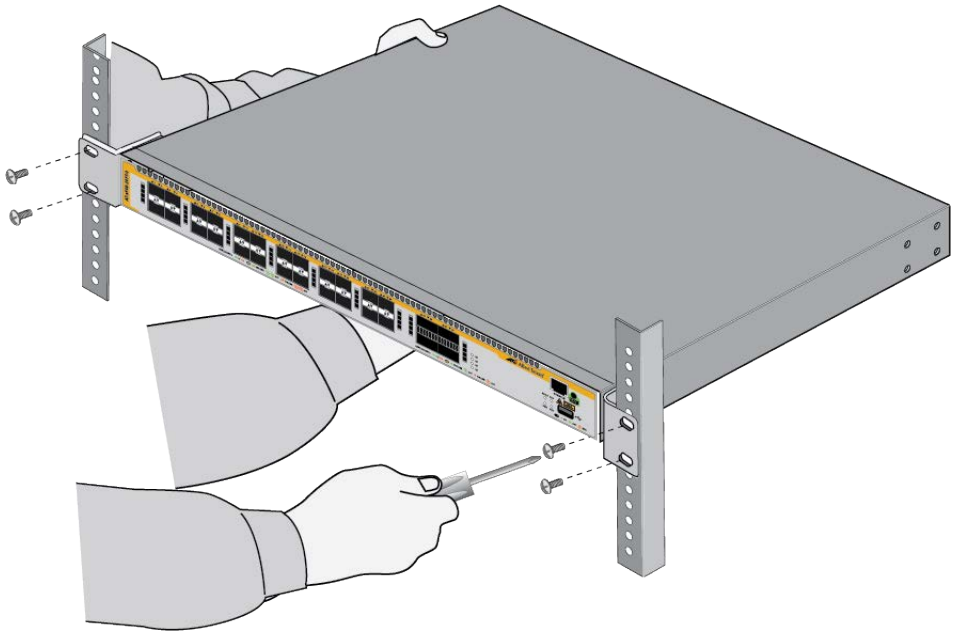


Figure 18. Installing the Switch in an Equipment Rack

Chapter 6

Installing the Switch on a Wall

The procedures in this chapter are listed here:

Overview of Installing the Switch on a Wall

The x560-28YSQ switch can be installed on a wall with the four brackets that come with the switch.

Installation Guidelines

Here are the guidelines to installing the switch on a wall:

- ❒ You may install the switch on a wall that has wooden studs.
- ❒ You may install it 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, see “Plywood Base for a Wall with Wooden Studs” on page 66. 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 only 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.
E122

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 may result if it is not properly fastened to the wall.
E105

- ❒ The switch can be installed on a wall with the front panel on the left or right and the bottom of the switch should be attached to the wall. See Figure 19 on page 63. Do not install it with the front panel on the top or bottom.

Figure 19. Correct Orientations of the Switch on the Wall

Installing the Switch on a Wall

This section describes instructions to install the switch on a wall.

Note
If you plan to install your switch on the plywood base, refer to "Plywood Base for a Wall with Wooden Studs" on page 66 before installing the switch.

Required Items

The following items are required to install the switch in a wall:

- Four brackets (included with the switch)
- 16 M3x6 mm bracket screws (included with the switch)
- Four screws to attache the switch to a wall (not provided)
- Cross-head screwdriver (not provided)

Installing the Switch on a Wall

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

1. See "Reviewing Safety Precautions" on page 42.
2. See "Choosing a Site for the Chassis" on page 46.
3. Place the switch on a table.
4. If the bumper feet are attached to the switch, go to "Removing the Bumper Feet" on page 57.
5. Attach the brackets that come with the switch with the 16 screws to the sides of the unit. See Figure 20.

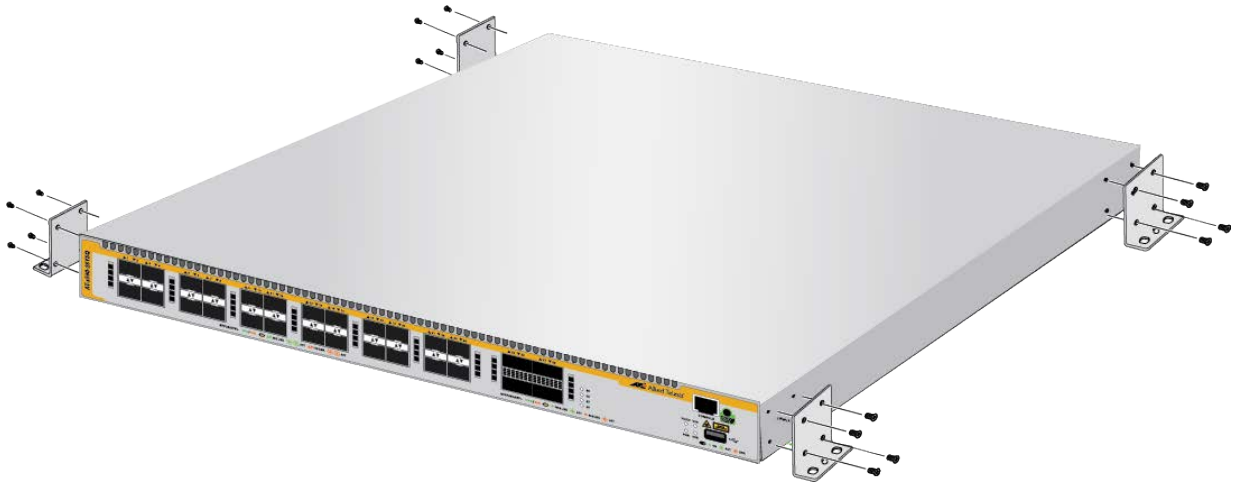


Figure 20. Installing the Brackets to the Switch

6. Have two people hold the switch at the wall location, mark the holes with a pencil as shown in Figure 21.

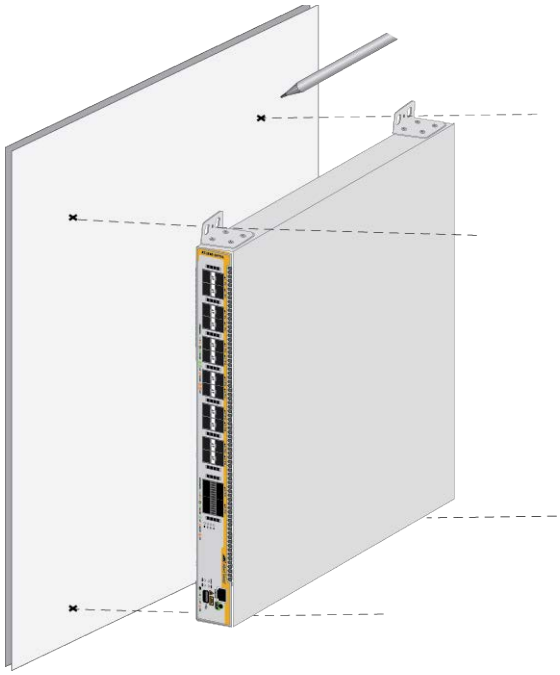


Figure 21. Marking the Holes on the Wall

7. Set aside the switch and pre-drill the marked holes.
8. Have two people hold the switch back to the wall location, tighten the screws to secure the switch to the wall. See Figure 22.

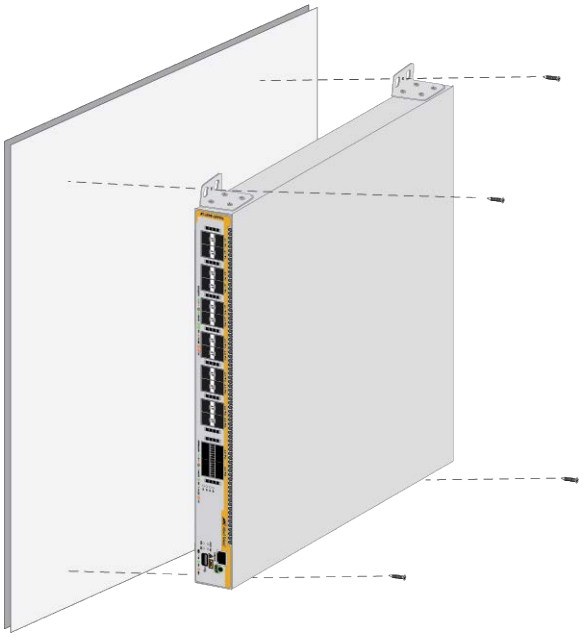


Figure 22. Installing the Switch to the Wall

Plywood Base for a Wall with Wooden Studs

If you are installing the switch on a wall that has wooden studs, Allied Telesis recommends using a plywood base for the device. (A plywood base is not required for a concrete wall.) See Figure 23.

