

ExtremeSwitching™

# Installing Ethernet Routing Switch 3500 Series

Release 5.3.6  
NN47203-304  
Issue 02.01  
December 2017

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# Chapter 1: Preface

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## Purpose

This document provides conceptual information and installation procedures for the switch hardware.

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## Training

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- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

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*Table continues...*

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5. Type your job title.
6. Select the industry in which your company operates.
7. Confirm your geographic information is correct.
8. Select the products for which you would like to receive notifications.
9. Click **Submit**.

## Chapter 2: New in this document

There are no new feature changes in this release.

# Chapter 3: Hardware compatibility for ERS 3500 Series

This chapter lists the hardware.

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## Switch models

The following table describes the ERS 3500 Series models.

All switch models support autopolarity.

Model	Part Number	Description
ERS 3510GT	AL3500A04–E6	10 port Ethernet Switch configured as: <ul style="list-style-type: none"><li>• 8 ports of 10/100/1000BASE-T with 2 SFP ports</li><li>• Fanless operation</li><li>• Standalone</li></ul>
ERS 3510GT-PWR+	AL3500A14–E6	10 port Ethernet Switch configured as: <ul style="list-style-type: none"><li>• 8 ports of 10/100/1000BASE-T (support for IEEE 802.3af PoE or IEEE 802.3at PoE+) with 2 SFP ports</li><li>• Dual power modes - fanless operation in Low Power Budget mode at 60W max PoE budget, or normal fan operation in High Power Budget mode at 170W max PoE budget</li><li>• Standalone</li></ul>
ERS 3524GT	AL3500A05–E6	24 port Ethernet Switch configured as: <ul style="list-style-type: none"><li>• 24 ports of 10/100/1000BASE-T with 4 shared SFP ports (combo with ports 21-24)</li><li>• 2 rear SFP ports can be used as additional ports in Standalone Mode or 2 rear HiStack ports delivering up to 10Gbps Full Duplex</li></ul>

*Table continues...*

Model	Part Number	Description
		(FDX) of Stackable Chassis throughput per switch in Stacking Mode
ERS 3524GT-PWR+	AL3500A15-E6	24 port Ethernet Switch configured as: <ul style="list-style-type: none"> <li>• 24 ports of 10/100/1000BASE-T (support for IEEE 802.3af PoE or IEEE 802.3at PoE+) with 4 shared SFP ports (combo with ports 21-24)</li> <li>• 2 rear SFP ports can be used as additional ports in Standalone Mode or as 2 rear HiStack ports delivering up to 10Gbps (FDX) of Stackable Chassis throughput per switch in Stacking Mode</li> </ul>
ERS 3526T	AL3500A01-E6	26 port Ethernet Switch can be configured as: <ul style="list-style-type: none"> <li>• 24 ports of 10/100Base-TX, plus 2 combo 10/100/1000BASE-T or SFP ports</li> <li>• 2 rear SFP ports can be used as additional ports in Standalone Mode or 2 rear HiStack ports delivering up to 10Gbps (FDX) of Stackable Chassis throughput per switch in Stacking Mode</li> <li>• Fanless operation</li> </ul>
ERS 3526T-PWR+	AL3500A11-E6	26 port Ethernet Switch can be configured as: <ul style="list-style-type: none"> <li>• 24 ports of 10/100BASE-TX (support for IEEE 802.3af PoE or IEEE 802.3at PoE+), plus 2 combo 10/100/1000BASE-T or SFP ports</li> <li>• Rear SFP ports can be used as additional ports in Standalone Mode or 2 rear HiStack ports delivering up to 10Gbps (FDX) of Stackable Chassis throughput per switch in Stacking Mode</li> </ul>
ERS 3549GTS	AL3500A06-E6	49 port Ethernet Switch configured as: <ul style="list-style-type: none"> <li>• 48 ports of 10/100/1000BASE-T with 2 shared SFP ports (combo with ports 47-48)</li> <li>• 1 SFP+ (1Gig or 10Gig) uplink port</li> <li>• 2 rear SFP ports can be used as additional ports in Standalone Mode or 2 rear HiStack ports delivering up to 10Gbps (FDX) of Stackable Chassis throughput per switch in Stacking Mode</li> </ul>

*Table continues...*

Model	Part Number	Description
ERS 3549GTS-PWR+	AL3500A16-E6	49 port Ethernet Switch configured as: <ul style="list-style-type: none"> <li>• 48 ports of 10/100/1000BASE-T (support for IEEE 802.3af PoE or IEEE 802.3at PoE+) with 2 shared SFP ports (combo with ports 47-48)</li> <li>• 1 SFP+ (1Gig or 10Gig) uplink port</li> <li>• 2 rear SFP ports can be used as additional ports in Standalone Mode or 2 rear HiStack ports delivering up to 10Gbps (FDX) of Stackable Chassis throughput per switch in Stacking Mode</li> </ul>
ERS 3550T	AL3500A07-E6	<ul style="list-style-type: none"> <li>• 48 ports of 10/100 Ethernet</li> <li>• 2 ports of combo 10/100/1000/SFP</li> <li>• 2 ports of rear dual mode / stacking</li> </ul>
ERS 3550T-PWR+	AL3500A17-E6	<ul style="list-style-type: none"> <li>• 48 ports of 10/100 Ethernet 802.3at PoE+</li> <li>• 2 ports of combo 10/100/1000/SFP</li> <li>• 2 ports of rear dual mode / stacking</li> </ul>

 **Note:**

AC power cords are not packaged with the switch. Ensure you order the correct power cord for your region. For more information, see [Supported power cords](#) on page 43.

# Chapter 4: Preinstallation checklist

Before you install the ERS 3500 Series, make sure that you complete the tasks in the preinstallation checklist.

No.	Task	Description	✓
1.	Review the technical specification for the switch. Make sure that the area where you install the switch and where it will operate meet the requirements.	For the physical, electrical, and environmental specifications, see <a href="#">Technical specifications</a> on page 18.	
2.	Verify the AC power specifications. Optionally order a redundant Power Supply Unit (PSU) to provide redundancy and load sharing.	See <a href="#">AC power specifications</a> on page 42.	
3.	Make sure that you have the following tools and cables: <ul style="list-style-type: none"> <li>• Phillips #2 screwdriver</li> <li>• RJ-45 console port cable</li> <li>• ESD cable</li> </ul>	See <a href="#">Cable requirements</a> on page 22.	
4.	Unpack the equipment.	Observe ESD precautions when you unpack the equipment. See <a href="#">Electrostatic discharge</a> on page 17.	
5.	Verify the contents of the shipped package.	See <a href="#">Package contents</a> on page 21 for a description of the components that are provided with the switch.	
6.	Make sure that the power cord has the correct country-specific termination.	See <a href="#">AC power cord specifications</a> on page 42.	
7.	Depending on the switch model, prepare the shelf or table or prepare the equipment rack.	If the switch model is ERS 3510GT or ERS 3510 GT PWR+, prepare shelf or table and ensure the surface supports the combined weight of the switch and attached cables from 15 and 20 pounds (7 to 9 kilograms).	

*Table continues...*

Preinstallation checklist

No.	Task	Description	✓
		<p>See <a href="#">Installing ERS 3510GT or ERS 3510GT PWR+ on a table or shelf</a> on page 25.</p> <p>Optionally, prepare the rack. See <a href="#">Installing a single ERS 3510GT or ERS 3510GT-PWR+ switch in an equipment rack</a> on page 26 or <a href="#">Installing two ERS 3510GT or ERS 3510GT-PWR+ switches in an equipment rack</a> on page 28.</p> <p>For the other switch models in ERS 3500 series, prepare the equipment rack and ensure that there is enough rack space of 1.75 inches (4.45 centimeters).</p> <p>See <a href="#">Installing ERS 3500 in an equipment rack</a> on page 22.</p>	

# Chapter 5: Installing the ERS 3500 Series

This chapter provides the information and procedures to install the ERS 3500 Series.

---

## Installation checklist

Use this checklist to install the ERS 3500 Series.

**Table 1: Installation checklist**

No.	Task	Description	✓
1.	Install the switch.  Installation depends on the switch model. ERS 3510T or ERS 3510GT-PWR+ can be mounted on a wall, table, or shelf. Optionally, it can also be mounted in an equipment rack.  All the other switches in the ERS 3500 Series are installed in an equipment rack.	Do any one of the following: <ul style="list-style-type: none"><li>• <a href="#">Installing ERS 3500 in an equipment rack</a> on page 22</li><li>• <a href="#">Installing ERS 3510GT or ERS 3510GT PWR+ on a table or shelf</a> on page 25</li><li>• <a href="#">Installing a single ERS 3510GT or ERS 3510GT-PWR+ switch in an equipment rack</a> on page 26</li><li>• <a href="#">Installing two ERS 3510GT or ERS 3510GT-PWR+ switches in an equipment rack</a> on page 28</li></ul>	
2.	Connect the AC power cord to the switch.	See, <a href="#">Connecting the AC power cord to the switch</a> on page 41.	
3.	Check LEDs to verify the installation.	See, <a href="#">LED state definitions</a> on page 45.	
4.	(Optional) Connect the switches in a stack.	See, <a href="#">Connecting the switches in a stack</a> on page 37.	

# Installation fundamentals

This section provides information about the switches and their front panel view.

## Front panel view

The following figures illustrate the front panel ports for the switch series.

