

x540L and SE540L Series

10 GIGA MANAGED SWITCHES

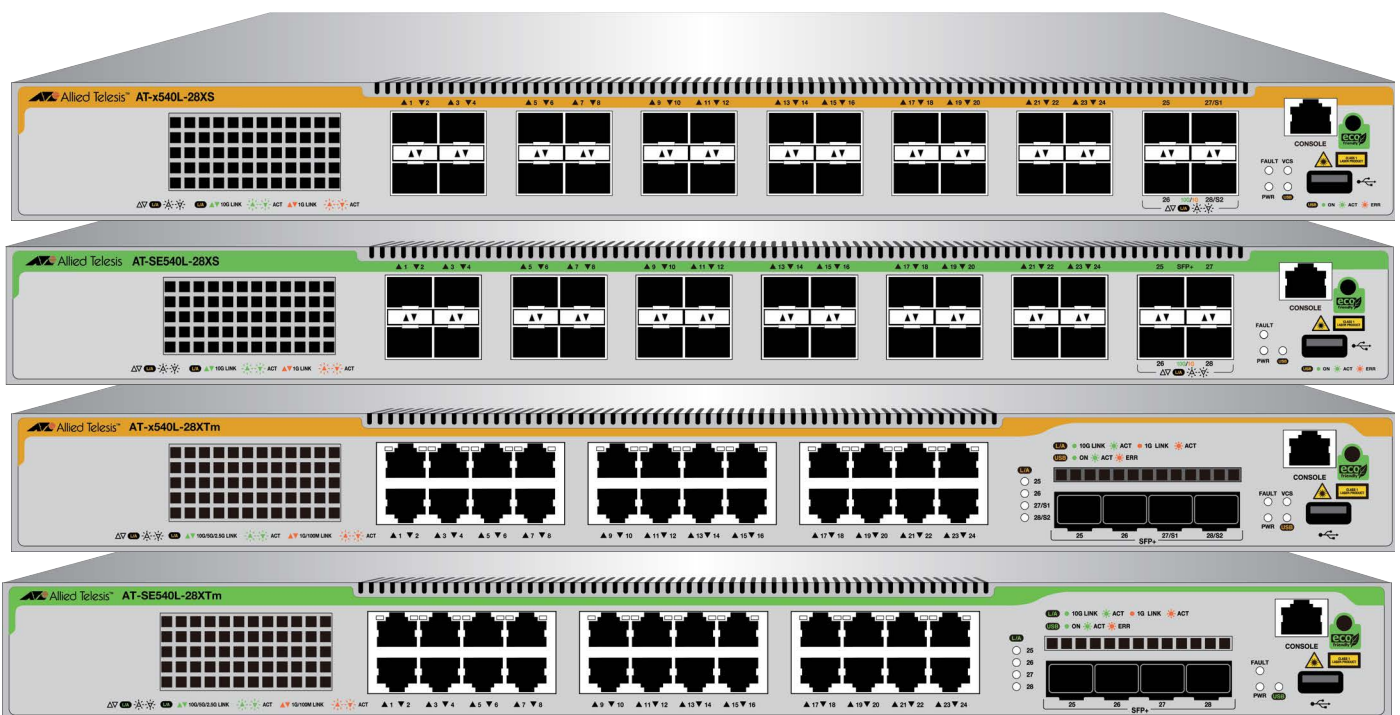
AlliedWare Plus™

x540L-28XS

SE540L-28XS

x540L-28XTm

SE540L-28XTm



Installation Guide

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Electrical Safety and Emissions Standards

This section contains the following:

- “US Federal Communications Commission”
- “Industry Canada”
- “Emissions, Immunity and Electrical Safety Standards” on page 4
- “Translated Safety Statements” on page 4

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

Electrical Safety	UL62368-1 (CULUS) CE UKCA IEC62368-1 EC62368-1
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



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	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
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Warning

Laser Safety: EN60825-1. ⚡ L7

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.

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Preface

This guide contains the installation instructions for the following products:

- ❑ x540L-28XS
- ❑ x540L-28XTm
- ❑ SE540L-28XS
- ❑ SE540L-28XTm

In addition to the installation instructions, this guide includes how to build a virtual stack with the Virtual Chassis Stacking (VCStack) feature for the x540L series switches.

Note

The VCS Stack section applies only to the x540L series switches.

This preface contains the following sections:

- ❑ “Document Conventions” on page 10
- ❑ “Translated Safety Statements” on page 11
- ❑ “Contacting Allied Telesis” on page 12

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

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- Översatta säkerhetsförklaringar

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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:

- ❑ “Physical Features” on page 14
- ❑ “Features” on page 16
- ❑ “Twisted Pair Ports on the Switch” on page 18
- ❑ “SFP/SFP+ Transceiver Slots” on page 20
- ❑ “Management Panel” on page 22
- ❑ “Designating Ports in the Command Line Interface” on page 24

Physical Features

The x540L series and SE540L series switches are equipped with ports, management panel among others. See Figure 1, Figure 2, Figure 3, and Figure 4 on page 15 for the front panels of each model.

x540L-28XS Switch

Management Panel

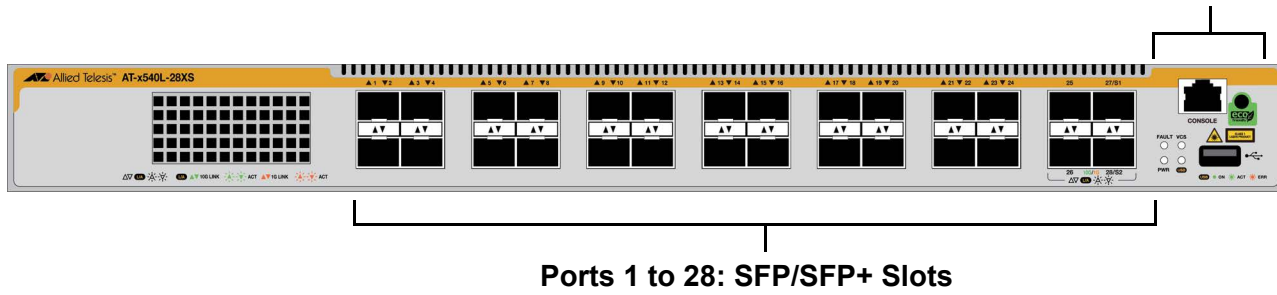


Figure 1. Front Panel of the x540L-28XS Switch

SE540L-28XS Switch

Management Panel

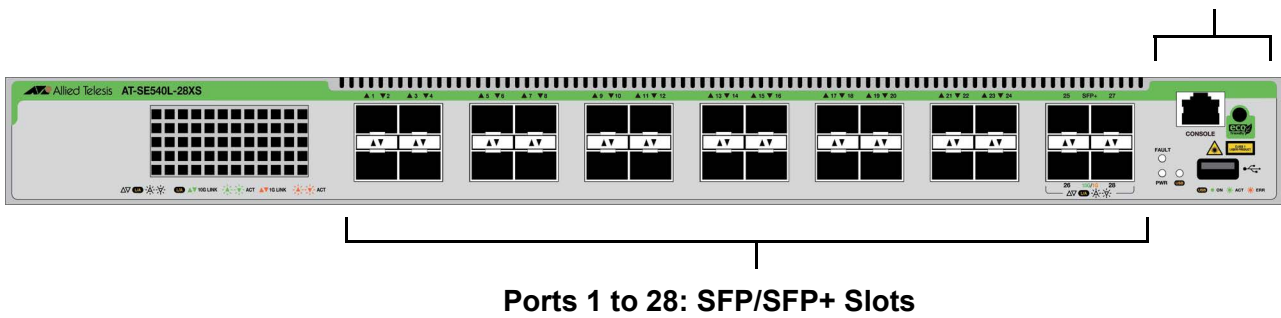


Figure 2. Front Panel of the SE540L-28XS Switch

x540L-28XTm Switch

Management Panel

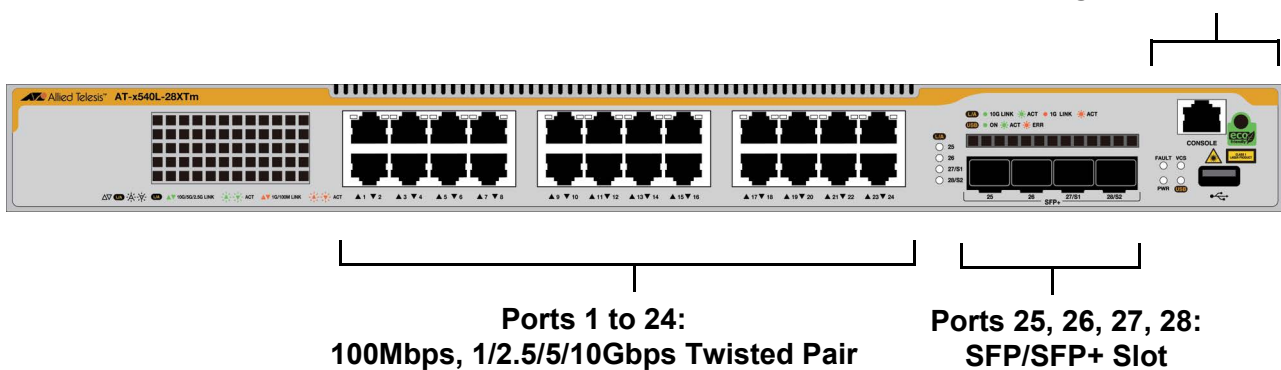


Figure 3. Front Panel of the x540L-28XTm Switch

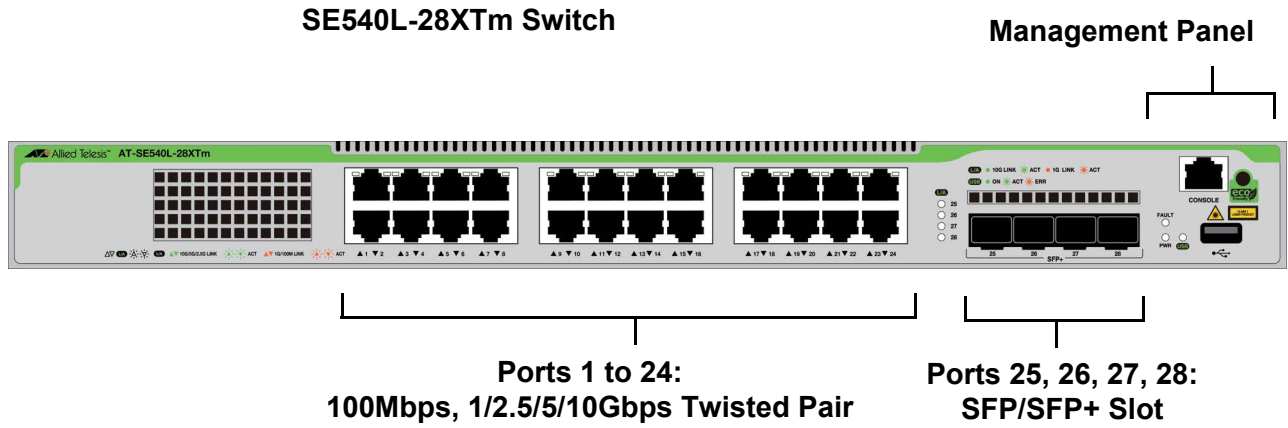


Figure 4. Front Panel of the SE540L-28XTm Switch

The rear panel of the x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm switches is shown in Figure 5 on page 15.

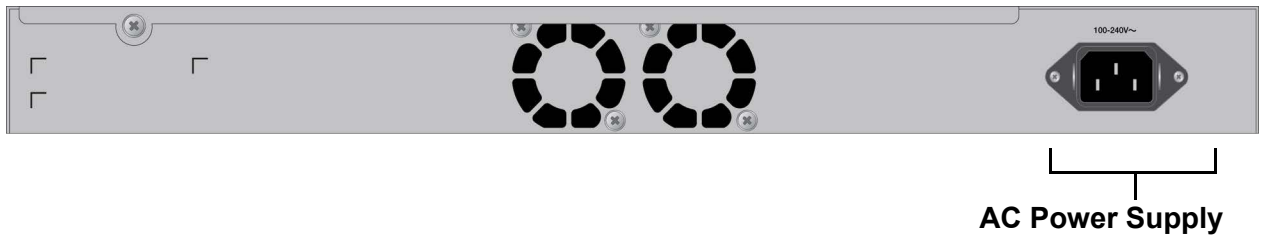


Figure 5. Rear Panel of the x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm Switches

Features

The main features of the switch are listed here.

Hardware Features

The switch has the following hardware features:

- Console port
- USB port
- Eco friendly button
- LEDs
- 100M/1G/2.5G/5G/10Gbps Twisted pair ports, SFP/SFP+ transceiver slots, or both. See Table 1 for each model.

Table 1. The numbers of Twisted Pair Ports and SFP Ports on the Switch

	x540L-28XS, SE540L-28XS	x540L-28XTm, SE540L-28XTm
Twisted pair ports	None	24
SFP/SFP+ Slots	28	4

Virtual Chassis Stacking (VCStack)

The VCStack feature enables you to link together two x540L series switches into a virtual stack so that they function as a single networking unit.

This feature only applies to the x540L series switches. For the instructions to build a virtual stack with the VCStack feature, see Chapter 2, “Virtual Chassis Stacking” on page 27.

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 accessed locally through the Console port or remotely using Telnet or Secure Shell.
- 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 22.

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 x540L series and SE540L series switches come with one pre-installed power supply that supplies system power. See “Power Specifications” on page 131. 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 x540L-28XS, SE540L-28XS, x540L-28XTm, or SE540L-28XTm switch has two ventilation fans located on the back panel. The airflow direction of the fans is from front to back, drawing air out of the switch. Problems with the fans are displayed with the Fault LED. See “System LEDs” on page 23.

Note

The fan is not field-replaceable.

Twisted Pair Ports on the Switch

This section describes the twisted-pair ports on the switch.

Note

The x540L-28XTm, and SE540L-28XTm switches have twisted-pair ports.

Connector Type

The twisted pair ports have 8-pin RJ-45 connectors. The ports use four pins at 100Mbps and all eight pins at 1G/2.5G/5G/10Gbps. The pin assignments are listed in “RJ-45 Twisted Pair Port Pinouts” on page 132.

Port Speed

The ports can operate at 100M/1G/2.5G/5G/10Gbps. The switch can set the speeds automatically through Auto-Negotiation, by the default setting, or manually configured with the AlliedWare Plus Operating System.

Note

Twisted pair ports must be set to Auto-Negotiation to operate at 1Gbps or higher

Duplex Mode

The ports can only operate in full-duplex mode. The ports are IEEE 802.3u-compliant and use Auto-Negotiate to set the duplex mode setting.

Maximum Distance

The ports have a maximum operating distance of 100 meters (328 feet).

Cable Requirements

The cable requirements are listed here:

- ❑ 100Mbps - Standard TIA/EIA 568-B-compliant Category 3 unshielded cabling.
- ❑ 1/2.5/5Gbps - Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling.
- ❑ 10Gbps -Standard TIA/EIA 568-C-compliant Category 6a unshielded cabling.

LEDs for Twisted Pair Ports

This section explains the LEDs for the 100Mbps and 1/2.5/5/10Gbps twisted pair ports on the switch.

Each port has one LED that displays link and activity information. The LEDs are shown in Figure 6.

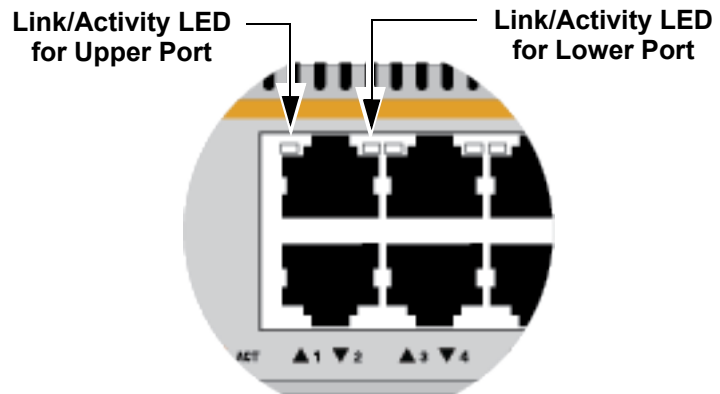


Figure 6. Link and Activity LEDs for Twisted Pair Ports on the Switch

The states of the link and activity LEDs are described in Table 2.