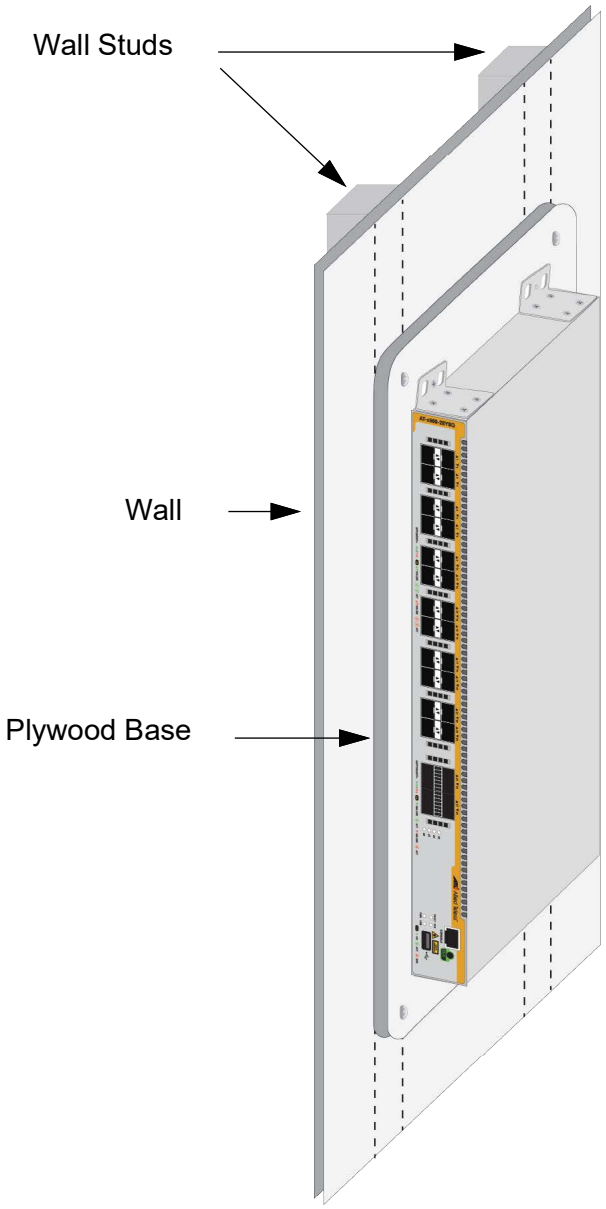


Figure 23. Switch on the Wall with a Plywood Base

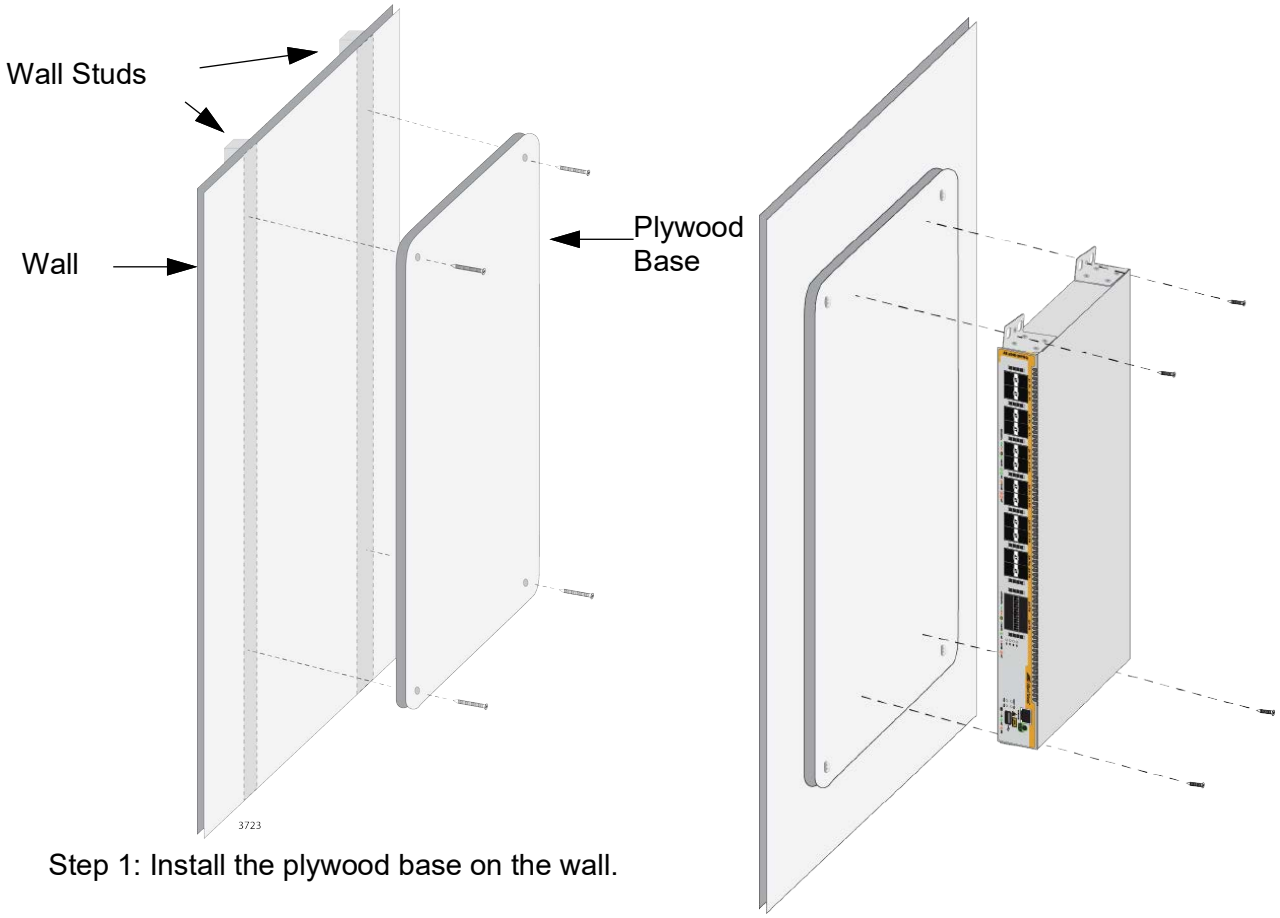
The plywood base allows you to mount the switch on two wall studs. Without the base, only one side of the switch would be attached to a stud. This is because the standard distance between two studs in a wall is 41cm (16 inches) while the distance between the left and right brackets on the switch is 37.7cm (14.8 inches).

The recommended minimum dimensions of the plywood base are listed here:

- Width: 58.4cm (23 inches)
- Height: 55.9cm (22 inches)
- Thickness: 5.1cm (2 inches)

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

You should install the plywood base to the wall and then install the switch on the base. See Figure 24.



Step 1: Install the plywood base on the wall.

Step 2: Install the switch on the plywood base.

Figure 24. Steps to Installing the Switch with a Plywood Base

Tools and Material

Here are the required tools and material for installing the switch on a wall:

- ❒ Eight wood or concrete wall screws (not provided
- ❒ Eight concrete wall anchors (not provided)
- ❒ Phillips-head screwdriver (not provided)
- ❒ Stud finder for a wooden wall, capable of identifying the middle of wall studs and hot electrical wiring (not provided)
- ❒ Drill and 1/4-inch carbide drill bit for a concrete wall (not provided)
- ❒ Plywood base if you are installing the switch on a wall with wooden studs (not provided.) Refer to “Plywood Base for a Wall with Wooden Studs” on page 66 for illustrations.
- ❒ Four screws and anchors for attaching the plywood base to the wall (not provided)

Caution

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

Guidelines for Installing the Plywood Base

A plywood base is recommended when installing the switch on a wall that has wooden studs. See “Plywood Base for a Wall with Wooden Studs” on page 66.

The installation guidelines are listed here:

- ❒ Consult a qualified building contractor for installation instructions for the plywood base.
- ❒ You should use a stud finder to identify the middle of studs and hot electrical wiring in the wall.
- ❒ You should attach the base to two wall studs with a minimum of four screws.
- ❒ The selected wall location for the base should adhere to the recommendations in “Choosing a Site for the Chassis” on page 46.

Installing the Switch on a Concrete Wall

Allied Telesis recommends a minimum of three people for this procedure. To install the switch on a concrete wall, perform the following procedure:

1. Place the switch on a table.
2. Install the brackets with screws to the sides of the switch.
3. Have two people 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.
4. Place the switch on a table or desk.
5. Use a drill and 1/4-inch carbide drill bit to pre-drill the four 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.
   - ❒ Allied Telesis recommends cleaning out the holes with a brush or compressed air.
6. Insert the four anchors into the holes.
7. Have two people hold the switch at the selected wall location while you secure it to the wall with the four provided screws.

Chapter 7

Configuring the Master Switch

This chapter contains the following sections:

Command Summary

The following sections briefly describe the commands for configuring the master and adding a member switch for stacking. For further instructions, see documents for *AlliedWare Plus Operating System*. After reviewing the commands, go to “General Steps for the Master Switch” on page 75 to begin the configuration procedures.

PLATFORM PORTMODE INTERFACE

This command is used to configure trunk ports on the switch.

Allied Telesis recommends configuring these ports during the initial configuration process even if they will not be used for the stack trunk.

The command format is shown here:

```
platform portmode interface ports speed
```

The parameters are defined here:

- *ports*: specifies the ports to be configured. The values can be port*n*.0.1, port*n*.0.2, port*n*.0.33, port*n*.0.37, and so on. The “*n*” variable is the switch’s ID. You can configure more than one port at a time.
- *speed*: configures ports for a speed such as 25g or 100g.

This example configures ports 1 and 2 for 25Gbps SFP28/SFP+ ports:

```
awplus(config)# platform portmode interface
port1.0.1,port1.0.2 25g
```

For background information on port numbering, see “Designating Ports in the Command Line Interface” on page 25.

STACKPORT

You use this command to designate the ports of the stack trunk. The command has to be performed after you have enabled the stacking feature with the `STACK ENABLE` command. Additionally, it has to be performed from the Interface mode of the selected ports. In this example, ports 1 and 2 on the switch are designated as ports of the stack trunk:

```
awplus(config)# interface port1.0.1-1.0.2
awplus(config-if)# stackport
```

The command for removing the stacking function from ports is the `NO STACKPORT` command. You might perform the command if you assign the stacking function to the wrong ports or decide to change the trunk ports. Like the `STACKPORT` command, it has to be performed from the Interface mode, This example removes the stacking function from ports 1 and 2:

```
awplus(config)# interface port1.0.1,port1.0.2
awplus(config-if)# no stackport
```

The PORT parameter depends on the ID number of the switch. This example designates ports 17 and 18 as the trunk ports on a switch with the ID number 2:

> **Note**
> For more information about the switch ID number, see “Designating Ports in the Command Line Interface” on page 25,

```
awplus(config)# interface port2.0.17,port2.0.18
awplus(config-if)# stackport
```

STACK ENABLE

This command, which is located in the Global Configuration mode, is used to activate the VCStack feature. Activating the VCStack feature requires resetting the switch. You must perform this command before designating the ports of the stack trunk with the `STACKPORT` command. Here is the command:

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

To disable the stacking function from a switch, use the `NO STACK ENABLE` command. The format of the command, which is in the Global Configuration mode, is shown here:

```
no stack switch_ID enable
```

The parameter is defined here:

- *`switch_ID`* - This is the ID number of a switch. The ID number can be found using the `SHOW STACK` command.