### Ethernet Routing Switch 3500 Series

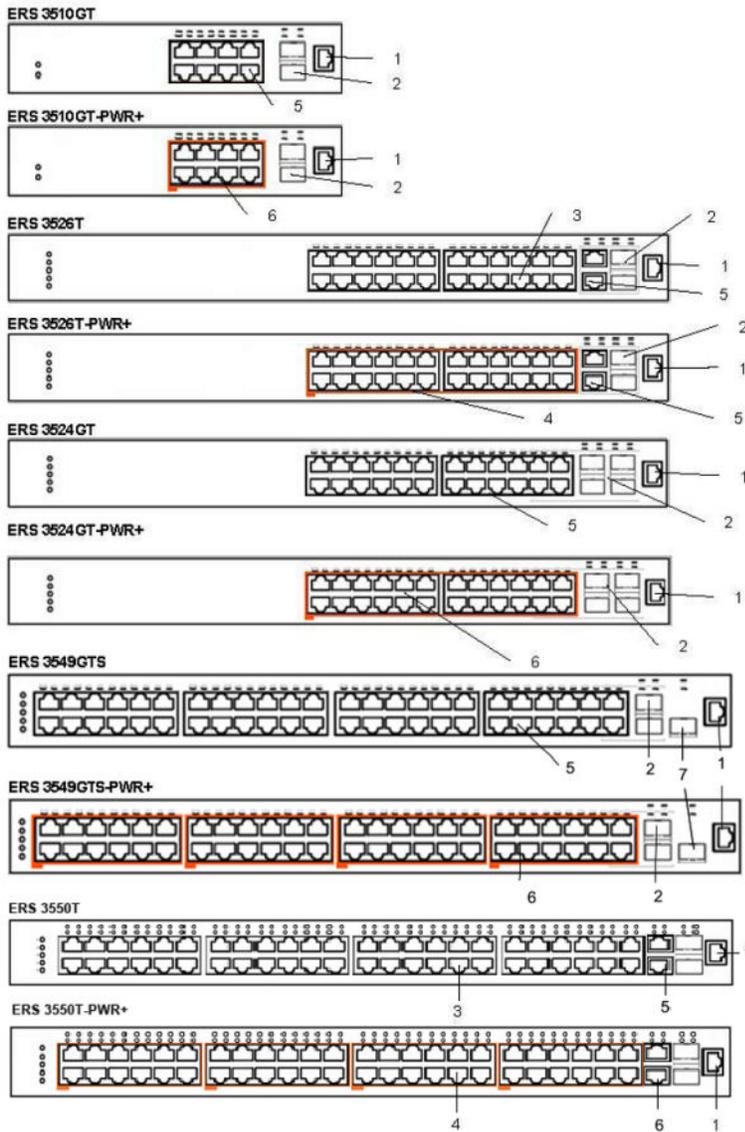


Figure 1: ERS 3500 Series front panel illustrations

**Table 2: Key**

Item	Description
1	Console RJ45 port
2	1000Base-X SFP ports
3	10/100 RJ45 ports
4	10/100 RJ45 PoE+ ports
5	10/100/1000 RJ45 ports
6	10/100/1000 RJ45 PoE+ ports
7	SFP+ for SFP+ port

---

## Electrostatic discharge

This section provides information and procedures to prevent electrostatic discharge during installation.

### Preventing electrostatic discharge damage

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. Electrostatic voltages can result from friction including, pulling cabling through conduits, walking across carpeted areas, and building static charge in clothing. When you improperly handle electronic components, ESD damage occurs and can result in complete or intermittent failures. While networking equipment is commonly designed and tested to withstand common mode ESD events, voltage can sometimes discharge to some connector pins, which can potentially damage the networking equipment.

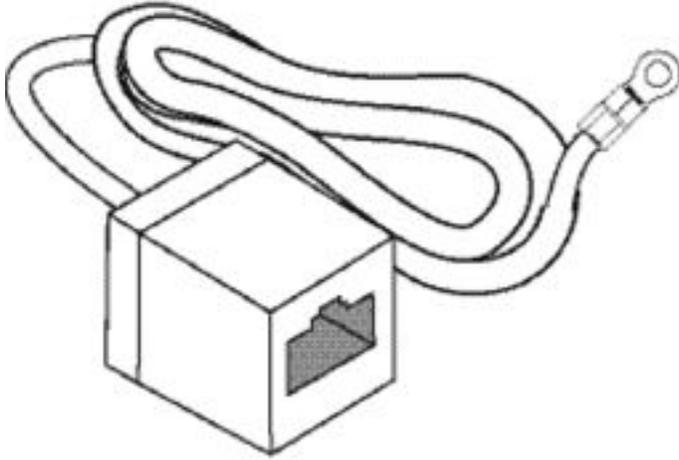
#### **Caution:**

To protect the switch against ESD damage, take the following measures before you connect data cables to the device:

- Always use antistatic wrist straps. Make sure you adjust the strap to provide good skin contact.
- Ensure that you properly ground work surfaces and equipment racks for protection against electrostatic discharge. You must connect the common point to the building ground wire. In a properly wired building, the nearest reliable ground is typically at the electrical outlet.
- Avoid contact between equipment and clothing. The wrist or ankle strap protects only the equipment from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Avoid touching any connector pins.
- Do not remove the wrist or ankle strap until the installation is complete.

## Preventing electrostatic damage in new cable installations

With new cable installations, Extreme Networks recommends that you use an ESD discharge cable to reduce the potential for damage from static, that can build up in cables. The following figure illustrates an ESD cable.



**Figure 2: ESD discharge cable**

To install the ESD discharge cable, perform this procedure.

1. Connect the ground lug on the ESD discharge cable to a safe and suitable earth ground.
2. Connect all RJ-45 cable connectors to the female RJ-45 connector of the ESD discharge cable for at least 5 seconds, and then connect each RJ-45 cable connector to the switch.
3. Leave cables connected to the networking equipment. After you connect cables to networking equipment, the cables do not build up charge.

---

## Technical specifications

The following table provides the technical specifications for the individual switches in the ERS 3500 Series. Ensure that the area where you install the switch and where it operates meets these requirements.

**⚠ Warning:**

To avoid bodily injury from hazardous electrical shock and current, never remove the top of the device. No user-serviceable components are inside.

**Table 3: Physical specifications**

	Switch	Specification
Height	ERS 3526T, ERS 3526T-PWR+, ERS 3510GT, ERS 3510GT-PWR + ERS 3524GT, ERS 3524GTPWR+, RS 3549GTS, and ERS 549GTS-PWR+	1U or 44.5mm / 1.75"
Width	ERS 3526T, ERS 3526T-PWR+, ERS 3524GT, ERS 3524GT-PWR +, ERS 3549GTS ERS and 3549GTS-PWR+	440mm / 17.5"
	ERS 3510GT, ERS 3510GT-PWR	220mm / 8.75"
	ERS 3526T, ERS 3526T-PWR+, ERS 3510GT-PWR+, ERS 3524GT, and ERS 3524GT-PWR+	280mm / 11"
	ERS 3510GT	200mm / 8"
	ERS 3549GTS and ERS 3549GTS-PWR+	405mm / 15.75"
Weight	ERS 3526T	3.60kg / 8lb
	ERS 3526T-PWR+	4.50kg / 10lb
	ERS 3510GT	1.75kg / 3.9lb
	ERS 3510GT-PWR+	2.70kg / 6lb
	ERS 3524GT	3.55kg / 7.8lb
	ERS 3524GT-PWR+	4.61kg / 10.2lb
	ERS 3549GTS and ERS 3549GTS-PWR+	6.15kg / 13.55lb
	ERS 3510GT	1.75 kg / 3.85 lb
	ERS 3510GT-PWR+	2.70 kg / 5.9 lb

**Table 4: Electrical specifications**

Electrical component	Switch details	Specification
Power consumption	ERS 3526T	28.5 Watts max
	ERS 3526T-PWR+	500 Watts max
	ERS 3510GT	18 Watts max
	ERS 3510GT-PWR+	210 Watts
	ERS 3524GT	28.5 Watts max
	ERS 3524GT-PWR+	500 Watts max

*Table continues...*

Electrical component	Switch details	Specification
	ERS 3549GTS	65 Watts max
	ERS 3549GTS-PWR+	484 Watts max
Thermal rating	ERS 3526T	65 BTU/hr max
	ERS 3526T-PWR+	360 BTU/hr max
	ERS 3510GT	61 BTU/hr max
	ERS 3510GT-PWR+	156 BTU/hr max
	ERS 3524GT	95 BTU/hr max
	ERS 3524GT-PWR+	357 BTU/hr max
	ERS 3549GTS	223 BTU/hr max
	ERS 3549GTS-PWR+	424 BTU/hr max
MTBF rating	ERS 3526T	645,510 hrs
	ERS 3526T-PWR+	332,778
	ERS 3510GT	892,667 hrs
	ERS 3510GT-PWR+	673,452 hrs
	ERS 3524GT	657,619 hrs
	ERS 3524GT-PWR+	336,357 hrs
	ERS 3549GTS	471,289 hours
	ERS 3549GTS-PWR+	259,615 hours

**Table 5: Environmental specifications**

Environmental component	Specification for ERS 3500 series
Operating Temperature	32° and 122° F (0° and 50° C)
Storage Temperature	-40C to 70C
Operating Humidity	95% RH non-condensing
Storage Humidity	95% RH non-condensing
Maximum Operating Altitude	10,000 ft
Storage Altitude	10,000 ft
Acoustic Noise (db)	ERS 3510GT — 0; ERS 3510GT-PWR+ — 36.4; ERS 3524GT— 36.1; ERS 3524GT-PWR+ — 40; ERS 3526T— 0; ERS 3526T-PWR+ — 40; ERS 3549GTS — 58; ERS 3549GTS-PWR+ — 58.
Miscellaneous Operating Considerations	<ul style="list-style-type: none"> <li>• At least 5cm (2") on each side of the switch unit for ventilation</li> <li>• Adequate power source within six feet. One 15 amp circuit required for each power supply</li> <li>• No excessive dust</li> <li>• No nearby sources of severe electromagnetic noise</li> </ul>

*Table continues...*

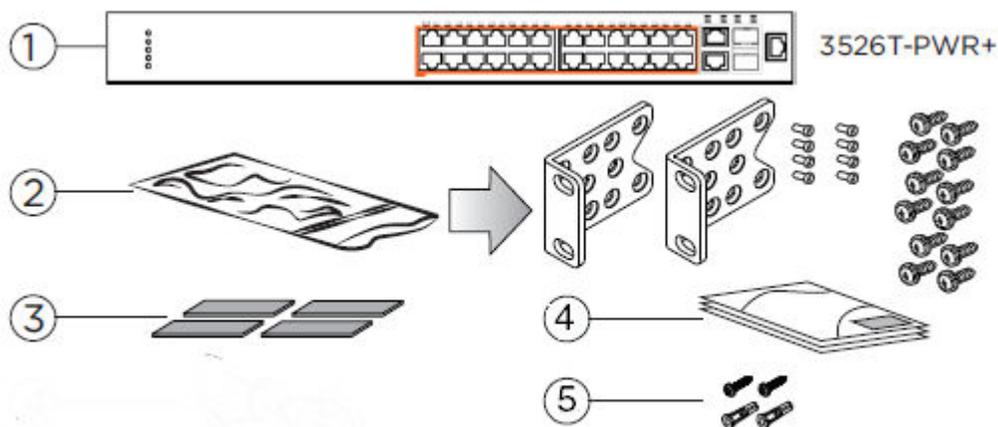
Environmental component	Specification for ERS 3500 series
	<ul style="list-style-type: none"> <li>No nearby heat sources such as hot air vents or direct sunlight</li> </ul>

## Equipment requirement

After unpacking this switch, check the contents to be that sure you have received all the components. Then, before beginning the installation, be sure that you have all other necessary installation equipment.