Table 2. Link and Activity LEDs for Twisted Pair Ports on the Switch

State	Description
Solid Green	The port has established a 2.5Gbps, 5Gbps, or 10Gbps link to a network device.
Flashing Green	The port is transmitting or receiving data at 2.5Gbps, 5Gbps or 10Gbps.
Solid Amber	The port has established a 100Mbps or 1Gbps link to a network device.
Flashing Amber	The port is transmitting or receiving data at 100Mbps or 1Gbps.
Off	<p>Possible causes of this state are listed here:</p> <ul style="list-style-type: none"> - The port has not established a link with another network device. - The LEDs are turned off. To turn on the LEDs, use the eco-friendly button in the management panel or the NO ECOFRIENDLY LED command in the command line interface.

SFP/SFP+ Transceiver Slots

The switch comes with slots for SFP/SFP+ transceivers.

Note

When using a Fiber Optic Small-Form Pluggable (SFP) module, ensure it is IEC 60825-1 certified and Class 1 Laser Product.

LEDs The slots for the SFP/SFP+ transceivers have one link and activity status LED each. Refer to Figure 7.

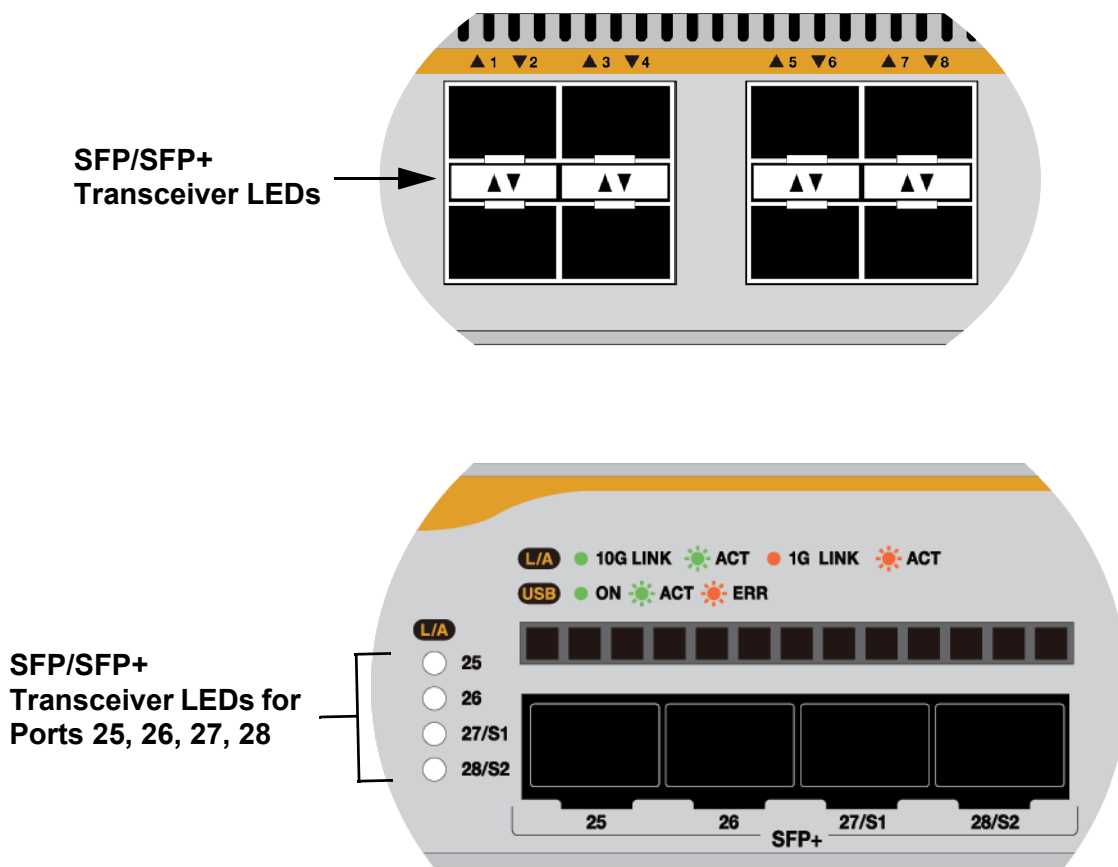


Figure 7. LEDs for SFP/SFP+ Transceiver Slots

The states of the LEDs are defined in Table 3.

Table 3. Link and Activity LEDs for SFP/SFP+ Transceivers

State	Description
Solid Green	The transceiver has established a 10Gbps link to a network device.
Flashing Green	The transceiver is transmitting or receiving data at 10Gbps.
Solid Amber	The transceiver has established a 1Gbps link to a network device.
Flashing Amber	The transceiver is transmitting or receiving data at 1Gbps.
Off	<p>Possible causes of this state are listed here:</p> <ul style="list-style-type: none"> - The transceiver slot is empty. - The transceiver 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 8.

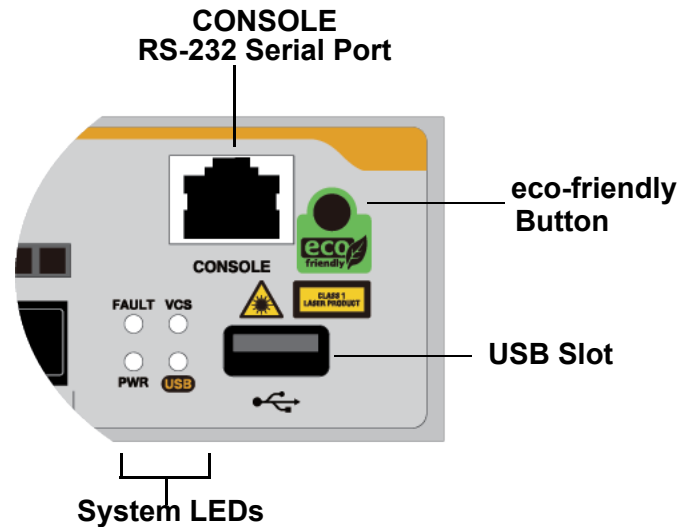


Figure 8. Management Panel for the Switch

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 flash drive.

Using a flash drive with the switch is optional.

Console (RS-232) Port

You 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 the management cable that comes with the switch. The switch does not need an Internet Protocol (IP) address for local management sessions because they are not conducted over a network. For instructions, refer to “General Steps for the Master Switch” on page 78.

eco-friendly Button

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

System LEDs

The system LEDs on the management panel are described in Table 4.

Table 4. System LEDs on the Management Panel

LED	Status	Description
FAULT	Off	The system is operating normally.
	Solid Red	The firmware is loading.
	Red Flashing (One time)	The system or fan is having an error.
	Red Flashing (Six times)	The temperature exceeds the threshold.
POWER	Solid Green	The switch is receiving power and operating normally.
	Off	The switch is not receiving power.
VCS	Solid Green	The unit is a VCStack master switch.
	Off	VCStack is disabled or the unit is a VCStack member switch.
USB	Off	No activities on the USB port
	Solid Green	A USB flash drive is attached.
	Flashing Green	Indicates that information is being written or read on the attached USB flash drive.
	Flashing Amber	Indicates that the USB flash drive has an error during writing or reading.

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 9.

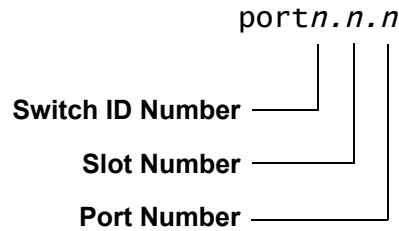


Figure 9. PORT Parameter in the Command Line Interface

The three parts of the PORT parameter are described in Table 5.

Table 5. 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 base 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 base 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 base port 10 in a switch with ID 1 and base 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” on page 28
- ❑ “Stacking Guidelines” on page 29
- ❑ “Stack Trunks” on page 30
- ❑ “Master and Member Switches” on page 32
- ❑ “Switch ID Numbers” on page 33
- ❑ “Optional Feature Licenses” on page 34
- ❑ “Planning a Stack” on page 35
- ❑ “Stacking Worksheet” on page 36

Overview

The Virtual Chassis Stacking (VCStack) feature enables you to link together two x540L series switches into a virtual stack so that they function as a single networking unit.

Note

VCStack feature is only available to the x540L series switches.

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

Here are general stacking guidelines:

- ❑ A stack must consist of two x540L series switches.
- ❑ Two ports per switch must be designated as trunk ports.
- ❑ 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 x540L series switches is enabled. Disabling it requires rebooting the switch. Instructions later in this guide explain how to disable and enable the feature and reboot the unit.
- ❑ 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.
- ❑ The switches of a stack have to be connected together with a network link called a stack trunk. As explained in “Stack Trunks” on page 30, you can choose any twisted pair ports on the switches to be the trunk. Once ports are designated as members of the trunk, they cannot be used as regular networking ports.
- ❑ 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 Trunks

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

- ❑ A stack must consist of two x540L series switches.
- ❑ Up to two ports per switch can be designated as trunk ports.
- ❑ The trunk ports must be operated at 10Gbps.
- ❑ Designate trunk ports with the STACKPORT command in the AlliedWare Plus operating system.
- ❑ Once ports are designated as trunk ports, you cannot view or change their parameter settings.
- ❑ The fiber optic transceivers or direct attach cables of a trunk must be from Allied Telesis. Transceivers or cables from other network equipment providers might not perform properly as trunks. For a list of supported transceivers, visit the Allied Telesis web site.
- ❑ If a trunk fails for any reason, the switches operate as stand-alone devices.

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

- ❑ “Twisted Pair Ports,” next
- ❑ “S1 or S2 SFP/SFP+ Ports” on page 31

Twisted Pair Ports

Twisted pair ports 1 to 24 on the x540L-28XTm switch support trunk. Here are the guidelines:

- ❑ You can use any of the two ports for the trunk.
- ❑ Ports 1 to 24 in the x540L-28XTm switch support 100Mbps, 1Gbps, 2.5Gbps, 5Gbps, and 10Gbps; however, a trunk must operate at 10Gbps in Auto-Negotiation.

The following guidelines are not mandatory but they are recommended because they can make managing or troubleshooting a trunk easier:

- ❑ Use the same ports for the trunk on the two switches and connect together the same ports in the switches, if possible.
- ❑ Choose consecutive ports (for example, ports 1 to 2).

Figure 10 shows an example of VCStack. Here are the general properties:

- ❑ The stack consists of two x540L series switches and each switch uses two ports as truck ports.
- ❑ Each port operates at 10Gbps speed.
- ❑ The switches use the same consecutive ports, 1 and 2.

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

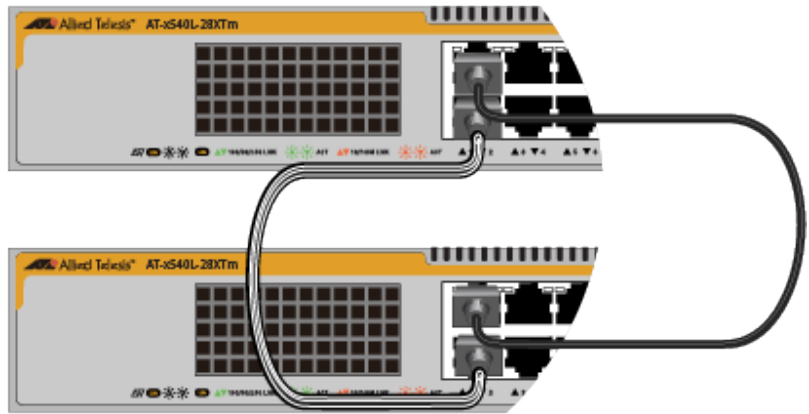


Figure 10. Example Stack of the x540L-28XTm Switches

**S1 or S2 SFP/
SFP+ Ports**

You can also use ports S1 and S2 on the x540L series switch, which are marked on SFP/SFP+ slots, for a stack trunk.

Here are the guidelines to using ports S1 and S2 for a trunk:

- ❑ A stack can use only ports S1 and S2, not other SFP/SFP+ ports.
- ❑ Figure 11 illustrates a stack of two x540L-28XTm switches with ports 27(S1) and 28(S2) for trunk ports.

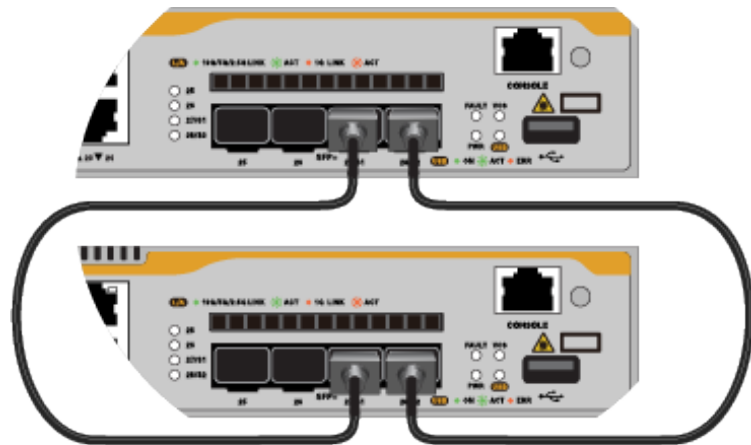


Figure 11. Stack Trunk Examples with S1 and S2 Ports

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 or more 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 ID number is 1 or 2. 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 24.

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 use 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. *See* 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, as shown in “Selection of the Master Switch” on page 32.

Optional Feature Licenses

The x540L series switches come 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 x540L series switches:

- ❑ 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 32. It can be any switch.
- ❑ Which ports will be the trunk ports on the switches? Refer to “Stack Trunks” on page 30.
- ❑ What will be the ID numbers of the member switches? Refer to “Switch ID Numbers” on page 33. The master switch should be given ID 1, the default value. Member switches should be assigned IDs in the range of 2 to 8.
- ❑ What types of transceivers will be used in ports S1 or S2 in the master and member switches? See “SFP/SFP+ Transceiver Slots” on page 20. You may install the transceivers (but not cable them) before configuring the switches for stacking.
- ❑ Have you already connected network cables to the trunk ports? If so, you should disconnect them 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 6 is here to assist you in configuring and maintaining a stack.

Table 6. Stacking Worksheet

Switch	Switch/ Location	Switch ID	Priority	Firmware Version Number ¹	Trunk Ports	Transceivers in S1 and S2
Master		1	1			S1: S2:
Member		2	2			S1: S2:

1. AlliedWare Plus version number.

The worksheet columns are described in Table 7.

Table 7. Stacking Worksheet Columns

Column	Description
Location	Use this column to record the model names and physical locations of the switches, such as their buildings or equipment rooms. The information can be useful in identifying and locating the switches if they are in different locations.
ID	Each switch in a stack has to have a unique ID number: 1 or 2. You use the ID numbers to configure the individual ports. Allied Telesis recommends assigning the ID 1, the default value, to the master switch. You should decide on the ID assignments of the switches before beginning the configuration procedures.

Table 7. Stacking Worksheet Columns (Continued)

Column	Description
Priority	<p>When the switches of a stack are reset or powered on, they perform an initialization process that involves, in part, choosing the master switch. The selection is based on their priority numbers and MAC addresses. The former is an adjustable parameter with a range of 0 to 255 and a default value of 128. The lower the value, the higher the priority. Thus, the switch with the lowest value becomes the stack master.</p> <p>If switches have the same priority number, the master is selected based on their MAC addresses. Again, as with priority numbers, the lower the MAC address, the higher the priority.</p> <p>Allied Telesis recommends setting each switch's priority value to match its ID value. This is to ensure that the switch you have chosen to be the master unit will 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.</p>
Firmware Version Number	<p>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.</p>
Trunk Ports	<p>Use this column to enter the trunk ports. You should choose the ports before beginning the configuration procedures. Refer to "Stack Trunks" on page 30.</p>
Transceivers in S1 and S2	<p>Used this column to record the transceiver speeds for S1 and S2.</p>

Table 8 is an example of a completed worksheet for planning a stack with four switches.

