Installing Avaya Ethernet Routing Switch 5000 Series

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Contents

Chapter 1: Introduction

Purpose

This document provides the information and procedures required to install the hardware, software, cabling, and power for the Ethernet Routing Switch 5600 Series.

Unless otherwise indicated, this information applies to:

- Ethernet Routing Switch 5632FD
- Ethernet Routing Switch 5650TD
- Ethernet Routing Switch 5650TD-PWR
- Ethernet Routing Switch 5698TFD
- Ethernet Routing Switch 5698TFD-PWR

Related resources

Documentation

See the *Documentation Reference for Avaya Ethernet Routing Switch 5000 Series*, NN47200–103 for a list of the documentation for this product.

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Chapter 2: New in this release

There are no new features for this document for Release 6.6.

As Release 6.6 is supported only on the ERS 5600, all references to ERS 5500 have been removed.

Chapter 3: Installation fundamentals

The fundamentals topics in this document support the tasks directly associated with installation of the Ethernet Routing Switch 5000 Series.

Electrostatic discharge prevention

This module provides information and procedures for the prevention of electrostatic discharge during the installation process.

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. These electrostatic voltages can result from friction, including, but not exclusive to, pulling cabling through conduits, walking across carpeted areas, and building up of static charge in clothing. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. While networking equipment is commonly designed and tested to withstand common mode ESD events, voltage sometimes can be discharged to some connector pins but not others, or to some pins before others, which has the potential to damage the networking equipment.

To protect the Avaya Ethernet Routing Switch against ESD damage, take the following preventive measures before connecting any data cables to the device:

- Always use antistatic wrist straps. Make sure the strap is adjusted to provide good skin contact.
- Ensure that work surfaces and equipment racks are properly grounded for protection against electrostatic discharge. The common point must be connected 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 only protects 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.

With new cable installations, Avaya recommends that the use of an ESD discharge cable to reduce the potential for damage from static that can build up in cables. See Figure 1: ESD cable on page 12.

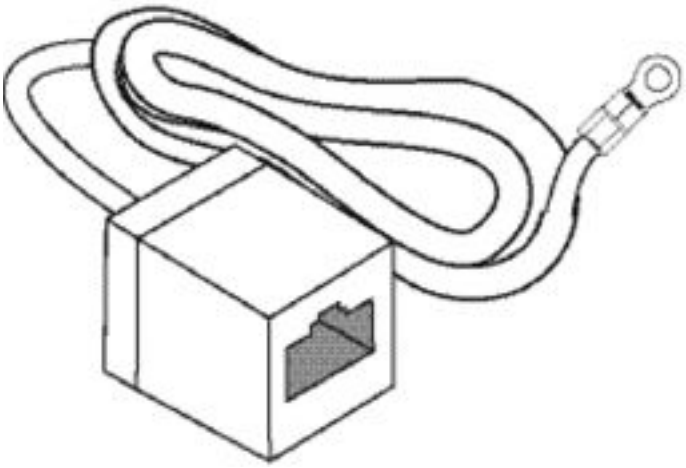


Figure 1: ESD cable

Ethernet Routing Switch 5000 series models

The following table lists the different Ethernet Routing Switch 5000 Series models and the key features for each switch.

Table 1: 5000 Series Switch Platforms

5000 Series Switch Model	Key features
Ethernet Routing Switch 5632FD	• 24 fixed 100/1000FX SFP Ethernet ports • Eight 10Gbit XFP ports • Non-PoE • Layer 2/Layer 3 • Stackable Ethernet switch • 1.5 rack units (U) high • Uses modular power supply units and has two field-serviceable power supply receptacles, which support 300W AC or DC power supply modules.
Ethernet Routing Switch 5650TD	• 48 port 10/100/1000 Base-T copper Ethernet ports • Two 10Gbit XFP ports • Non-PoE • Layer 2/Layer 3 • Stackable Ethernet switch

5000 Series Switch Model	Key features
	• 1 rack unit (U) high • Uses modular power supply units and has two field-serviceable power supply receptacles, which support 300W AC or DC power supply modules.
Ethernet Routing Switch 5650TD-PWR	• 48 port 10/100/1000 Base-T copper Ethernet ports • Two 10Gbit XFP ports • PoE • Layer 2/Layer 3 • Stackable Ethernet switch • 1 rack unit (U) high • Uses modular power supply units and has two field-serviceable power supply receptacles, which support 600W and 1000W AC or DC power supply modules.
Ethernet Routing Switch 5698TFD	• 96 fixed 10/100/1000 Base-T copper Ethernet ports • Six shared ports • Two 10Gbit XFP ports • Non-PoE • Layer 2/Layer 3 • Stackable Ethernet switch • 2 rack units (U) high • Uses modular power supply units and has three field-serviceable power supply receptacles, which support 300W AC or DC power supply modules.
Ethernet Routing Switch 5698TFD-PWR	• 96 fixed 100/1000FX SFP Ethernet ports • Six 10Gbit XFP ports • PoE • Layer 2/Layer 3 • Stackable Ethernet switch • 2 rack units (U) high • Uses modular power supply units and has three field-serviceable power supply

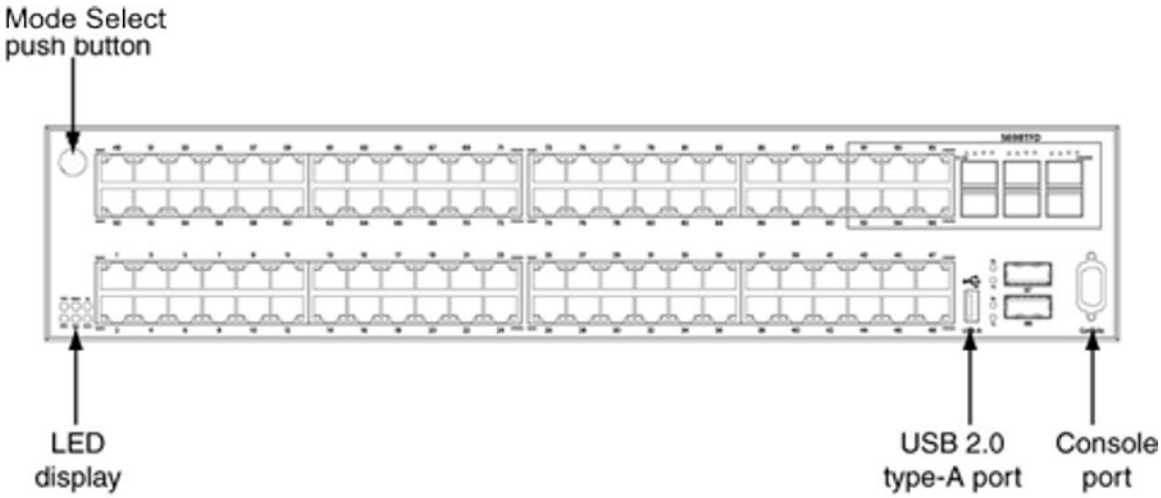
5000 Series Switch Model	Key features
	receptacles, which support 1000W AC or DC power supply modules.

Common hardware features

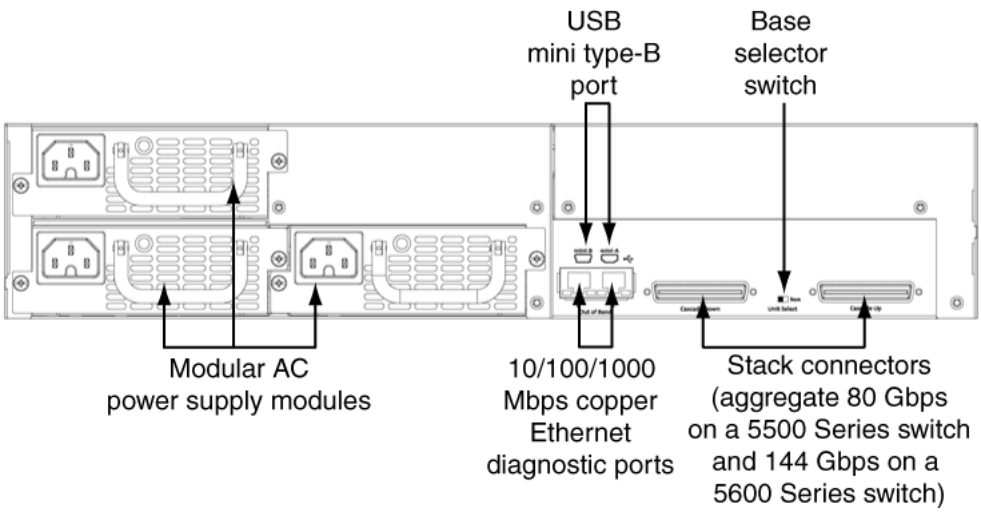
The following hardware features are part of all 5000 Series switches:

- Two stack connectors, each operating an aggregate 80 or 144 Gbps
- Mode Select push button (formerly known as UI push button)
- LED display panel
- Console port (DB-9 connector)
- Two 10/100/1000 Mbps copper Ethernet diagnostics ports
- USB 2.0 Type-A port

The following figure shows the front panel of the 5698TFD switch.



The following figure shows the rear panel of the 5698TFD switch. Not all 5000 Series switches have a USB port on the rear panel. See Universal Serial Bus ports on the Avaya Ethernet Routing Switch 5000 Series on page 15 for information about switches that have the rear-panel USB port.



Universal Serial Bus ports on the Avaya Ethernet Routing Switch 5000 Series

The following switches include a Type A USB port on the front panel adjacent to the console port, as well as a rear panel USB port (mini Type B):

- 5632FD
- 5650TD
- 5650TD-PWR
- 5698TFD
- 5698TFD-PWR

USB ports enable switch administrators to perform tasks that were previously completed through TFTP with a commonly available USB Mass Storage Device (also know as a flash drive or thumb drive). These tasks include:

- software download
- syslog backup
- ASCII configuration file generation and download

File and system operations are limited by the size of the USB device in use. Only USB drives that comply with the Mass Storage sub-section of the USB 1.1 and USB 2.0 specification are supported. Support is not extended to third-party devices that do not comply with these standards. Consult the documentation provided with the USB drive to ensure compliance with these standards.

Important:

The USB port on the back panel of the Ethernet Routing Switch 5600 Series models is not enabled.

Placement options and cables

The following sections describe the available placement option and requirements, as well as cables for the Ethernet Routing Switch 5000 Series switch.

Environmental requirements

This module describes the environmental requirements for the Ethernet Routing switches.

The Ethernet Routing switches must be properly mounted in a dry, well-ventilated area with adequate power available for optimum operation. See the environmental specifications in the job aid for Verifying environment suitability on page 43.

Placement options

You can mount 5000 Series switches on a flat surface such as a table or shelf, or in a rack. Choose the mounting option that best suits your location. The following sections describe the options.

Navigation

- Switch installation on a table or shelf on page 16
- Switch installation on the wall on page 17
- Switch installation in an equipment rack, front mount option on page 17
- Switch installation in an equipment rack, rear mount option on page 17

Choose the mounting solution that suits your requirements and site.

Switch installation on a table or shelf

You can mount 5000 Series switch on a flat surface such as a table or shelf. See Mounting on a table or shelf on page 46, to install a single unit on a table or shelf.

The surface, whether a shelf or table, must be able to support the combined weight of the switch and attached cables; between 21 and 33 pounds (9.5 to 15 kilograms) for a 5600 Series switch.

Switch installation on the wall

You can mount 5000 Series switches on a wall. See Mounting on a wall on page 48, to mount the switch on a wall.

Do not install a switch on a wall if the switch has a height greater than 1 rack unit (U).

Switch installation in an equipment rack, front mount option

You can mount 5000 Series switches in a rack with the front panel at the front of the rack. See Installing a front mounted switch in an equipment rack on page 50, to install the switch in a rack.

Before you begin this procedure, ensure that the equipment rack meets the following requirements:

- A space equivalent to the rack height of the switch is provided for each switch in an EIA or IEC standard 19-inch (48.2 centimeter) or TIA 23-inch (58.4 centimeter) equipment rack.
- The rack is bolted to the floor and braced if necessary.
- The rack is grounded to the same grounding electrode used by the power service in the area. The ground path must be permanent and must not exceed 1 ohm of resistance from the rack to the grounding electrode.

Caution:

When you mount the switch in a rack, do not stack units directly on top of one another in the rack. Each unit must be secured to the rack with the appropriate mounting brackets. Mounting brackets are not designed to support multiple units.

Switch installation in an equipment rack, rear mount option

You can mount 5000 Series switches in a rack with the rear panel at the front of the rack. See Installing a rear mounted switch in an equipment rack on page 52, to install the switch in a rack.

Before you begin this procedure, ensure that the equipment rack meets these requirements:

- A space equivalent to the rack height of the switch is provided for each switch in an EIA or IEC standard 19-inch (48.2 centimeter) or TIA 23-inch (58.4 centimeter) equipment rack.
- The rack is bolted to the floor and braced if necessary.
- The rack is grounded to the same grounding electrode used by the power service in the area. The ground path must be permanent and must not exceed 1 ohm of resistance from the rack to the grounding electrode.

Caution:

When you mount the switch in a rack, do not stack units directly on top of one another in the rack. Each unit must be secured to the rack with the appropriate mounting brackets. Mounting brackets are not designed to support multiple units.

Single and multiple switch arrangements

This module describes standalone and stacked arrangements.

Navigation

- Standalone arrangement on page 18
- Stack arrangement on page 18

You can stack any of the 5000 Series switches. You can connect up to eight 5600 Series devices in a stack to provide uninterrupted connectivity for up to 384 ports. Bandwidth in a 5600 Series stack is 144 Gbps.

Standalone arrangement

This module describes a standalone configuration.

Any one switch can operate in a standalone configuration. You can add more switches as your traffic increases.

Stack arrangement

This module describes a stack arrangement.

You connect the switches in the stack by the stack connectors. You designate one unit as the base unit by setting a switch on the back panel.

The stack connector is a component of the Ethernet Routing Switch 5000 Series back panel and consists of the Unit Select switch, Cascade Down connector, and Cascade Up connector.