This example disables the stacking function on the switch with ID 2:

```
awplus(config)# no stack 2 enable
```

STACK PRIORITY

This command is used to assign priority numbers to switches. Switches use the numbers to select the master switch. The lower the number the higher the priority. The unit with the lowest number becomes the master. If they have the same priority value, they use their MAC addresses 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 making a switch’s priority and ID numbers the same. This is not required, but it can make managing and troubleshooting a stack easier.

The format of the command, which is in the Global Configuration mode, is shown here:

```
stack switch_ID priority priority_number
```

The parameters are defined here:

- *switch_ID* - This is the ID number of the switch. The ID number can be 1 or 2. 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
```

STACK RENUMBER

Every switch in a stack must have a unique ID number assigned with this command. Here is the format.

```
stack current_switch_ID renumber new_switch_ID
```

The parameters 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 switch ID number can be 1, 2, 3, or 4. The default is 1.

Changing the ID number requires resetting the switch.

This example changes the switch's ID from the default 1 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 configuring the units such that each unit knows about the others prior to forming the stack. This involves using the `SWITCH PROVISION` command to add the switches as provisioned units on all the devices. Here is the format of the command:

```
switch switch_ID provision switch_name
```

This example adds a provisioned switch with the ID 2 to the current x560-28YSQ switch:

```
awplus(config)# switch 2 provision x560-28YSQ
```

General Steps for the Master Switch

The procedure for configuring the master switch is divided into two parts.

Here are the general steps to “Configuring the Master Switch - Part I” on page 77.

Note
The procedures require reseting the switch. Some network traffic will be lost if the unit is already connected to an active network.

1. Review “Stacking Guidelines” on page 29.
2. Power on the switch.

   See “Powering on the Switch” on page 104.
3. Start a local management session on the switch.

   See “Starting a Local Management Session” on page 107.
4. Verify the hardware with the `SHOW SYSTEM ENVIRONMENT` command in the Privilege Exec mode.
5. Display the firmware version number with the `SHOW VERSION` command.
6. If the VCStack feature is not enabled, enable the switch with the `STACK ENABLE` command in the Global Configuration mode.

   By default, the VCStack feature is enabled.
7. Assign the master switch the priority 1 with the `STACK PRIORITY` command in the Global Configuration mode.

   This is to ensure that it acts as the master switch during the first power-on of the stack.
8. Add the member switches as provisioned units to the master switch, with the `SWITCH PROVISION` command.

   This step is to ensure that the master switch knows about the member switch during the first power-on of the stack.
9. Save your changes with the `WRITE` command in the Privilege Exec mode.
10. Reboot the switch with the `REBOOT` command.

Here are the general steps to “Configuring the Master Switch - Part II” on page 80:

1. Start a new local management session.
2. Designate the types of transceivers or direct attach cables to be used in ports on the switch with the `PLATFORM PORTMODE INTERFACE` command, on the master and provisioned member switch.

   Allied Telesis recommends performing this task at this time even if you are not using those ports as the stack trunk.
3. Remove the stacking function from ports 33 (S1) and 37 (S2) if necessary.

   By default, ports 33 and 37 are designated as trunk ports. If you designate ports 33 and 37 as truck ports, skip this step and step 4.
4. Designate the ports of the stack trunk on the master and provisioned member switches with the `STACKPORT` command in the port Interface mode.
5. Save your changes with the `WRITE` command in the Privilege Exec mode.
6. Reboot the switch with the `REBOOT` command.
7. Verify the changes with the `SHOW STACK` and `SHOW RUNNING-CONFIG` commands.

Configuring the Master Switch - Part I

This section contains Part I for configuring the master switch for stacking. In this procedure, you do the following:

- Verify the hardware status with the SHOW SYSTEM ENVIRONMENT command.
- Display the firmware version number with the SHOW VERSION command.
- Enable VCStack with the STACK ENABLE command if VCStack is not enabled.
- Assign the master switch the priority 1 with the STACK PRIORITY command in the Global Configuration mode.
- Add the member switches as provisioned switches with the SWITCH PROVISION command.
- Save the configuration and reboot the switch with the WRITE and REBOOT commands.

Allied Telesis recommends filling out the worksheet in “Stacking Worksheet” on page 38 before performing this procedure.

To configure the master switch, perform the procedure in Table 10.

Table 10. Configuring the Master Switch - Part I

Step	Description and Command
Steps 1 to 4 power on the switch, start a local management session, and verify the hardware operations of the unit.	
1	Power on the master switch and wait two minutes for it to initialize the management software. Refer to “General Steps for the Master Switch” on page 75.
2	Start a local management session. Refer to “General Steps for the Master Switch” on page 75.
3	Move to the Privileged Exec mode with the ENABLE command. `awplus> enable`

Table 10. Configuring the Master Switch - Part I (Continued)

Step	Description and Command
4	Verify that the switch hardware is operating correctly with the SHOW SYSTEM ENVIRONMENT command. The status of all components should be Ok. awplus# show system environment Environment Monitoring Status Overall Status: Normal Resource ID: 1 Name: PSU Bay A (AT-PWR600) ID Sensor (Units) Reading Low Limit High Limit Status 1 Device Present Yes - - Ok 2 Fan/Temperature Fault Yes - - Ok . .
Step 5 displays the version number of the AlliedWare Plus operating software on the switch. 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.	
5	Display the version number of the AlliedWare Plus operating software on the switch by entering the SHOW VERSION command and write it down in the worksheet in “Stacking Worksheet” on page 38 for the master switch. awplus# show version
Steps 6 to 8 activate VCStack on the switch and assign it the priority 1 so that it becomes the master switch when the stack is powered on for the first time.	
6	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.
7	Activate VCStack on the switch with the STACK ENABLE command if necessary. 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.
8	Assign priority 1 to the switch with the STACK PRIORITY to ensure that it is selected as the master switch during the first power-on of the stack. awplus(config)# stack 1 priority 1 % Warning: Stacking is currently disabled.

Table 10. Configuring the Master Switch - Part I (Continued)

Step	Description and Command
Step 9 adds the member switch as a provisioned switch to the master switch.	
9	Add the member switch as a provisioned switch to the master switch, with the SWITCH PROVISION command. Assign ID 2, 3, or 4. The x560-28YSQ switch can have only one member switch. awplus(config)# switch 2 provision x560-28YSQ awplus(config)# switch 3 provision x560-28YSQ awplus(config)# switch 4 provision x560-28YSQ
Steps 10 to 15 save your changes and reboot the switch.	
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. awplus# write Building configuration ... [OK]
12	Restart the switch with the REBOOT command. awplus# reboot reboot system? (y/n): awplus#
13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.

Configuring the Master Switch - Part II

This section contains Part II for configuring the master switch. In this procedure, you do the following:

- Designate the types of transceivers or direct attach cables to be used in ports for the x560-28YSQ switch on the master and provisioned member switches.
- Remove the stacking function from ports 33 (S1) and 37 (S2) if you assign other than ports 33 and 37 as truck ports.

Note
By default, ports 33 and 37 are designated as trunk ports.

- Designate the trunk ports if you assign ports other than ports 33 and 37 as trunk ports.

To perform Part II, perform the procedure in Table 11.

Table 11. Configuring the Master Switch- Part II

Step	Description and Command
1	Start a new local management session. Refer to “General Steps for the Master Switch” on page 75.
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.`

Step 4 designates the types of transceivers or direct attach cables to be used in ports 1 and 2 on the master switch. The SFP28/SFP+ ports support 25Gbps transceivers and direct attach cables as trunk ports; the QSFP28/QSFP+ ports support 100Bbps on ports 25, 29, 33, and 37.	
4	Designate the types of transceivers or direct attach cables to be used in 1 and 2 on the master switch with the `PLATFORM PORTMODE INTERFACE` command in the Global Configuration mode. For more information, refer to “PLATFORM PORTMODE INTERFACE” on page 72. This example configures ports 1 and 2 for 25Gbps transceivers/direct attach cables on the master switch: `awplus(config)# platform portmode interface port1.0.1-1.0.2 25g`
Step 5 removes the stacking function from ports 33 (S1) and 37 (S2).	

Table 11. Configuring the Master Switch- Part II (Continued)

Step	Description and Command

5	The commands remove the stack function from ports 33 and 37. If you use ports 33 and 37 as trunk ports, skip this process and following steps.
	
	To remove the stacking function from ports 33 and 37:
	
	`awplus(config)# interface port1.0.33,port1.0.37`
	`awplus(config-if)# no stackport`
	`awplus(config-if)# exit`
	`awplus(config)#`

Steps 5 to 7 designate the stack ports on the master switch with the `STACKPORT` command.	
6	If you assign ports 33 and 37 as trunk ports, skip steps 5 to 7. If you assign ports other than ports 33 and 37 as trunk ports, enter the port Interface modes of the ports that will be the stack trunk on the master switch. This example assumes the master switch uses ports 1 and 2 as the stack trunk. Be sure to modify the command to specify the ports for your stack trunk. `awplus(config)# interface port1.0.1-1.0.2`

7	Designate the ports as trunk ports with the `STACKPORT` command.
	
	`awplus(config-if)# stackport`
	`% Save the config and restart the system for this change to take effect.`

8	Return to the Global Configuration mode. `awplus(config-if)# exit`
Step 9 designates the types of transceivers or direct attach cables to be used in ports 1 and 2 on the provisioned member switches.	

9	Configure ports 1 and 2 on the provisioned member switches for the appropriate transceivers/direct attach cables, with the `PLATFORM PORTMODE INTERFACE` command. For more information, refer to “LEDs for QSFP28/QSFP+ Slots” on page 22 and “PLATFORM PORTMODE INTERFACE” on page 72.
	The x560-28YSQ switch can only have one member switch.
	
	`awplus(config)# platform portmode interface port2.0.1-2.0.2 25g`
	`awplus(config)# platform portmode interface port3.0.1-3.0.2 25g`
	`awplus(config)# platform portmode interface port4.0.1-4.0.2 25g`

Steps 10 and 11 designate the stack ports on the provisioned switches with the `STACKPORT` command.	

Table 11. Configuring the Master Switch- Part II (Continued)

Step	Description and Command
10	Enter the port Interface modes of the ports that will be the stack trunk on the provisioned member switches. This example assumes the stack has one member switch and the stack ports are 1 and 2. Be sure to modify the command to specify the ports for your stack trunk. `awplus(config)# interface port2.0.1-2.0.2,port3.0.1-3.0.2, port4.0.1-4.0.2`

11	Designate the ports as trunk ports with the `STACKPORT` command.
	
	`awplus(config-if)# stackport`
	`% Save the config and restart the system for this change to take effect.`

Steps 12 to 18 save your changes and reboot the switch.	
12	Return to the Global Configuration mode. `awplus(config-if)# exit`
13	Return to the Privileged Exec mode. `awplus(config)# exit`

14	Enter the `WRITE` command to save your change.
	
	`awplus# write`
	`Building configuration ...`
	`[OK]`

15	Restart the switch with the `REBOOT` command.
	
	`awplus# reboot`
	`reboot system? (y/n):`
	`awplus#`

16	Type “Y” for yes.
17	Wait two minutes for the switch to initialize its management software.
18	Go to “Verifying the Master Switch” on page 83.

Verifying the Master Switch

Perform the steps in Table 12 to confirm the configuration of the master switch.

Table 12. Verifying the Master Switch

Step	Description and Command
1	Start a new local management session.
2	Move to the Privileged Exec mode with the ENABLE command. `awplus> enable`

3	Enter the SHOW STACK command. Here is an example for a stack of four switches:
	`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 - - - - Provisioned`
	`Operational Status Standalone unit`
	`Stack MAC address 0000.ab56.d4a8 (Virtual MAC)`

4	Verify the display for the following: - The table should have one entry for the master switch (ID 1). - The table should have one entry for the provisioned member switch. If the table is missing a member switch, repeat the SWITCH PROVISION command in “Configuring the Master Switch - Part I” on page 77. - The master switch should have the priority 1. If the priority number is incorrect, repeat the STACK PRIORITY command in “Configuring the Master Switch - Part I” on page 77. - The Operational Status should be Standalone Unit, indicating that stacking is enabled and that the unit is operating as a stack of one switch. If the status is Stacking Hardware Disabled, the stacking feature is disabled and needs to be enabled. Repeat the STACK ENABLE command in “Configuring the Master Switch - Part I” on page 77. - Always remember to perform the WRITE command to save your configuration changes.

Table 12. Verifying the Master Switch (Continued)

Step	Description and Command

5	Enter the `SHOW RUNNING-CONFIG` command and verify the following:
	- Check the running configuration for `SWITCH PROVISION` commands. There should be one command for each switch and the commands should designated x560-28YSQ switches. Here are examples for a stack of two switches:
	`switch 1 provision x560-28YSQ`
	`switch 2 provision x560-28YSQ`
	`switch 3 provision x560-28YSQ`
	`switch 4 provision x560-28YSQ`
	- Check the running configuration for `STACKPORT` commands. There should be one command for each switch and the commands should designate the trunk ports. Here are examples:
	`.`
	`interface port1.0.1-1.0.2`
	`stackport`
	`.`
	`interface port2.0.1-2.0.2`
	`stackport`
	`.`
	`interface port3.0.1-3.0.2`
	`stackport`
	`.`
	`interface port4.0.1-4.0.2`
	`stackport`
	`.`

6	Go to “What to Do Next” on page 85.

What to Do Next

After configuring the master switch, do the following:

1. Power off the switch.

   The x560-28YSQ switch has two power supply units (PSUs). Power off both PSUs by pulling the plugs from the outlets.

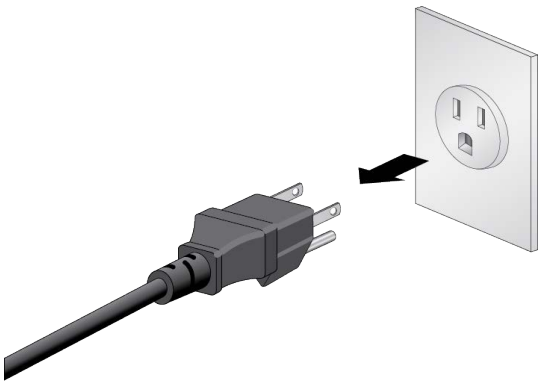