## Package contents

AC power cords are not packaged with the switch. Ensure you order the correct power cord for your region.



1. Ethernet Routing Switch 3500 Series
2. Rack-mounting hardware that includes: (not applicable to ERS 3510GT or ERS 3510GT-PWR+)
  - Rack-mount brackets (2)
  - Screws to attach brackets to the switch (8)
  - Screws to attach the switch to the equipment rack (3x4)
3. Rubber footpads (ERS 3510GT and ERS 3510GT-PWR+ only)
4. Documentation includes the Quick Install poster and Regulatory documents
5. Screws (2) and wall anchors (2) for wall mounting (ERS 3510GT and ERS 3510GT-PWR+ only)

---

## Cable requirements

The following table describes the cables required for ERS 3500 Series.

Category 5E or higher specification cabling should be used for 1 Gbps/1000 Mbps operation.

Required Cable	Description
RJ45 console kit	1.8m cable with DB-9 Female for PC and RJ-45 for console port
DB-9/USB integrated console cable	1.5m cable with USB Connector for PC and DB-9 for device console port, also included USB Driver.

### Stacking cables

Stacking cables are not included and must be ordered separately for ERS 3500 Series 24-port and 48-port models.

Order code	Description
AL3518001-E6	46cm SFP direct connect stack cable
AL3518002-E6	1.5 meter SFP direct connect stack cab
AL3518003-E6	3 meter SFP direct connect stack cable

---

## Switch installation

This section describes how to install the switch on a table or shelf, or in an equipment rack. The installation procedure is different for ERS 3510GT / ERS 3510GT-PWR+ from the other switch models in the series.

ERS 3510GT / ERS 3510GT-PWR+ can be installed on a table or shelf, or wall mounted. It can also be installed in an equipment rack like the other switches in the ERS 3500 Series.

See the following procedures to install the switch:

- [Installing ERS 3500 in an equipment rack](#) on page 22
- [Installing ERS 3510GT or ERS 3510GT-PWR+](#) on page 24

---

## Installing an ERS 3500 Series switch in an equipment rack

### About this task

Install an ERS 3500 Series switch in an equipment rack using the supplied brackets. The brackets secure the chassis and prevent it from sliding around during vibration or when inserting or extracting transceivers.

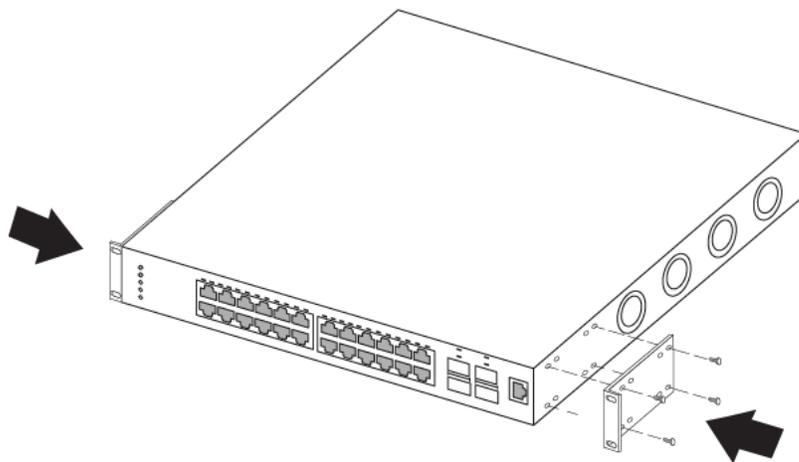
## Before you begin

Check for the following rack and bracket requirements:

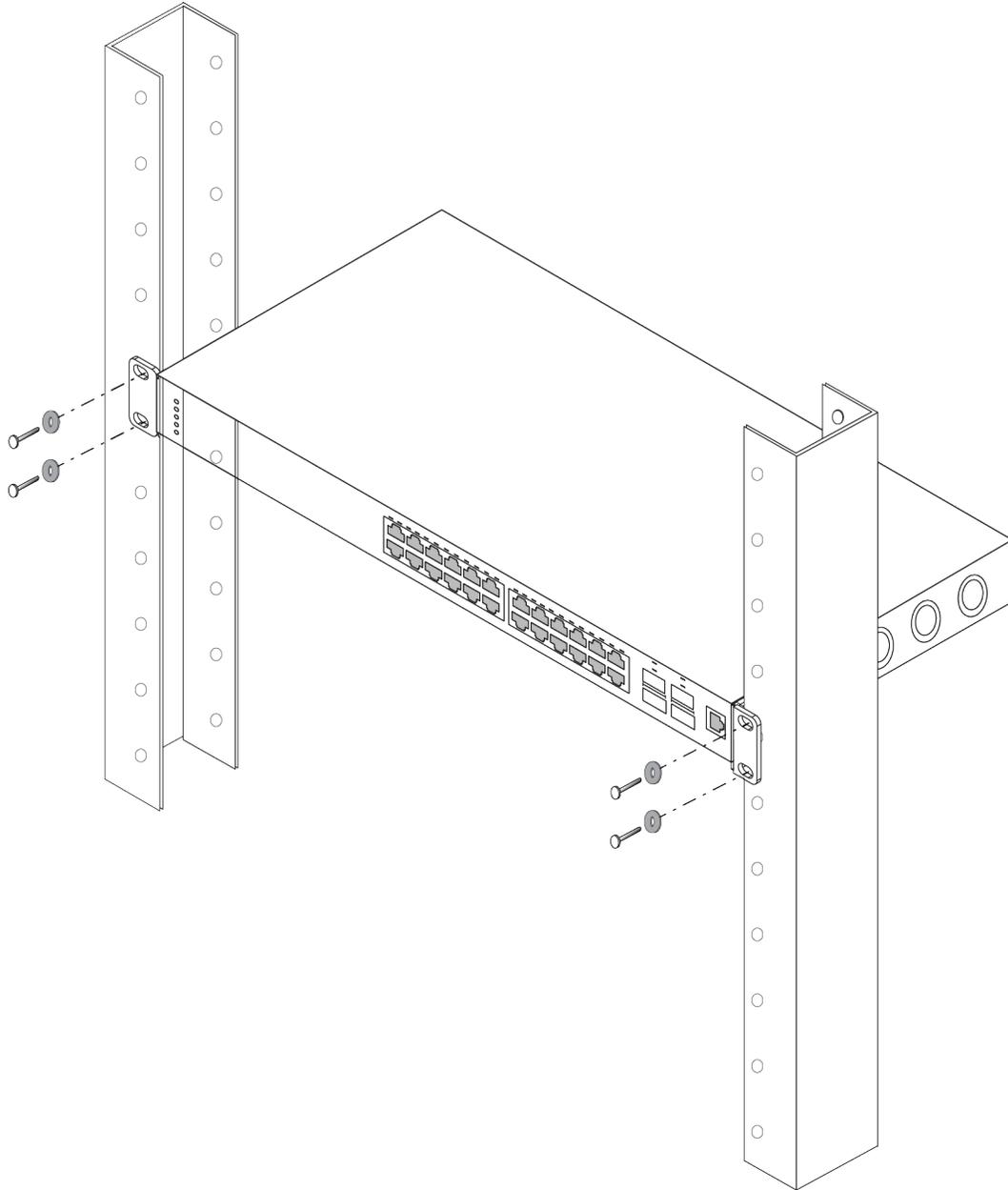
- Space of 2.8 inches (7.1 cm) (or one vertical rack width) for each switch in an E1A or 1EC standard 19 inch (48.2 cm) equipment rack and T1A 23 inch (58.5 cm) equipment rack.
- Appropriate rack space to accommodate 1U switch height (44 mm).
- Rack bolted to floor and braced if necessary.
- Rack must be grounded to the same grounding electrode used by the power service in the area. The group path must be permanent and must not exceed 1 Ohm of resistance from the rack to the grounding electrode.
- One Spare Rack Mount Kit. This kit can be used as a replacement rack mount kit for the ERS switch and must be ordered separately (Order Code AL3511001–E6).

## Procedure

1. Ensure power is disconnected from the switch.
2. Attach a bracket to each side of the switch with the included screws.



3. Slide the switch into the rack. Insert and tighten the rack mount screws.



4. Verify that the switch is securely fastened to the rack.

### Installing an ERS 3510GT or ERS 3510GT-PWR+

The following procedures describe how to install the switch models ERS 3510GT or ERS 3510GT PWR+ on a table or shelf, or in an equipment rack:

- [Installing ERS 3510GT or ERS 3510GT PWR+ on a table or shelf](#) on page 25
- [Installing a single ERS 3510GT or ERS 3510GT-PWR+ switch in an equipment rack](#) on page 26

- [Installing two ERS 3510GT or ERS 3510GT-PWR+ switches in an equipment rack](#) on page 28

## Installing an ERS 3510GT or ERS 3510GT-PWR+ switch on a table or shelf

### About this task

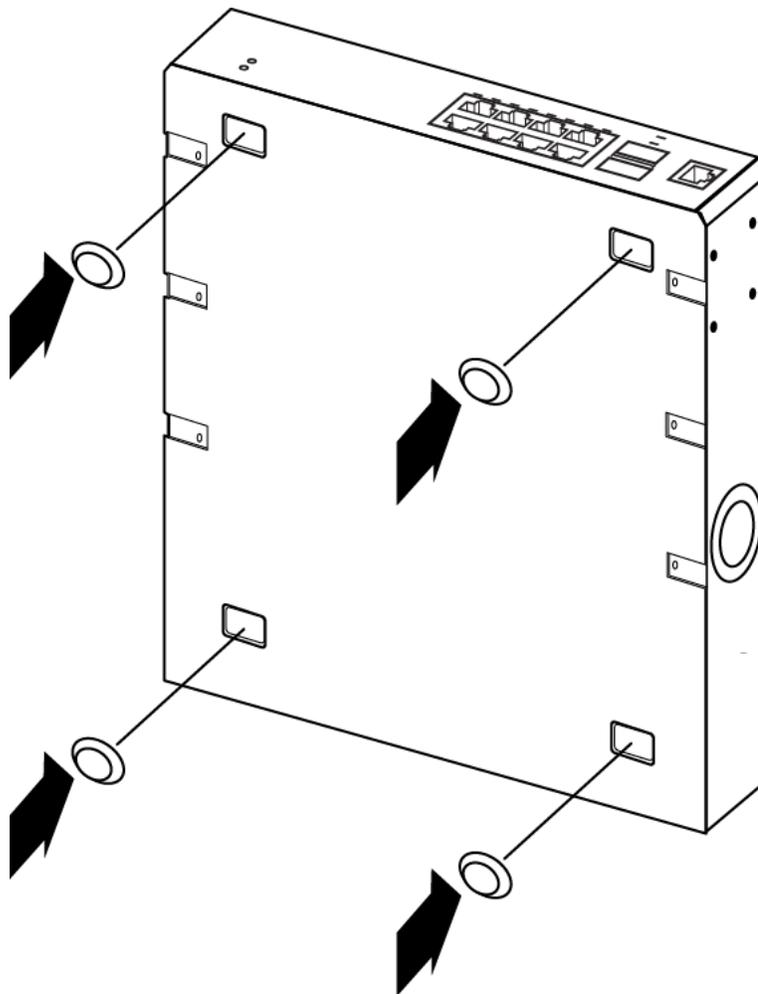
Install the switch models ERS 3510GT or ERS 3510GT-PWR+ on a flat surface such as a table or shelf.