The Cascade Down connector connects this switch to the next unit in the stack through a cascade cable. A connection from this connector must be attached to the Cascade Up connector of the next switch in the stack. A return cable from another Cascade Down connector to this unit's Cascade Up connector completes the stack connection.

Important:

To create a stack connection, order the appropriate Ethernet Routing Switch 5000 Series cascade cables to ensure fail-safe stacking. An 18 inch cable is provided with the switch. Ensure you order additional stacking cables of the correct length for a stack of three or more units -- you require one long cable (stack return cable) to complete the loop in a stack from the bottom unit to the top unit. See Cascade down on page 20 and Cascade up on page 22.

The Cascade Up connector provides an attachment point for accepting a cascade cable connection from another unit in the stack. A return cable from the Cascade Down connector to the Cascade Up connector on the adjacent unit completes the stack connection.

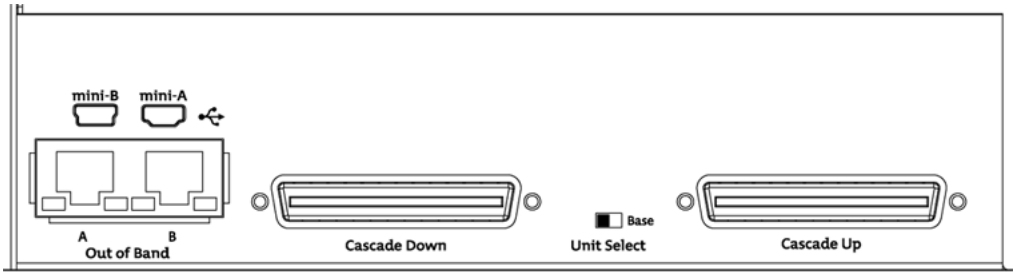


Figure 2: Stack connector for a 5600 Series switch

Understanding stack types

This section describes the different stack types.

Due to stack parameters being associated with the base unit, the physical stack order depends on the base unit position and whether the stack is configured cascade up (stack up) or cascade down (stack down). This designation depends on the stack cabling arrangement.

The Unit Select switch is used to designate a switch in the stack as a base or non-base unit. Sliding the switch to the right designates that switch as the base unit. Only one switch in a stack may have the Unit Select switch in the base unit position. All other switches in the stack must have the Unit Select switch in the left position which designates them as non-base units.

During the initial installation of the stack, the software automatically determines the physical order of all units in the stack according to the position of the base unit within the stack.

Thereafter, the individual units maintain their original unit numbering, even if the position of one or more units in the stack is changed.

For example, when the stack is initially powered, the base unit becomes unit 1 and the unit that the base unit connects to (via the Cascade Down cable) becomes unit 2 (and the next unit is unit 3 and so on), until the maximum stack configuration (up to eight units for a 5600 Series stack) is reached. If the base unit is changed to another unit in the stack, the new base unit keeps its original unit number in the stack.

When a switch participates in a stack configuration, a stack MAC address is automatically assigned during stack initialization. The stack MAC address is the base unit MAC address plus 1. If another unit in the stack is assigned as the base unit, the new stack MAC address is the MAC address of the new base unit plus 1. The original stack IP address still applies to the new base unit.

If an assigned base unit fails, the next unit in the stack order automatically becomes the new temporary base unit. This change is indicated by the Base LED on the temporary base unit LED display panel moving to a steady amber state.

This automatic failover is a temporary safeguard only. If the stack configuration loses power, the temporary base unit will not power up as the base unit when power is restored. Also, if the original unit rejoins the stack, it will not resume base unit status. For this reason, always assign the temporary base unit as the base unit until the failed unit is repaired or replaced.

Important:

If the temporary base unit is not assigned as the new base unit, and the temporary base unit fails, the next unit in the stack order becomes the temporary base unit. This process will continue after successive failures until only two units are left in the stack.

Regardless of stack configuration, the following applies:

- When power is applied to the stack the base unit initializes, typically within 60 seconds, and the entire stack powers up as a single logical unit.
- A RS-232 communications cable can be attached to the console port of any switch in the stack to establish a console connection.
- A software upgrade can be performed on the stack from any switch using the console interface, a Telnet session, the Enterprise Device Manager interface, or any SNMP-based management software.
- The stack can be managed using a Telnet session, Enterprise Device Manager interface, or any SNMP-based management software through any stack switch port.

Cascade down

The system automatically numbers the physical units based on the designated base unit (Unit 1). In a cascade down configuration, the base unit is physically located as the top unit in the stack. The cable connected to the Cascade Down connector of the base unit terminates in the Cascade Up connector on the next unit in the stack which is physically located below the base

unit. This next unit is designated Unit 2. The stack is wired downward through the units and the system continues to number in this manner throughout the stack. In this configuration, the base unit discovers the stack in a cascade down (stack down) direction. The following illustration shows a cascade down (stack down) configuration.

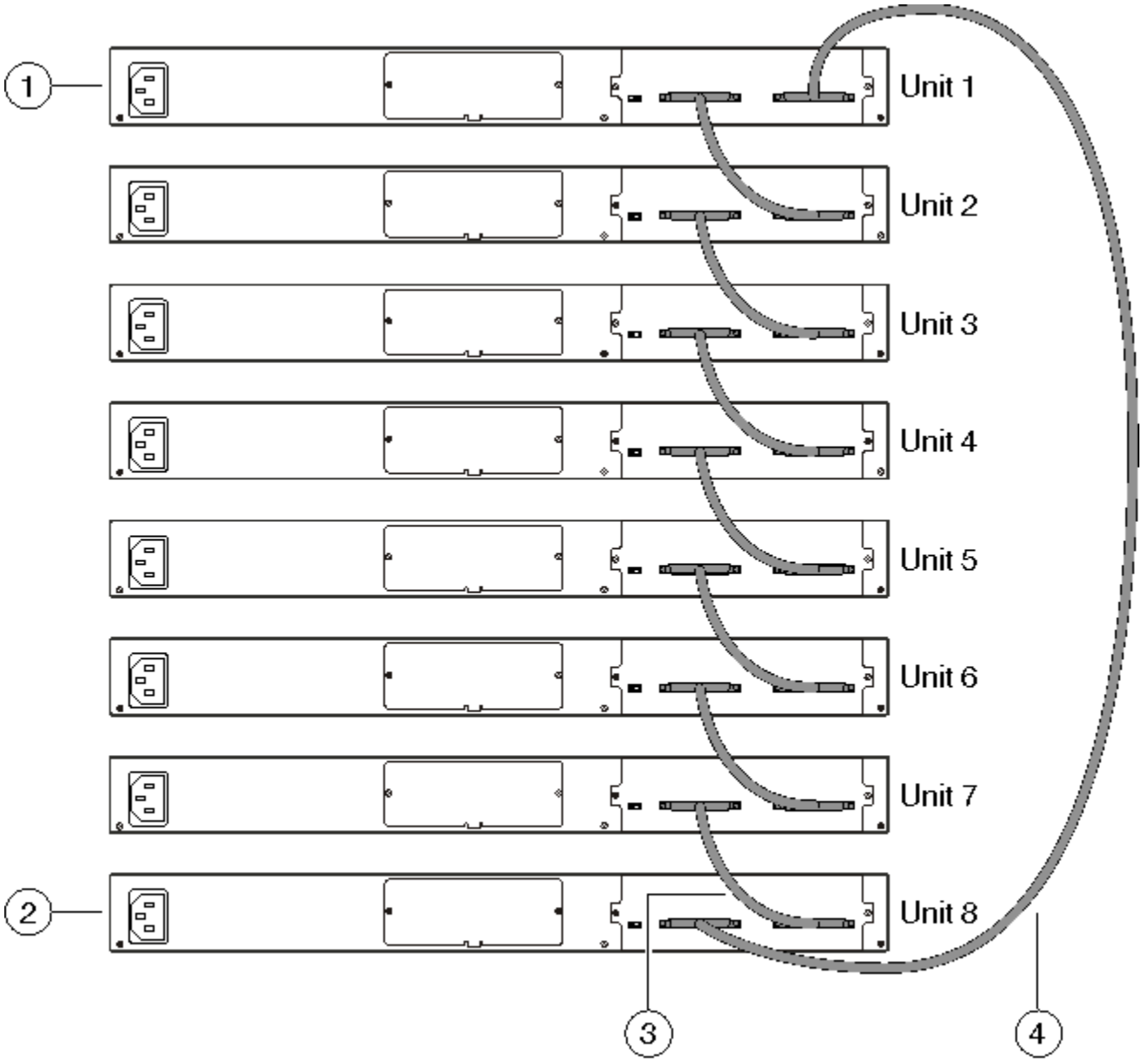


Figure 3: Cascade down configuration

Important:

Since many network management software packages assume a cascade down (stack down) configuration, Avaya recommends the usage of this configuration.

For stack installation procedures, see Stack configuration on page 67.

Cascade up

In a cascade up (stack up) configuration, the base unit is physically located as the top unit in the stack. The cable connected to the Cascade Down connector of the base unit terminates in the Cascade Up connector physically located at the bottom of the stack. This next unit is designated Unit 2. The stack is wired upward through the units and the system continues to number in this manner throughout the stack. In this configuration, the base unit discovers the stack in a cascade up (stack up) direction. The following illustration shows a cascade up (stack up) configuration.

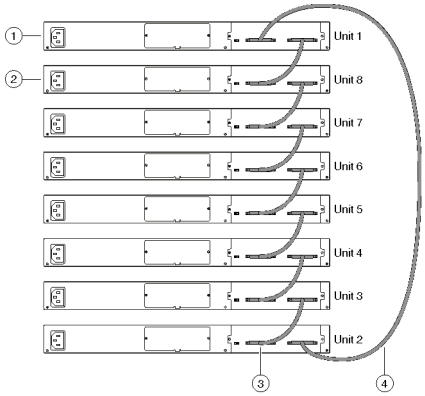


Figure 4: Cascade up configuration

For stack installation procedures, see Stack configuration on page 67.

Redundant cascade stacking

The 5000 Series switches allow a stack of up to eight units in a 5600 Series stack. If any single unit fails or if a cable is accidently disconnected, other units in the stack remain operational without interruption.

In addition to increasing bandwidth, the software uses the cables to provide two paths between units. If one path breaks the data travels over the remaining path with half the normal inter-switch bandwidth.

The following diagram shows an example of how a stack configuration reacts to a failed connection in the stack configuration. In the illustrated example, the following occurs:

- Unit 3 becomes non-operational due to a unit failure, cable disconnection, or a loss of power.
- Units 2 and 4, directly upstream and downstream from Unit 3, sense the loss of link signals from unit 3. The software causes all the data to traverse the remaining path.

- The Cascade Down LED for Unit 2 and the Cascade Up LED for Unit 4 turn amber to indicate an error has been detected.
- The remaining stack units continue to be connected.

There are four internal ports for two Cascade links. Internal ports 1 and 2 are associated with Cascade-Down link and internal ports 3 and 4 are associated with Cascade-Up link. When viewing the event log after a stack port goes down, use the following information to help determine the problem:

- Message Stack port 1 DOWN or Stack port 2 DOWN means Cascade-Down link is down.
- Message Stack port 1 UP or Stack port 2 UP means Cascade-Down link is up.
- Message Stack port 3 DOWN or Stack port 4 DOWN means Cascade-Up link is down.
- Message Stack port 3 UP or Stack port 4 UP means Cascade-Up link is up.

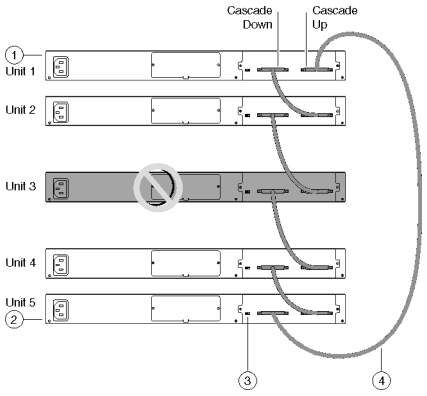


Figure 5: Redundant stack configuration

For stack installation procedures, see Stack configuration on page 67.

Identifying cables to use with the Ethernet Routing Switch

The following table lists the required cables for a 5000 Series switch and cable specifications.

Table 2: Switch cabling requirements

Required cable	Description
10/100/1GBase-T Ports	The interconnect cabling must conform to the Cat5e, Cat6, or Cat6e specification of the Commercial Building Telecommunications Cabling Standard, ANSI/TIA/EIA 568-B fitted with an RJ-45 Module Jack.

Required cable	Description
Console Port	Serial cable with a DB-9 female connector on both ends. The maximum length for the console port cable is 25 feet (8.3 meters).
Shared SFP Transceiver Ports	Varies with the installed SFP Transceiver. Refer to the documentation that was shipped with the SFP Transceiver for specifications.
XFP Transceiver Ports	Varies with the installed XFP Transceiver. Refer to the documentation that was shipped with the XFP Transceiver for specifications.
USB Ports	USB 2.0 compliant cable with a USB Type A connector on both ends.

Important:

In Autonegotiation mode, the Ethernet Routing Switch 5000 Series switches automatically provide the proper MDI/MDI-X connection on the RJ-45 ports; thereby eliminating the need for crossover cables. When Autonegotiation is disabled on 10/100 ports, they are configured as an MDI-X connection.

Connecting a transceiver to the switch or switch stack

The following sections describe small form factor pluggable (SFP) transceivers in the Ethernet Routing Switch 5000 Series. For installation and removal procedures, see *Installing Transceivers and Optical Components on Avaya Ethernet Routing Switch 5000 Series*, NN47200–302.

Understanding transceiver connections

The following sections describe transceiver connections.

Small form factor pluggable (SFP) transceivers interface a device motherboard to a fiber optic or unshielded twisted pair network cable. The SFPs described in this section provide Ethernet at 1 gigabit per second (Gbit/s).

Select the appropriate transceiver to provide the required reach. SFPs are available for cable distances of up to 100 meters (m), 550 m, 10 kilometers (km), 40 km, 70 km, and 120 km. Any reach over 100 m requires fiber optic cable.

SFPs are hot-swappable input/output enhancement components designed for use with Avaya products to allow Gigabit Ethernet ports to link with other Gigabit Ethernet ports over various media types.

The following table lists SFP and XFP models.