Table 8. Example of a Completed Stack Worksheet

Switch	Switch/ Location	Switch ID	Prior-ity	Firmware Version Number	Trunk Ports	Transceivers in S1 and S2
Master	x540L-28XTm Bldg 2A rm:304	1	1	v5.4.9-0	S2	S1: empty S2: 10Gbps
Member	x540L-28XTm Bldg 2A rm:304	2	2	v5.4.9-0	S2	S1: empty S2: 10Gbps

Chapter 3

Beginning the Installation


The chapter contains the following sections:

- “Reviewing Safety Precautions” on page 40
- “Choosing a Site for the Chassis” on page 44
- “Unpacking the Box and Verifying the Contents” on page 45
- “Installation Options” on page 47

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

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 (T_{mra}). *↪* 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 or SFP+ transceiver may exceed 70° C (158° F). Exercise caution when removing or handling transceivers with unprotected hands. *↻* E43

**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

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.
- ❑ Twisted pair cabling should not be exposed to sources of electrical noise, such as radio transmitters, broadband amplifiers, power lines, electric motors, or fluorescent fixtures.
- ❑ Switch ports are suitable for intra-building connections, or where non-exposed cabling is required.
- ❑ 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 injury to yourself or damage to 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. Please 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 9 shows the contents of the shipping box except a switch.

Table 9. Accessory Kit

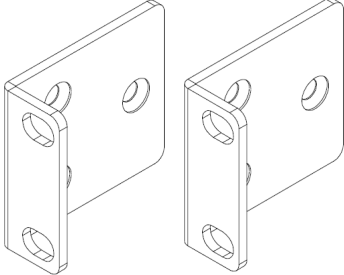
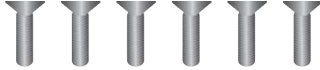



Item	x540L-28XS, SE540L-28XS, x540L-28XTm, SE540L-28XTm
Two 19-inch rack mount brackets	
Six M4x8mm screws for the 19-inch rack-mount brackets	
Four bumper feet	 <p style="text-align: center;">Bumper feet with rivets</p>


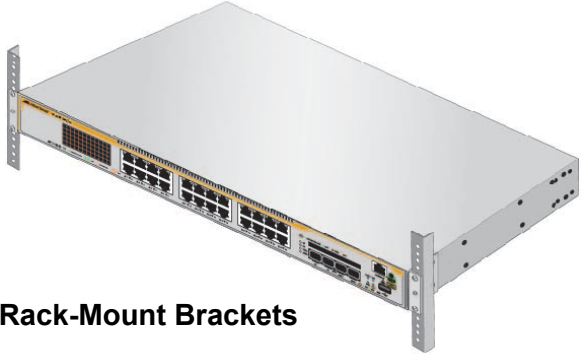
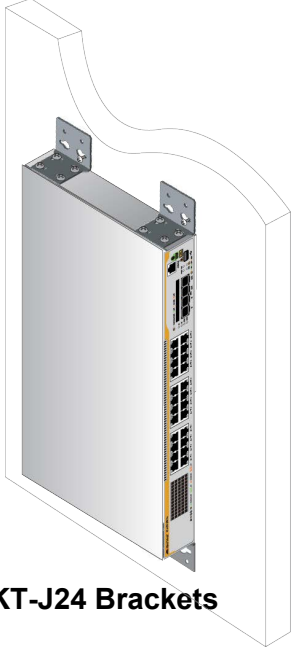
Table 9. Accessory Kit (Continued)

Item	x540L-28XS, SE540L-28XS, x540L-28XTm, SE540L-28XTm
Power cord	 <p>1570</p>
Power cord retaining clip	 <p>3376</p>

Installation Options

The Installation options of the x540L series and SE540L series switches are shown in Table 10.

Table 10. Installation Options

	x540L-28XS, SE540L-28XS, x540L-28XTm, SE540L-28XTm
Tabletop	 <p style="text-align: center;">Bumper Feet</p>
Equipment Rack	 <p style="text-align: center;">Rack-Mount Brackets</p>
Wall	 <p style="text-align: center;">Optional BRKT-J24 Brackets</p>

Guidelines for the Installation

Here is a list of guidelines for installing the x540L-28XS, SE540L-28XS, x540L-28XTm, or SE540L-28XTm switch:

- ❑ To install the switch on a table, go to Chapter 4, “Installing the Switch on a Table” on page 49.
- ❑ To install the switch on a wall, go to Chapter 6, “Installing the Switch on a Wall” on page 57.
- ❑ To install the x540L-28XS, SE540L-28XS, x540L-28XTm, or SE540L-28XTm switch on an equipment rack, go to “Installing the Switch in a Rack” on page 54.
- ❑ The BRKT-J24 bracket kit is optional. You must purchase one, in addition to your switch.

Chapter 4

Installing the Switch on a Table

This chapter contains instructions for installing the switch on a table. The procedure in this chapter is here:

- “Guidelines to Installing the Switch on the Table” on page 50
- “Installing the Switch on a Table” on page 51

Guidelines to Installing the Switch on the Table

Here is the Guidelines to installing the switch on a table:

- ❑ The switch must be installed flat on the table. The switch cannot be installed vertically, nor upside down on a table.
- ❑ Before installing the switch on the table, see Chapter 3, “Beginning the Installation” on page 39.



Warning

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



Warning

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

ES E122

Installing the Switch on a Table

To install the x540L-28XS, SE540L-28XS, x540L-28XTm, or SE540L-28XTm switch on a table, perform the following procedure:

1. Disassemble the bumper feet by removing the rivets and rivet housings from the bumper feet. See Figure 12.

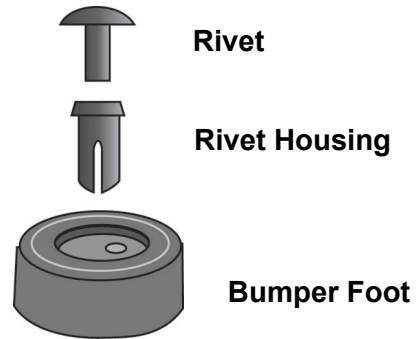


Figure 12. Parts of the Bumper Feet

2. Place the switch upside down on a table.
3. Inset a rivet housing into a bumper foot shown in Figure 13.
You have four units total.

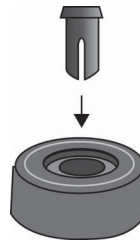


Figure 13. Inserting the Rivet Housing into the Bumper Foot

4. Place a rivet housing and bumper foot unit onto a hole at each corner shown in Figure 14. The switch has four holes.

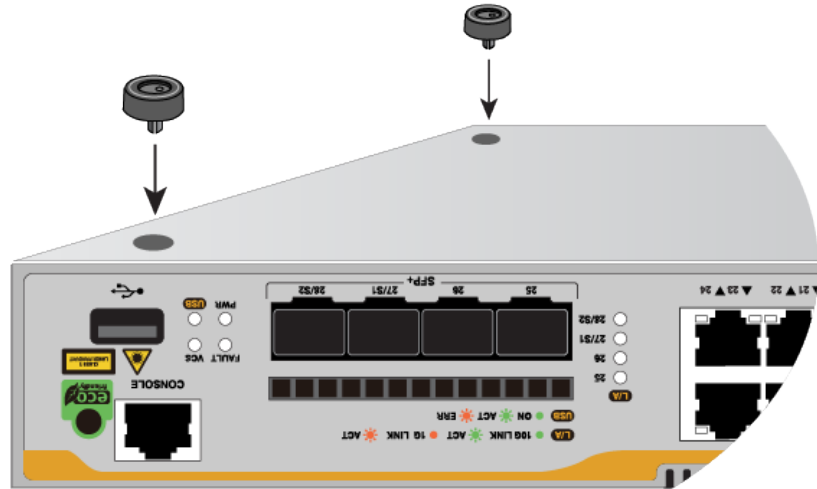


Figure 14. Placing the Bumper Foot Units on Base Corner Holes

5. Insert the rivet to secure the bumper foot to the base. See Figure 15 on page 52.

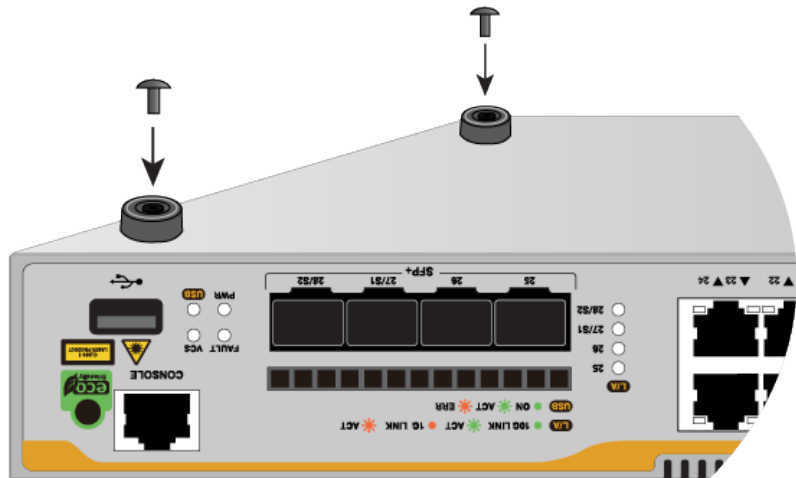


Figure 15. Inserting the Rivet into the Bumper Foot

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 113.
 - ❑ For Stacking, go to Chapter 7, “Configuring the Master Switch” on page 73.

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 procedure in this chapter is here:

- “Installing the Switch in a Rack” on page 54

Installing the Switch in a Rack

When installing the switch in a 19-inch equipment rack, use the rack mount brackets that come with the switch

Guidelines

Here is a list of guidelines for installing the x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm switches on an equipment rack:

- ❑ Before installing the switch, review the information and perform the procedures in Chapter 3, “Beginning the Installation” on page 39.
- ❑ You must install the switch with its front panel level with the front of the equipment rack as shown in Figure 16.



Figure 16. Correct Switch Orientation in an Equipment Rack

Rack Hole Locations

See Figure 17 for identifying the holes for the brackets on the switch.

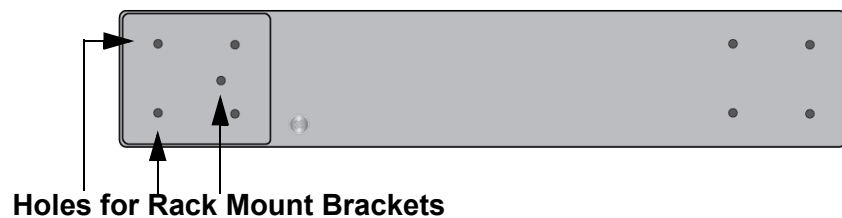


Figure 17. Holes for the Brackets on the x540L-28XS, SE540L-28XS, x540L-28XTm and SE540L-28XTm Switches

Required Items

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

- ❑ Two equipment rack brackets (included with the switch)
- ❑ Six M4x8 mm bracket screws (included with the switch)
- ❑ Cross-head screwdriver (not provided)
- ❑ Four standard equipment rack screws (not provided)

Removing 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 18.

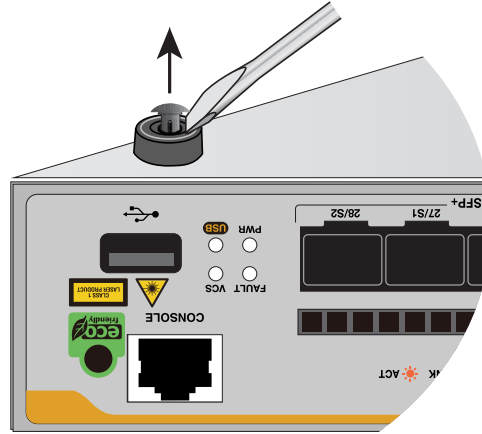


Figure 18. Removing the Bumper Feet

3. Remove the rivet and bumper feet from the switch.
4. Turn the switch back over.

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 40 and “Choosing a Site for the Chassis” on page 44.



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. *See* 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 55.
4. Attach the rack mount brackets to the sides of the switch in the selected positions as shown in n Figure 19.

Figure 19 shows the installation of the brackets so that the front panel is even with the front of the equipment rack.

5. Tighten the six M4x8 mm screws to attach the rack mount brackets to the switch. See Figure 19.

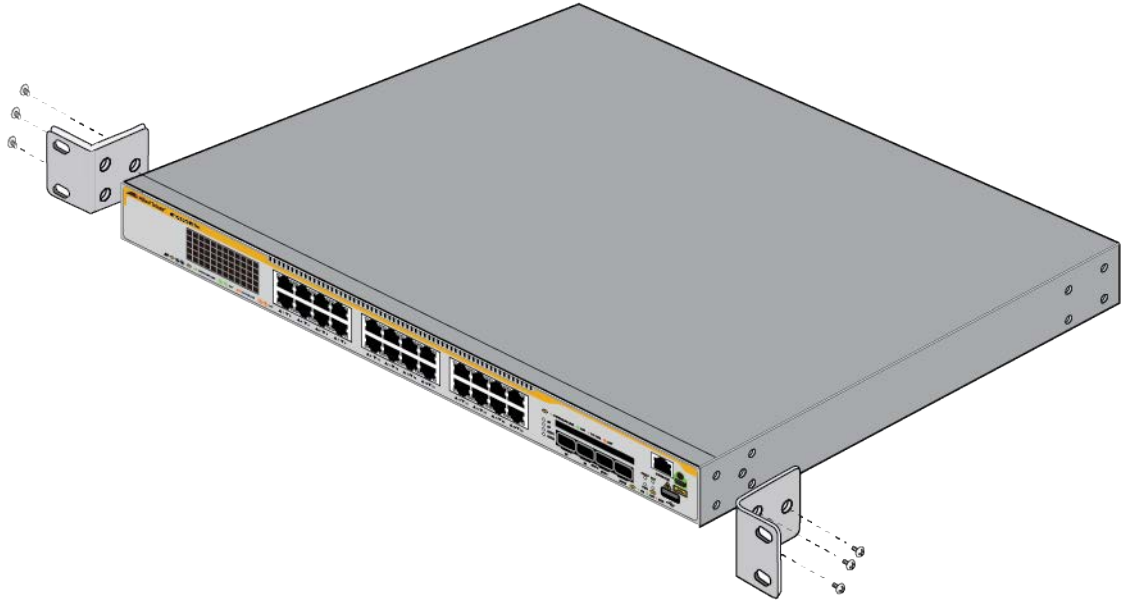


Figure 19. Attaching the Rack Mount Brackets

6. Have another person hold the switch in the equipment rack while you secure it using standard equipment rack screws (not provided). See Figure 20 on page 56.

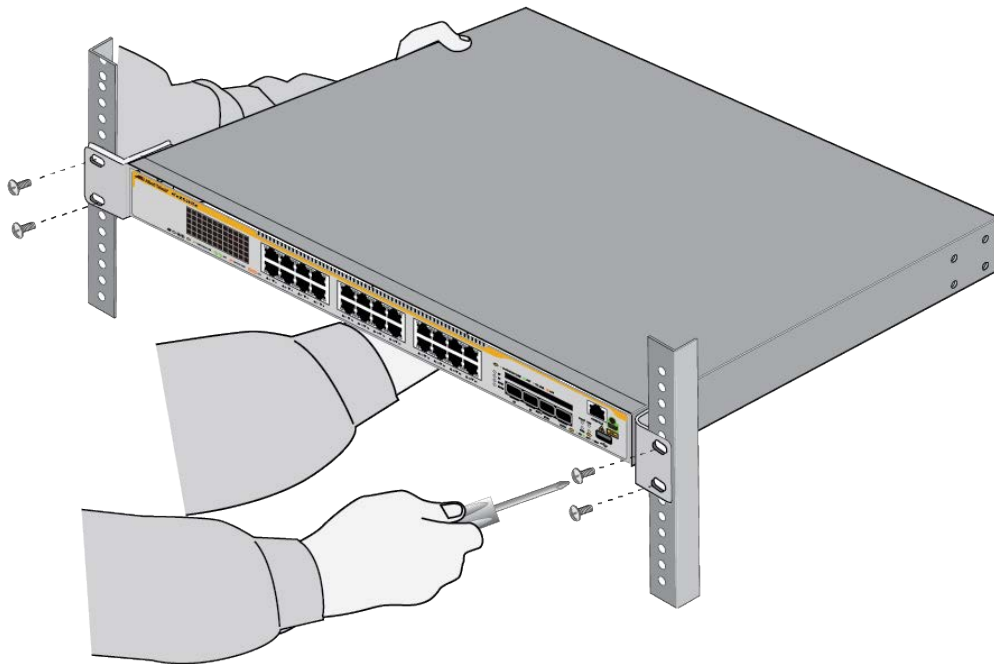


Figure 20. Installing the Switch in an Equipment Rack

Chapter 6

Installing the Switch on a Wall

The procedures in this chapter are listed here:

- “Overview of Installing the Switch on a Wall” on page 58
- “Unpacking the BRKT-J24 Wall Mount Bracket Kit” on page 61
- “Plywood Base for a Wall with Wooden Studs” on page 62
- “Installing the Switch on a Wall” on page 65
- “Installing the Switch on a Concrete Wall” on page 70

Overview of Installing the Switch on a Wall

The x540L series and SE540L series switches require BRKT-J24 wall mount brackets to be installed on a wall.