### Before you begin

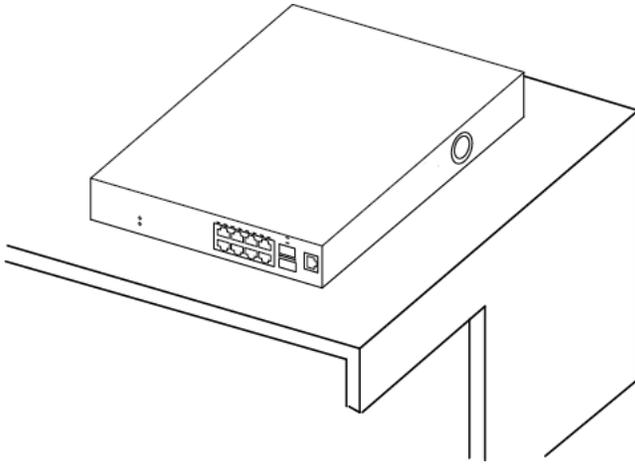
- Ensure the surface supports the combined weight of the switch and attached cables. Cable weight varies for each installation.
- Allow at least 2 inches (5.1 cm) on each side of the switch for proper ventilation and at least 5 inches (12.7 cm) at the back of the switch for power cord clearance.

### Procedure

1. Attach the rubber feet at the marked locations.



2. Set the switch on a table or shelf.



## Installing a single ERS 3510GT or ERS 3510GT-PWR+ switch in an equipment rack

### About this task

Install the switch using the supplied brackets. The brackets secure the chassis and prevent it from sliding around during vibration or when inserting or extracting transceivers.

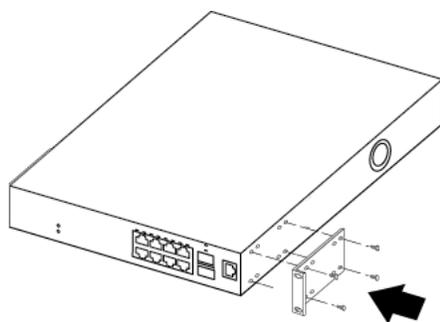
### Before you begin

Check for the following rack and bracket requirements:

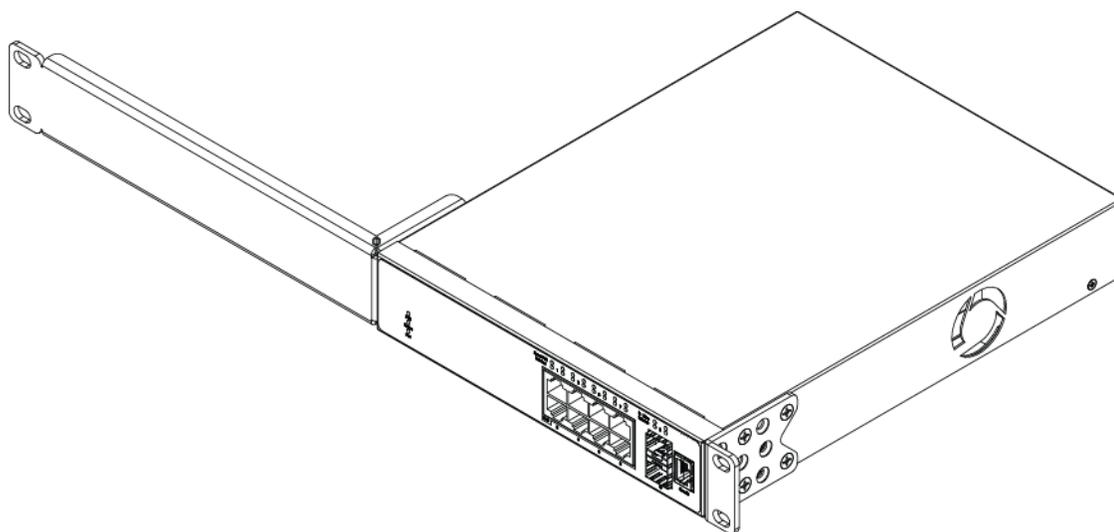
- Ensure to provide the equivalent of one rack of vertical space for each switch in an E1A or 1EC standard 19 inch (48.2 cm) and T1A 23 inch (58.5 cm) equipment rack.
- Appropriate rack space to accommodate 1U switch height (44 mm).
- Rack bolted to floor and braced if necessary.
- Rack must be grounded to the same grounding electrode used by the power service in the area. The group path must be permanent and must not exceed 1 Ohm of resistance from the rack to the grounding electrode.
- one 3510–Single Rack Mount Kit. For more information, see [Package contents](#) on page 21.

### Procedure

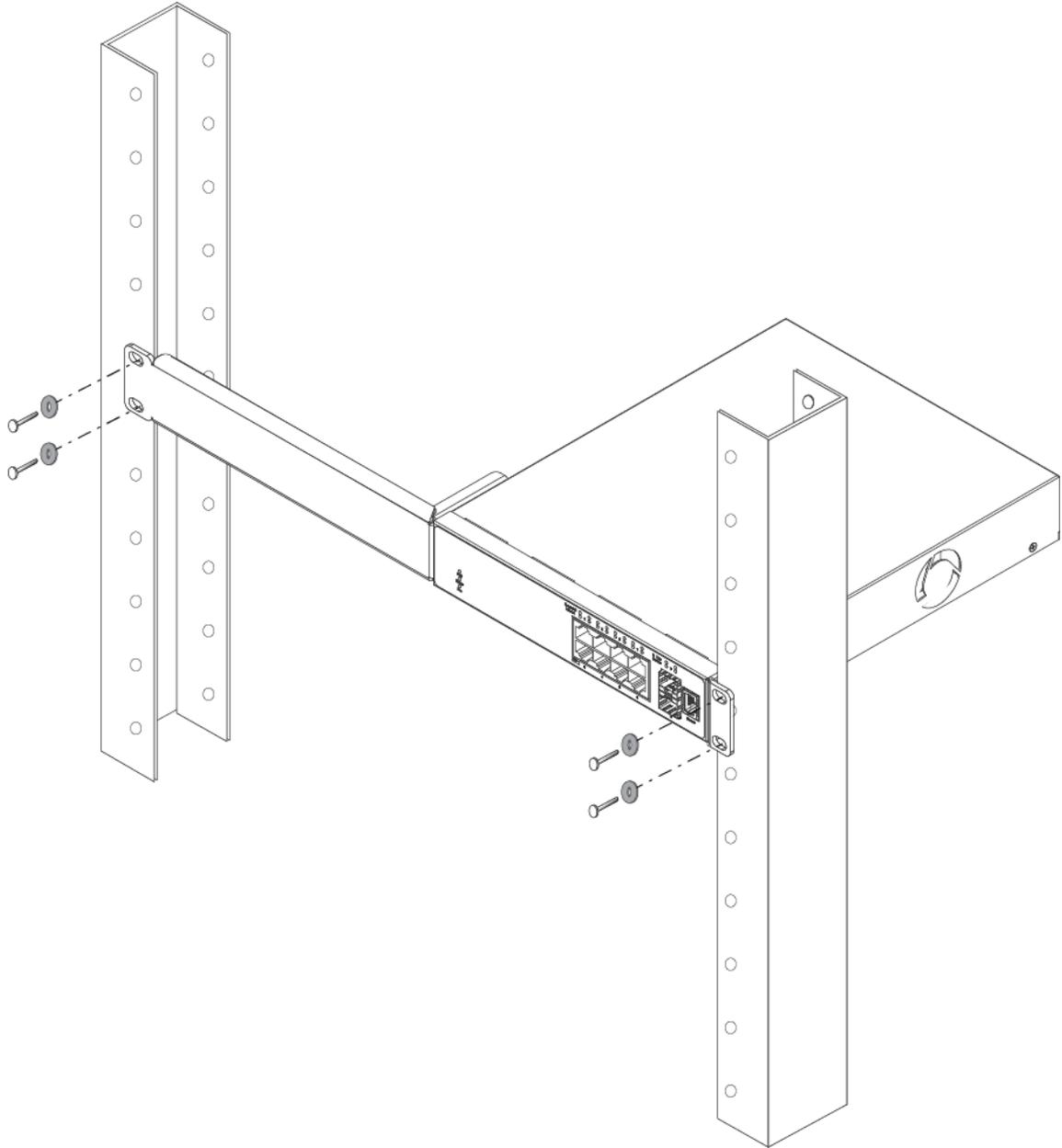
1. Ensure power is disconnected from the switch.
2. With the front of the ERS 3510GT or ERS 3510GT-PWR+ unit facing you, attach the small bracket from the optional kit to the right side of the switch using the flathead screws provided.



3. With the front of the ERS 3510GT or ERS 3510GT-PWR+ unit facing you, attach the long bracket from the optional kit (see Figure that follows) to the left side of the switch using the flathead screws provided.



4. Slide the switch into the rack as shown in the figure that follows. Insert and tighten the rack mount screws.



**\* Note:**

The ERS 3500 Series mounting hardware is specific for each switch model. Do not mix screws or brackets between different ERS 3500 Series switches.

5. Verify that the switch is securely fastened to the rack.

## Installing two ERS 3510GT or ERS 3510GT-PWR+ switches in an equipment rack

## About this task

Install two ERS 3510GT or ERS 3510GT-PWR+ units together to form one standard width rack-wide system using a 19 inch side-by-side Rack Mount Kit (ordered separately).