Table 3: SFPs and XFPs

SFP model	Description	Part Number
1000Base-SX SFP	850 nm LC connector	AA1419013-E5
1000Base-SX SFP	850 nm MT-RJ connector	AA1419014-E5
1000Base-LX SFP	1310 nm LC connector	AA1419015-E5
1000BaseCWDM-XD SFP	1470 nm LC connector, up to 40 km	AA1419025-E5
1000BaseCWDM-XD SFP	1490 nm LC connector, up to 40 km	AA1419026-E5
1000BaseCWDM-XD SFP	1510 nm LC connector, up to 40 km	AA1419027-E5
1000BaseCWDM-XD SFP	1530 nm LC connector, up to 40 km	AA1419028-E5
1000BaseCWDM-XD SFP	1550 nm LC connector, up to 40 km	AA1419029-E5
1000BaseCWDM-XD SFP	1570 nm LC connector, up to 40 km	AA1419030-E5
1000BaseCWDM-XD SFP	1590 nm LC connector, up to 40 km	AA1419031-E5
1000BaseCWDM-XD SFP	1610 nm LC connector, up to 40 km	AA1419032-E5
1000BaseCWDM-ZX SFP	1470 nm LC connector, up to 70 km	AA1419033-E5
1000BaseCWDM-ZX SFP	1490 nm LC connector, up to 70 km	AA1419034-E5
1000BaseCWDM-ZX SFP	1510 nm LC connector, up to 70 km	AA1419035-E5
1000BaseCWDM-ZX SFP	1530 nm LC connector, up to 70 km	AA1419036-E5
1000BaseCWDM-ZX SFP	1550 nm LC connector, up to 70 km	AA1419037-E5
1000BaseCWDM-ZX SFP	1590 nm LC connector, up to 70 km	AA1419039-E5

SFP model	Description	Part Number
1000BaseCWDM-ZX SFP	1610 nm LC connector, up to 70 km	AA1419040-E5
1000Base-T SFP	Category 5 copper unshielded twisted pair (UTP), RJ-45 connector	AA1419043-E5
1000Base-SX DDI SFP	850 nm DDI LC connector	AA1419048-E5
1000Base-LX DDI SFP	1310 nm DDI LC connector	AA1419049-E5
1000BASE-BX bidirectional SFP	1310 nm, single fiber LC (Must be paired with AA1419070-E5)	AA1419069-E5
1000BASE-BX bidirectional SFP	1490 nm, single fiber LC (Must be paired with AA1419069-E5)	AA1419070-E5
100Base-FX SFP	1310 nm LC connector NOTE: Supported on the 5600 Series switches only.	AA1419074-E6
XFP Model	Description	Part Number
10GBase-LR/LW XFP	1-port 1310 nm SMF, LC connector	AA1403001-E5
10GBASE-ER/EW	1-port 40km, 1550nm SMF, LC connector	AA1403003-E5
10GBase-SR XFP	1-port 850 nm MMF, LC connector	AA1403005-E5
10GBase-ZR/ZW XFP	1550 nm SMF LC connector	AA1403006-E5
10GBase-LRM XFP	1310 nm, up to 220 m over MMF, DDI	AA1403007-E6

See *Installing Transceivers and Optical Components on Avaya Ethernet Routing Switch 5000 Series*, NN47200–302 for a list of supported SFPs and your latest product-specific release notes. Information contained in the Release Notes takes precedence over any information contained in this document.

5600 Series power options

The Ethernet Routing Switch 5600 Series uses power supply modules. All 5600 Series power supply modules have an internal fuse for protection. The 5600 Series power contain fans for cooling purposes.

Two power supply modules can operate in parallel for redundancy. In the case of the 5698 model, 3 power supply modules can be used to provide true N+1 redundancy. For information about which power supply modules you can install in each 5600 Series switch, and how many, see Power supply module installation matrix on page 28

All 5600 Series power supply modules are hot-swappable and hot-pluggable.

AC and DC power specifications

The following table describes the AC and DC power specifications for the Ethernet Routing Switch 5600 Series.

Model	Input current Amps maximum per power supply			Power consumption	Thermal rating	Power supply used	Power over Ethernet (PoE)
	100-120 VAC	48 VDC	200-240 VAC	Watts maximum	BTU/h maximum	Watts AC/DC, DC/DC	Power per port (Watts)
ERS 5632FD	1.8		0.9	190	650	300	n/a
ERS 5632FD DC		4.2		190	650	300	n/a
ERS 5650TD	1.2		0.6	132	450	300	n/a
ERS 5650TD DC		3.0		132	450	300	n/a
ERS 5650TD-PWR	5.5		2.75	218	745	600	7.7
ERS 5650TD-PWR	10.5		5.25	290	990	1000	15.4
ERS 5650 TD-PWR (2 power supplies)	5.3 *		2.65 *	290	990	600 *	15.4
ERS 5650 TD-PWR DC		21		290	990	1000	15.4

Model	Input current Amps maximum per power supply			Power consumption	Thermal rating	Power supply used	Power over Ethernet (PoE)
	100-120 VAC	48 VDC	200-240 VAC	Watts maximum	BTU/h maximum	Watts AC/DC, DC/DC	Power per port (Watts)
ERS 5698TFD	2.0		1.0	215	735	300	n/a
ERS 5698TFD DC		4.5		215	735	300	n/a
ERS 5698TFD -PWR	10.5		5.25	400	1365	1000	7.7
ERS 5698TFD -PWR (2 power supplies)	9.5 *		4.75 *	545	1850	1000 *	15.4
ERS 5698TFD -PWR DC		26		400	1365	1000	7.7
ERS 5698TFD -PWR DC (2 power supplies)		21 *		545	1850	1000 *	15.4
* per power supply							

Power supply module installation matrix

The following table indicates the type and maximum number of power supply modules that you can use with each 5600 Series switch. If you install two or more power supply modules in one switch, the power supply modules must be identical wattage.

Power Supply Module	5632 - FD	5632 - FD DC	5650 - TD	5650 - TD DC	5650 - TD PWR	5650 - TD PWR DC	5698 - TFD	5698 - TFD DC	5698 - TFD PWR	5698 - TFD PWR DC
300W AC/DC	2		2				3			
300W DC/DC		2		2				3		
600W AC/DC					2					
1000 W AC/DC					2				3	
1000 W DC/DC						2				3

For regulatory information about the power supply modules, see *Regulatory Information Reference for Avaya Ethernet Routing Switch 5600 Series*, NN47201-101.

PoE capabilities for 5600 Series switch ports

The PoE capability at each 5600 Series switch port is dependant on the power supply modules that you install. The following table shows the PoE capability at each port as a function of the power supply module installed.

Table 4: PoE capability matrix

	5650TD-PWR		5698TFD-PWR
10/100/1000 TX Ports 100FE/1GE SFP Ports 10GFX XFP Ports	48 0 2	48 0 2	96 6 2
Main power	600W	1000W	2 x 1000W
Redundant power	600W	1000W	1000W
PoE power at each port	7.7W	15.4W	15.4W

Chapter 4: Installing the switch

About this task

Installation of hardware and software introduces the Avaya Ethernet Routing Switch 5000 Series to the network. Installation tasks include the procedures required to bring the switch online. The procedures reflect the recommended method to install the 5000 Series switch in the simplest way, with necessary safety precautions. Installation does not include customized configuration, switch maintenance, or switch administration.

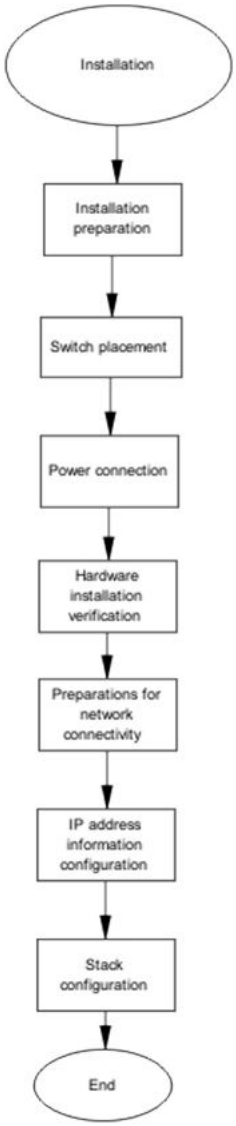
Prerequisites:

- Environmental requirements on page 16
- Placement options on page 16
- Standalone arrangement on page 18
- Single and multiple switch arrangements on page 18
- Stack arrangement on page 18
- Understanding stack types on page 19
- Understanding transceiver connections on page 24
- Avaya Ethernet Redundant Power Supply 15 power specification on page 78

Installation tasks

This work flow shows you the sequence of tasks you perform to install the switch.

Installation Tasks Task Flow



Navigation:

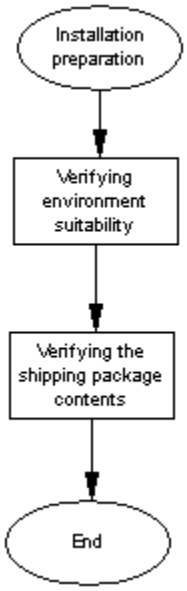
- Installation Preparation on page 33
- Switch placement on page 33
- Power connection on page 34
- Hardware installation verification on page 36
- Preparations for network connectivity on page 36

- IP address information configuration on page 37
- Stack configuration on page 39

Installation Preparation

This task flow shows the sequence of procedures you perform to prepare for ERS 5000 installation.

Installation Preparation Task Flow



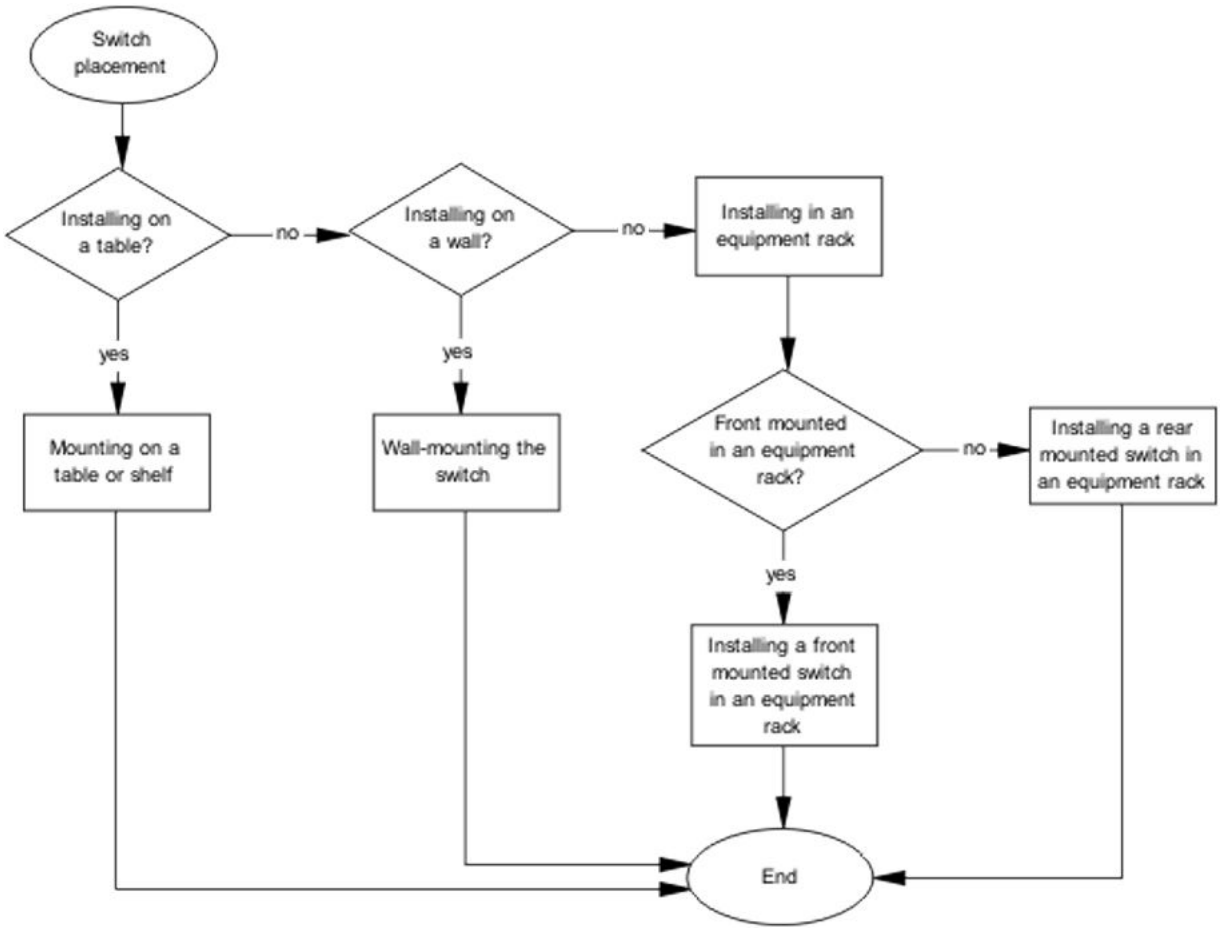
Navigation:

- Installation preparation on page 43
- Verifying environment suitability on page 43
- Verifying the package contents on page 45

Switch placement

This task flow shows the sequence of procedures you perform to place the switch.