Installation Guidelines

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

- ❑ The BRKT-J24 wall mount bracket kit is optional. You must purchase one separately.
- ❑ 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, you should use a plywood base to support the switch. For more information, refer to “Plywood Base for a Wall with Wooden Studs” on page 62. A plywood base is not required for a concrete wall.
- ❑ You should not install the switch on a wall that has metal studs. Metal studs may not be strong enough to safely support the device.
- ❑ You should 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.

GE 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.

GE E105

- ❑ The switch can be installed on a wall with the front panel on the left or right and the bottom of the switch attached to the wall, as shown in Figure 21 on page 59. Do not install it with the front panel on the top or bottom.



Figure 21. Correct Orientations of the Switch on the Wall

Guidelines for Bracket Holes

To install the switch on a wall, you need the BRKT-J24 wall mount brackets. Here is a list of guidelines for bracket holes to attach your switch to the brackets and attach the brackets to the wall:

- ❑ When you use two screws per bracket to install your switch to a wall, the two screws must be diagonally on the bracket plate as shown in Figure 22 on page 59.

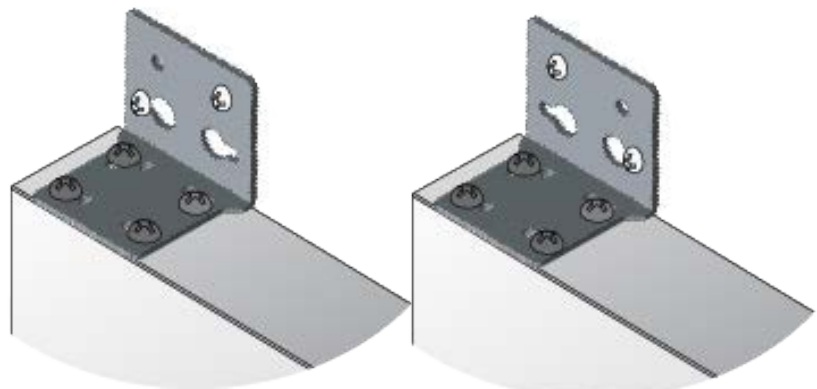


Figure 22. Two Screws Per Bracket Attached on the Wall

- For the key-hole slots on the bracket plate to a wall:
 1. With a pencil, mark the smaller holes of the key-hole slots on the wall.
 2. Install screws where you just marked on the wall. Leave them loose enough so that you can slide the bracket under the screw heads.
 3. Install the brackets on the screws by sliding the key-hole slots under the screw heads. See Figure 23.

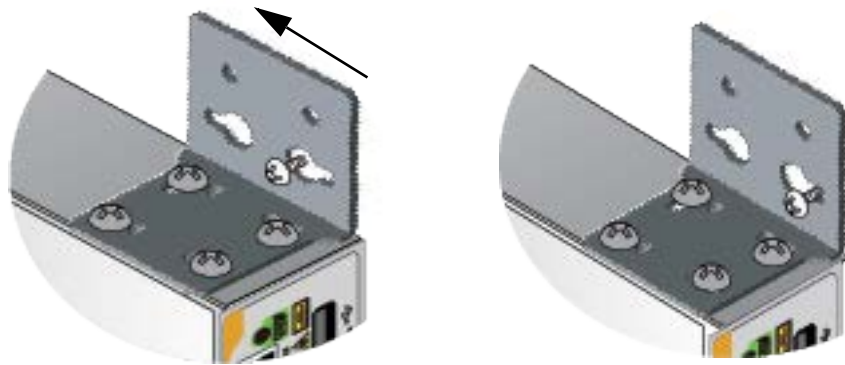


Figure 23. Sliding the Key-hole Slot under the Screw Head

Unpacking the BRKT-J24 Wall Mount Bracket Kit

To install the switch on a wall, you must have the BRKT-J24 wall mount bracket kit. Here are guidelines:

Note

The BRKT-J24 wall mount bracket kit is optional. You must purchase the kit separately.

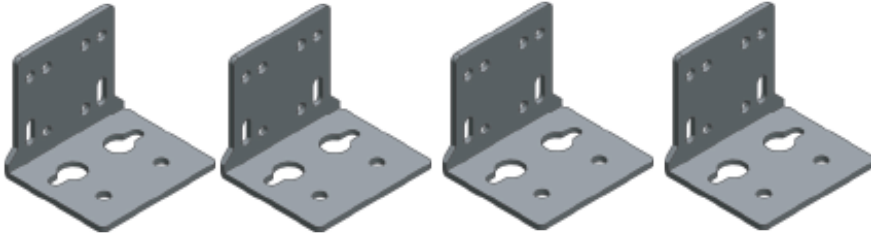

Unpacking the BRKT-J24 Bracket Kit

Unpack the BRKT-J24 brackets kit, perform the following procedure:

1. Unpack the shipping box.
2. Verify and inspect the contents.

Table 11 shows the contents of the shipping box.

Table 11. BRKT-J24 Wall Mount Bracket Kit

Item	Description
	Four BRKT-J24 wall mount brackets
	16 M4x6mm screws for the BRKT-J24 wall mount brackets

3. If any item is missing or damaged, contact your Allied Telesis sales representative for assistance.

Note

Store the packaging material in a safe location. Please use the original shipping material if you need to return the device to Allied Telesis.

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 24.

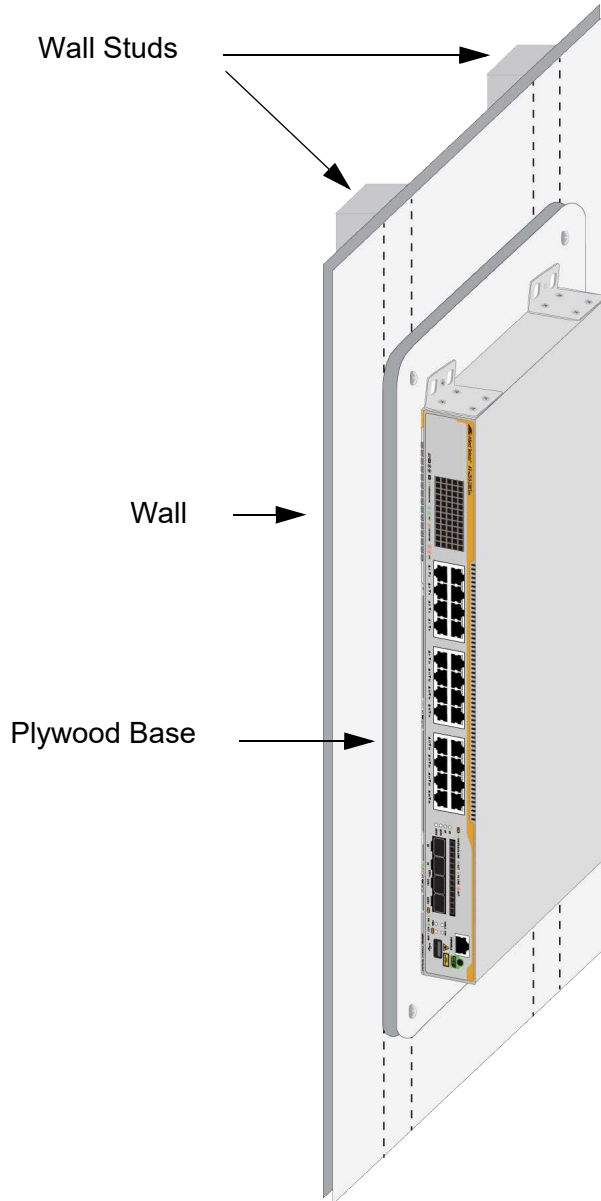


Figure 24. Switch on the Wall with a Plywood Base

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 41 centimeters (16 inches) while the distance between the left and right brackets on the switch is 37 centimeters (14-1/2 inches).

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

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

The dimensions assume the wall studs are 41 centimeters (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 25.

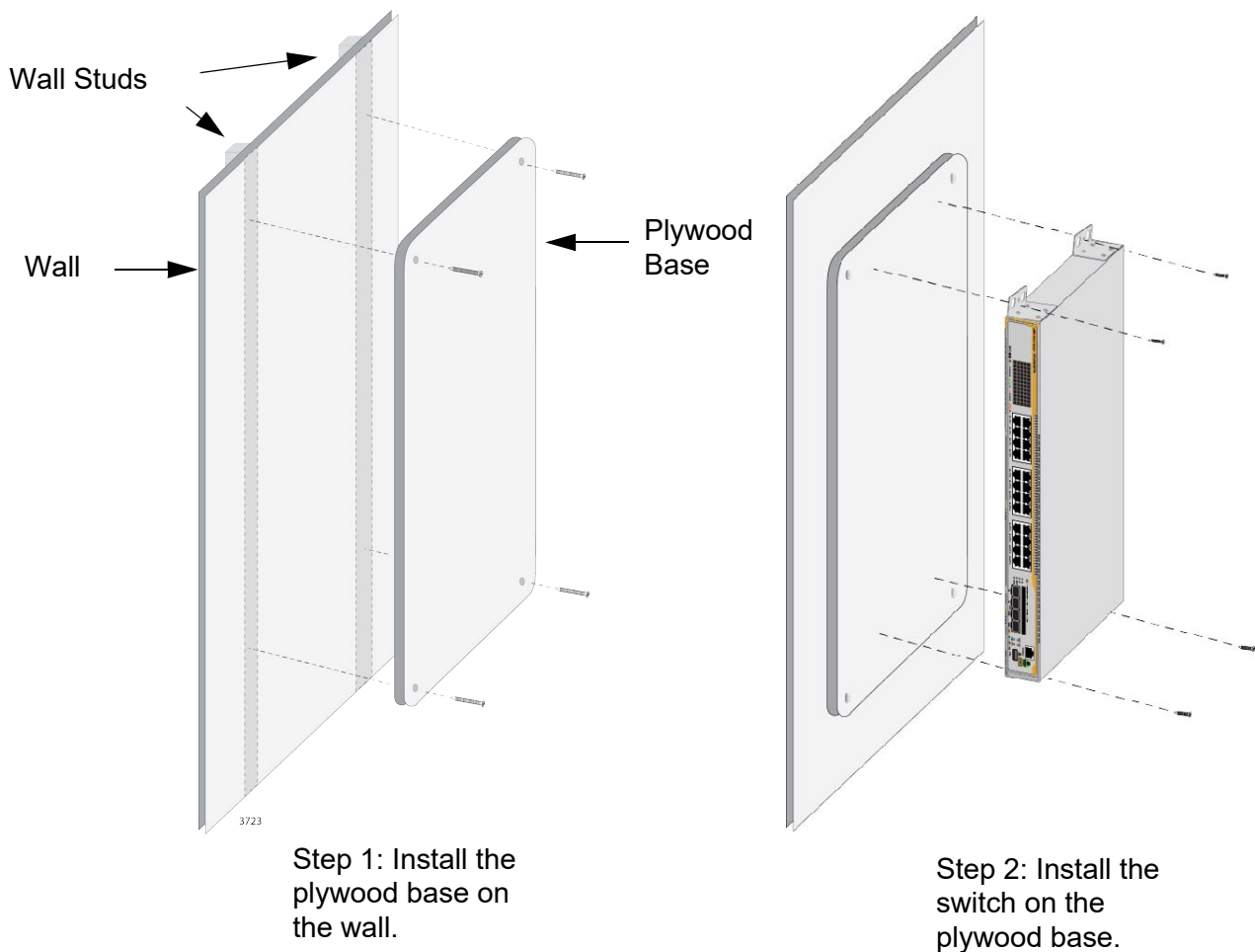


Figure 25. Steps to Installing the Switch with a Plywood Base

Tools and Material

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

- Four BRKT-J24 wall mount brackets and sixteen M3-6mm screws (included with the switch) listed in Table 9 on page 45.
- 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 62 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. *ES* 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 62.

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 44.

Installing the Switch on a Wall

If you plan to install your switch on the plywood base, go to “Plywood Base for a Wall with Wooden Studs” on page 62 before installing the switch.

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

1. See “Reviewing Safety Precautions” on page 40.
2. See “Choosing a Site for the Chassis” on page 44.
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 55.
5. Install the four BRKT-J24 brackets with the 16 screws that come with the switch to the sides of the unit.

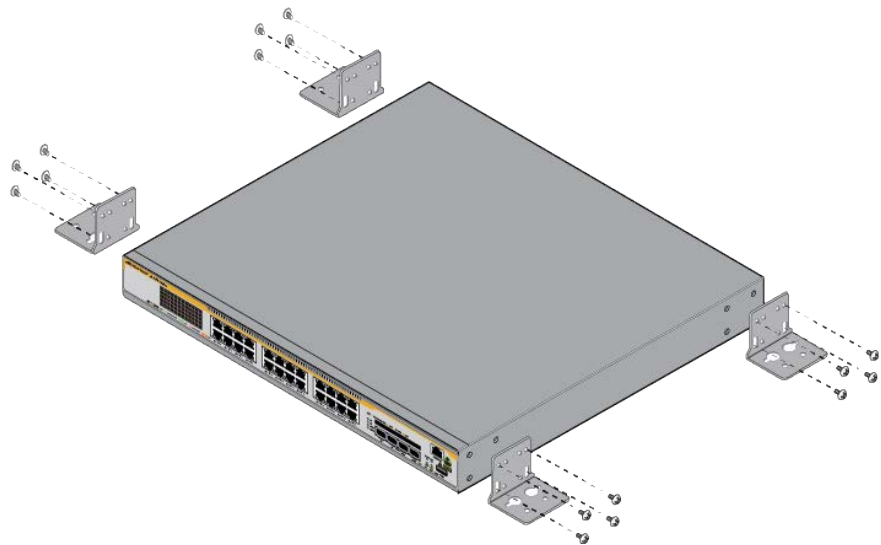


Figure 26. Installing the BRKT-J24 Brackets to the x540L-28XTm Switch

6. While another person holds the switch at the wall location, mark the holes with a pencil.

For the key-hole slots, mark the smaller holes of the slots. See Figure 27.