## Before you begin

Check for the following rack and bracket requirements:

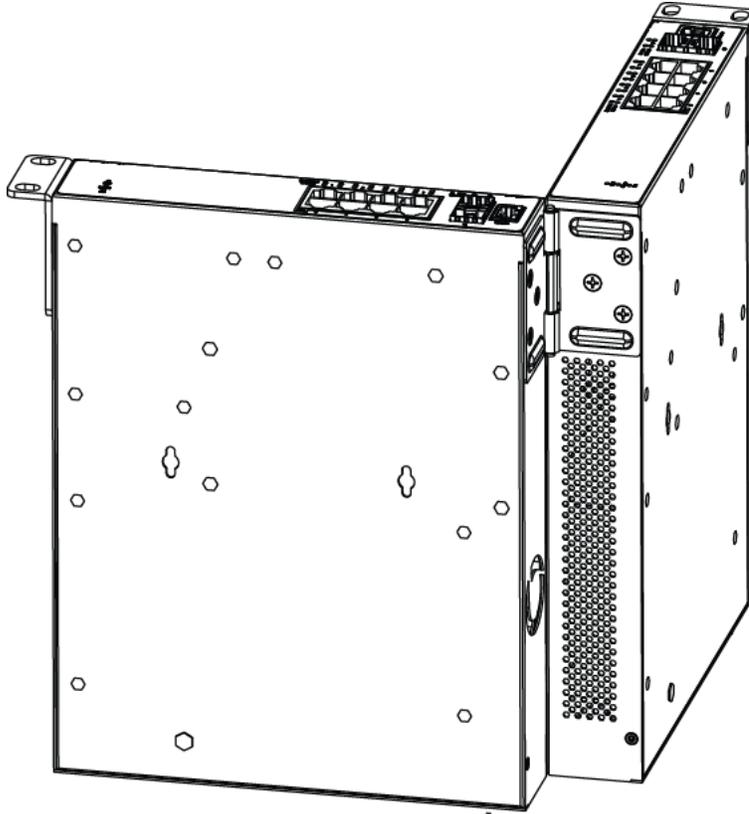
- Provide the equivalent of one rack of vertical space for each switch in an E1A or 1EC standard 19 inch (48.2 cm) equipment rack and T1A 23 inch (58.5 cm) equipment rack.
- Appropriate rack space to accommodate 1U switch height (44 mm).
- Rack bolted to floor and braced if necessary.
- Rack must be grounded to the same grounding electrode used by the power service in the area. The group path must be permanent and must not exceed 1 Ohm of resistance from the rack to the grounding electrode.
- Pair or side-by-side rack mount kit. For more information, see [Package contents](#) on page 21.
- When mounting two 3510GT-PWR+ units side by side in an equipment rack, run the switches in high power mode to ensure adequate airflow. In high power mode, the available power is 170 Watts.

```
#show poe-main-status
PoE Main Status - Stand-alone
-----
Power Mode : High Power Budget
Available DTE Power : 170 Watts
DTE Power Status : Normal
DTE Power Consumption : 0 Watts
DTE Power Usage Threshold : 80%
PD Detect Type : 802.3at and Legacy
Power Source Present : AC Only
AC Power Status : Present
DC Power Status : Not Present
```

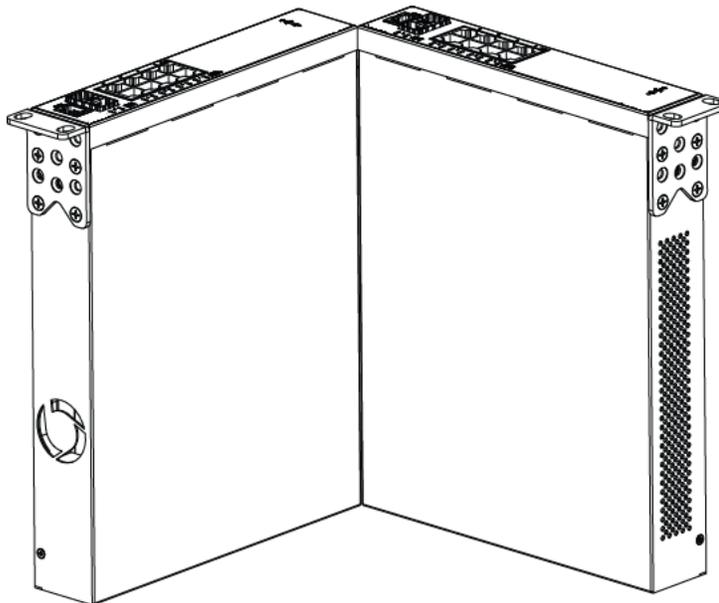
- The PoE+ model supports Power over Ethernet+ with compatibility to 802.3at PoE+. 802.3at is backward compatible for detection with 802.3af.

## Procedure

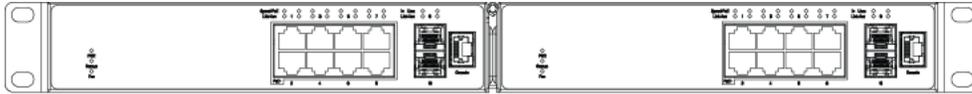
1. Ensure power is disconnected from the switch.
2. Connect the two ERS 3510GT switches together by opening the hinged bracket to 90° and attaching it to each ERS 3510GT switch with three M4 flat head screws (included), as shown below.



3. Attach the standard rack mount bracket ears to the outer end of each switch as shown below.

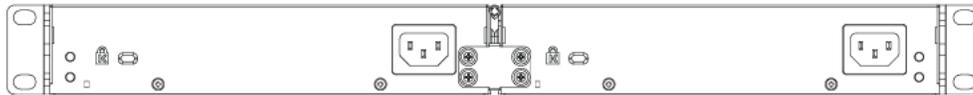


4. After the switches are joined together, fold the hinged bracket inward.



5. Perform one of the following:

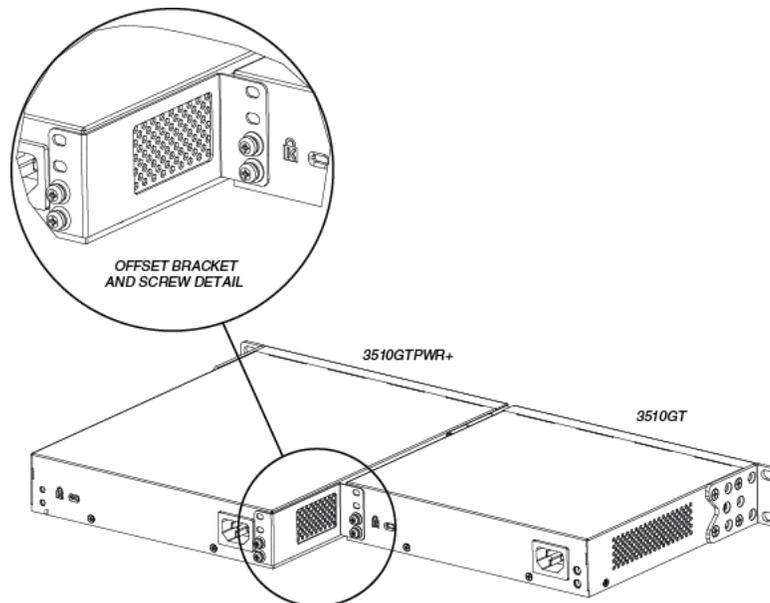
- **To connect two ERS 3510GT or two 3510GT-PWR+ switches together** use the rear bracket as shown below, with four M4 pan head screws to secure the switches at the rear. Once the rear bracket has been installed, the switches can be installed in the rack.



- **To connect one ERS 3510GT switch and one ERS 3510GT-PWR+ switch together** use the offset rear bracket with four M4 pan head screws to join the switches at the rear. Once the rear bracket has been installed, the switches can be installed in the rack.

\* **Note:**

If you are mounting a mix of ERS 3510GT and ERS 3510GT-PWR+ units side by side, ensure that the ERS 3510GT unit is mounted on the LEFT side (when viewed from the front) for adequate airflow.



6. Slide the switches into the rack. Insert and tighten the rack mount screws.
7. Verify that the switch is securely fastened to the rack.

---

## Installation and removal of transceivers

The following sections describe how to install and remove transceivers in the ERS 3500 Series switch. In this context, the term *transceiver* refers to Small Form Factor (SFP) and SFP+.

For more information about transceiver use and designation, see *Installing Transceivers and Optical Components on Ethernet Routing Switch 3500 Series*.

---

### Installing an SFP

Install an SFP to provide an interface between the device and the network cable.

#### Before you begin

- Verify that the SFP is the correct model for your network configuration.
- Before you install the fiber, ensure that the connector is clean.

#### **Danger:**

##### **Risk of eye injury by laser**

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber optic cables are connected to a light source.

#### **Electrostatic alert:**

ESD can damage electronic circuits. Do not touch electronic hardware unless you wear a grounding wrist strap or other static-dissipating device.

#### **Warning:**

##### **Risk of equipment damage**

Only trained personnel can install this product.

#### About this task

Installing an SFP takes approximately 3 minutes.

#### Procedure

1. Remove the SFP from its protective packaging.
2. Grasp the SFP transceiver between your thumb and forefinger.
3. Insert the device into the port on the module.

Depending on the module type, you must insert some SFP transceivers into the port with the bail facing up and some SFP transceivers with the bail facing down.

#### **Warning:**

##### **Risk of equipment damage**

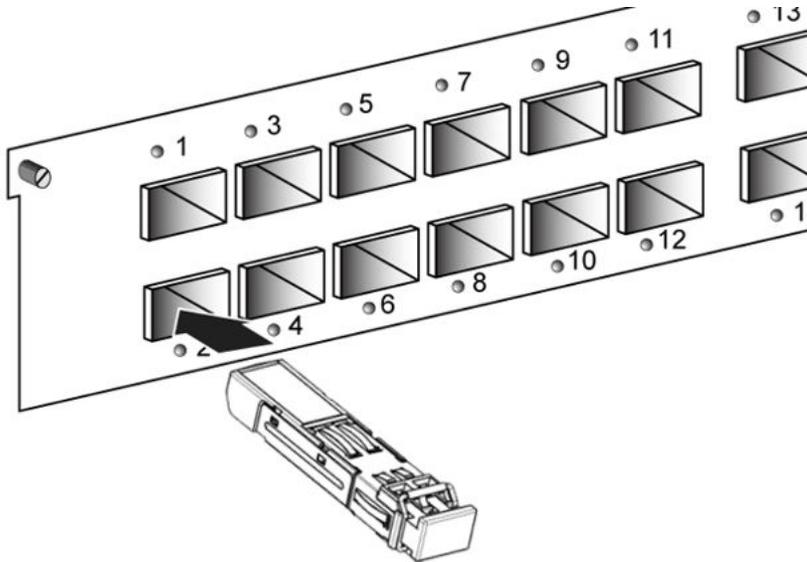
Transceivers are keyed to prevent incorrect insertion. If the transceiver resists pressure, do not force it; turn it over, and reinsert it.