Switch Placement Task Flow



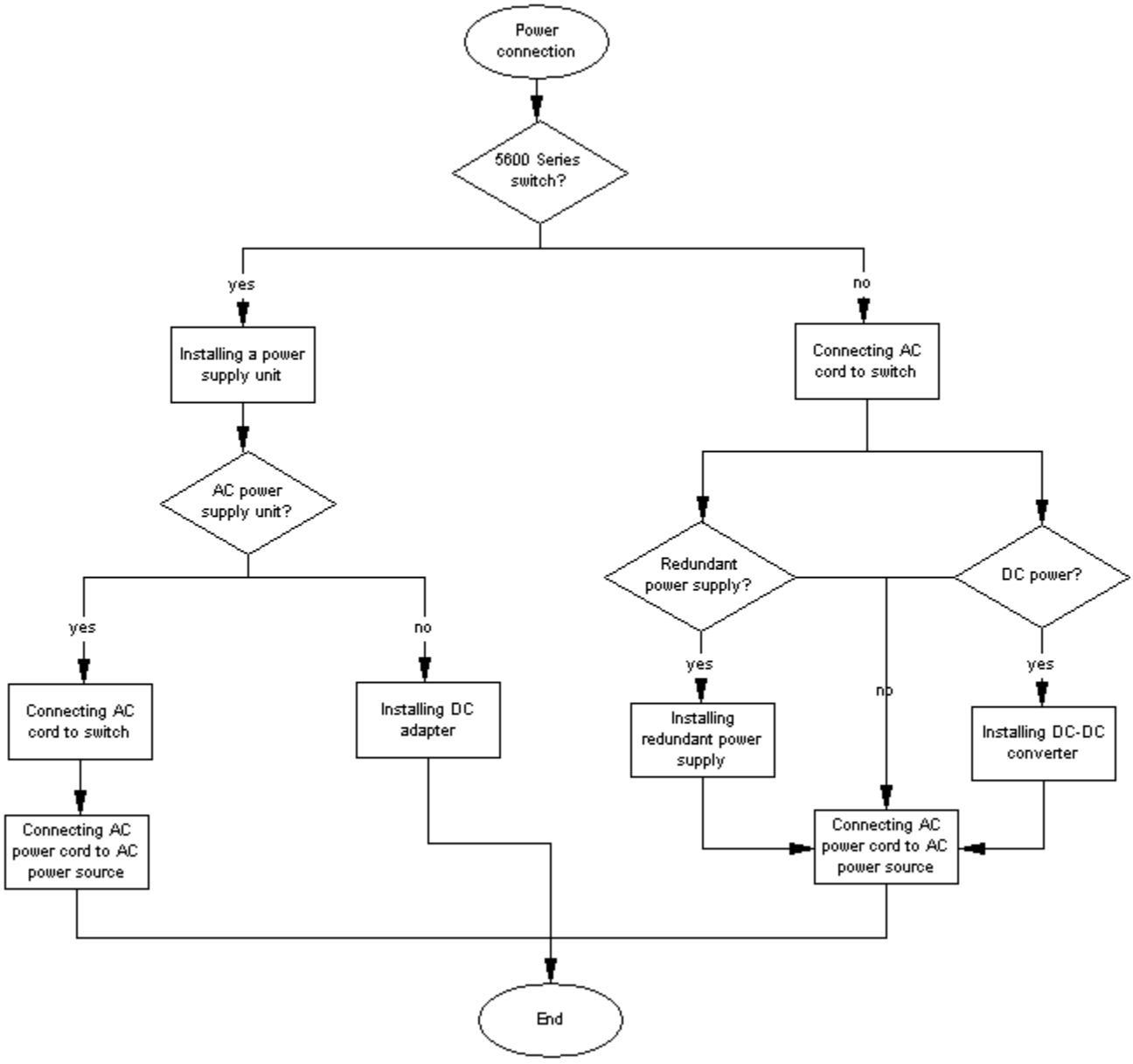
Navigation:

- Mounting on a table or shelf on page 46
- Mounting on a wall on page 48
- Installing a front mounted switch in an equipment rack on page 50
- Installing a rear mounted switch in an equipment rack on page 52

Power connection

This task flow shows the sequence of procedures you perform to connect power.

Power Connection Task Flow



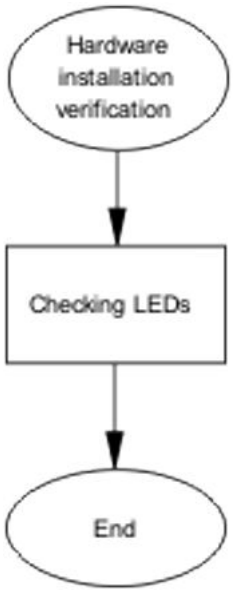
Navigation:

- Connecting an AC cord to switch on page 56

Hardware installation verification

Use the following procedures to install the hardware.

Hardware Installation Verification Task Flow



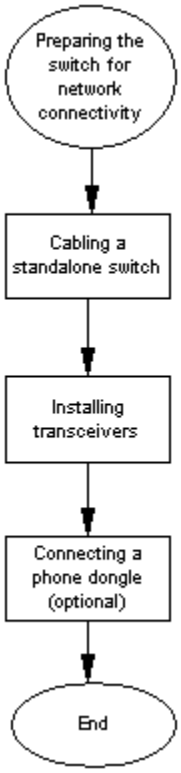
Navigation:

- Checking LEDs on page 57

Preparations for network connectivity

Use the following procedures to prepare for network connectivity.

Preparations for Network Connectivity Task Flow



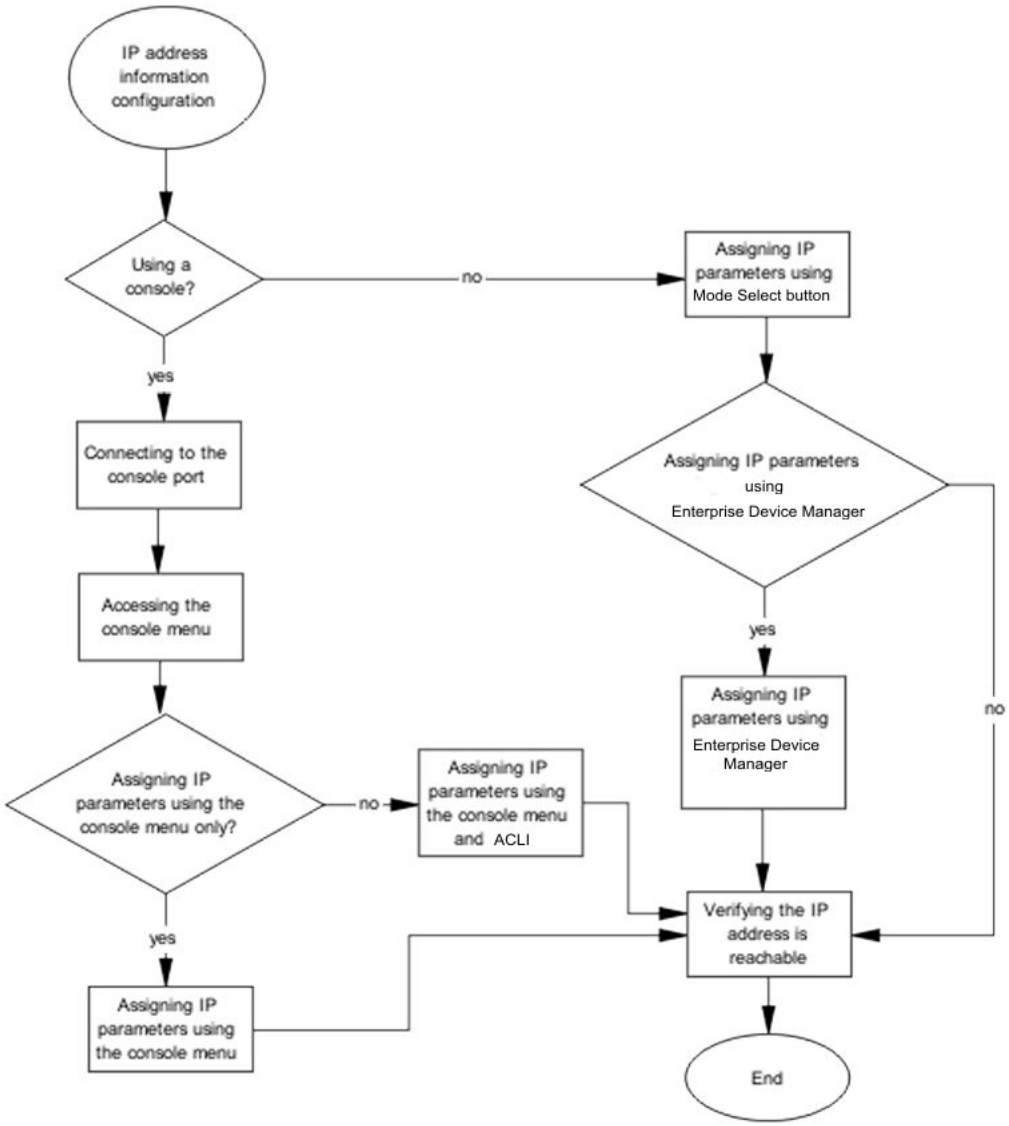
Navigation:

- Cabling a standalone switch on page 61
- Installing transceivers on page 62

IP address information configuration

This task flow shows the sequence of procedures you perform to configure IP address information.

IP Address Information Configuration Task Flow



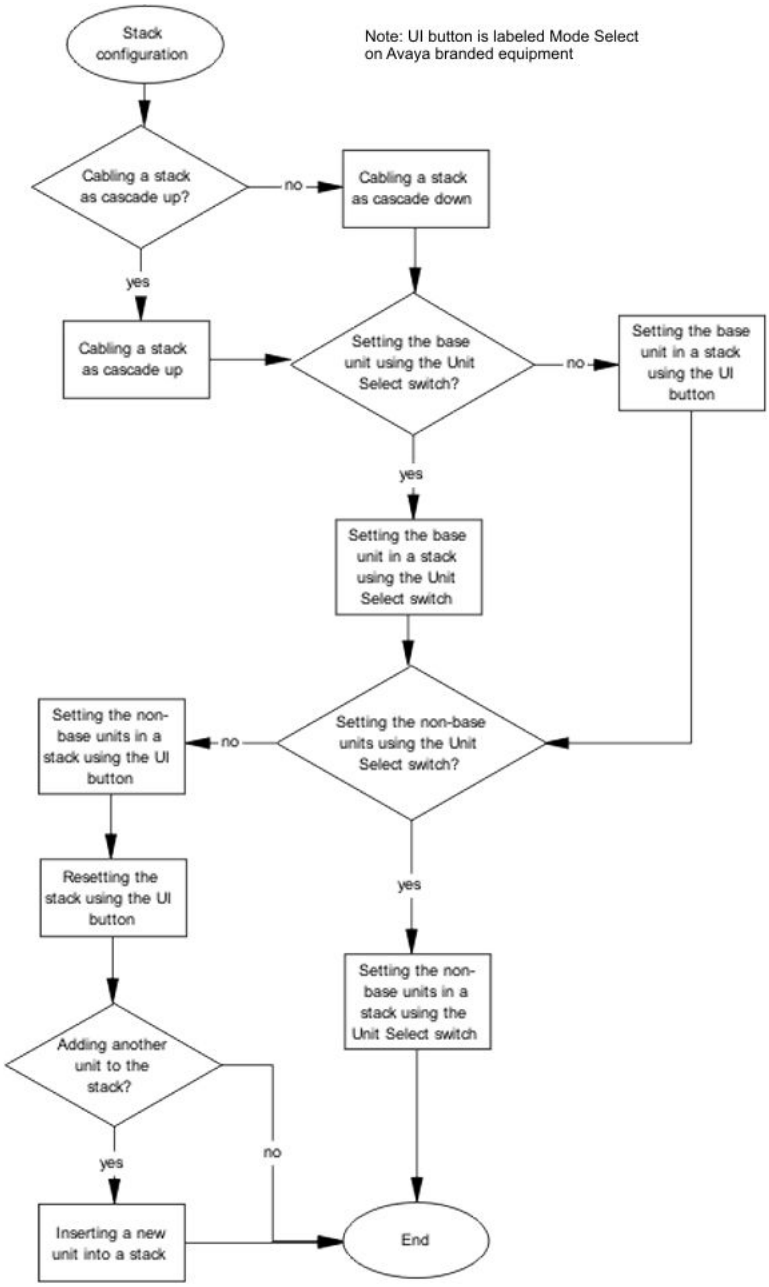
Navigation:

- Accessing the console menu on page 64
- Assigning IP parameters using the console menu on page 64
- Assigning IP parameters using Enterprise Device Manager on page 66
- Verifying assigned IP address is reachable on page 66

Stack configuration

This task flow shows the sequence of procedures you perform to configure a stack.

Stack Configuration Task Flow



Navigation:

- Cabling a stack on page 67
- Selecting a base unit on page 69
- Selecting a base unit using the UI/Mode Select button on page 70

Chapter 5: Procedures for installation of the switch

Installation preparation

About this task

This procedure describes how to prepare to install a switch.

Warning:

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

Procedure

1. Determine the type of installation
2. Prepare the site.
3. Collect the tools required to install a switch.

Verifying environment suitability

About this task

This procedure describes how to verify environment suitability.

Procedure

To verify environmental suitability for installation of the Ethernet Routing Switch 5600 Series switch, ensure that the area where you want to install and operate the switch meets the requirements listed in the following job aid.

Job Aid

The following table shows the environmental requirements for the Ethernet Routing Switch 5600.

Table 5: Job aid: Ethernet Routing Switch 5600 Series environmental requirements

Storage temperature	-40° to 85°C
Operating temperature	0° to 50°C (continuous operational.) 0° to 55°C (short term operational)
ESS temperature	-5° to 55°C
Operating relative humidity	10 to 90% non-condensing
Storage relative humidity	10 to 95% non-condensing
Operating altitude	13,000 feet above sea level
Storage altitude	-1,000 to 40,000 feet above sea level
Cooling	Dependent on system requirements
Audible noise	45dB to 55dB nominal
DMT temperature	-10° to 60°C
DVT temperature	-15° to 65°C
Miscellaneous Operating Considerations	• No heat sources such as hot air vents or direct sunlight located near the switch. • No sources of severe electromagnetic interference located near the switch. • No excessive dust in the environment. • An adequate power source is located within 6 feet (1.83 meters) of the switch. One 15-amp circuit is required for each power supply. • At least 2 inches (5.08 centimeters) of clearance on each side of the switch unit for ventilation. • Adequate clearance is allotted at the front and rear of the switch for access to cables.

Verifying the package contents

About this task

For each Ethernet Routing Switch 5600, verify the package contents with the items in the following figure to ensure you have received all components. If any components are missing, contact the vendor where you purchased the switch.