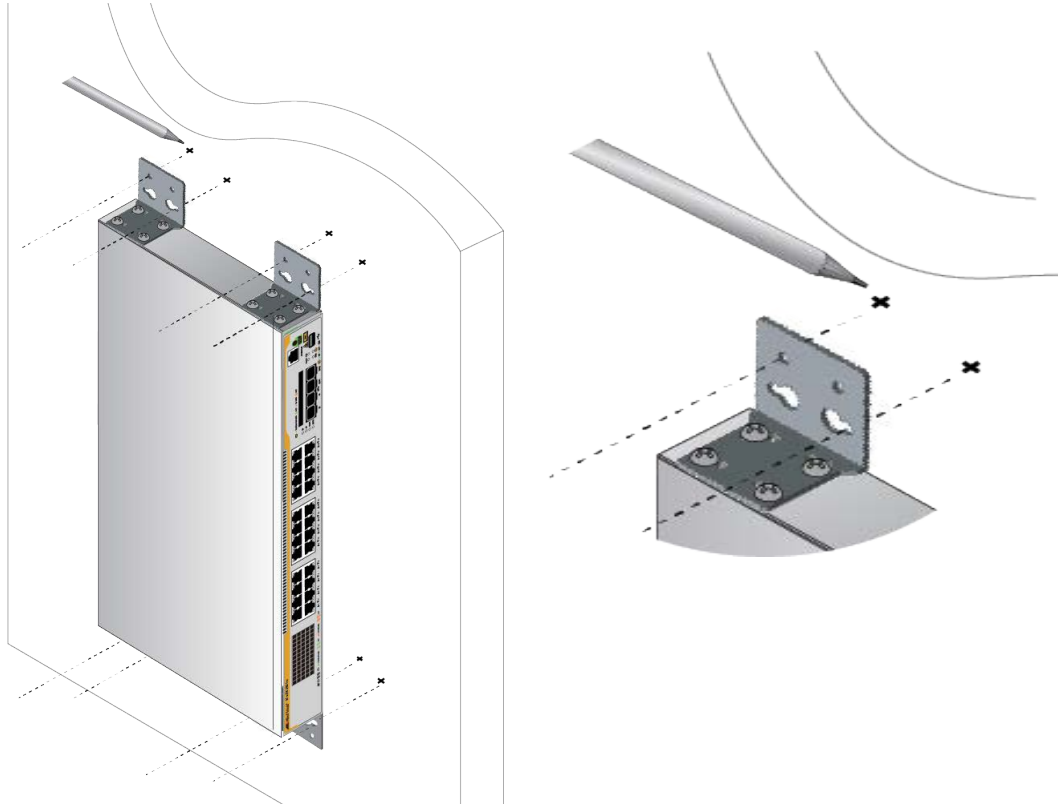


Figure 27. Marking the Holes on the Wall

7. Pre-drill the marked holes.

8. Screw four screws to the pre-drilled holes that are closer to the switch, leaving space between the screw heads and the wall. See Figure 28.

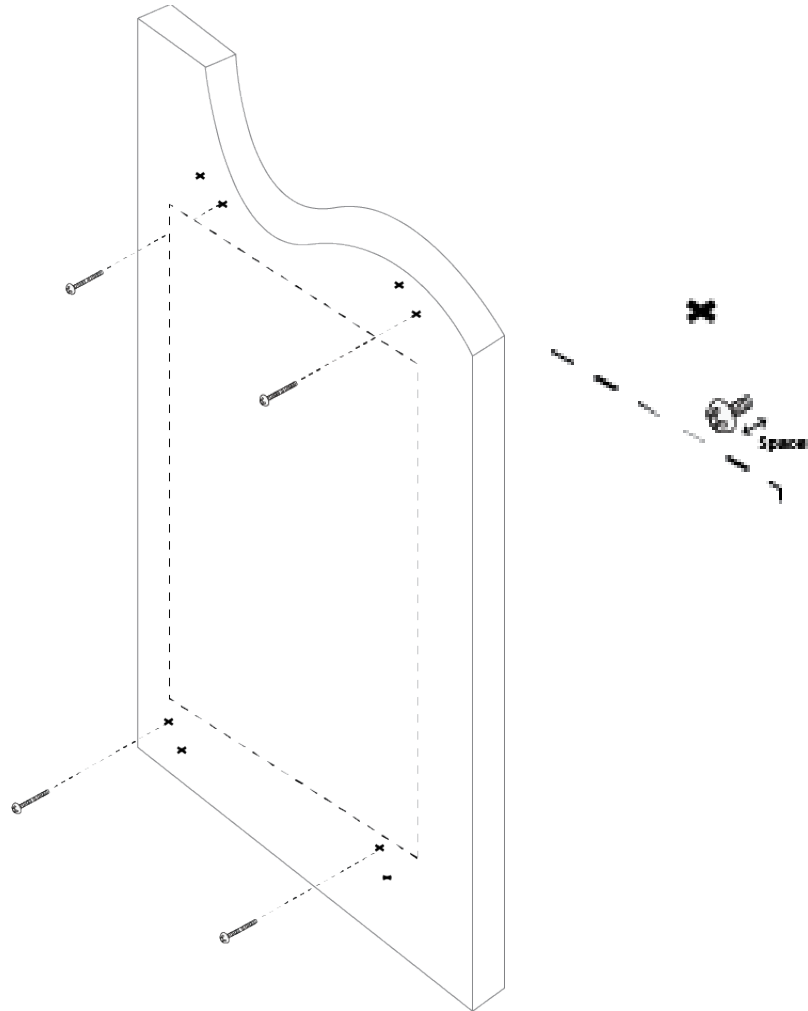


Figure 28. Screwing Four Screws on the Wall

9. Install the brackets on the screws by sliding the key-hole slots under the screw heads. See Figure 29.

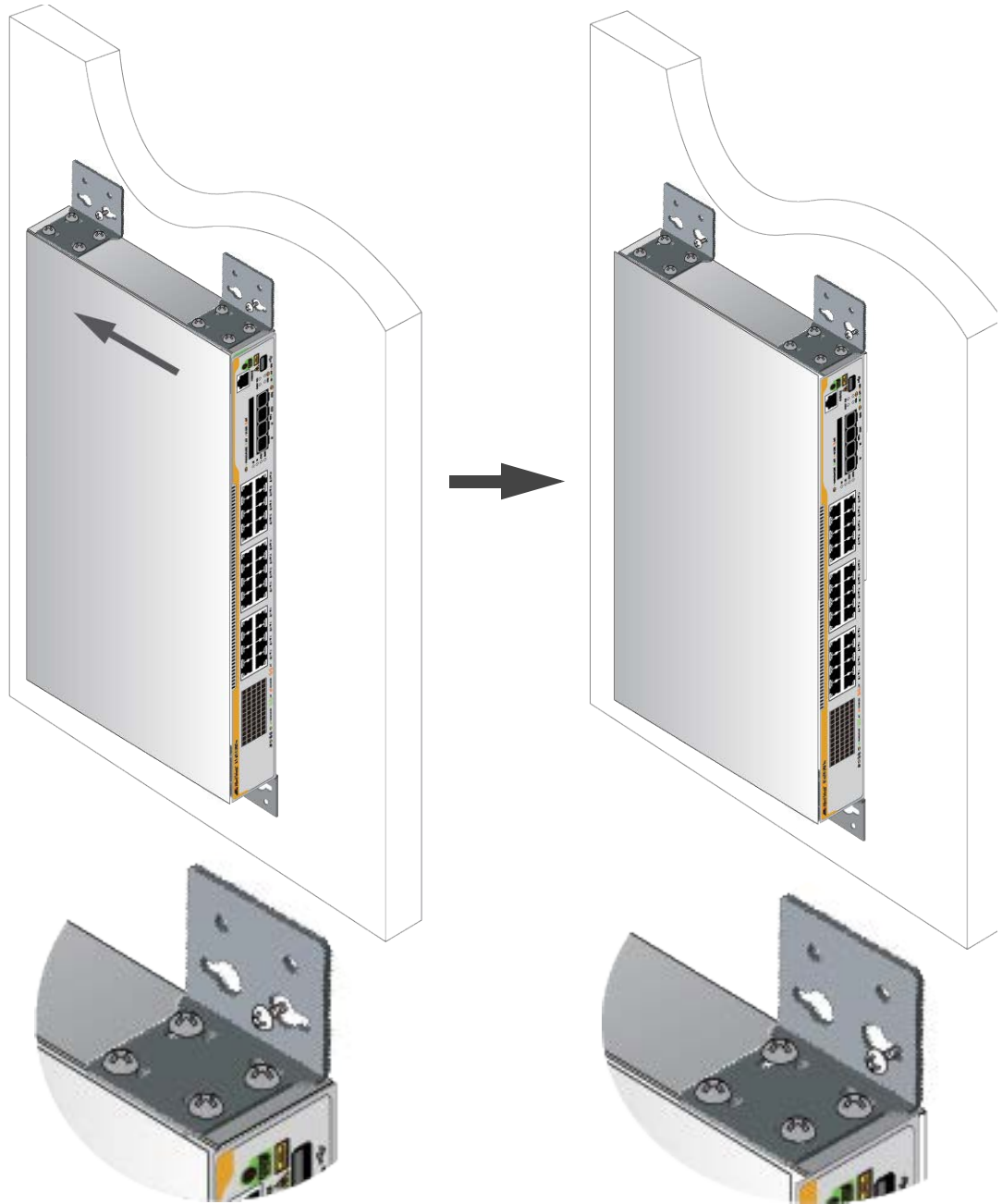


Figure 29. Hooking and Slide the Switch

10. Tighten the four screws to secure the switch to the wall.

11. Install the other four screws to the rest of the pre-drilled holes. See Figure 30.

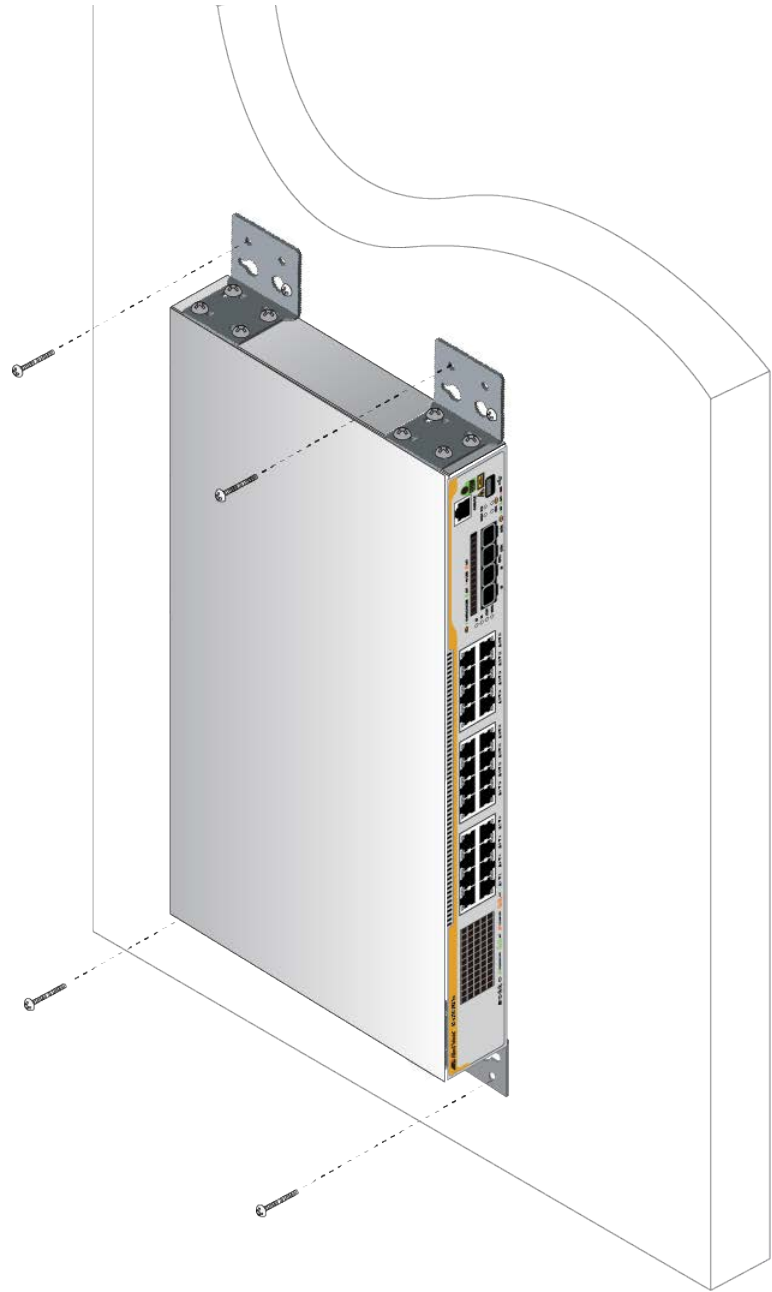


Figure 30. Screwing the Rest of the Screws

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 four brackets with sixteen screws that come with the BRKT-J24 brackets to the sides of the switch, as shown in Figure 26 on page 65 and Figure 27 on page 66.
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. See Figure 31.

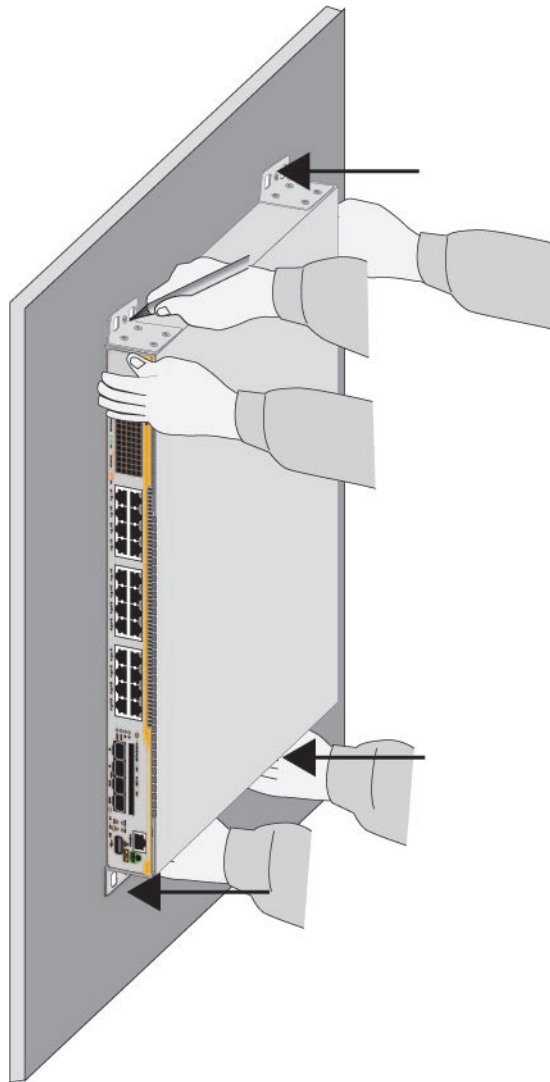


Figure 31. Marking the Locations of the Bracket Holes on a Concrete Wall

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. See Figure 32.

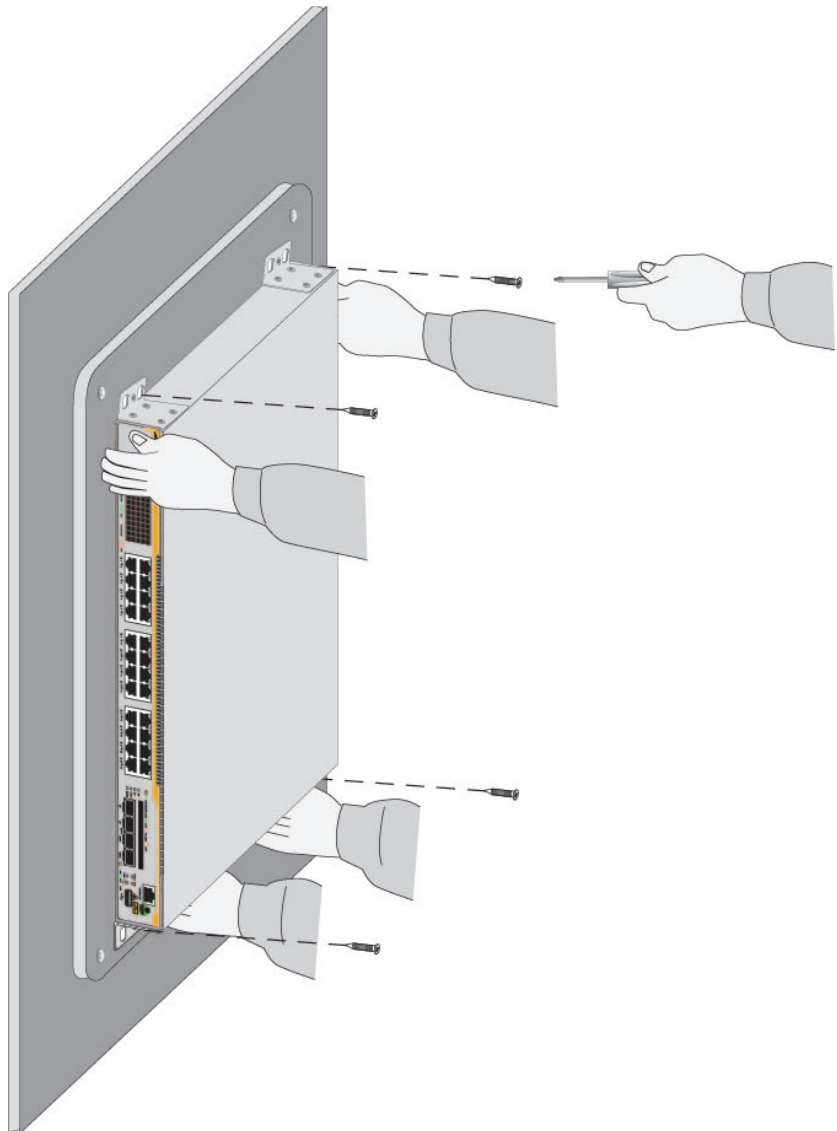


Figure 32. Installing the Switch on a Concrete Wall

Chapter 7

Configuring the Master Switch

This chapter contains the following sections:

- “Command Summary” on page 75
- “General Steps for the Master Switch” on page 78
- “Configuring the Master Switch - Part I” on page 80
- “Configuring the Master Switch - Part II” on page 83
- “Verifying the Master Switch” on page 86
- “What to Do Next” on page 88

Note

This chapter applies only to the x540L series switches.