Figure 25. Powering Off the AC Power Supply

2. Configure the member switches, as explained in Chapter 8, “Configuring Member Switches” on page 87.
3. Cable the ports of the stack trunk. Refer to Chapter 2, “Virtual Chassis Stacking” on page 27.
4. Power on the switches of the stack. Refer to “Powering on the Stack” on page 100.
5. Verify that the switches formed the stack. Refer to “Verifying the Stack” on page 101.
6. Cable the networking ports. Refer to Chapter 11, “Cabling the Networking Ports” on page 111.

Chapter 8

Configuring Member Switches

This chapter contains the following sections:

General Steps for Member Switches

The procedure for configuring a member switch is divided into two parts.

> **Note**
> The procedures require resetting a member switch twice. Network traffic will be lost if it is already connected to an active network.

Here are the general steps to “Configuring a Member Switch - Part I” on page 90:

1. Start a local management session on a member switch.

   See “Starting a Local Management Session” on page 107.

2. Verify the hardware with the `SHOW SYSTEM ENVIRONMENT` command in the Privilege Exec mode.

3. If the VCStack feature is not enabled, enable the switch with the `STACK ENABLE` command in the Global Configuration mode.

   By default, the VCStack feature is enabled.

4. Assign the member switch its ID number 2, with the `STACK RENUMBER` command in the Global Configuration mode.

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 “Configuring a Member Switch - Part II” on page 93:

1. Start a new local management session.

2. Change the switch’s priority number to match its ID number, with the `STACK PRIORITY` command in the Global Configuration mode.

3. Specify the types of transceivers or direct attach cables to be used in stack trunk ports for the x560-28YSQ switch on the master and member switch with the `PLATFORM PORTMODE INTERFACE` command.

4. Designate the ports of the stack trunk on the master and member switches 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 a Member Switch - Part I

The instructions for configuring a member switch are divided into two parts. In Part I you do the following:

- Display the hardware status with the `SHOW SYSTEM ENVIRONMENT` command.
- Display the firmware version number with the `SHOW VERSION` command.
- Enable VCStack with the `STACK ENABLE` command if VCStack is not enabled.
- Set the switch ID number with the `STACK RENUMBER` command.
- Add other member switches with the `SWITCH PROVISION` command.
- Save the configuration and reboot the switch with the `WRITE` and `REBOOT` commands.

Allied Telesis recommends filling out the worksheet in “Stacking Worksheet” on page 38 before performing the procedures.

To configure a member switch, perform the procedure in Table 13.

Table 13. Configuring a Member Switch - Part I

Step	Description and Command
1	Power on the member switch and wait two minutes for it to initialize the management software. Refer to “General Steps for the Master Switch” on page 75.
2	Start a local management session. Refer to “General Steps for the Master Switch” on page 75.
3	Enter the `ENABLE` command to move from the User Exec mode to the Privileged Exec mode. `awplus> enable`

Table 13. Configuring a Member Switch - Part I (Continued)

Step	Description and Command
4	Verify that the switch hardware is operating correctly, with the SHOW SYSTEM ENVIRONMENT command. All components should have a status of Ok. awplus# show system environment Environment Monitoring Status Overall Status: Normal Resource ID: 1 Name: PSU Bay A (AT-PWR600) ID Sensor (Units) Reading Low Limit High Limit Status 1 Device Present Yes - - Ok 2 Fan/Temperature Fault Yes - - Ok .
5	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 the worksheet in “Stacking Worksheet” on page 38. 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. awplus# show version
6	Move to the Global Configuration mode with the CONFIGURE TERMINAL command. awplus# configure terminal Enter configuration commands, one per line. End with CNTL/Z.
7	Activate VCStack on the switch with the STACK ENABLE command if necessary. 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.
8	Assign a ID number 2, 3. or 4 to the member switch with the STACK RENUMBER command. In this example, the command assigns the ID number 2 to the switch. awplus(config)# stack 1 renumber 2 % Warning: Stacking is currently disabled. % Warning: the new ID will not become effective until the stack-member reboots. % Warning: the boot configuration may now be invalid.

Table 13. Configuring a Member Switch - Part I (Continued)

Step	Description and Command

9	If the stack has other member switches, add them as provisioned switches with the SWITCH PROVISION command. The example adds two provisioned switches with IDs 3 and 4:
	
	`awplus(config)# switch 3 provision x560-28ysq`
	`awplus(config)# switch 4 provision x560-28ysq`

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]`

12	Restart the switch with the REBOOT command.
	
	`awplus# reboot`
	`reboot system? (y/n):`
	`awplus#`

13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.

Configuring a Member Switch - Part II

This section contains the second part to configuring the member switch. The steps show how to configure the following parameters:

- Set the priority number of the switch to match its ID number, with the `STACK PRIORITY` command.
- Specify the types of transceivers or direct attach cables to be used in stack trunk ports for the x560-28YSQ switch on the master and member switches with the `PLATFORM PORTMODE INTERFACE` command.
- Remove the stacking function from ports 33 (S1) and 37 (S2) if you assign other than ports 33 and 37 as truck ports.

Note
By default, ports 33 and 37 are designated as trunk ports.

- Designate the ports of the stack trunk with the `STACKPORT` command. Refer to “Stack Trunk Guidelines” on page 29.

To configure a member switch, perform the procedure in Table 14.

Table 14. Configuring a Member Switch - Part II

Step	Description and Command
1	Start a new local management session on the member switch. Refer to “General Steps for the Master Switch” on page 75.
2	Enter the `ENABLE` command to move from the User Exec mode to the Privileged Exec mode. `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.`

4	Change the switch’s priority to match its ID number, with the `STACK PRIORITY` command. This example sets priority to 2 on a member switch with the ID 2: `awplus(config)# stack 2 priority 2`

Table 14. Configuring a Member Switch - Part II (Continued)

Step	Description and Command

5	Specify the types of transceivers or direct attach cables to be used in stack trunk ports on the master (port1.0.*n*) switch and member(port2.0.*n*, port3.0.*n*, or port4.0.*n*) switch with the `PLATFORM PORTMODE INTERFACE` command. For more information, see “PLATFORM PORTMODE INTERFACE” on page 72.
	This example configures ports 1 and 2 for SFP28/SFP+ ports at 25Gbps on a stack of four switches.
	`awplus(config)# platform portmode interface port1.0.1-1.0.2 25g`
	`awplus(config)# platform portmode interface port2.0.1-2.0.2 25g`
	`awplus(config)# platform portmode interface port3.0.1-3.0.2 25g`
	`awplus(config)# platform portmode interface port4.0.1-4.0.2 25g`

6	Remove the stacking function from ports 33 (S1) and 37 (S2) if you assign other than ports 33 and 37 as truck port. By default, ports 33 and 37 are configured as trunk ports.
	The commands remove the stack function from ports 33 and 37. If you use ports 33 and 37 as trunk ports, skip steps 6 to 8.
	To remove the stacking function from ports 33 and 37:
	`awplus(config)# interface port1.0.33,port1.0.37`
	`awplus(config-if)# no stackport`
	`awplus(config-if)# exit`
	`awplus(config)#`

7	Enter the port Interface modes of the ports to be the stack trunk on the master and member switches with the `INTERFACE` command. The example command assumes a stack of four switches and that the switches use ports 1 and 2 for the stack trunk. Be sure to modify the command for you selected trunk ports.
	`awplus(config)# interface port1.0.1-1.0.2,port2.0.1-2.0.2,`
	`port3.0.1-3.0.2 port4.0.1-4.0.1`

8	Designate the ports as the stack trunk with the `STACKPORT` command.
	`awplus(config-if)# stackport`
	`% Save the config and restart the system for this change to take effect.`

9	Return to the Global Configuration mode. `awplus(config-if)# exit`
10	Return to the Privileged Exec mode. `awplus(config)# exit`

Table 14. Configuring a Member Switch - Part II (Continued)

Step	Description and Command

11	Save your changes with the `WRITE` command.
	
	`awplus# write`
	`Building configuration ...`
	`[OK]`

12	Restart the switch.
	
	`awplus# reboot`
	`reboot system? (y/n):`

13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.
15	Go to “Verifying a Member Switch,” next.

Verifying a Member Switch

Perform the steps in Table 15 to confirm the configuration of a member switch.

Table 15. Verifying a Member Switch

Step	Description and Command
1	Start a local management session. Refer to “General Steps for the Master Switch” on page 75.
2	Move to the Privileged Exec mode. `awplus> enable`

3	Enter the `SHOW STACK` command. The example here is for a member switch with the ID 2:
	`awplus# show stack`
	`Virtual Chassis Stacking summary information`
	`ID Pending ID MAC address Priority Status Role`
	`1 - - - - Provisioned`
	`2 - e01a.ba56.c112 2 Ready Active Master`
	`3 - - - - Provisioned`
	`4 - - - - Provisioned`
	
	`Operational Status Standalone unit`
	`Stack MAC address 0000.ab56.478c (Virtual MAC)`

4	Verify the display for the following: - The table should have four entries: one master switch and three member switches. - Switch ID 1 is for the master switch. - The entry with the Ready status and Active Master role is the switch you are currently managing. Its role will change to member after the stack is functioning. - The switch’s priority should match its ID number. (Allied Telesis recommends.) If it does not, perform the `STACK PRIORITY` command in “Configuring a Member Switch - Part II” on page 93. - The Operational Status should be Standalone Unit. This indicates that stacking is enabled and the unit is operating as a stack of one switch. If the status is Stacking Hardware Disabled, the stacking feature is disabled. Perform the `STACK ENABLE` in “Configuring a Member Switch - Part I” on page 90. Be sure to save your changes with the `WRITE` command.

Table 15. Verifying a Member Switch (Continued)

Step	Description and Command

5	Enter the `SHOW RUNNING-CONFIG` command and verify the following:
	- Check the running configuration for `SWITCH PROVISION` commands. There should be one command for each switch and the commands should designate x560-28YSQ switches. Here are examples for a stack of four switches:
	`switch 1 provision x560-28YSQ`
	`switch 2 provision x560-28YSQ`
	`switch 3 provision x560-28YSQ`
	`switch 4 provision x560-28YSQ`
	- Check the running configuration for `STACKPORT` commands. There should be one command for each switch and the commands should designate the trunk ports. In this example, ports 1 and 2 are designated as the trunk ports:
	`.`
	`interface port1.0.1-1.0.2`
	`stackport`
	`.`
	`interface port2.0.1-2.0.2`
	`stackport`
	`.`
	`interface port3.0.1-3.0.2`
	`stackport`
	`.`
	`interface port4.0.1-4.0.2`
	`stackport`
	`.`

6	Go to “What to Do Next,” next.

What to Do Next

After configuring a member switch, do the following:

1. Power off the switch. See “Powering off the Switch” on page 109.
2. If you have not already configured the master switch, perform “Configuring the Master Switch - Part I” on page 77.
3. Repeat the procedures in this chapter to configure all member switches.
4. After configuring the master and member switches, verify that all the units are powered off.
5. Cable the stacking ports on the master and member switches. See Chapter 2, “Virtual Chassis Stacking” on page 27.
6. Power on the switches of the stack, as explained in “Powering on the Stack” on page 100.
7. Verify that the switches have successfully formed the stack by performing “Verifying the Stack” on page 101.
8. Cable the networking ports, as explained in Chapter 11, “Cabling the Networking Ports” on page 111.

Chapter 9

Powering On and Verifying the Stack

This chapter contains the following sections:

Powering on the Stack

After configuring the master and member switches for stacking and cabling the trunk ports, you are ready to power on the stack for the first time. (If you want to monitor the power-on sequence, connect a terminal or PC 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 all switches are powered off.

   Disconnect the AC power cord for the power supply from the AC power source.

2. If you have not already cabled the trunk ports, do so now. See Chapter 11, “Cabling the Networking Ports” on page 111.

3. Power on all the switches at the same time.

   Connect the AC power cord for the power supply from the AC power source. Each switch has two power supply units to power on.

   See “Power Specifications” on page 126 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 three minutes for the switches to form the stack.

5. Go to “Verifying the Stack” on page 101.

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 107.

2. From the User Exec mode, enter the `SHOW STACK` command:

   ```
   awplus> show stack
   ```

   An example of the command for a stack of two switches is shown in Figure 26.