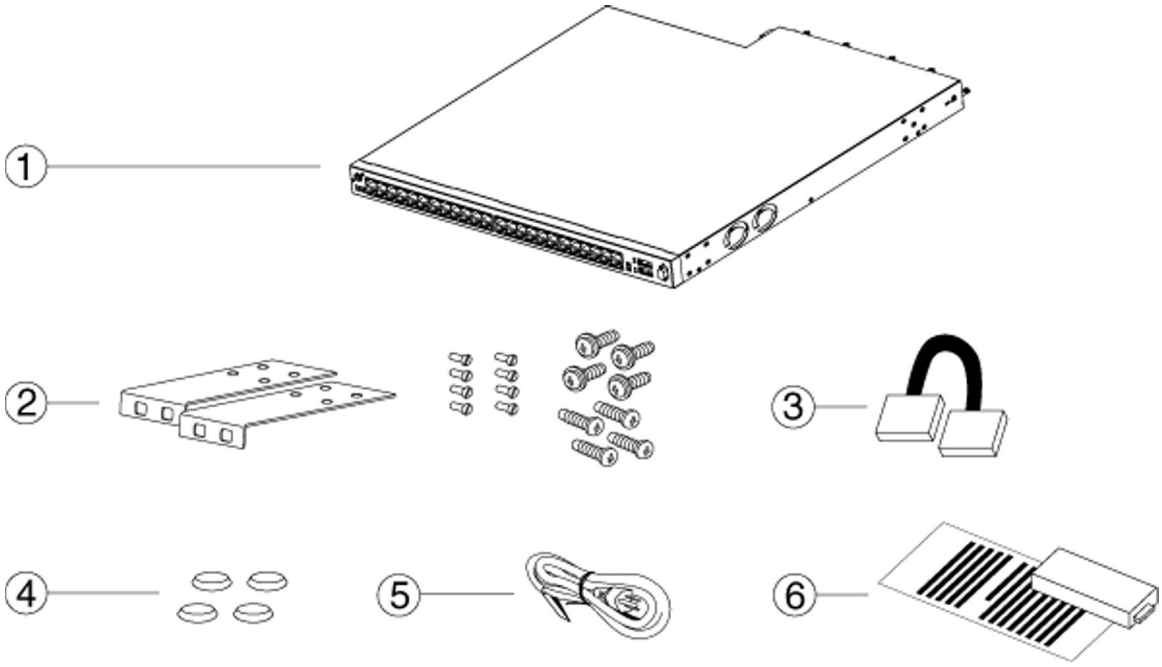


Figure 6: Ethernet Routing Switch 5600 Series package contents

1. Avaya Ethernet Routing Switch 5600 Series
2. Rack-mounting hardware that includes:
   - Rack-mount brackets (two for a 19-inch equipment rack and two for a 23-inch equipment rack)
   - Screws for attaching brackets to the switch
   - Screws for attaching the brackets to the equipment rack
3. Stacking cable
4. Rubber footpads
5. Country-specific AC power cord or DC adapter
6. Power supply module and related documentation

Switch placement

About this task

The following sections describes the various methods of mounting or placing a switch.

Mounting on a table or shelf

About this task

This procedure describes how to mount 5000 Series switches on a table or a shelf.

A single 5000 Series switch can be installed on any flat surface. The surface should be able to support the combined weight of the switch and attached cables; between 21 and 33 lbs (9.5 to 15 kg) for a 5600 Series switch.

Procedure

1. Attach the provided rubber footpads to the bottom of the switch in the locations shown in the following figure.

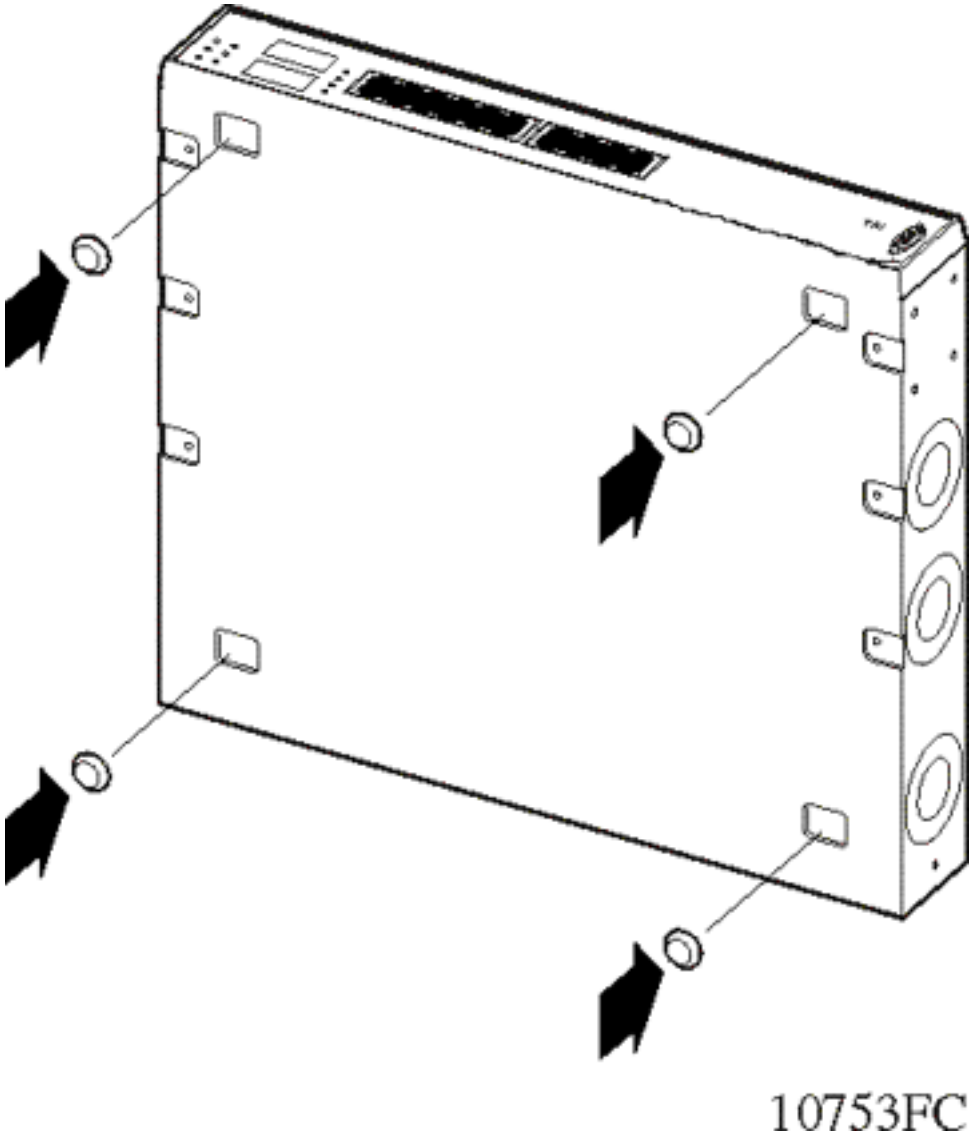


Figure 7: Attaching rubber footpads to a 5000 Series switch

2. Set the switch on a table or shelf, as shown in the following figure. Allow at least 2 inches (5.1 centimeters) on each side for proper ventilation and at least 5 inches (12.7 centimeters) at the back for power cord clearance.

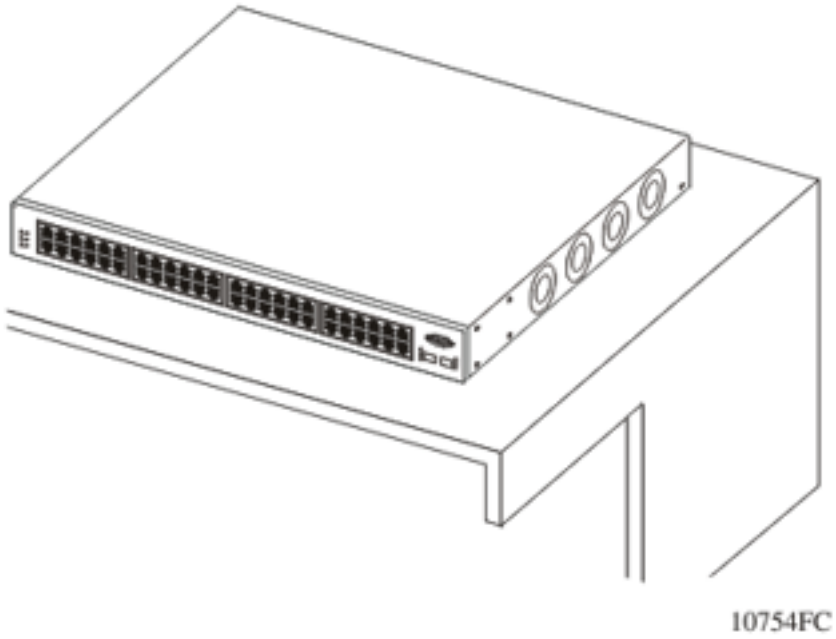


Figure 8: Table or shelf mount

Mounting on a wall

This procedure describes how to mount a 5000 Series switch on the wall.

Before you begin

- Phillips #2 screwdriver
- Wall anchors and screws

About this task

One 1U 5600 Series switch weighs approximately 30 lbs (13.6 kg). Ensure you choose fasteners appropriate for the weight of the unit. Avaya recommends that two people lift and install a 5600 Series switch.

Procedure

1. Attach the brackets to each side of the device, as shown in the following job aid.
2. Secure the brackets to the wall using appropriate screws and wall anchors (not provided), as shown in the following job aid.

Job Aid

The following figures show the wall mount bracket detail.

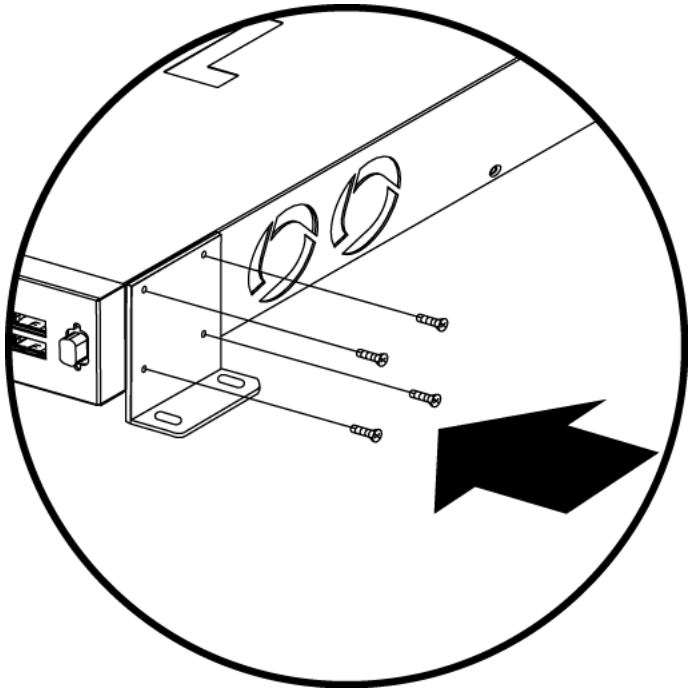


Figure 9: Wall mount bracket detail

The following figures show the wall mount screw location.

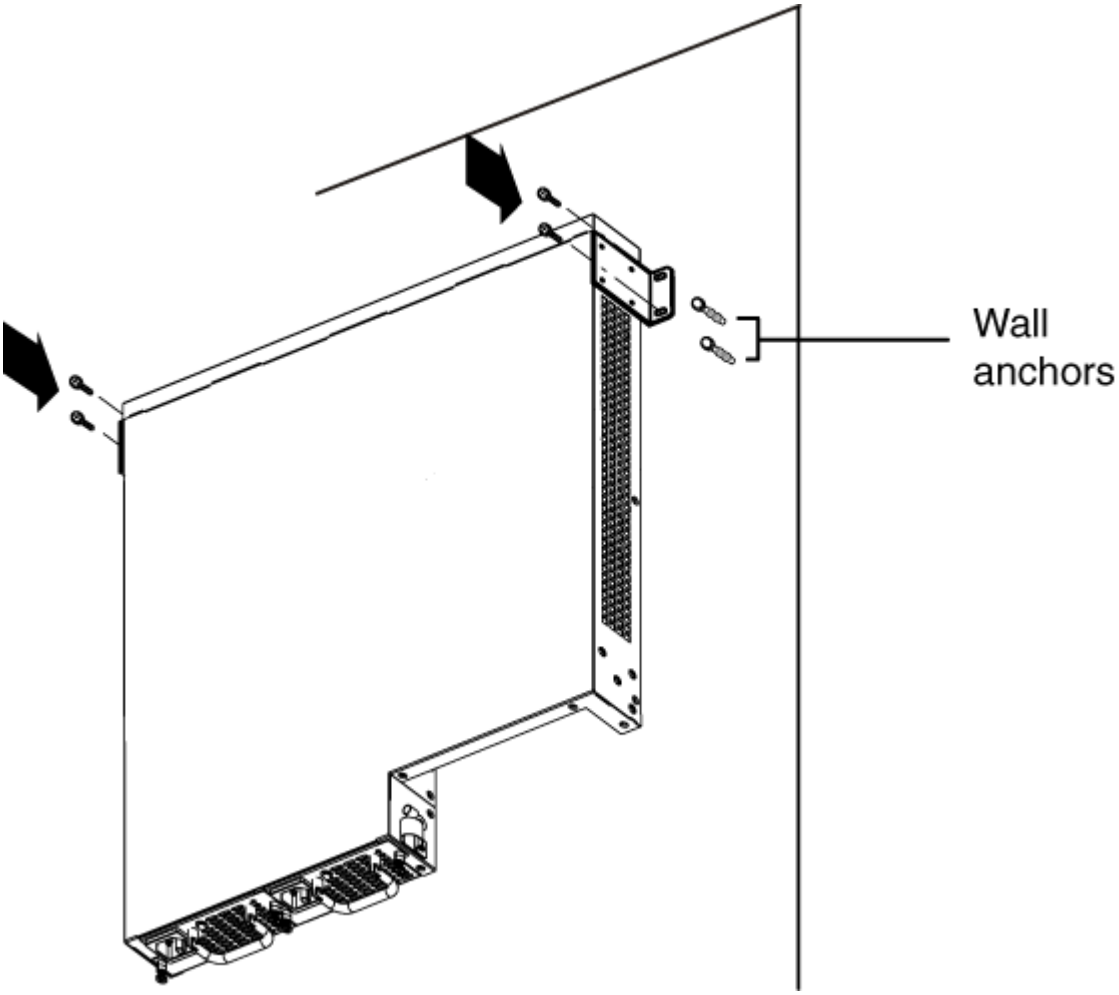


Figure 10: Wall mount mounting screw location

Installing a front mounted switch in an equipment rack

This procedure describes how to install a front mounted switch in a rack.