Overview of Stack Ports

The x540L series switch has the Virtual Chassis Stacking (VCStack) feature that you can build a stack trunk. The ports marked S1 and S2 on the switch can be used for VCStack. In addition, any twisted-pair ports can be used for VCStack.

Guidelines to the Stack Ports:

Here is a list of guidelines to the stack ports:

- ❑ Any two twisted-pair ports on the x540L-28XTm switch can be stack ports.
- ❑ The SFP/SFP+ slots marked S1 and S2 can be stack ports.

See the x540L-28XTm switch in Figure 33 as an example. Port 27 is marked as S1; Port 28 is marked as S2.

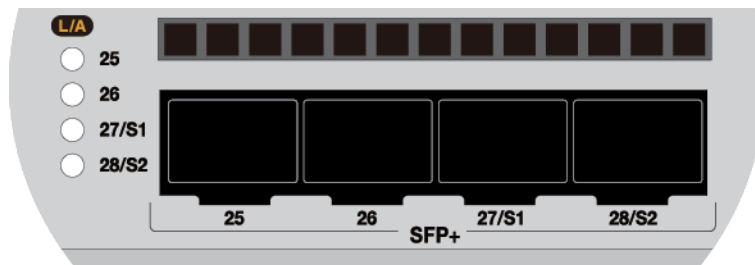


Figure 33. Ports S1 and S2

- ❑ Ports S1 and S2 can be used either as stack ports or for SFP/SFP+ transceiver.
- ❑ Ports S1 and S2 are identified as ports for VCStack; however, you must use port numbers to identify ports when you refer them on command lines. For example:

```
awplus(config)# interface port1.0.27-1.0.28
```

Command Summary

The following sections briefly describe the commands for configuring the master and member switches 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 78 to begin the configuration procedures.

PLATFORM PORTMODE INTERFACE

This command is used to configure ports S1 and S2 on the switch for the SFP/SFP+ transceiver.

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

The command format is shown here:

```
platform portmode interface ports 10g
```

The variables are defined here:

- ❑ The PORTS variable specifies the ports to be configured. The values are PORT*n*.0.27 or PORT*n*.0.28. The “*n*” variable is the switch’s ID. You can configure more than one port at a time.
- ❑ The “10g” parameter configures ports for 10Gbps.

This example configures ports 27 and 28 for 100Gbps SFP+ transceivers:

```
awplus(config)# platform portmode interface  
port1.0.27,port1.0.28 10g
```

For background information on port numbering, refer to “Designating Ports in the Command Line Interface” on page 24.

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 27 and 28 on the switch are designated as ports of the stack trunk:

```
awplus(config)# interface port1.0.27-1.0.28  
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 6 and 7:

```
awplus(config)# interface port1.0.27,port1.0.28  
awplus(config-if)# no stackport
```

As explained in “Designating Ports in the Command Line Interface” on page 24, you need to adjust the PORT parameter depending 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:

```
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 variable 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 variables 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 has to have a unique ID number assigned with this command. Here is the format.

```
stack current_switch_ID renumber new_switch_ID
```

The variables are defined here:

- ❑ `current_switch_ID` - This is the current ID number of the switch. You can specify only one ID number.
- ❑ `new_switch_ID` - This is the new ID number for the switch. You can specify only one number. The switch ID number can be 1 or 2. 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 x540l-28xtm
```

This example adds a provisioned switch with the ID 2 to the current switch:

```
awplus(config)# switch 2 provision x540l-28xtm
```

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 80.

Note

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

1. Power on the switch.
See “Powering on the Switch” on page 106.
2. Start a local management session on the switch.
See “Starting a Local Management Session” on page 109.
3. Verify the hardware with the `SHOW SYSTEM ENVIRONMENT` command in the Privilege Exec mode.
4. Display the firmware version number with the `SHOW VERSION` command.
5. Enable the VCStack feature with the `STACK ENABLE` command in the Global Configuration mode.
6. 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.
7. 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.
8. Save your changes with the `WRITE` command in the Privilege Exec mode.
9. Reboot the switch with the `REBOOT` command.

Here are the general steps to “Configuring the Master Switch - Part II” on page 83:

1. Start a new local management session.

2. Designate the types of transceivers to be used in ports S1 and S2 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. Designate the ports of the stack trunk on the master and provisioned member switches with the STACKPORT command in the port Interface mode.
4. Save your changes with the WRITE command in the Privilege Exec mode.
5. Reboot the switch with the REBOOT command.
6. 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.
- ❑ 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 36 before performing this procedure.

To configure the master switch, perform the procedure in Table 12.

Table 12. 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 78.
2	Start a local management session. Refer to “General Steps for the Master Switch” on page 78.
3	Move to the Privileged Exec mode with the <code>ENABLE</code> command. <code>awplus> enable</code>

Table 12. Configuring the Master Switch - Part I (Continued)

Step	Description and Command
4	<p>Verify that the switch hardware is operating correctly with the SHOW SYSTEM ENVIRONMENT command. The status of all components should be Ok.</p> <pre>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 . .</pre>
<p>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.</p>	
5	<p>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 36 for the master switch.</p> <pre>awplus# show version</pre>
<p>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.</p>	
6	<p>Move to the Global Configuration mode with the CONFIGURE TERMINAL command.</p> <pre>awplus# configure terminal</pre> <p>Enter configuration commands, one per line. End with CNTL/Z.</p>
7	<p>Activate VCStack on the switch with the STACK ENABLE command.</p> <pre>awplus(config)# stack enable % Automatically enabling 'stack virtual-mac' to minimize disruption 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.</pre>
8	<p>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.</p> <pre>awplus(config)# stack 1 priority 1 % warning: stacking is currently disabled.</pre>

Table 12. Configuring the Master Switch - Part I (Continued)

Step	Description and Command
Step 9 adds the member switches as provisioned switches to the master switch. You need to add one provisioned switch for each member switch to be in the stack.	
9	<p>Add the member switch as a provisioned switch to the master switch, with the SWITCH PROVISION command. Assign ID 2. The x540L-28XTm switch can have only one member switch.</p> <pre>awplus(config)# switch 2 provision x540l-28xtm</pre>
Steps 10 to 15 save your changes and reboot the switch.	
10	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
11	<p>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.</p> <pre>awplus# write Building configuration ... [OK]</pre>
12	<p>Restart the switch with the REBOOT command.</p> <pre>awplus# reboot reboot system? (y/n): awplus#</pre>
13	Type "Y" for yes.
14	Wait two minutes for the switch to initialize its management software.

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 to be used in ports S1 and S2 for the x540L series switch on the master and a provisioned member switch.
- ❑ Designate the trunk ports.

To perform Part II, perform the procedure in Table 13.

Table 13. 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 78.
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.
Steps 4 designates the types of transceivers to be used in ports 27(S1) and 28(S2) on the master switch. The ports support 10Gbps SFP+ transceivers,	
4	Designate the types of transceivers to be used in ports 27(S1) and 28(S2) on the master switch with the PLATFORM PORTMODE INTERFACE command in the Global Configuration mode. For more information, refer to “SFP/SFP+ Transceiver Slots” on page 20 and “PLATFORM PORTMODE INTERFACE” on page 75. This example configures ports 27 and 28 for 10Gbps transceivers on the master switch: awplus(config)# platform portmode interface port1.0.27-1.0.28 10g
Steps 5 to 7 designate the stack ports on the master switch with the STACKPORT command.	
5	Enter the port Interface modes of the ports that will be the stack trunk on the master switch. This example assumes the master switch will use ports 27(S1) and 28(S2) as the stack trunk. Be sure to modify the command to specify the ports for your stack trunk. awplus(config)# interface port1.0.27-1.0.28

Table 13. Configuring the Master Switch- Part II (Continued)

Step	Description and Command
6	Designate the ports as trunk ports with the STACKPORT command. <pre>awplus(config-if)# stackport</pre> % Save the config and restart the system for this change to take effect.
7	Return to the Global Configuration mode. <pre>awplus(config-if)# exit</pre>
Steps 8 designates the types of transceivers to be used in ports 27(S1) and 28(S2) on the provisioned member switches.	
8	Configure ports27(S1) and 28(S2) on the provisioned member switches for the appropriate transceivers, with the PLATFORM PORTMODE INTERFACE command. For more information, refer to “SFP/SFP+ Transceiver Slots” on page 20 and “PLATFORM PORTMODE INTERFACE” on page 75. The x540L-28XTm switch can have only one member switch. <pre>awplus(config)# platform portmode interface port2.0.27-2.0.28 10g</pre>
Steps 9 and 10 designate the stack ports on the provisioned switches with the STACKPORT command.	
9	Enter the port Interface modes of the ports that will be the stack trunk on the provisioned member switches. This example assumes the stack will have three member switches and the stack ports are 33 and 37. Be sure to modify the command to specify the ports for your stack trunk. <pre>awplus(config)# interface port2.0.27-2.0.28</pre>
10	Designate the ports as trunk ports with the STACKPORT command. <pre>awplus(config-if)# stackport</pre> % Save the config and restart the system for this change to take effect.
Steps 11 to 17 save your changes and reboot the switch.	
11	Return to the Global Configuration mode. <pre>awplus(config-if)# exit</pre>
12	Return to the Privileged Exec mode. <pre>awplus(config)# exit</pre>

Table 13. Configuring the Master Switch- Part II (Continued)

Step	Description and Command
13	Enter the WRITE command to save your change. <pre>awplus# write Building configuration ... [OK]</pre>
14	Restart the switch with the REBOOT command. <pre>awplus# reboot reboot system? (y/n): awplus#</pre>
15	Type "Y" for yes.
16	Wait two minutes for the switch to initialize its management software.
17	Go to "Verifying the Master Switch" on page 86.

Table 14. Verifying the Master Switch (Continued)

Step	Description and Command
5	<p>Enter the SHOW RUNNING-CONFIG command and verify the following:</p> <ul style="list-style-type: none"> - Check the running configuration for SWITCH PROVISION commands. There should be one command for each switch and the commands should designate x540L-28XTm switches. Here are examples for a stack of two switches: <pre>switch 1 provision x5401-28 switch 2 provision x5401-28</pre> <ul style="list-style-type: none"> - 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: <pre>. interface port1.0.27-1.0.28 stackport . interface port2.0.27-2.0.28 stackport .</pre>
6	Go to “What to Do Next” on page 88.

What to Do Next

After configuring the master switch, do the following:

1. Power off the switch by performing the following:

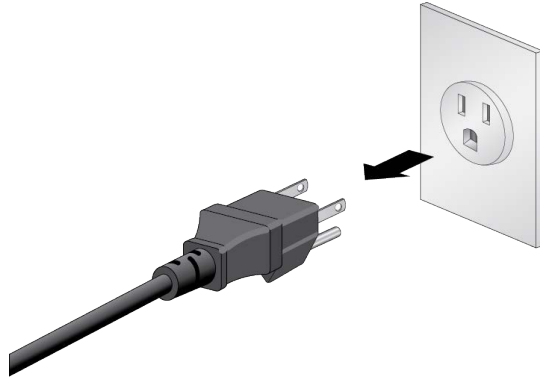


Figure 34. Powering Off the AC Power Supply

2. Configure the member switches, as explained in Chapter 8, “Configuring Member Switches” on page 89.
3. After configuring the master and member switches, verify that all the units are powered off.
4. Cable the ports of the stack trunk. Refer to Chapter 2, “Virtual Chassis Stacking” on page 27.
5. Power on the switches of the stack. Refer to “Powering on the Stack” on page 102.
6. Verify that the switches formed the stack. Refer to “Verifying the Stack” on page 103.
7. Cable the networking ports. Refer to Chapter 11, “Cabling the Networking Ports” on page 113.

Chapter 8

Configuring Member Switches

This chapter contains the following sections:

- “General Steps for Member Switches” on page 90
- “Configuring a Member Switch - Part I” on page 92
- “Configuring a Member Switch - Part II” on page 95
- “Verifying a Member Switch” on page 97
- “What to Do Next” on page 99

Note

This chapter applies only to the x540L series switch.

General Steps for Member Switches

The procedure for configuring a member switch is divided into two parts. Here are the general steps to “Configuring a Member Switch - Part I” on page 92:

Note

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

1. Start a local management session on a member switch.
2. Verify the hardware with the `SHOW SYSTEM ENVIRONMENT` command in the Privilege Exec mode.
3. Enable the VCStack feature with the `STACK ENABLE` command in the Global Configuration mode.
4. Assign the member switch its ID number 2, with the `STACK RENUMBER` command in the Global Configuration mode.
5. If the stack has three or more switches, add the other member switches as provisioned switches, with the `SWITCH PROVISION` command.
6. Save your changes with the `WRITE` command in the Privilege Exec mode.
7. Restart the switch with the `REBOOT` command.

Here are the general steps to “Configuring a Member Switch - Part II” on page 95:

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 to be used in slots S1 and S2 for the x540L series 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.
- 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 36 before performing the procedures.

To configure a member switch, perform the procedure in Table 15.

Table 15. 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 78.																		
2	Start a local management session. Refer to “General Steps for the Master Switch” on page 78.																		
3	Enter the <code>ENABLE</code> command to move from the User Exec mode to the Privileged Exec mode. awplus> enable																		
4	Verify that the switch hardware is operating correctly, with the <code>SHOW SYSTEM ENVIRONMENT</code> 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) <table border="1" data-bbox="316 1732 1380 1827"> <thead> <tr> <th>ID</th> <th>Sensor (Units)</th> <th>Reading</th> <th>Low Limit</th> <th>High Limit</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Device Present</td> <td>Yes</td> <td>-</td> <td>-</td> <td>ok</td> </tr> <tr> <td>2</td> <td>Fan/Temperature Fault</td> <td>Yes</td> <td>-</td> <td>-</td> <td>ok</td> </tr> </tbody> </table>	ID	Sensor (Units)	Reading	Low Limit	High Limit	Status	1	Device Present	Yes	-	-	ok	2	Fan/Temperature Fault	Yes	-	-	ok
ID	Sensor (Units)	Reading	Low Limit	High Limit	Status														
1	Device Present	Yes	-	-	ok														
2	Fan/Temperature Fault	Yes	-	-	ok														

Table 15. Configuring a Member Switch - Part I (Continued)

Step	Description and Command
5	<p>Display the version number of the AlliedWare Plus operating software on the switch by entering the <code>SHOW VERSION</code> command. Write down the version number in the worksheet in “Stacking Worksheet” on page 36. After viewing the version numbers on all the switches, you will compare them to confirm they all have the same version. Switches with different versions will have to be updated.</p> <pre>awplus# show version</pre>
6	<p>Move to the Global Configuration mode with the <code>CONFIGURE TERMINAL</code> command.</p> <pre>awplus# configure terminal</pre> <p>Enter configuration commands, one per line. End with CNTL/Z.</p>
7	<p>Activate VCStack on the switch with the <code>STACK ENABLE</code> command.</p> <pre>awplus(config)# stack enable</pre> <p>% 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.</p>
8	<p>Assign a ID number 2 to the member switch with the <code>STACK RENUMBER</code> command.</p> <pre>awplus(config)# stack 1 renumber 2</pre> <p>% 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.</p>
9	<p>Add the member switch as a provisioned switch to the member switch, with the <code>SWITCH PROVISION</code> command.</p> <pre>awplus(config)# switch 2 provision x5401-28</pre>
10	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
11	<p>Enter the <code>WRITE</code> command to save your change. If this is the first management session, the switch adds the configuration file <code>DEFAULT.CFG</code> to flash memory, for storing your configuration changes.</p> <pre>awplus# write Building configuration ... [OK]</pre>

Table 15. Configuring a Member Switch - Part I (Continued)

Step	Description and Command
12	Restart the switch with the <code>REBOOT</code> command. <pre>awplus# reboot reboot system? (y/n): awplus#</pre>
13	Type “Y” for yes.
14	Wait two minutes for the switch to initialize its management software.
15	Check the switch ID. The switch ID number can be found using the <code>SHOW STACK</code> command. Do one of the following: <ul style="list-style-type: none"> - If the switch ID that is displayed with the <code>SHOW STACK</code> command is the ID number you assigned to the switch, VCStack is now enabled on the switch. Go to “Configuring a Member Switch - Part II” on page 95. - If the switch ID that is displayed with the <code>SHOW STACK</code> command is the wrong ID number for the switch, repeat this procedure. Be sure to correctly enter the <code>STACK RENUMBER</code> command and to save your changes with the <code>WRITE</code> command. - If the switch ID that is displayed with the <code>SHOW STACK</code> command is displaying “0,” VCStack is still disabled. Repeat this procedure. Be sure to perform the <code>STACK ENABLE</code> command and to issue the <code>WRITE</code> command.

Configuring a Member Switch - Part II

This section contains the second part to configuring member switches. 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 to be used in slots S1 and S2 for the x540L series switch on the master and member switch with the `PLATFORM PORTMODE INTERFACE` command.
- ❑ Designate the ports of the stack trunk with the `STACKPORT` command. Refer to “Stack Trunks” on page 30.

To configure a member switch, perform the procedure in Table 16.

Table 16. 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 78.
2	Enter the <code>ENABLE</code> command to move from the User Exec mode to the Privileged Exec mode. awplus> enable
3	Move to the Global Configuration mode with the <code>CONFIGURE TERMINAL</code> 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 <code>STACK PRIORITY</code> command. This example sets priority to 2 on a member switch with the ID 2: awplus(config)# stack 2 priority 2
5	Specify the types of transceivers to be used in slots S1 and S2 the x540L series switch on the master (port1) and member switch with the <code>PLATFORM PORTMODE INTERFACE</code> command. For more information, see “PLATFORM PORTMODE INTERFACE” on page 75. This example configures slots S1 and S2 for 10Gbps transceivers on a stack of two switches. awplus(config)# platform portmode interface port1.0.27-1.0.28 10g awplus(config)# platform portmode interface port2.0.27-2.0.28 10g

Table 16. Configuring a Member Switch - Part II (Continued)

Step	Description and Command
6	<p>Enter the port Interface modes of the ports to be the stack trunk on the master and member switches with the <code>INTERFACE</code> command. The example command here assumes a stack of four switches and that the switches will be using ports S1 and S2 for the stack trunk. Be sure to modify the command for you selected trunk ports.</p> <pre>awplus(config)# interface port1.0.27-1.0.28,port2.0.27-2.0.28</pre>
7	<p>Designate the ports as the stack trunk with the <code>STACKPORT</code> command.</p> <pre>awplus(config-if)# stackport</pre> <p>% Save the config and restart the system for this change to take effect.</p>
8	<p>Return to the Global Configuration mode.</p> <pre>awplus(config-if)# exit</pre>
9	<p>Return to the Privileged Exec mode.</p> <pre>awplus(config)# exit</pre>
10	<p>Save your changes with the <code>WRITE</code> command.</p> <pre>awplus# write Building configuration ... [OK]</pre>
11	<p>Restart the switch.</p> <pre>awplus# reboot reboot system? (y/n):</pre>
12	<p>Type “Y” for yes.</p>
13	<p>Wait two minutes for the switch to initialize its management software.</p>
14	<p>Go to “Verifying a Member Switch,” next.</p>

Verifying a Member Switch

Perform the steps in Table 17 to confirm the configuration of a member switch.

Table 17. Verifying a Member Switch

Step	Description and Command
1	Start a local management session. Refer to “General Steps for the Master Switch” on page 78.
2	Move to the Privileged Exec mode. awplus> enable
3	<p>Enter the <code>SHOW STACK</code> command. The example here is for a member switch with the ID 2, that will be in a stack of four switches:</p> <pre>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)</pre>
4	<p>Verify the display for the following:</p> <ul style="list-style-type: none"> - The table should have from two to eight entries, depending on the number of switches to be in the stack. - Switch ID 1 will be for the master switch. - The other entries are for the member switches. There should be one entry for each member switch that will be in the stack. To add more entries, perform the <code>SWITCH PROVISION</code> command in “Configuring a Member Switch - Part I” on page 92. - 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. If it does not, perform the <code>STACK PRIORITY</code> command in “Configuring a Member Switch - Part II” on page 95. - 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 <code>STACK ENABLE</code> in “Configuring a Member Switch - Part I” on page 92. Be sure to save your changes with the <code>WRITE</code> command.

Table 17. Verifying a Member Switch (Continued)

Step	Description and Command
5	<p>Enter the <code>SHOW RUNNING-CONFIG</code> command and verify the following:</p> <ul style="list-style-type: none"> - Check the running configuration for <code>SWITCH PROVISION</code> commands. There should be one command for each switch and the commands should designate x540L-28XTm switches. Here are examples for a stack of four switches: <pre>switch 1 provision x5401-28 switch 2 provision x5401-28</pre> <ul style="list-style-type: none"> - Check the running configuration for <code>STACKPORT</code> commands. There should be one command for each switch and the commands should designate the trunk ports. In this example, ports 27 and 28 are designated as the trunk ports: <pre>. interface port1.0.27-1.0.28 stackport . interface port2.0.27-2.0.28 stackport .</pre>
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 111.
2. If you have not already configured the master switch, perform “Configuring the Master Switch - Part I” on page 80.
3. After configuring the master and member switches, verify that all the units are powered off.
4. Cable the stacking ports on the master and member switches. See Chapter 2, “Virtual Chassis Stacking” on page 27.
5. Power on the switches of the stack, as explained in “Powering on the Stack” on page 102.
6. Verify that the switches have successfully formed the stack by performing “Verifying the Stack” on page 103.
7. Cable the networking ports, as explained in Chapter 11, “Cabling the Networking Ports” on page 113.

Chapter 9

Powering On and Verifying the Stack

This chapter contains the following sections:

- “Powering on the Stack” on page 102
- “Verifying the Stack” on page 103

Note

This chapter applies only to the x540L-28XTm switch.

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 2, “Virtual Chassis Stacking” on page 27.
3. Power on all the switches at the same time.

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

See “Power Specifications” on page 131 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 103.

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 “General Steps for the Master Switch” on page 78.
2. From the User Exec mode, enter the `SHOW STACK` command:

```
awplus> show stack
```

An example of the command for a stack of four switches is shown in Figure 35.

```
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
Operational Status      Normal operations
Stack MAC address       0015:774f:ed30
```

Figure 35. 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 123.
 - 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 123.
3. Go to Chapter 11, “Cabling the Networking Ports” on page 113, to complete the installation.

Chapter 10

Powering on and Starting the Switch

This chapter contains the following sections:

- “Powering on the Switch” on page 106
- “Starting a Local Management Session” on page 109
- “Powering off the Switch” on page 111

Powering on the Switch

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 131.



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 the power cord retaining clip on the AC power connector on the rear panel of the switch, as shown in Figure 36.

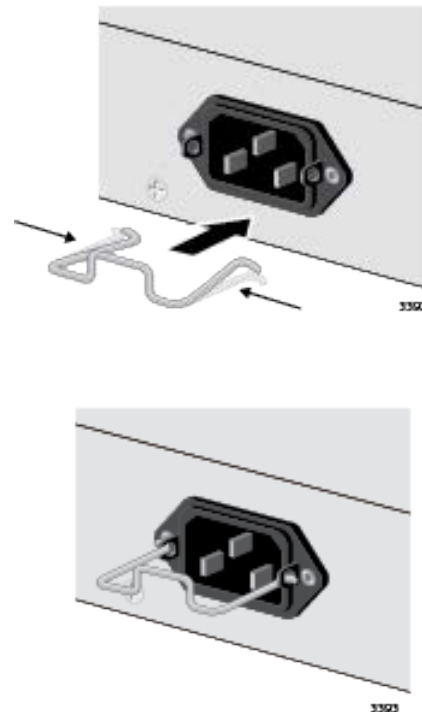


Figure 36. Installing the Power Cord Retaining Clip

2. Connect the AC power cord to the AC power connector on the rear panel. Refer to Figure 37.

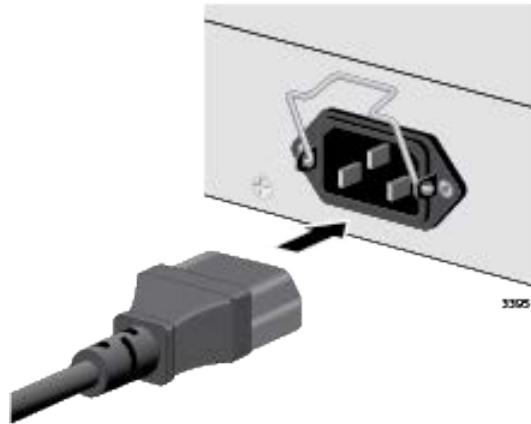


Figure 37. Connecting the AC Power Cord

3. Lower the power cord retaining clip to secure the cord to the switch. Refer to Figure 38.

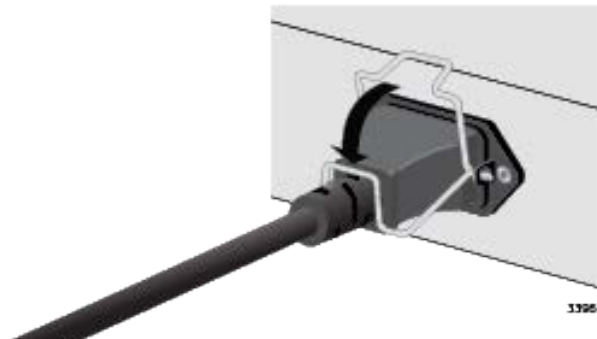


Figure 38. Lowering the Power Cord Retaining Clip

4. Connect the power cord to an appropriate AC power source. Refer to Figure 39 on page 108.

Note

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

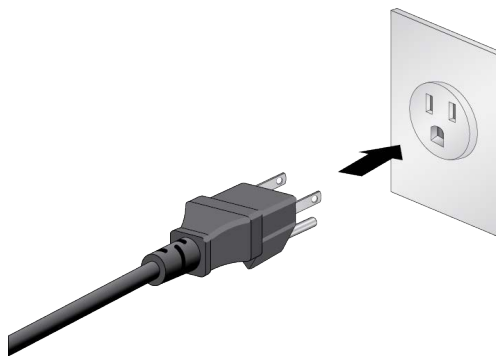


Figure 39. Connecting the Power Cord to an AC Power Source

5. Go to “Starting a Local Management Session” on page 109.

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 over your network through the NET MGMT port. 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, refer to the *Software Reference for x540L Switches, AlliedWare Plus Operating System*.

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 40.



Figure 40. 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. They are “manager” and “friend” (without the quotes), respectively.

Note

User names and passwords are case sensitive.

The local management session starts when the User Exec mode prompt, shown in Figure 41. is displayed.


A rounded rectangular box containing the text 'awp1us>'.

Figure 41. User Exec Mode Prompt

Note

The User Exec mode is the first level in the command mode interface. For complete information on the modes and commands, refer to the *Software Reference for x540L Series Switches, AlliedWare Plus Operating System* from www.alliedtelesis.com.

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 73.
 - If you have already configured the master switch, go to Chapter 8, “Configuring Member Switches” on page 89.

Powering off the Switch

To power off the switch, perform the following procedure:

1. Unplug the power cord.

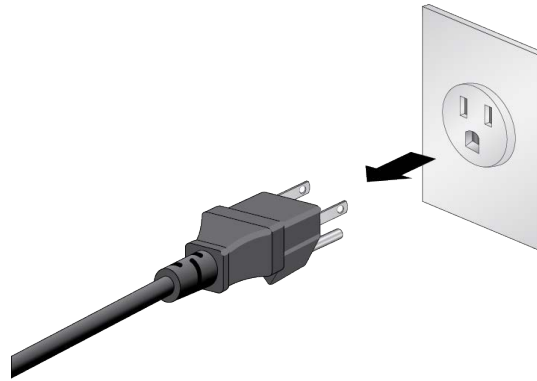


Figure 42. Powering Off the AC Power Supply

Chapter 11

Cabling the Networking Ports

This chapter contains the following procedures:

- ❑ “Cabling Twisted Pair Ports” on page 114
- ❑ “Installing SFP and SFP+ Transceivers” on page 116
- ❑ “Installing SP10TW Direct Connect Cables” on page 120

Cabling Twisted Pair Ports

Note

This section is applied only to the x540L-28XTm and SE540L-28XTm switches.

Here are the guidelines to cabling the twisted pair ports:

- ❑ The minimum cable requirements are as follows:
 - 100M: Standard TIA/EIA 568-compliant Category 5, 100 ohm unshielded cabling, complying with IEEE 802.3u 100Base-TX specifications
 - 1/2.5/5G: Standard TIA/EIA 568-A-compliant Category 5 or TIA/EIA 568-B-compliant Enhanced Category 5 (Cat 5e) unshielded cabling
 - 10Gbps: Standard TIA/EIA 568-C-compliant Category 6a unshielded cabling
- ❑ The connectors on the cables should fit snugly into the ports, and the tabs should lock the connectors into place.
- ❑ The default setting for the wiring configurations of the ports is auto-MDI/MDI-X. The default setting is appropriate for switch ports that are connected to 100Base-TX network devices that also support auto-MDI/MDI-X.
- ❑ The default auto-MDI/MDI-X setting is not appropriate for switch ports that are connected to 100Base-TX network devices that do not support auto-MDI/MDI-X and have a fixed wiring configuration. For switch ports connected to those types of network devices, you should disable auto-MDI/MDI-X and set the wiring configurations manually.
- ❑ The appropriate MDI/MDI-X setting for a switch port connected to a 100Base-TX network device with a fixed wiring configuration depends on the setting of the network device and whether the switch and network device are connected with straight-through or crossover cable.

If you are using straight-through twisted pair cable, the wiring configurations of a port on the switch and a port on a network device must be opposite each other, such that one port uses MDI and the other MDI-X. For example, if a network device has a fixed wiring configuration of MDI, you must disable auto-MDI/MDI-X on the corresponding switch port and manually set it to MDI-X. If you are using crossover twisted pair cable, the wiring configurations of a port on the switch and a port on a network device must be the same.

- ❑ The default speed setting for the wiring configurations of the ports is Auto-Negotiation. This setting is appropriate for ports connected to network devices that also support Auto-Negotiation.
- ❑ The ports must be set to the default setting of Auto-Negotiation to operate at 1G and higher speeds.
- ❑ The twisted pair ports operate at full-duplex mode when operating at 100M/1G.

Installing SFP and SFP+ Transceivers

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

Guidelines for Installing SFP or SFP+ Transceiver

Here is a list of guidelines for installing SFP or SFP+ transceiver:

- ❑ The ports for SFP/SFP+ transceivers are indicated in Table 18.

Table 18. Ports for SFP/SFP+ Transceivers

	Port for Transceivers
x540L-28XS	Ports 1 to 28
SE540L-28XS	
x540L-28XTm	Ports 25 to 28
SE540L-28XTm	

- ❑ The ports for SFP/SFP+ support 1G SFP and 10G transceivers. They do not support 100M SFP transceivers.
- ❑ SFP and SFP+ transceivers are hot-swappable. You can install them while the switch is powered on.

Note

For a list of supported transceivers, refer to the product data sheet on the Allied Telesis web site.

- ❑ The operational specifications and fiber optic cable requirements of the transceivers are provided in the documents included with the devices.
- ❑ Install a transceiver before connecting the fiber optic cable.
- ❑ 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 can lead to premature failure.



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*

Installing SFP and SFP+ Transceivers

The illustrations in the procedure show a transceiver being installed in port 25 of the x540L-28XTm switch. The procedure is the same for all SFP and SFP+ ports. The transceiver in the illustrations has a duplex LC connector. The connector on your transceivers may be different.

To install transceivers, perform the following procedure:

1. If the transceiver port has a dust plug, remove it. Refer to Figure 43.

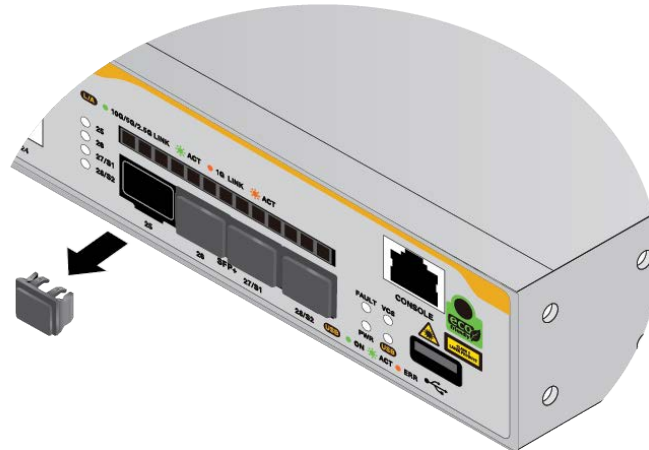


Figure 43. Removing the Dust Plug from an SFP+ Port

2. Remove the transceiver from its shipping container and store the packaging material in a safe location.
3. Position the transceiver with the Allied Telesis label facing up.
4. Slide the transceiver into the port until it clicks into place, as shown in Figure 44 on page 118.

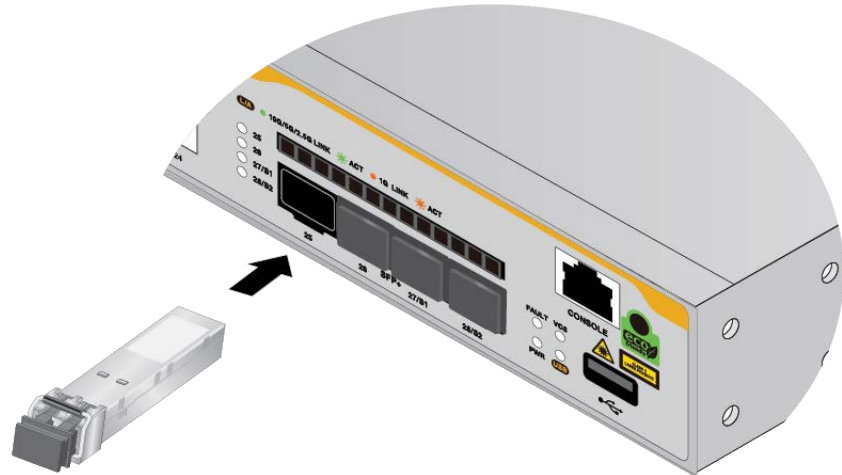


Figure 44. Installing SFP+ Transceivers

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 4 to install the remaining transceivers in the switch.

5. Remove the dust cover from the transceiver. Refer to Figure 45.



Figure 45. Removing the Dust Cover from an SFP or SFP+ Transceiver

6. Verify the position of the handle on the transceiver. The transceiver handle should be in the upright position, as shown in Figure 46 on page 119.



Figure 46. Positioning the SFP or SFP+ Handle in the Upright Position

7. Connect the fiber optic cable to the transceiver, as shown in Figure 47 on page 119. The connector on the cable should fit snugly into the port, and the tab should lock the connector into place.

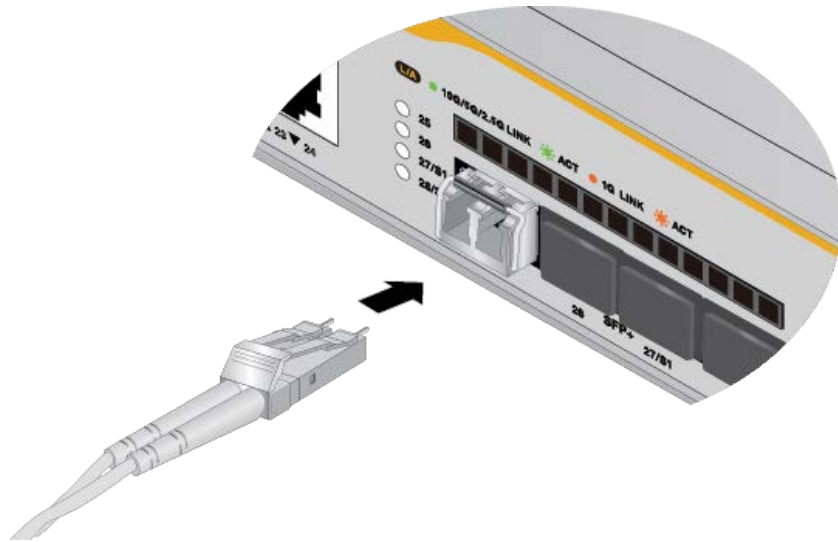


Figure 47. Connecting a Fiber Optic Cable to an SFP or SFP+ Transceiver

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

Installing SP10TW Direct Connect Cables

The SFP/SFP+ transceiver ports support SP10TW direct connect twinax cables:

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

Note

The switch does not support the 7-meter SP10TW7 cable.

To install SP10TW direct connect cables, perform the following procedure:

1. If the SFP+ port has a dust cover, remove it. Refer to Figure 45 on page 118.
2. Remove the SP10TW direct connect cable from its shipping container and store the packaging material in a safe location.
3. If there is a dust cap, remove the dust cap from a connector on the cable.
4. Slide the connector into the slot. The release tab on the connector must be on the top. Refer to Figure 48.

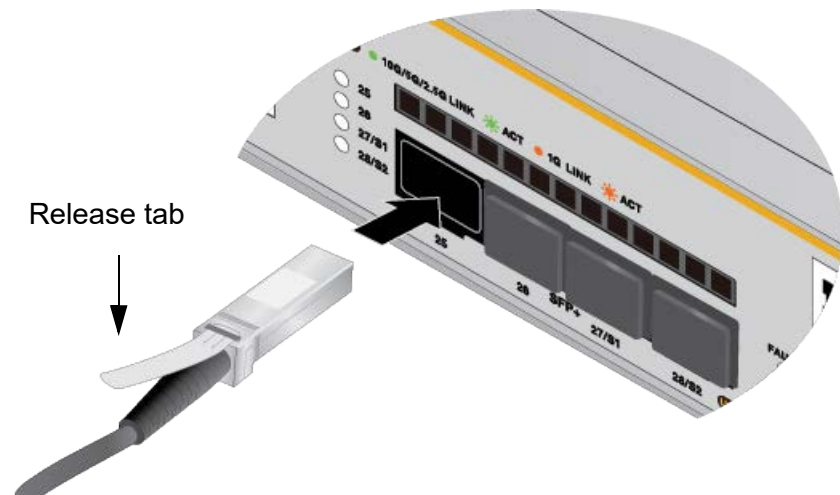


Figure 48. Installing SP10TW Cables

5. Repeat this procedure to install the other end of the cable into a port on another network device.

Note

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

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.
- Verify that the DC power wires are securely connected to the screws on the front panel and to the DC power source unit.
- 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 131.
- Try replacing the power supply.

Note

Power supplies are hot swappable. If the chassis has two power supplies and one fails, you can replace the failed unit without having to power off the operational power supply.

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 1Gbps or 10Gbps fiber optic transceiver in SFP/SFP+ ports on the switch is unable to establish a link to a network device.

Solutions: Try the following:

- ❑ Check that the transceiver 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 on the transceiver 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 will 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: 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 Trunks” on page 30 to verify that the trunk complies with all rules and restrictions.
- ❑ If the trunk is using fiber optic transceivers, verify that they are fully inserted into the ports.
- ❑ Verify that the transceivers are from Allied Telesis.
- ❑ Verify that the fiber optic cables are securely connected to the ports on the transceivers.
- ❑ 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:

```
interface port1.0.1-1.0.2 stackport
```
- ❑ If necessary, repeat the `STACKPORT` command. For information, refer to “STACKPORT” on page 75. Afterwards, save your changes and reboot the switch.

Problem 5: 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 6: 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 7: 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 will shut 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" on page 128
- "Environmental Specifications" on page 130
- "Power Specifications" on page 131
- "RJ-45 Twisted Pair Port Pinouts" on page 132
- "RJ-45 Style Serial Console Port Pinouts" on page 134

Physical Specifications

Dimensions (H x W x D)

Table 19 lists the dimensions of the switches.

Table 19. Product Dimensions

x540L-28XS	4.4 cm x 44.0 cm x 29 cm (1.7 in. x 17.3 in. x 11.4 in.)
SE540L-28XS	
x540L-28XTm	
SE540L-28XTm	

Height, Width and Depth of x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm

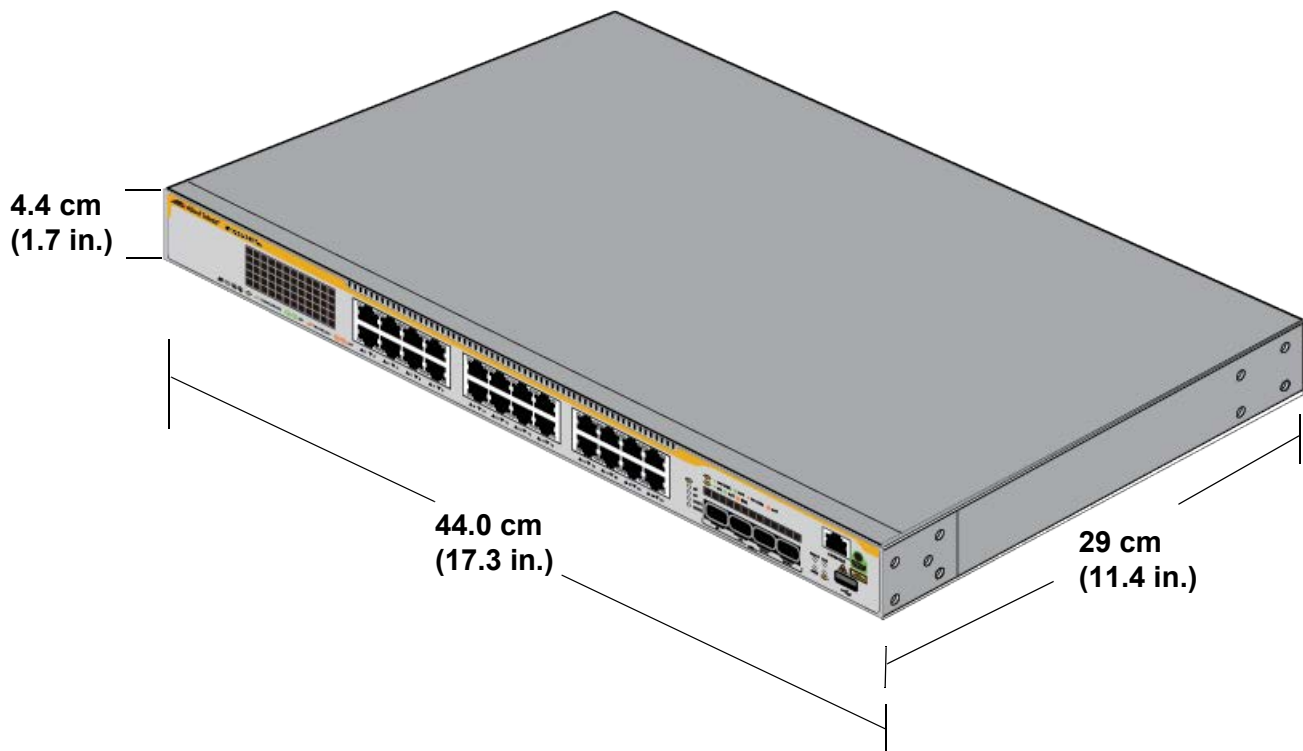


Figure 49. x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm Switches (H x W x D)

The locations of the bracket holes for the x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm switches are shown in Figure 50.

Depth (x540L-28XTm and SE540L-28XTm)

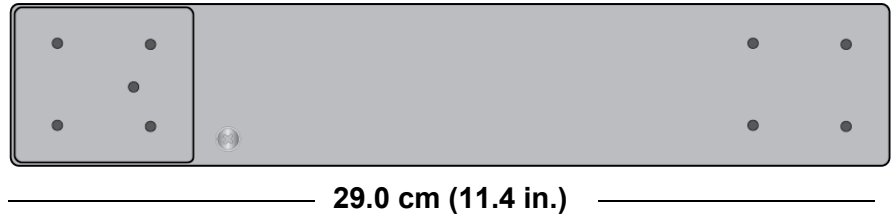


Figure 50. Bracket Holes of x540L-28XS, SE540L-28XS, x540L-28XTm, and SE540L-28XTm Switches

Weights

Table 20. Product Weights

x540L-28XS switch	3.8kg (8.4lb)
SE540L-28XS switch	3.8kg (8.4lb)
x540L-28XTm switch	4.0kg (8.8lb)
SE540L-28XTm switch	4.0kg (8.8lb)

Ventilation

Table 21. Ventilation Requirements

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

Environmental Specifications

Table 22 lists the environmental specifications of the switches.

Table 22. 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

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

Maximum Power Consumptions

Table 23. Maximum Power Consumption

x540L-28XS	86W
SE540L-28XS	86W
x540L-28XTm	160W
SE540L-28XTm	160W

The maximum power consumptions for the switch is 970W.

Input Voltage and Frequency

Table 24 lists the input voltages for the switches.

Table 24. Input Voltages

	AC
x540L-28XS	100-240 VAC, 2.0A maximum, 50/60Hz
SE540L-28XS	100-240 VAC, 2.0A maximum, 50/60Hz
x540L-28XTm	100-240 VAC, 2.0A maximum, 50/60Hz
SE540L-28XTm	100-240 VAC, 2.0A maximum, 50/60Hz

Heat Dissipation

Table 25 lists the heat dissipations for the switches.

Table 25. Heat Dissipation

x540L-28XS	263.82 BTU/hr
SE540L-28XS	263.82 BTU/hr
x540L-28XTm	540.25 BTU/hr
SE540L-28XTm	540.25 BTU/hr

RJ-45 Twisted Pair Port Pinouts

Figure 51 illustrates the pin layout of the RJ-45 connectors on the following products:

- ❑ x540L-28XTm switch
- ❑ SE540L-28XTm switch

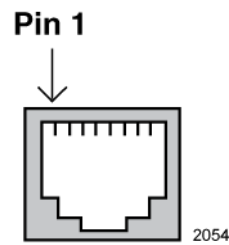


Figure 51. Pin Layout (Front View) of Twisted Pair Ports

Table 26 lists the pin signals at 100Mbps.

Table 26. Pin Signals on RJ-45 Twisted Pair Ports at 100Mbps

Pin	MDI Signal	MDI-X Signal
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
4	Not used	Not used
5	Not used	Not used
6	RX-	TX-
7	Not used	Not used
8	Not used	Not used

Table 27 lists the pin signals at 1/2.5/5/10Gbps.

Table 27. Pin Signals on Twisted Pair Ports at 1/2.5/5/10Gbps

Pin	Pair	Signal
1	1 +	TX and RX+
2	1 -	TX and RX-
3	2 +	TX and RX+
4	3 +	TX and RX+
5	3 -	TX and RX-
6	2 -	TX and RX-
7	4 +	TX and RX+
8	4 -	TX and RX-

RJ-45 Style Serial Console Port Pinouts

Table 28 lists the pin signals of the RJ-45 style serial Console port.

Table 28. RJ-45 Style Serial Console Port Pin Signals

Pin	Signal
1	Looped to pin 8
2	Looped to pin 7
3	Transmit Data
4	Ground
5	Ground
6	Receive Data
7	Looped to pin 2
8	Looped to pin 1