```
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:ee45    2          Ready    Member
3     -              e01a:ea20:8b87    3          Ready    Member
4     -              e01a:ea20:1a65    4          Ready    Member

Operational Status                     Normal operations
Stack MAC address                      aaaa:774f:ed30
```

Figure 26. SHOW STACK Command

Review the following items:

- The command should list all the switches. If the list is incomplete, see Chapter 12, “Troubleshooting” on page 119.
- The Operational Status field should be “Normal operations” to indicate that all the trunk ports are operating normally.
- If the Operational Status field is displaying “Not all stack ports are up,” one or more trunk ports are not being used or cannot establish links with their counterparts. For more information, see Chapter 12, “Troubleshooting” on page 119.

Chapter 10

Powering on and Starting the Switch

This chapter contains the following sections:

Powering on the Switch

The x560-28YSQ switch is equipped with two Power Supply Units (PSUs) to provide power redundancy. Each power unit is capable of powering the entire switch. One PSU is active and providing power, while the other PSU is in standby and ready to take over if the active PSU fails.

The procedure in this section explains how to power on the switch.

Before powering on the chassis, review the information in “Power Specifications” on page 126.

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

To power on the switch, perform the following procedure:

1. Install a power cord retaining clip on an AC power connector on the rear panel of the switch, as shown in Figure 27.

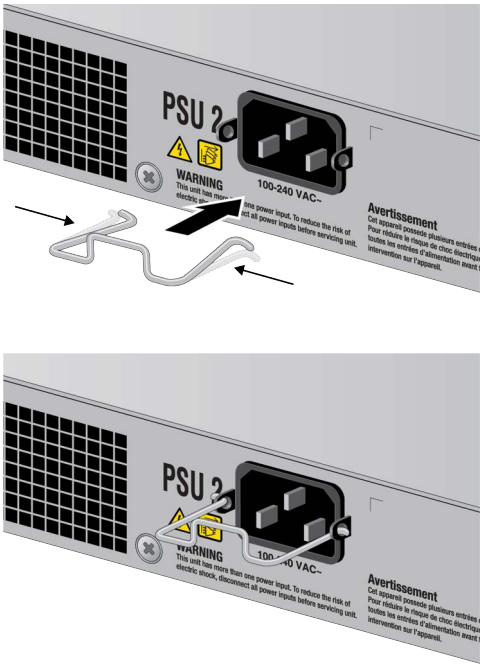


Figure 27. Installing the Power Cord Retaining Clip

2. Push the power cord retaining clip to the upper position. See Figure 28.

Figure 28. Moving the Power Cord Retaining Clip to the Upper Postion

3. Plugin the AC power cord. See Figure 29.

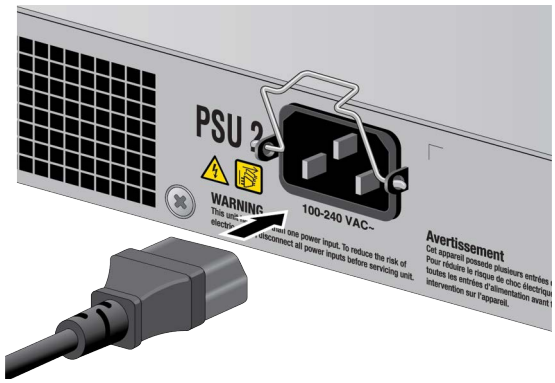


Figure 29. Connecting the AC Power Cord

4. Lower the power cord retaining clip to secure the cord to the switch. See Figure 30.

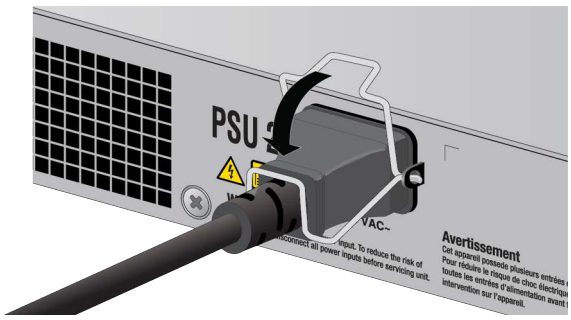


Figure 30. Lowering the Power Cord Retaining Clip

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

5. Repeat Step 1 to Step 4 to plug in the other power cord.
6. Connect one power cord to an appropriate AC power source. See Figure 31.

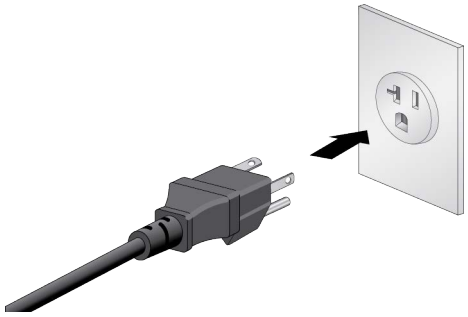


Figure 31. Connecting the Power Cord to an AC Power Source

7. Repeat Step 6 for the other power cord.
8. Go to “Starting a Local Management Session” on page 107.

Starting a Local Management Session

This procedure explains how to start a local management session on the switch. It assumes that you powered on the device and waited two minutes for it to initialize its operating software.

> **Note**
> The first management session of the switch can be either a local session, as explained in this section, or a remote session. For remote management, the switch uses either its default IP address 192.168.42.42 or an address assigned to it by a DHCP server. For instructions on how to start a remote management session, visit https://www.alliedtelesis.com.

To start a local management session, perform the following procedure:

1. Connect the RJ-45 end of the management cable to the Console RS-232 port on the management panel. Refer to Figure 32.

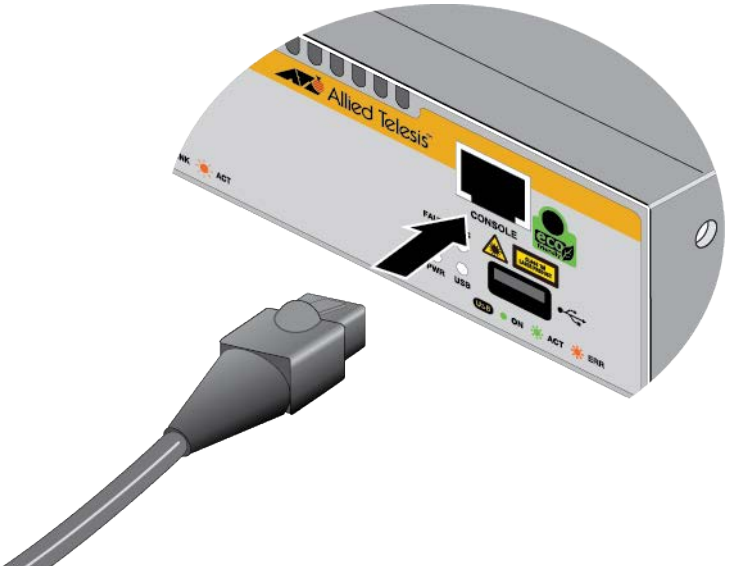


Figure 32. Connecting the Management Cable to the Console RS-232 Port

2. Connect the other end of the cable to an RS-232 port on a terminal or personal computer with a terminal emulation program.

3. Configure the VT-100 terminal or terminal emulation program as follows:

   - Baud rate: 9600 bps
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow controller: None

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

4. Press Enter.

   You are prompted for a user name and password.

5. Enter the default user name and password:

   - User name: manager
   - Password: friend

   Note
   User names and passwords are case sensitive.

   The local management session starts when the User Exec mode prompt, shown in Figure 33. is displayed.