Before you begin

- Acquire a #2 Phillips screwdriver

Procedure

1. Attach a bracket to each side of the switch using a #2 Phillips screwdriver, as shown in the following job aid. Attach the bracket with the round holes to the right side of the switch where the round fan vents are located.

2. Slide the switch into the rack, as shown in the following job aid. Insert and tighten the rack-mount screws with a #2 Phillips screwdriver.

Job aid

The following figures show the bracket installation.

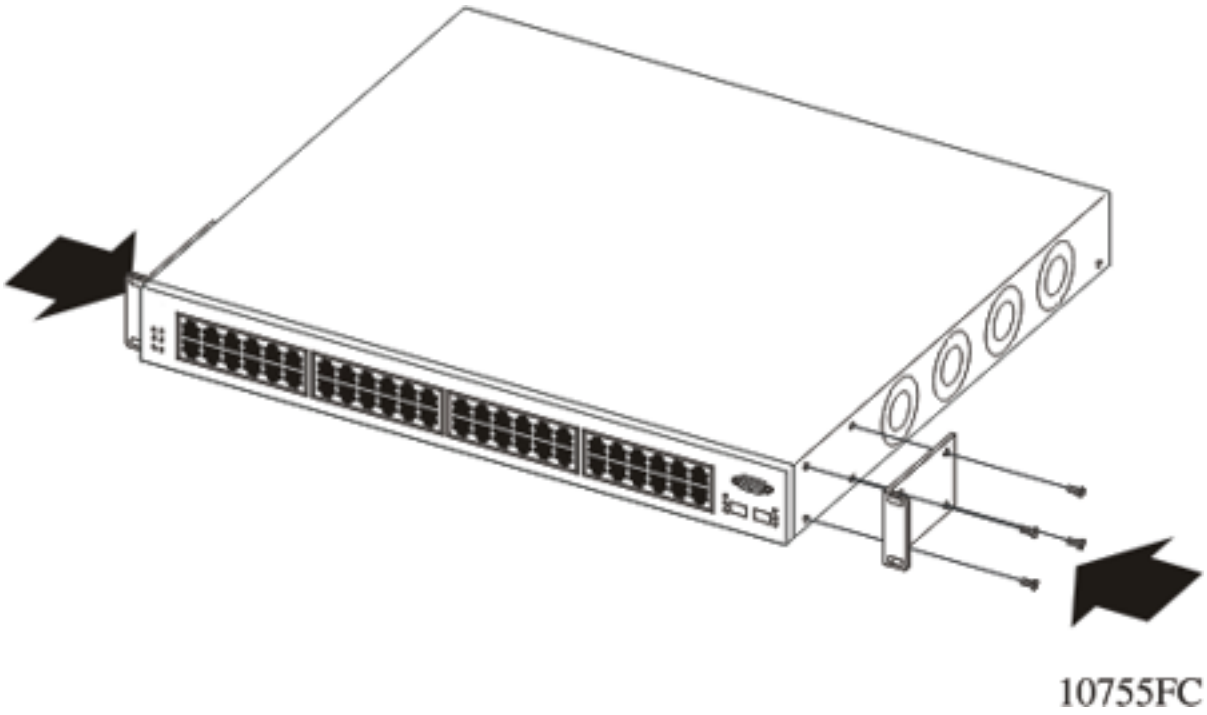


Figure 11: Bracket installation

The following figures show the rack mount.

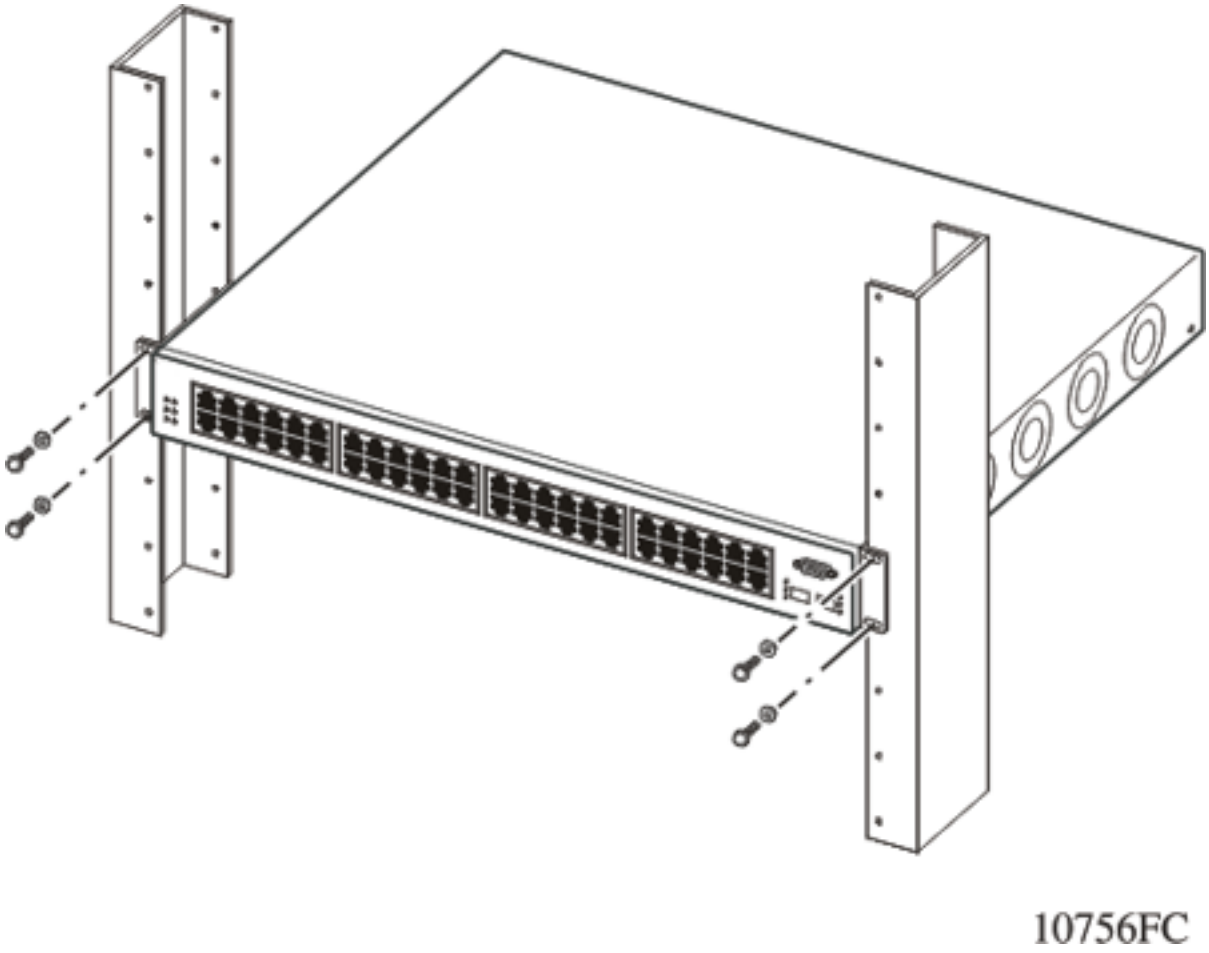


Figure 12: Rack mount

Installing a rear mounted switch in an equipment rack

The Ethernet Routing Switch 5600 Series switch provides the option for installing the switch in a rear mounted configuration. This option allows the switch to be installed with the back panel facing forward.

Before you begin

- Acquire a #2 Phillips screwdriver

About this task

This procedure describes how to install a rear-mounted switch.

Procedure

1. Attach a bracket to each side of the switch using a #2 Phillips screwdriver, as shown in Figure 13: Attaching rear mounted switch brackets on page 53. Attach the

bracket with the round holes to the right side of the switch where the round fan vents are located.

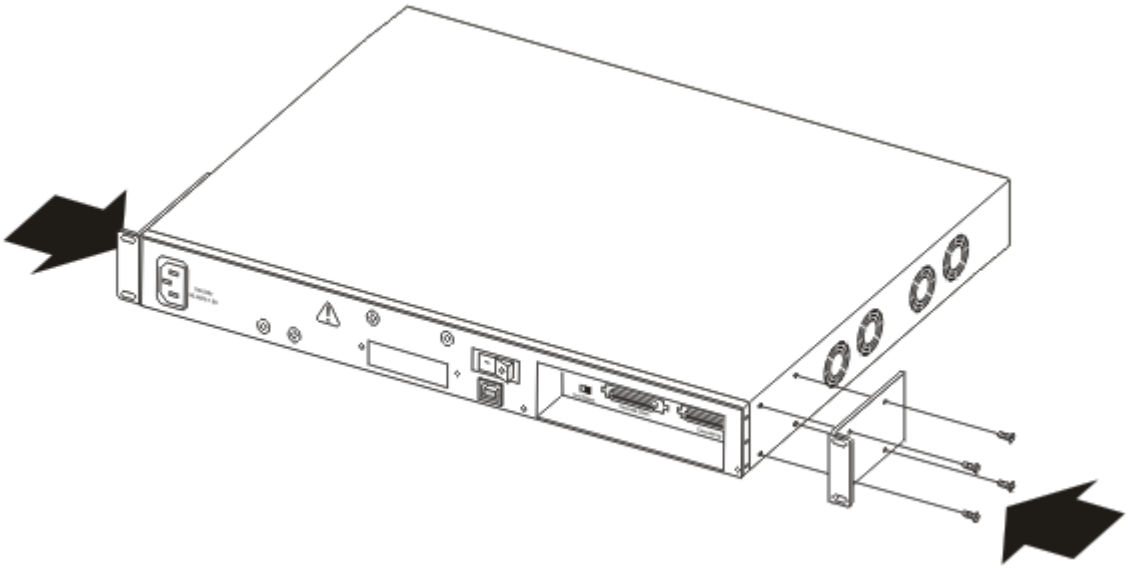


Figure 13: Attaching rear mounted switch brackets

2. Slide the switch into the rack, as shown in Figure 14: Rear mounted switch configuration on page 54. Insert and tighten the rack-mount screws with a #2 Phillips screwdriver.

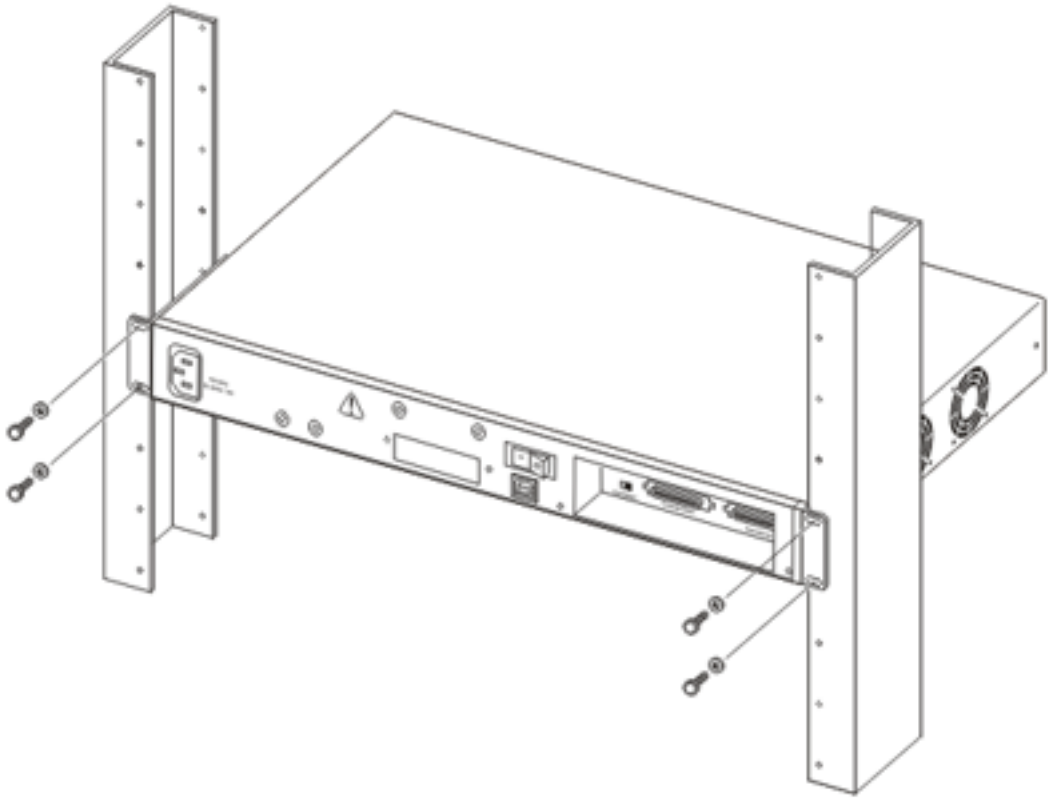


Figure 14: Rear mounted switch configuration

Power connection

About this task

This section describes how to connect power sources to the 5600 Series switch.

Installing a power supply module in a 5600 Series switch

Use this procedure to install a power supply module in a 5600 Series switch.