Apply a light pressure to the device until it clicks and locks into position.

4. Remove the dust cover from the optical bore, and insert the fiber optic connector.

### Example

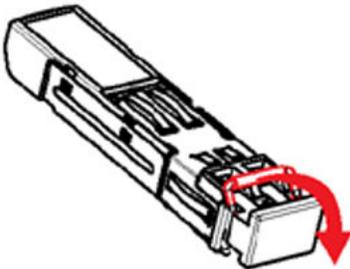
The following figure shows an example installation of a bore plug transceiver with the bail latch facing up. The figure does not represent a specific product.



### Job aid

Depending on the transceiver manufacturer, the SFP transceiver can use different types of locking and extractor mechanisms.

The following figure shows the typical mechanism used on SFP transceivers; other locking mechanisms exist although they are not shown here. In the following figure, the SFP transceiver uses the bore plug. Pull the bail to release the device.



## Removing an SFP

Remove an SFP to replace it or to commission it elsewhere.

### Before you begin

- Wear an antistatic wrist strap.

#### **Danger:**

##### **Risk of eye injury by laser**

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber optic cables connect to a light source.

#### **Electrostatic alert:**

ESD can damage electronic circuits. Do not touch electronic hardware unless you wear a grounding wrist strap or other static-dissipating device.

### Procedure

1. Disconnect the network fiber optic cable from the SFP connector.
2. Depending on your SFP model, there are different locking mechanisms to release the SFP transceiver. The following describes the typical mechanism used on SFP transceivers; other locking and extractor mechanisms exist, although they are not described here.
  - Bail latch: Pull the swing-down latch handle to the fully lowered position and hold the handle to extract the module.
3. Slide the SFP out of the module SFP slot.

If the SFP does not slide easily from the module slot, use a gentle side-to-side rocking motion while firmly pulling the SFP from the slot.

4. Affix dust covers over the fiber optic bore and connector.
5. Store the SFP in a safe place until needed.

#### **Important:**

If you discard the SFP transceiver, dispose of it according to all national laws and regulations.

---

## Stacking switches

All the switches in the ERS 3500 Series other than ERS 3510GT, include up/down stack ports located in the rear of the unit in the form of SFP ethernet ports.

The stack ports can be used in one of two different modes and are not reserved as stacking ports. The two modes are Standalone Mode and Stacking Mode.

**\* Note:**

Before adding switches to a stack, ensure that all switches for the stack have the same software image installed, or that the Agent Auto Unit Replacement (AAUR) functionality is enabled on all switches participating in a stack. AAUR automatically installs the stack software image to any unit that has a dissimilar image. AAUR is enabled by default on a switch.

For more information about AAUR, see *Quick Start Configuration for Ethernet Routing Switch 3500 Series*.

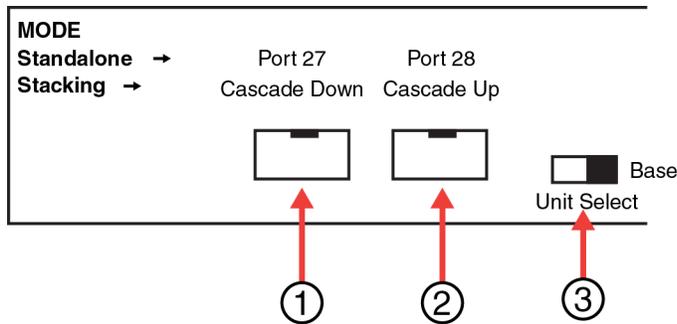
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## Stacking capabilities

ERS 3500 Series supports stacking capability. The two rear ports on these models can be used in either standalone mode (default) or stacking mode.

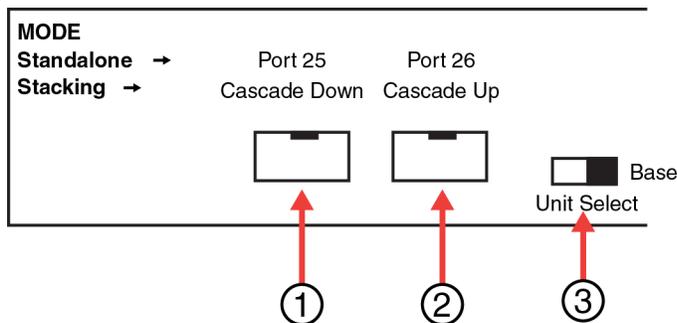
The ERS 3500 supports stacking capability. The two rear ports on these models can be used in either standalone mode (default) or stacking mode.

- **Standalone Mode** — In this mode, the switch front panel function as follows:
  - Provides two additional uplinks or connections to servers or power users and supports regular port configuration parameters such as Spanning Tree, EAP, VLAN Tagging, MLT/DMLT/VLACP, and port enable/disable
  - Provides fixed port speed at 1000 Mbps Full Duplex operation with the insertion of a supported SFP in the rear ports. Link and traffic indications are provided on the front left of each switch where the LEDs for the rear ports illustrate “Down / 27” and “Up / 28” for the ERS 3526T models, “Down / 25” and “Up / 26” on the ERS 3524GT models, “Down / 50” and “Up / 51” on the ERS 3549GTS models, and “Down / 51” and “Up / 52” on the ERS 3550T models as shown in the figures that follow.
- **Stacking Mode** — In this mode, the switch rear ports function as follows:
  - Provides resilient stacking of up to eight stackable units when the two rear SFP ports are configured for “stacking mode” operation.
  - LEDs on the front panel of the switches indicate “Base Unit” selection and rear stack port Up/Down connection status.
  - Rear ports operate at 2.5 Gbps bandwidth (bi-directional) for an aggregate of up to 80 Gbps for a stack of eight units.



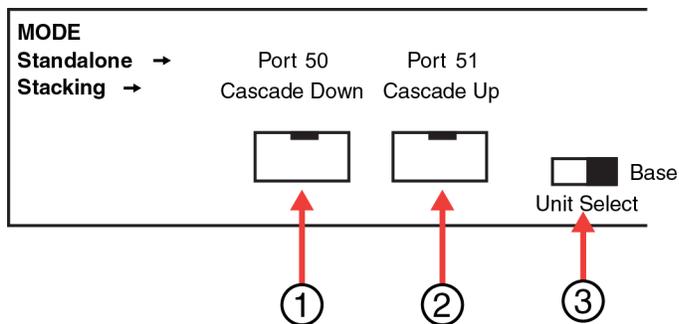
- 1 = Cascade down port
- 2 = Cascade up port
- 3 = Base Unit Select Switch - used to designate the Base Unit in a stack. When set to the RIGHT position, this unit acts as the Base Unit for the stack

**Figure 3: ERS 3526T and ERS 3526T-PWR+ rear ports**



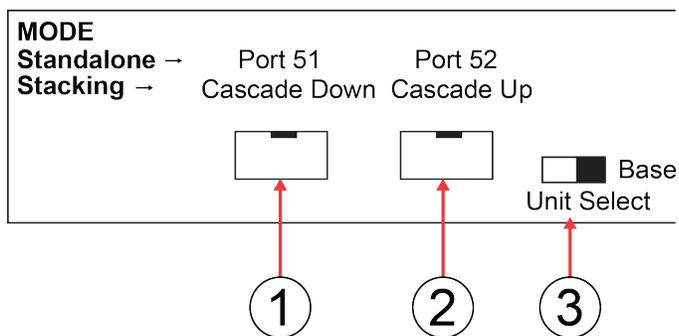
- 1 = Cascade down port
- 2 = Cascade up port
- 3 = Base Unit Select Switch - used to designate the Base Unit in a stack. When set to the RIGHT position, this unit acts as the Base Unit for the stack

**Figure 4: ERS 3524GT and ERS 3524GT-PWR+ rear ports**



- 1 = Cascade down port
- 2 = Cascade up port
- 3 = Base Unit Select Switch - used to designate the Base Unit in a stack. When set to the RIGHT position, this unit acts as the Base Unit for the stack

**Figure 5: ERS 3549GTS and ERS 3549GTS-PWR+ rear ports**



**Figure 6: ERS 3550T and ERS 3550T-PWR+ rear ports**

Stacking cables must be ordered separately. The correct SFP direct attach cable is required in order to enable and use stacking mode. For more information see, [Cable requirements](#) on page 22.

## Connecting switches in a stack

### Cascading down or cascading up ports

#### About this task

Connect a switch to the next unit in the stack through a cascade cable.

The stack parameters are associated with the base unit, the physical stack order depends on the base unit position and whether you configure the stack cascade up (stack up) or cascade down (stack down). This designation depends on the stack cabling arrangement.

#### \* Note:

Extreme Networks recommends that you use a Cascade Down configuration.

## Before you begin

- Order the appropriate ERS 3500 Series cascade cables to ensure fail-safe stacking. For more information, see [Cable requirements](#) on page 22.