```
awplus>
```

Figure 33. User Exec Mode Prompt

6. If you configure your switch for stacking, do one of the following:

   - To begin configuring the master switch, go to Chapter 7, “Configuring the Master Switch” on page 71.
   - If you have already configured the master switch, go to Chapter 8, “Configuring Member Switches” on page 87.

Powering off the Switch

To power off the switch, perform the following procedure:

1. Unplug the power cord as shown in Figure 34.

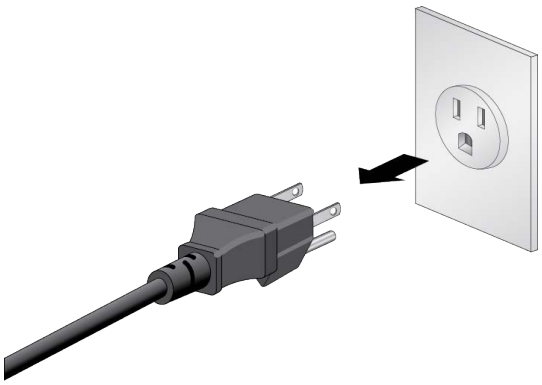


Figure 34. Powering Off the AC Power Supply

2. Unplug the other power cord.

Chapter 11

Cabling the Networking Ports

This chapter contains the following procedures:

Guidelines for Cabling the Network Ports

Review the following guidelines before installing transceivers/direct attach cables to the ports:

Warning
Laser Safety: EN60825-1. L7

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. E92

- SFP28/SFP+ and QSFP28/QSFP+ transceivers/direct attach cables are hot-swappable. You can install them while the switch is powered on.

Note
For a list of supported transceivers and direct attach cables, refer to the product data sheet on the Allied Telesis web site at www.alliedtelesis.com.

- Ports 1 to 24 are for SFP28/SFP+ transceivers or direct attach cables.
- Ports 25, 29, 33 and 37 are for QSFP28 and QSFP+ transceivers or direct attach cables.
- The ports for SFP28/SFP+ support 10G SFP and 25G transceivers and direct attach cables. They do not support 100M SFP transceivers.
- The ports for QSFP28/QSFP+ support 40Gbps and 100Gbps transceivers and direct attach cables.
- You may install a transceiver before connecting the fiber optic cable.
- Fiber optic transceivers are dust sensitive. Always keep the plug in the optical bores when a fiber optic cable is not installed, or when you store the transceiver. When you do remove the plug, keep it for future use.
- Unnecessary removal and insertion of a transceiver or direct attach cable can lead to premature failure.
- Breakout cables are not supported.

Installing Transceivers

This section contains instructions for installing transceivers in the ports on the switch.

Installing SFP28/SFP+ Transceivers

The illustrations in the procedure show a transceiver being installed in port 22. The procedure is the same for all SFP28 and SFP+ ports. The transceiver in the illustrations has a duplex LC connector. The connector on your transceivers may be different.

To install a transceiver, perform the following procedure:

1. If the transceiver port has a dust plug, remove it.
2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. Slide the transceiver into the port until it clicks into place, as shown in Figure 35.

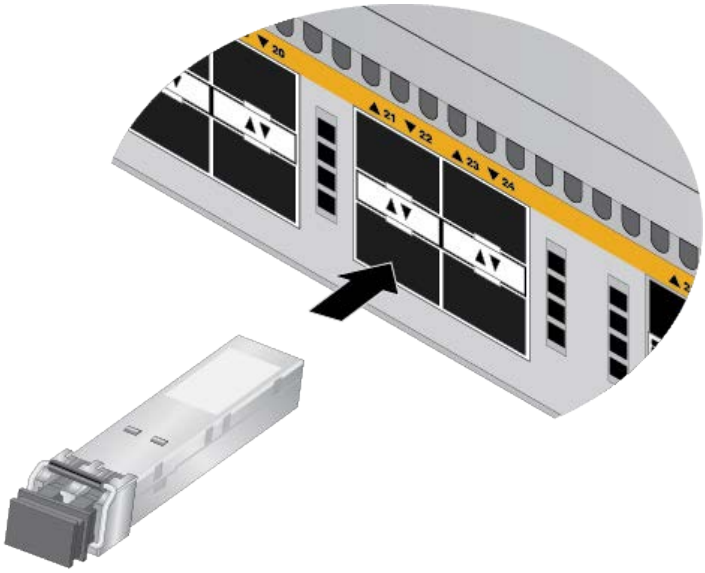


Figure 35. Installing an SFP28 or SFP+ Transceiver

Note
If you are ready to attach the fiber optic cable to the transceiver, continue with the next step. Otherwise, repeat step 1 to step 3 to install the remaining transceivers in the switch.

4. Remove the dust cover from the transceiver. See Figure 36.

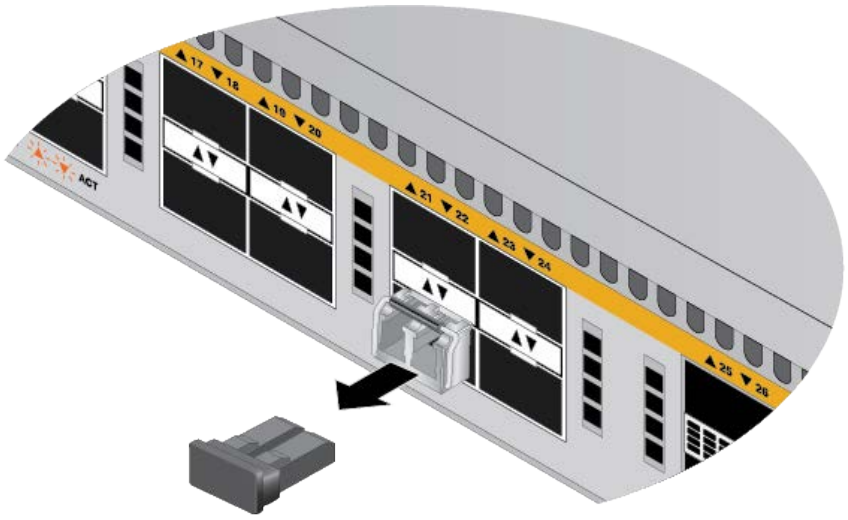


Figure 36. Removing the Dust Cover from an SFP28 or SFP+ Transceiver

5. Verify the position of the handle on the transceiver. The transceiver handle should be in the upright position, as shown in Figure 37.

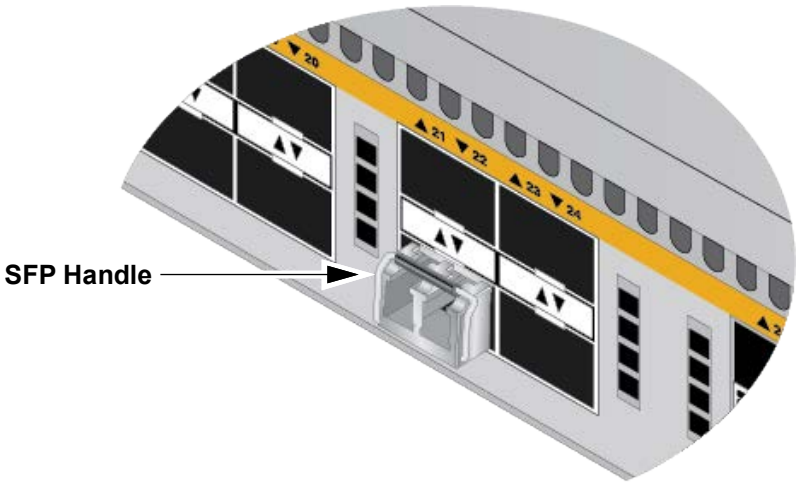


Figure 37. Positioning the SFP28 or SFP+ Handle in the Upright Position

6. Connect the fiber optic cable to the transceiver, as shown in Figure 38.

   The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

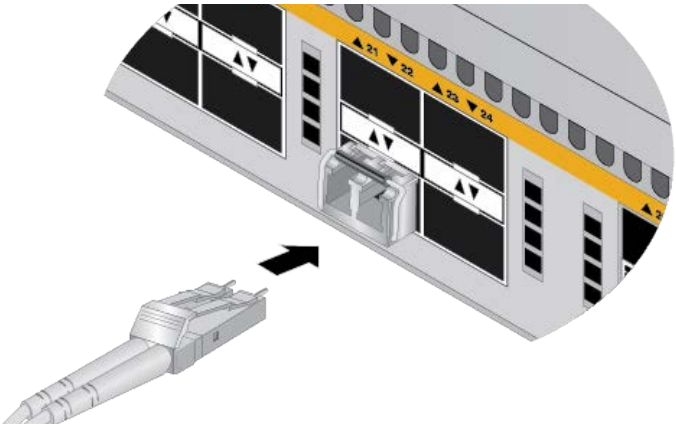


Figure 38. Connecting a Fiber Optic Cable to an SFP28 or SFP+ Transceiver

7. Repeat step 4 to step 6 to cable additional transceivers.

Installing QSFP28/QSFP+ Transceivers

This section contains instructions for installing QSFP28 or QSFP+ transceivers in the ports on the switch. The QSFP28 or QSFP+ transceiver can be installed in port 25, 29, 33 or 37.

To install a QSFP28 transceiver, perform the following procedure:

1. Remove the transceiver from its shipping container and store the packaging material in a safe location.

2. Slide the transceiver into port 25, 29, 33, or 37 until it clicks into place. See Figure 39.

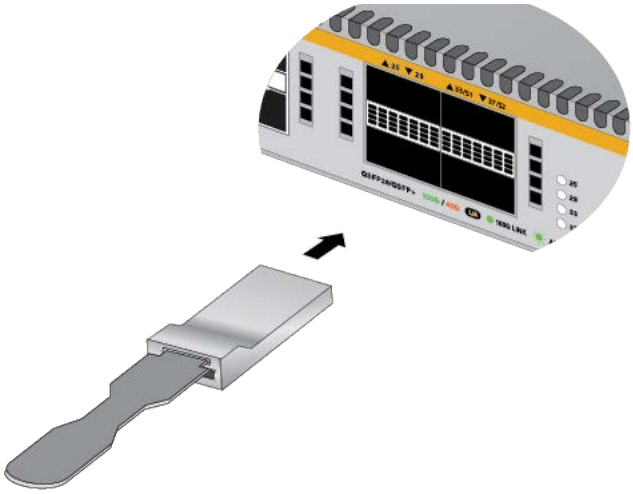


Figure 39. Installing a QSFP28 Transceiver

3. Connect the fiber optic cable to the transceiver.

   The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

4. Repeat this procedure to install and cable additional transceivers.

5. To connect a cable, refer to “Installing QSFP28/QSFP+ Transceivers” on page 115.

Installing Direct Attach Cables

To install direct attach cables, perform the following procedure:

> **Note**
> For a list of supported direct attach cables, refer to the product data sheet on the Allied Telesis web site at www.alliedtelesis.com.

1. Select a port for the direct attach cable.
2. If the selected port has a dust cover, remove the cover.
3. Remove the direct attach cable from its shipping container and store the packaging material in a safe location.
4. Orient the connector of the direct attach cable and slide it into the port until it clicks into place. The correct orientation depends on the cable:
   - Figure 40 shows the orientations for SP10TW direct attach cables installed in SFP28/SFP+ ports 5 and 6.

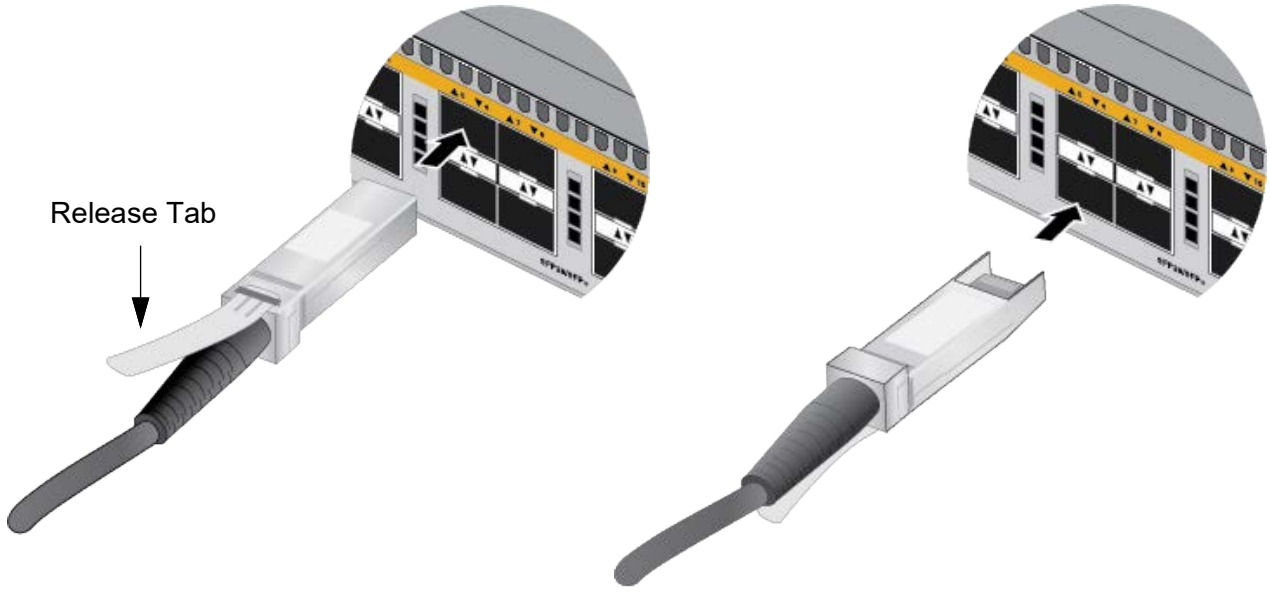


Figure 40. Installing SP10TW Direct Attach Cables

- Figure 41 shows the orientations for QSFPCU Cables installed in QSFP28/QSFP+ ports 25 and 29.

Figure 41. Attaching QSFPCU Cables

5. Connect the other end of the cable into a compatible port on another network device.

6. Repeat this procedure to install additional direct attach cables.

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

Chapter 12
Troubleshooting

This chapter contains suggestions on how to troubleshoot problems with the switch.

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

Problem 1: The unit is not receiving power. All the port LEDs are off, and the fans are not operating.

Solutions: Try the following:

- Verify that the power cord is securely connected to the power source and AC connector on the back panel of the switch. The switch has two power supply units.
- Verify that the power outlet has power by connecting another device to it.
- Try connecting the unit to another power source.
- Try a different power cord.
- Verify that the voltage from the power source is within the required levels for your region. The power requirements for the switch are listed in “Power Specifications” on page 126.

Problem 2: All the port LEDs are off even though the ports are connected to active network devices.

Solution: The switch might be operating in the low power mode. To toggle on the LEDs, press the eco-friendly button on the front panel of the switch. You can also toggle the LEDs off and on with the `ECOFRIENDLY LED` and `NO ECOFRIENDLY LED` commands in the command line interface.

Problem 3: A 10Gbps or 25Gbps fiber optic transceiver or direct attach cable in SFP28/SFP+ ports on the switch is unable to establish a link to a network device.

Solutions: Try the following:

- ❒ Check that the transceiver or direct attach cable is fully inserted in the port.
- ❒ Verify that the fiber optic cable is securely connected to the port on the transceiver and the remote network device.
- ❒ Verify that the remote network device is operating properly.
- ❒ Verify that the operating specifications of the fiber optic ports and remote network device are compatible.
- ❒ Verify that the correct type of fiber optic cabling is being used.
- ❒ Verify that the port is connected to the correct fiber optic cable.
- ❒ Try connecting another network device to the fiber optic port using a different cable. If the port is able to establish a link, then the problem is with the cable or with the other network device.
- ❒ Use the switch's management software to verify that the port is enabled.
- ❒ If the remote network device is a managed device, use its management firmware to determine whether its port is enabled.
- ❒ If the problem is with two BiDi (bi-directional) transceivers, refer to their data sheets to verify that their transmission and reception frequencies are opposite each other. For instance, a BiDi transceiver that transmits and receives at 1310nm and 1550nm, respectively, has to be connected to a transceiver that transmits and receives at 1550nm and 1310nm, respectively. Two BiDi transceivers do not establish a link if they transmit and receive at the same frequencies.
- ❒ 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.

Problem 4: A 40Gbps or 100Gbps fiber optic transceiver or direct attach cable in QSFP28/QSFP+ ports on the switch is unable to establish a link to a network device.

Solutions: Try the following:

- ❒ Review the solutions to Problem 3.
- ❒ Use the `SHOW PLATFORM` command to confirm that the port is configured correctly for the transceiver or direct attach cable. If necessary, use the `PLATFORM PORTMODE INTERFACE` command to configure the port. For more information, see "PLATFORM PORTMODE INTERFACE" on page 72.

- Changing a port from a 40G transceiver to a 100G transceiver requires resetting the switch. The same is also true when replacing a 100G transceiver with a 40G transceiver.
- If the problem is with an 100G transceiver, you might need to adjust the Forward Error Correction (FEC) parameter on the port, with the FEC command. Refer to the Software Reference for x560 switch, AlliedWare Plus Operating System.

Problem 5: The `SHOW STACK` command is not displaying all the switches in the stack.

Solutions: The switches are unable to form the stack. Try the following:

- The switches might have an earlier version of the management software that does not support VCStack, or they might have different versions. You can view the version number with the `SHOW VERSION` command.
- Review the information in “Stack Trunk Guidelines” on page 29 to verify that the trunk complies with all rules and restrictions.
- Verify that the fiber optic transceivers or direct attach cables that are used for the trunk are fully inserted into the ports.
- Verify that the transceivers or direct attach cables are from Allied Telesis.
- Verify that the fiber optic cables are securely connected to the ports on the transceivers or ports.
- Display the running configurations and confirm the ports of the stack trunk. They are identified by the `STACKPORT` command. In this example from a running configuration, ports 1 to 2 are the stack trunk:

  ```
  awplus(config)# interface port1.0.1-1.0.2
  awplus(config-if)# stackport
  ```

- If necessary, repeat the `STACKPORT` command. For information, refer to “STACKPORT” on page 72. Afterwards, save your changes and reboot the switch.

Problem 6: You removed a port from a stack trunk with the `NO STACKPORT` command, but the port is still not forwarding regular Ethernet traffic.

- Display the running configuration to verify that the port is no longer part of the stack trunk.
- You have to reboot the switch whenever you add or remove ports from stack trunks with the `STACKPORT` and `NO STACKPORT` commands. Be sure to save the change to the configuration file with the `WRITE` command before rebooting the unit.

Problem 7: The switch overheats and shuts down.

Solutions: Try the following:

- Verify that the location of the switch allows for adequate airflow.
- If the switch is operating, use the `SHOW SYSTEM ENVIRONMENT` command in the Privileged Exec mode to verify that the power supplies and fan modules are operating properly.

Problem 8: The switch functions intermittently.

Solutions: Try the following:

- 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 shuts down if the input voltage fluctuates above or below the approved operating range.
- Use the `SHOW SYSTEM ENVIRONMENT` command in the Privileged Exec mode to verify that the fan modules are operating correctly.
- Verify that the location of the switch allows for adequate airflow. The unit will shut down if it overheats.

Appendix A
Technical Specifications

This appendix contains the following sections:

Physical Specifications

Dimensions

- Height: 4.4cm (1.7 in.)
- Width: 44.1cm (17.4 in.)
- Depth: 42.1cm (16.6 in.)

Height, Width and Depth of x560-28YSQ

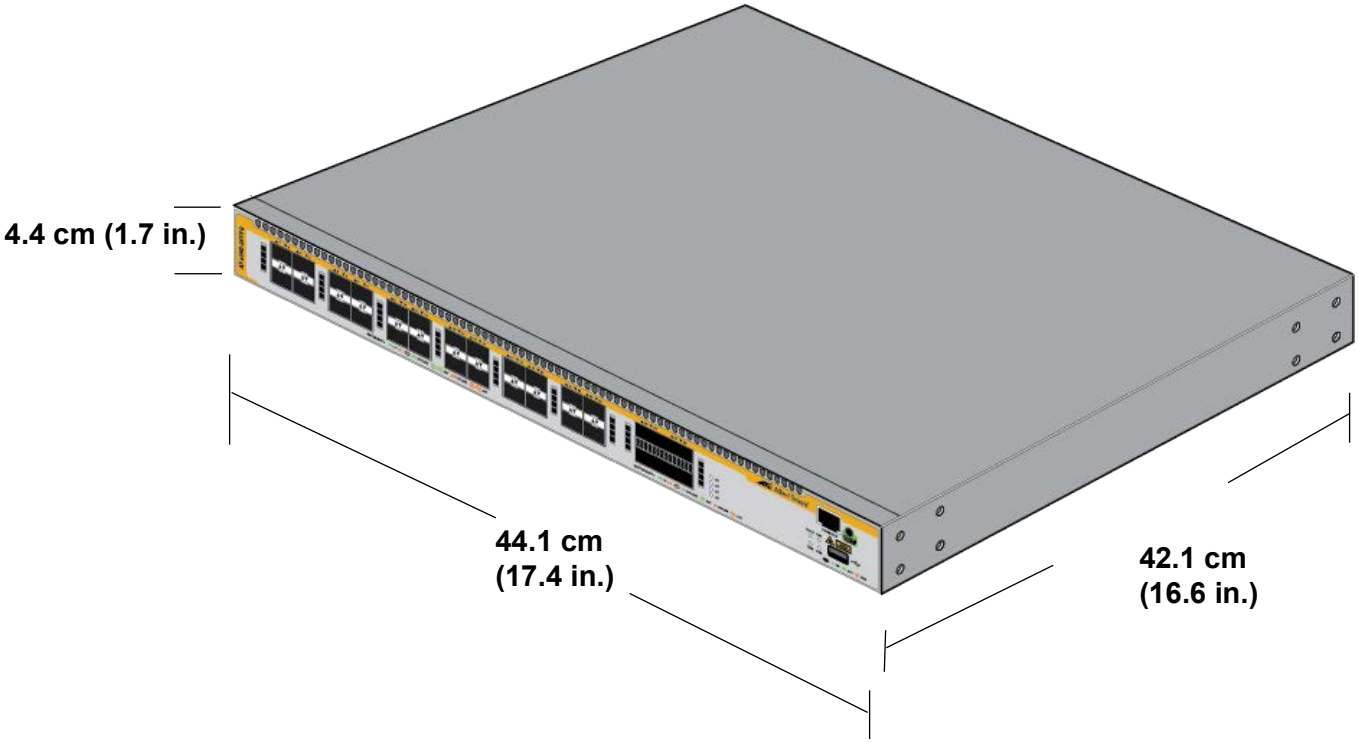


Figure 42. x560-28YSQ Switch (H x W x D)

Weight

The weight of the x560-28YSQ switch is 5.95 kg (13.12 lb.).

Ventilation

The recommended minimum ventilation on all sides is weight of the x560-28YSQ switch is 10 cm (4.0 in.).

Environmental Specifications

Table 16 lists the environmental specifications of the switches.

Table 16. Environmental Specifications

Operating Temperature	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)

Power Specifications

Maximum Power Consumptions

Table 17. Maximum Power Consumption

x560-28YSQ	255W

Input Voltage and Frequency

Table 18. Input Voltages

x560-28YSQ	100-240 VAC, 2.0A maximum, 50/60Hz

Heat Dissipation

Table 19. Heat Dissipation

x560-28YSQ	870 BTU/hr