Before you begin

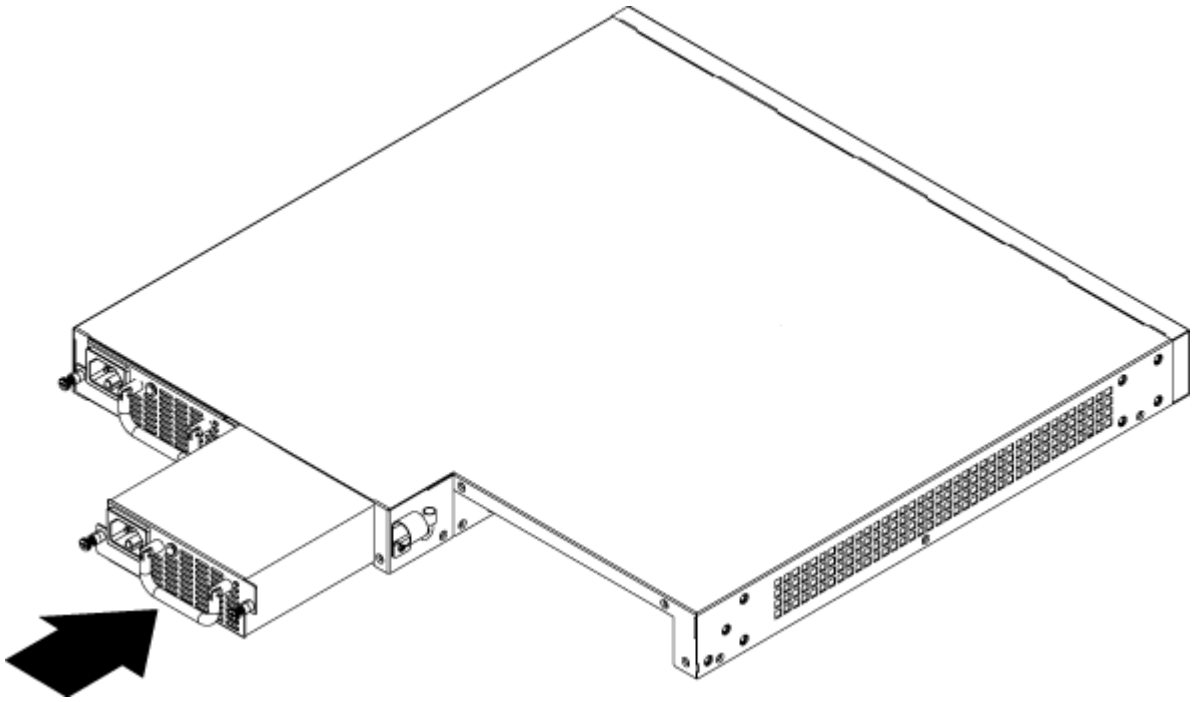
- Acquire a #2 Phillips screwdriver

Electrostatic alert:

To prevent damage from electrostatic discharge, always wear an antistatic wrist strap connected to an ESD jack when performing maintenance on a 5000 Series switch. Ensure that the wrist strap makes contact with your skin.

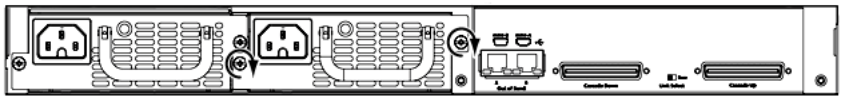
Procedure

1. Use a Phillips screwdriver to loosen the two screws that secure the metal plate that covers the slot in which you want to install the power supply module.
2. Remove the cover plate.
3. Insert the power supply module in the power supply slot. The following figure shows the power supply module inserted in a 5600 Series switch.



4. Push the power supply module gently, but firmly, to insert it fully into the internal connection port. When the power supply is fully inserted, the front of the power supply unit is flush with the rear panel of the switch.

5. Secure the power supply module in the chassis by tightening the two retaining screws. The following figure shows the captive screws.



Connecting an AC cord to switch

This procedure describes the steps used to connect an AC power cord to the switch.

Before you begin

To connect AC power to the switch an appropriate AC power cord is required.

About this task

Danger:

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 may result in excessive emissions.

Procedure

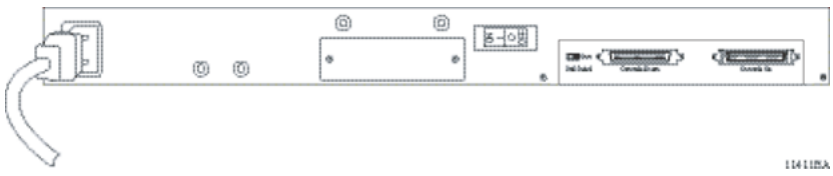
1. Connect the AC power cord to the back of the switch and then connect the cord to an AC power outlet. The following figure shows the AC power cord connection to the switch back panel.

   Important:

   The 5000 Series switches do not have an AC power switch. When the power cord is connected to a suitable AC power outlet, the switch powers up immediately.

   Warning:

   Disconnecting the AC power cord is the only way to turn off AC power to the 5000 Series switches. Always connect the AC power cord in a location that can be reached quickly and safely in case of an emergency. For a translation of this statement, see Translations of safety messages on page 81.



2. Insert the male end of the power cord in a standard 110/220 V AC power outlet.

Caution:

Ensure you use an appropriately rated AC power cord only. Do not use an extension cord.

Connecting a DC power source to a 5600 Series switch

This procedure describes the steps necessary to connect a DC power source to a 5600 Series switch.

Before you begin

- Ensure the DC power source is switched off.

Procedure

1. Plug the DC adapter into the power supply module.
2. Connect the DC leads to the adapter terminal block.
3. Tighten the screws on top of the adapter terminal block to secure the DC leads.
4. Attach the opposite ends of the leads to a –48V DC power source.

Hardware installation verification

Checking LEDs

About this task

This procedure describes how to check and interpret LEDs on the 5000 Series switches.

Procedure

To check and interpret front panel LEDs, compare the LEDs to the tables in the Job aid section.

Job aid

The following tables describe the LED indicators.

Table 6: Switch LED state indicators

Label	Color / Status	Description
UI button	White/steady	Power is on.
	Off	Power is off.
Note: The UI button is labeled **Mode Select** on Avaya branded equipment.		
Pwr	Green / steady	The switch is connected to AC power and is receiving power.
	Green / blinking	Problem with primary Boot image. Booted from back up image. Configuration and agent code may be incorrect.
	Amber / slow blinking	System will reset in less than 3 seconds. To stop the reset, release UI push button. **Note:** The UI button is labeled **Mode Select** on Avaya branded equipment.
	Amber / fast blinking	System will reset in less than 1 second. To stop the reset, release UI push button. **Note:** The UI button is labeled **Mode Select** on Avaya branded equipment.
	Off	The switch is not connected to an AC power source or the power supply unit is not supplying power.
Status	Green / steady	• During Initialization: The power-on self-test is complete and the switch is operating normally. • After Initialization: The front panel configuration mode is inactive. Unit booted successfully.
	Green / blinking	• During Initialization:: A non-fatal error occurred during the self-test. • After Initialization: The user pushed the UI button and activated the front panel configuration mode and the system is awaiting input.

Label	Color / Status	Description
	Amber / steady	• During Initialization: N/A • After Initialization: The front panel has accepted the user command. The system accepts the UI input and is awaiting execution.
	Amber / blinking	• During Initialization: N/A • After Initialization: The system has rejected the UI input.
	Off	The switch failed the self-test.
RPSU	Green / steady	The switch is connected to a redundant power supply unit (RPSU) and is receiving power if necessary.
	Green / blinking	The switch is powered up with two or more supplies and the AC has been removed. This is a non-service affecting condition as the loss of one supply does not stop system operation.
	Amber / steady	The switch is powered up with two or more supplies and the PSU has been removed. This is a non-service affecting condition as the loss of one supply does not stop system operation.
	Amber / blinking	The switch is powered up with two or more supplies and the DC output is off or bad. This is a non-service affecting condition as the loss of one supply does not stop system operation.
	Off	The switch is not connected to a RPSU, the RPSU is not supplying power, or the DC/DC module is not supplying power.
Up	Green / steady	The Cascade Up port has a physical connection to another unit.
	Amber / steady	The Cascade Up port has detected an error.
	Off	The switch is in standalone mode or there is no link to the Cascade Up port.
Down	Green / steady	The Cascade Down port has a physical connection to another unit.
	Amber / steady	The Cascade Down port has detected an error.
	Off	The switch is in standalone mode or there is no link to the Cascade Down port.
Base	Green / steady	The switch is the stack base unit.
	Green / blinking	There is a stack configuration error. Either multiple base units or no base units are configured in the stack.

Label	Color / Status	Description
	Amber / steady	The switch is operating as the temporary base unit in the stack configuration.
	Off	The switch is not the stack base unit or it is operating in standalone mode.

Table 7: Shared SFP transceiver Port LED state indicators

Label	Color / Status	Description
In Use	Green / steady	The port has a link established.
	Off	The port does not have a link established.
LNK/ACT	Green / steady	This link is operating normally.
	Green / blinking	There is activity on the port.
	Green / slow blinking	The port has been disabled by the software.
	Off	Indicates that the link has been lost.

Table 8: XFP transceiver port LED state indicators

LED Color / Status	Description
Tx Green / steady Rx Green / steady	Link established.
Tx Green / blinking	Transmit activity detected.
Rx Green / blinking	Receive activity detected.
Tx Amber / steady	Transmit activity enabled.
Rx Amber / steady	Fiber connected with signal present.
Tx Amber / blinking	XFP has been installed. Laser Transmitter OFF or XFP in Reset.
Rx Amber / blinking	XFP has been installed. No Signal Detected or XFP in Reset.
Both Off	No XFP installed.
The Amber LEDs are usually only used during the boot process. Under normal operation, Green is the only color the XFP LED should emit.	

Preparations for network connectivity

About this task

The following section contains procedures used to prepare 5000 Series switches for network connectivity.

Cabling a standalone switch

This procedure describes the steps used to cable a standalone switch.

Procedure

1. Mount the switch. You can mount a standalone switch on a table or shelf, the wall, or in a rack.
2. Connect the ground cable to the switch, see the following job aid for the location of the ground lug.
3. Attach the required cables to the switch.
4. Install any required transceivers, see Installing transceivers on page 62.
5. Connect the AC power cord.

Job aid

The following figure shows the location of the grounding lug on a 5600 Series switch.

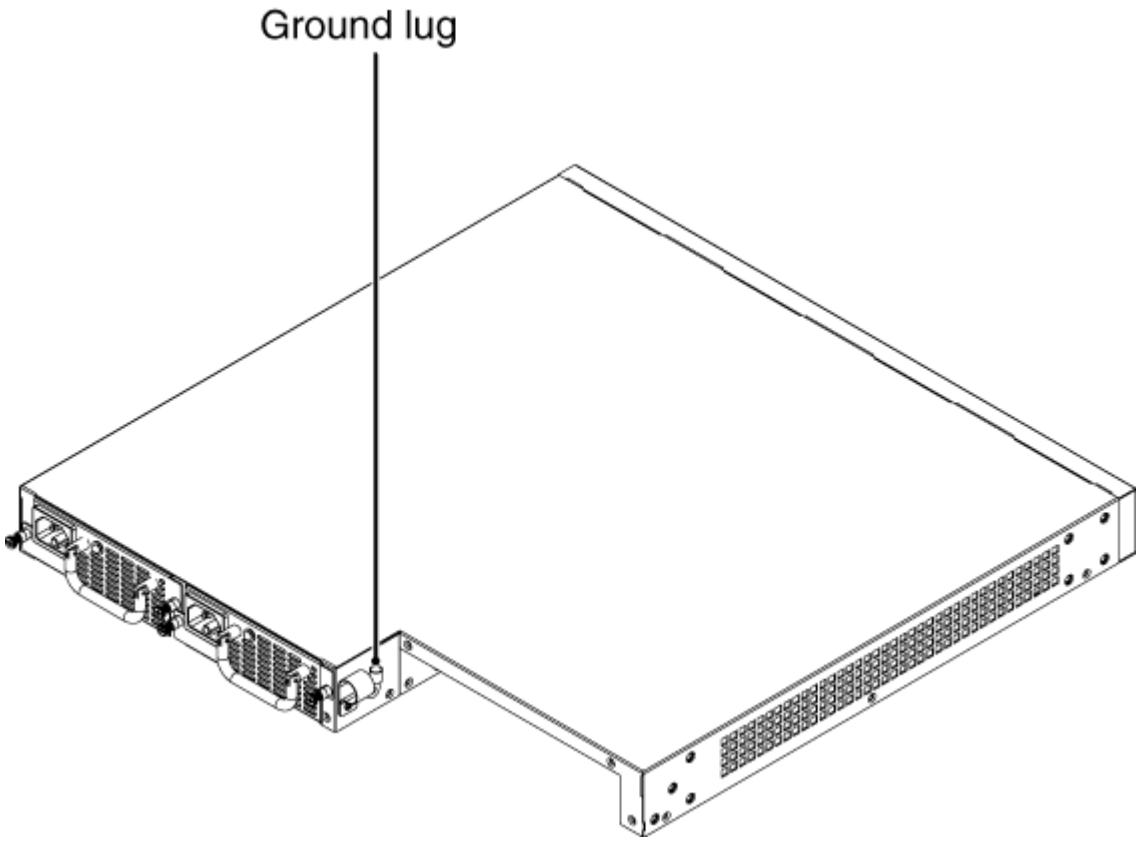


Figure 15: Grounding lug location on a 5600 Series switch

Installing transceivers

About this task

This procedure describes the steps used to install transceivers.

Procedure

1. Remove the transceiver from the protective packaging.
2. Verify that the transceiver is the correct model for the network configuration.
3. Grasp the transceiver between the thumb and forefinger.
4. Insert the transceiver into the proper module on the switch. Apply a light pressure to the transceiver until it clicks and locks into position in the module.
5. Remove the dust cover from the transceiver optical bores.

Job aid

The following graphic shows an SFP tranceiver.

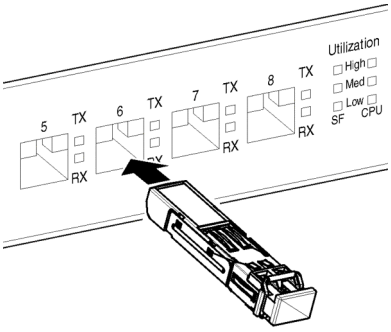


Figure 16: SFP transceiver

IP address information configuration

About this task

The following sections contain information necessary to configure IP address parameters on the switch.

Connecting a console

This procedure describes the steps to connect a console.

Before you begin

- Terminal with AC power cord and keyboard.
- Serial cable with a DB-9 female connector on both ends. The maximum length for the console port cable is 25 feet (8.3 meters).

Procedure

1. Connect one end of serial cable to the DB-9 connector on the terminal.
2. Connect the other end of the serial cable to the DB-9 connector on the switch.
3. Turn the terminal on.