## Procedure

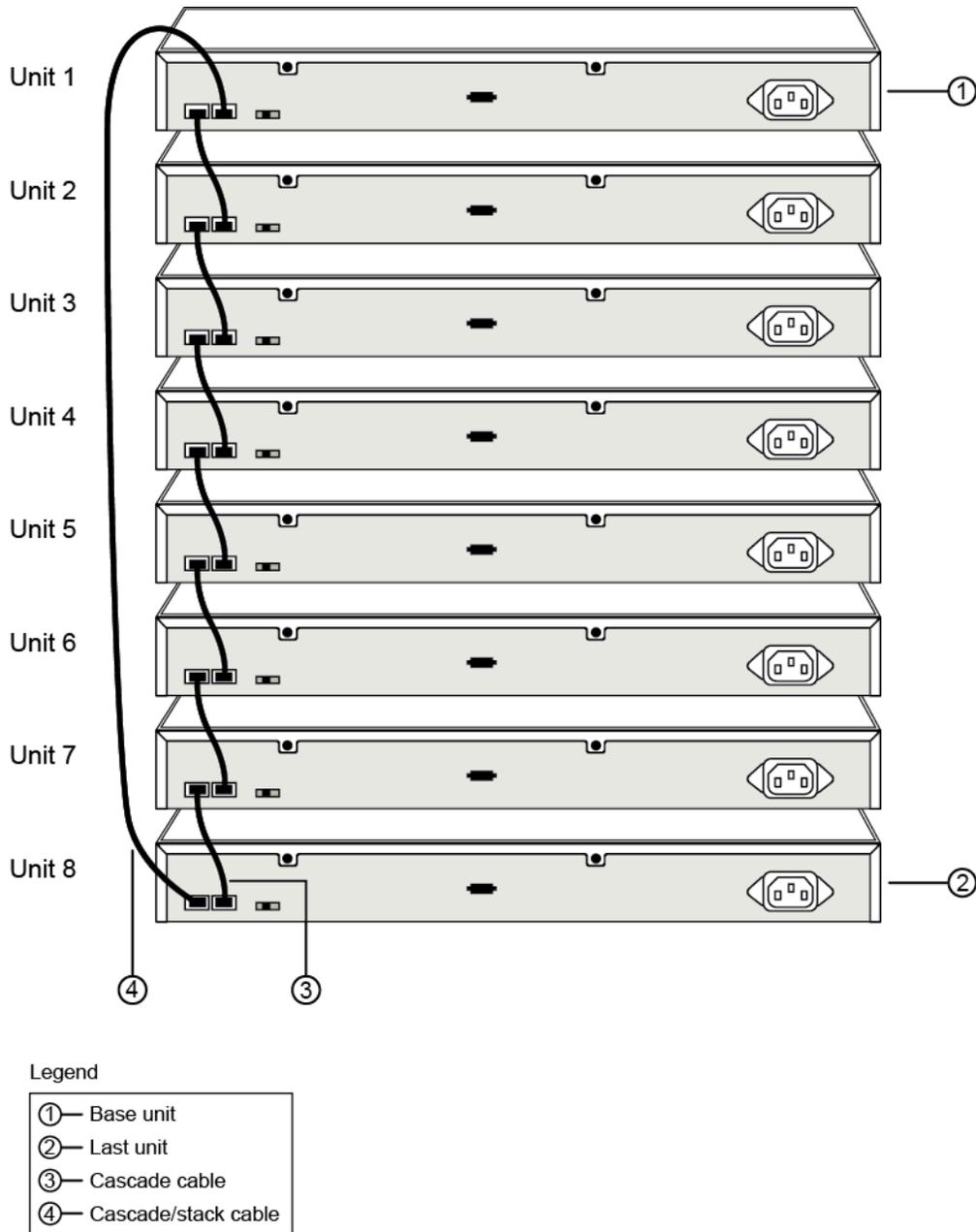
1. Ensure that all switches for the stack are rack mounted.
2. Slide the Unit Select switches on the back of the units to the appropriate position, depending on whether they are a base unit or non-base unit:

- **Base Unit (Unit 1)** - Slide the Unit Select switch to the RIGHT
- **Non-Base Unit (Units 2-8)** - Slide the Unit Select switch to the LEFT

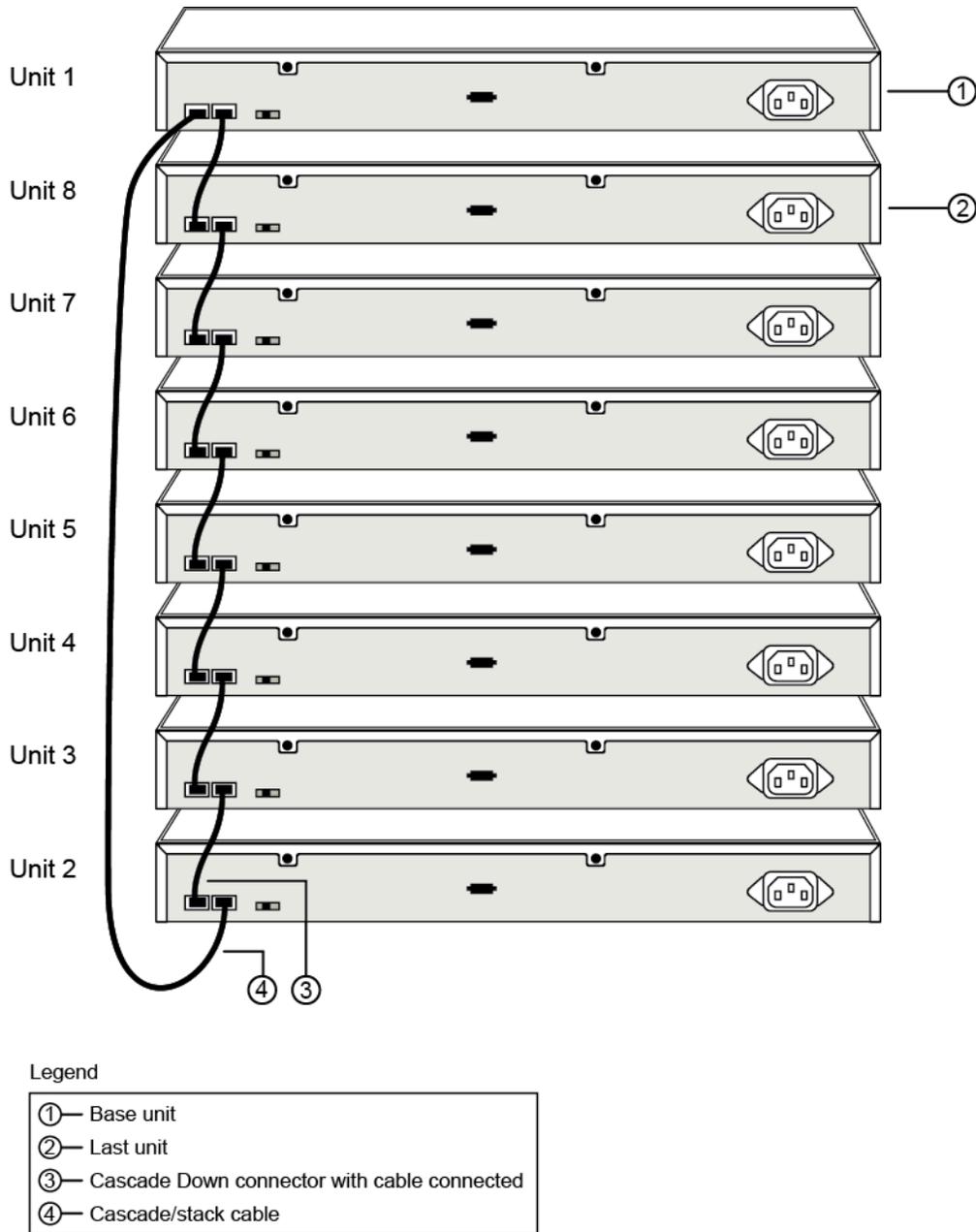
 **Note:**

The Base Unit Select switch defaults to be in the Non-Base position. Only one switch in the stack must have the Base Unit Select switch set to the Base position.

3. Connect stacking cables as required for a Cascade Up (stack up) or Cascade Down (stack down) configuration as shown below:



**Figure 7: Cascade Down**



**Figure 8: Cascade Up**

**Next steps**

For making a standalone switch a stack for the first time and adding a switch to an already existing stack, see *Quick Start Configuration for Ethernet Routing Switch 3500 Series*, NN47203-301.

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## Connecting AC power

### Before you begin

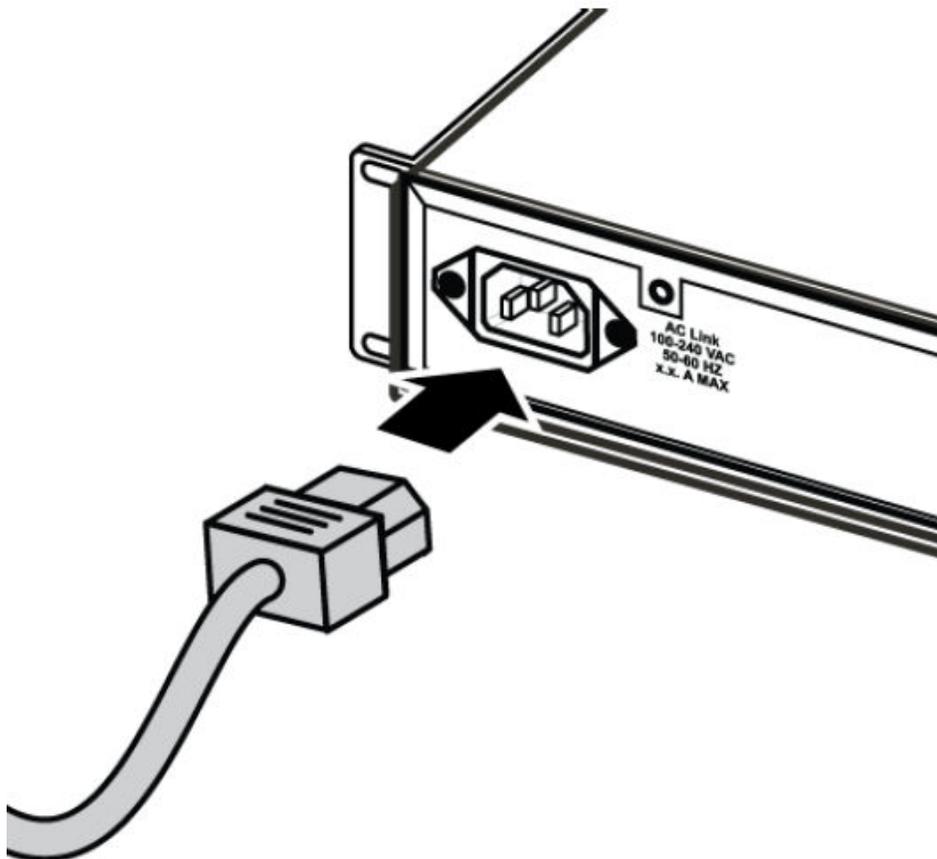
- Ensure to check AC power specifications for the switch.
- Ensure to check the AC power cord for international use. You must use a power cord that is approved for the receptacle type in your country.

### Procedure

1. Connect the AC power cord to the back of the switch, and then connect the cord to a power outlet.

**\* Note:**

ERS 3500 Series does not have a power switch. When you connect the AC power cord to a suitable AC power outlet, the switch powers up immediately.



2. Check the front-panel LEDs as the device is powered on to be sure the PWR LED is lit. If not, check that the power cable is correctly plugged in.

Connect the AC power cord to the back of the switch, and then connect the cord to a power outlet.

 **Danger:**

**Using power cords with a proper grounding path**

Use only power cords that have a grounding path. Without a proper ground, a person who touches the switch is in danger of receiving an electrical shock. Lack of a grounding path to the switch can result in excessive emissions.

## AC power specifications

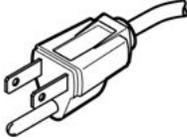
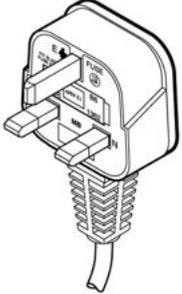
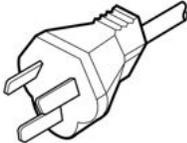
The following table describes the AC power specifications for the ERS 3500 Series.

Model	Input current	Input voltage (rms)	Power consumption	Thermal rating
3510GT	Maximum 0.18 A	100–240 VAC at 50–60 Hz	Maximum 18 W	61Btu/h maximum
3510GT-PWR+	Maximum 2.1 A	100–240 VAC at 50–60 Hz	Maximum 210 W	156 Btu/h maximum
3524GT	Maximum 0.28 A	100–240 VAC at 50–60 Hz	Maximum 28.5 W	95 Btu/h maximum
3524GT-PWR+	Maximum 5.0 A	100–240 VAC at 50–60 Hz	Maximum 475 W	357 Btu/h maximum
3526T	Maximum 0.28 A	100–240 VAC at 50–60 Hz	Maximum 28.5 W	95 Btu/h maximum
3526T-PWR+	Maximum 5.0 A	100–240 VAC at 50–60 Hz	Maximum 473 W	350 Btu/h maximum
3549GTS	Maximum 0.71 A	100–240 VAC at 50–60 Hz	Maximum 65 W	223 Btu/h maximum
3549GTS-PWR+	Maximum 4.91 A	100–240 VAC at 50–60 Hz	Maximum 484 W	424 Btu/h maximum
3550T	Maximum 0.83 A	100–240 VAC at 50–60 Hz	Maximum 35 W	118 Btu/h maximum
3550T-PWR+	Maximum 6.8 A	100–240 VAC at 50–60 Hz	Maximum 504 W	456 Btu/h maximum

## AC power cord specifications

To connect AC power to the switch, you need an appropriate AC power cord as described in the following table, also see the following table for plug specifications.

**Table 6: International power cord specifications**

Country and plug description	Specifications	Typical plug
Continental Europe <ul style="list-style-type: none"> <li>• CEE7 standard VII male plug</li> <li>• Harmonized cord (HAR marking on the outside of the cord jacket to comply with the CENELEC Harmonized Document HD-21)</li> </ul>	220 or 230 VAC 50 Hz Single phase	 228FA
U.S./Canada/Japan <ul style="list-style-type: none"> <li>• NEMA5-15P male plug</li> <li>• UL-recognized (UL stamped on cord jacket)</li> <li>• CSA-certified (CSA label secured to the cord)</li> </ul>	100 or 120 VAC 50-60 Hz Single phase	 227FA
United Kingdom <ul style="list-style-type: none"> <li>• BS1363 male plug with fuse</li> <li>• Harmonized cord</li> </ul>	240 VAC 50 Hz Single phase	 229FA
Australia AS3112-1981 male plug	240 VAC 50 Hz Single phase	 230FA

## Supported power cords

The switch supports power cords with Power Cords with C13 Power Supply Side Connector.

AC power cords are not packaged with the switch. Ensure you order the correct power cord for your region.

Order Code	Description	Region
AA0020062E6	POWER CORD 3.05M IEC C13 TO NEMA 5-15P	North America
AA0020063E6	POWER CORD 2.5M IEC C13 TO BS1363	United Kingdom
AA0020064E6	POWER CORD 2.5M IEC C13 TO CEE 7/7	European Union

*Table continues...*

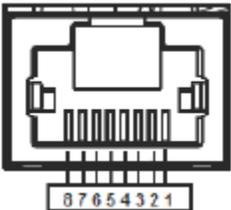
Order Code	Description	Region
AA0020065E6	POWER CORD 2.5M IEC C13 TO CEI 23-16	Italy
AA0020066E6	POWER CORD 2.5M IEC C13 TO GB 2099.1-1996	China
AA0020067E6	POWER CORD 2.5M IEC C13 TO BS-546/SANS164-1	India and South Africa
AA0020068E6	POWER CORD 2.5M IEC C13 TO AS 3112	Australia
AA0020069E6	POWER CORD 2.5M IEC C13 TO JIS 8303	Japan
AA0020101-E6	POWER CORD 2.5M IEC C13 TO NBR 14136 (IEC 60906-1)	Brazil
AA0020104-E6	POWER CORD 2.5M IEC C13 TO SEV 1011	Switzerland
AA0020107-E6	POWER CORD 2.5M IEC C13 TO SI-32	Israel

## Console port pin assignments

Console port establishes a management terminal connection to the switch.

You can use an RJ-45 to DB-9 cable to connect the switch console port to your management terminal. Extreme Networks recommends you use the RJ-45. Alternatively a DB-9 to RJ-45 adapter or other suitable console cables can be used - the maximum length of a console cable is 25 feet (8.3 meters). The following table describes the RJ-45 console port pin-out information. You can use the pin-out information to verify or create a console cable for use with your maintenance terminal.

**Table 7: Console port pin assignments**

Connector	Pin Number	Signal
	1	Ready to send (RTS) — optional, can swap or link with pin 8
	2	Data terminal ready (DTR) — optional, can swap or link with pin
	3	Transmit data (TXD) — mandatory
	4	Carrier detect (DCD) — optional
	5	Ground (GND) — mandatory
	6	Receive data (RXD) — mandatory
	7	Data set ready (DSR) — optional, can swap or link with pin 1
	8	Clear to send (CTS) — optional, can swap or link with pin 1

## LED state definitions

The figures and tables in the following sections describe the LEDs on the Ethernet Routing Switch 3500 Series. The tables describe LED operation for a switch that finishes the power-on self-test.

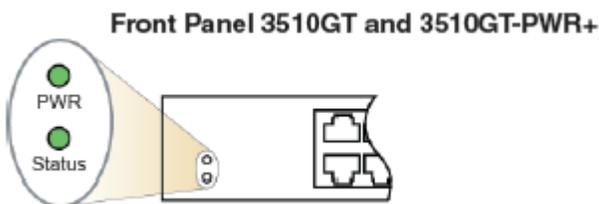
### Warning:

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber-optic cables are connected to a light source.

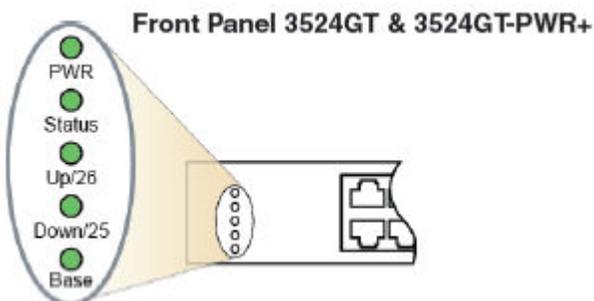
### Switch front panel LED views

The front-panel PWR LEDs are lit when the device powers on.

The following figures illustrate the switch series front panel LED indicators.

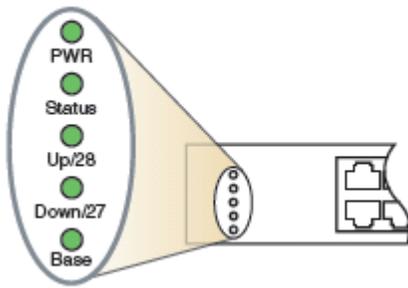


**Figure 9: ERS 3510GT/3510GT-PWR+ Series Front Panel LEDs**

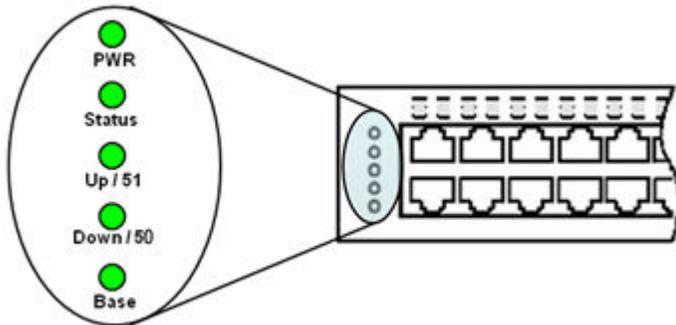


**Figure 10: ERS 3524 Front Panel LEDs**

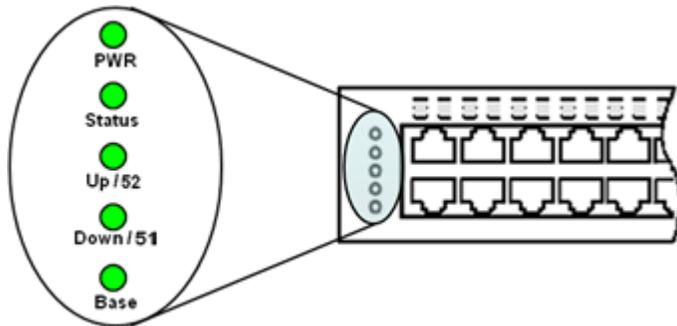
**Front Panel 3526T & 3526T-PWR+**



**Figure 11: ERS 3526 Front Panel LEDs**



**Figure 12: ERS 3549GTS/GTS-PWR+ Front Panel LEDs**



**Figure 13: ERS 3550T/T-PWR+ Front Panel LEDs**

**Status LEDs**

The System Status LEDs are located on the left side of the unit and include PWR, Status, UP, Down, and Base. The following table defines the operation of the Status LEDs.

LED	State	Definition
PWR	Off	The unit power is off.
	Green (Solid)	Normal operation.
	Green (Blinking)	The system is in reset.

*Table continues...*

LED	State	Definition
<b>Status</b>	<b>Off</b>	System cannot work properly (like temperature is too high).
	<b>Amber (Solid)</b>	Non-critical warning (the system can still work)
	<b>Amber (Blinking)</b>	The system failed self-test
	<b>Green (Solid)</b>	Everything is OK
	<b>Green (Blinking)</b>	TBD
<b>UP/Down</b>	<b>Off</b>	No Stack-up or Stack-down connection is detected.
	<b>Amber (Solid)</b>	A Stack-up or Stack-down cable is detected, but adjacency has not been completed.
	<b>Green (Solid)</b>	The unit has formed a neighbor with an adjacent unit over the Stack-up or Stack-down cables.
<b>Base</b>	<b>Off</b>	The unit is operating in a standalone mode, or not the stack base unit.
	<b>Amber (Solid)</b>	The unit is operating as the Temporary Base Unit.
	<b>Green (Solid)</b>	The unit is operating as the Base Unit for the designated stack.
	<b>Green (Blinking)</b>	There is a stack configuration error. Either multiple base units or no base unit is configured in the stack.