Accessing the console menu

About this task

This procedure describes the steps used to access the console menu.

Procedure

1. Connect a terminal to the console port of the switch.
2. Set the terminal protocol on the terminal or terminal emulation program to VT100 and VT100/ANSI.
3. Connect to the switch using the terminal or terminal emulation application.
4. After the Avaya banner is displayed, press CTRL + Y to display the main menu. The version of the main menu displayed is dependent on whether the switch is part of a standalone or stacked switch configuration.

Assigning IP parameters using the console menu

About this task

This procedure describes the steps used to assign IP parameters using the console menu.

Procedure

1. From the console menu, select IP Configuration/Setup.
2. Assign an IP address to the switch.
   - For a standalone switch, enter a value in the In-Band Switch IP Address field in dotted-decimal notation.
   - For a stack configuration, enter a value in the In-Band Stack IP Address field in dotted-decimal notation.
3. In the In-Band Subnet Mask field enter the appropriate subnet mask in dotted-decimal notation.
4. In the Default Gateway field, enter the appropriate default gateway in dotted-decimal notation.
5. Press CTRL + C to return to the main menu.

Assigning IP parameters using the console menu and ACLI

Procedure

1. Connect a terminal to the console port of the switch.
2. Set the terminal protocol on the terminal or terminal emulation program to VT100 and VT100/ANSI.
3. Connect to the switch using the terminal or terminal emulation application.
4. After the Avaya banner is displayed, press CTRL + Y to display the main menu.
5. Select **`Command Line Interface. . .`** from the main menu.
6. Enter the Global Configuration command mode using the **`enable`** and **`configure terminal`** commands.
7. In the Global Configuration command mode, use the **`ip address`** command to set the switch or stack IP address.
8. Initial IP configuration is now complete. To continue with configuration operations, use the appropriate CLI commands. To disconnect from the switch use the **`logout`** command to return to the Console Menu and select **Logout** from the main menu.

Job aid

Any terminal or PC with an appropriate terminal emulator can be used as the management station. The following table lists the parameters that must be used with any terminal emulation software used to connect to the switch.

Table 9: Terminal emulation settings

Property	Value
Baud Rate	9600 bps
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None

Assigning IP parameters using Enterprise Device Manager

About this task

The following procedure describes how to use Quick Start to assign IP parameters to the Ethernet Routing Switch 5000 Series.

Procedure

1. Connect a computer to the switch through a data port using a standard RJ-45 network cable.
2. Open a Web browser on the attached computer.
3. Enter the factory default IP address of the switch in the following format: `http://<IPAddress>`.

   The main screen of the Enterprise Device Manager Interface opens.
4. In the navigation pane, click **Administration** > **Quick Start**.

   The IP/Community/Vlan work area opens.
5. In the In-Band Stack IP Address dialog box, type a switch or stack IP address .
6. In the In-Band Subnet Mask dialog box, type a subnet mask.
7. In the Default Gateway dialog box, type an IP address.
8. Click **Apply**.

Note:

For more information about switch configuration, see *Getting Started with Avaya Ethernet Routing Switch 5000 Series*, NN47200–303.

Verifying assigned IP address is reachable

This procedure describes a method of verifying that the assigned IP address is reachable.

Before you begin

- Ensure you have assigned an IP address to the switch.
- Physically connect the switch to the network.
- Ensure the terminal from which you ping the switch is on the same network as the switch.

Procedure

Ping the 5000 Series switch from a terminal or workstation that is on the same network. If the network device sends a ping reply, a message indicates that the specified IP address is alive and can communicate with other devices.

Stack configuration

About this task

This section describes the procedures to configure a stack.

Important:

You can change base unit switches with switches on (hot), but changes do not take affect until switches are rebooted.

Cabling a stack

This procedure describes the steps to cable a stack.

Procedure

1. Choose a Cascade up or Cascade down arrangement.
2. Connect cables as shown in the Job aid.
3. Select the base unit.
4. Connect the console cable.
5. Connect the AC power cord.

   If you assign the base unit and non-base units with the switches powered up, you must reset the switches for the assignments to be applied.

Job aid

The following figures show the stack connector for the 5600 Series switch and connecting cascade cables and also Cascade up and Cascade down cable arrangements.

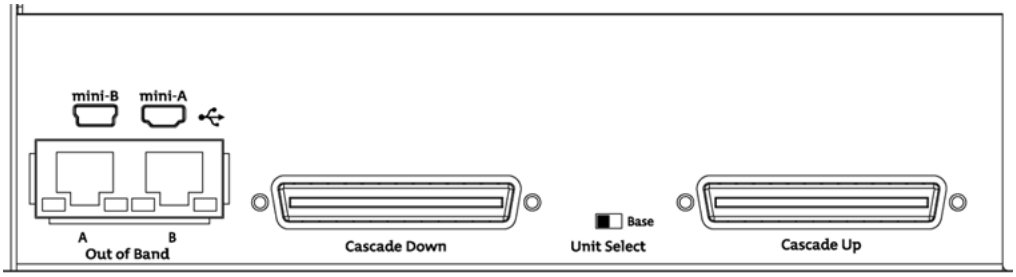


Figure 17: Job aid: 5600 Series stack connector

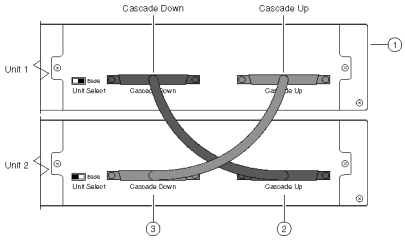


Figure 18: Connecting cascade cables

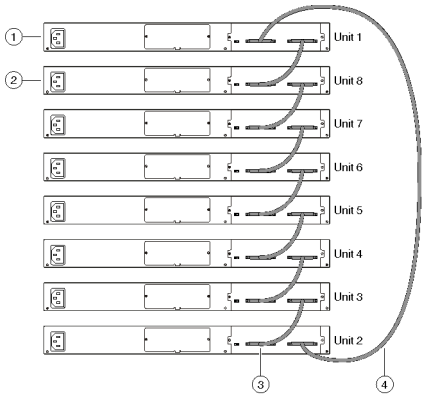


Figure 19: Cascade up stack configuration

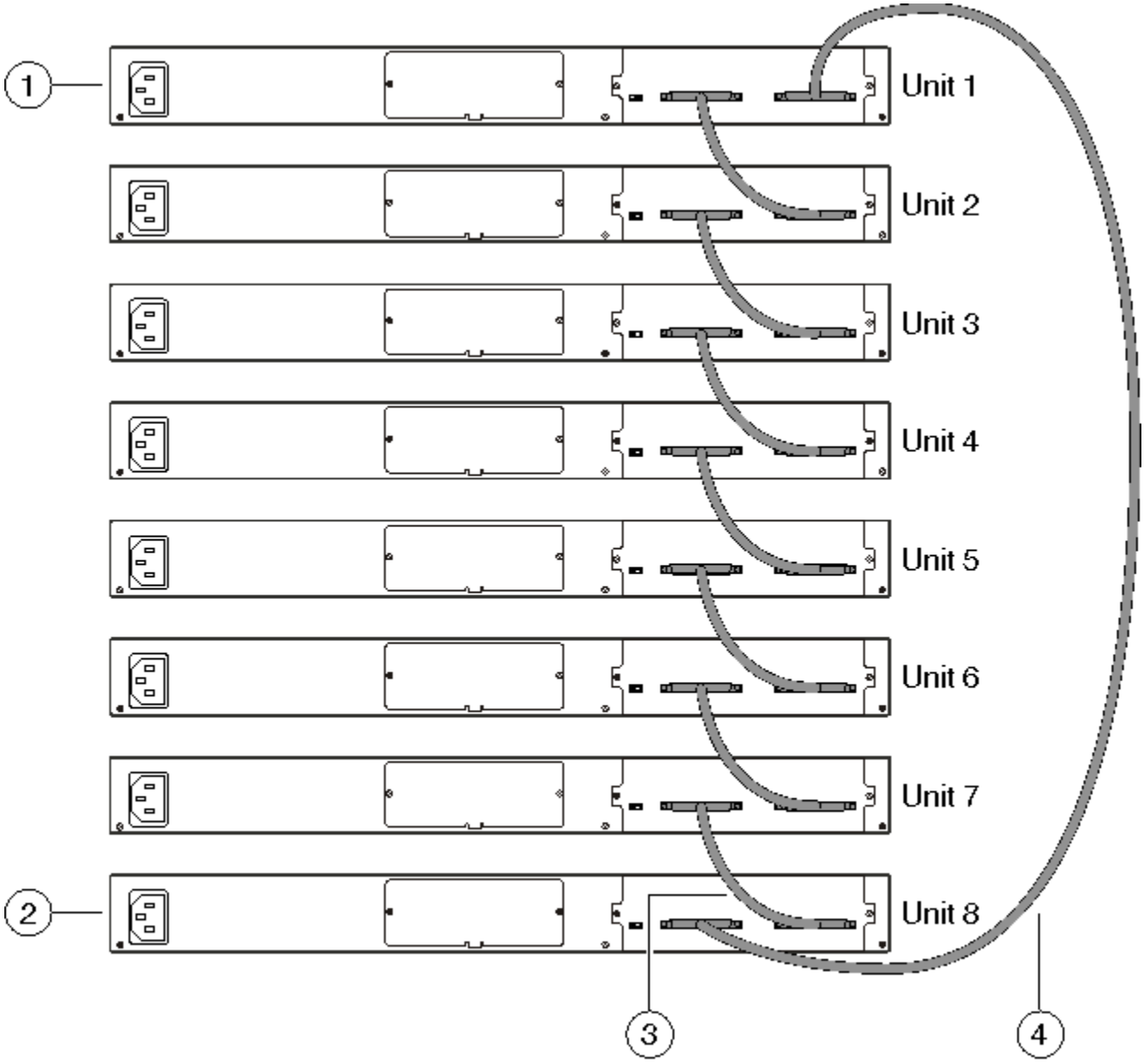


Figure 20: Cascade down stack configuration

Selecting a base unit

About this task

This procedure describes the steps to select a base unit.

Procedure

1. Determine which unit will be the base unit.
2. Locate the Unit Select switch on the rear panel.
3. Slide the switch to the right to designate it as the base unit.

Selecting a base unit using the UI/Mode Select button

About this task

This procedure describes the steps necessary to set the base unit using the UI button.

Note:

The UI button is labeled **Mode Select** on Avaya branded equipment.

Procedure

1. Press and hold the UI button for three seconds. The unit is now in configuration mode. The color and status of the Status LED turns to blinking green.
2. Press the UI button once. The Base LED is illuminated and the Up and Down LEDs are off to indicate that the button press was recognized.
3. Press and hold the UI button for three seconds to confirm the command. The Status LED returns to a steady green state to confirm command acceptance. If the command is rejected, the Status LED moves to a blinking amber state.

Setting non-base units

About this task

The following procedure describes the steps to set the units as non-base switches.

Procedure

Set the Unit Select switch set to the left to designate them as non-base units.

Setting non-base units using the UI/Mode Select button

About this task

This procedure describes the steps necessary to set a non-base unit using the UI button.

Note:

The UI button is labeled **Mode Select** on Avaya branded equipment.

Procedure

1. Press and hold the UI button for three seconds. The unit is now in configuration mode. The color and status of the Status LED turns to blinking green.
2. Press the UI button twice. The Base LED will turn off and the Up and Down LEDs are turned off.
3. Press and hold the UI button for three seconds to confirm the commands. The Status LED returns to a steady green state to confirm command acceptance. If the command is rejected, the Status LED moves to a blinking amber state.

Resetting a stack using the UI/Mode Select button

About this task

The following procedure describes the steps to reset the stack using the UI button.

Note:

The UI button is labeled **Mode Select** on Avaya branded equipment.

Procedure

1. Press and hold the UI button for three seconds.

   The unit is now in configuration mode. The color and status of the Status LED turns to blinking green.
2. Press the UI button three times.

   The Base, Up, and Down LEDs will move to a blinking amber state and blink in unison.
3. Press and hold the UI button for three seconds to confirm the command.

Chapter 6: Common procedures

About this task

This module contains procedures that are common to more than one product line.

Abandoning a command

About this task

This procedure describes how to abandon a command entered using the UI/Mode Select button.

Note:

The UI button is labeled **Mode Select** on Avaya branded equipment.

Abandoning a command entered using the UI/Mode Select button

Procedure

1. Do not confirm a command within approximately twenty seconds after you enter the command and the system ignores the input.
2. Press the UI/Mode Select button nine or more times to exit configuration mode.

Note:

Wait sixty seconds after the last configuration change before resetting the unit. The system can take up to this long to save configuration changes to the NVRAM. Stacks can be reset immediately after the last configuration change without any loss of information.

Chapter 7: Installation reference

About this task

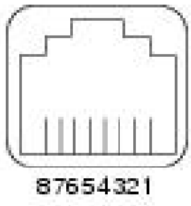
This section provides reference information for the Avaya Ethernet Routing Switches.

RJ-45 connector pin assignments

The following section outlines the connector pin assignments for the RJ-45 connectors in the Avaya Ethernet Routing Switch 5000 Series switches.

Avaya Ethernet Routing Switch 5600 non-PoE

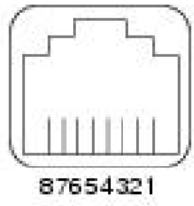
The following table outlines the RJ-45 connector pin assignments in the Avaya Ethernet Routing Switch 5600 Series non-PoE switches.

Connector	Pin Number	Signal for 10/100Base-T MDI configuration	Signal for 10/100Base-T MDI-X configuration
	1	Output transmit data + (TX+)	Input receive data + (RX+)
	2	Output transmit data - (TX-)	Input receive data - (RX-)
	3	Input receive data + (RX+)	Output transmit data + (TX+)
	6	Input receive data + (RX+)	Output transmit data + (TX+)
	4, 5, 7, 8	Not used	Not used
	Pin Number	Signal for 1GBase-T MDI configuration	Signal for 1GBase-T MDI-X configuration
	1	TP0+	TP1+
	2	TP0-	TP1-
	3	TP1+	TP0+
	4	TP2+	TP3+

Connector	Pin Number	Signal for 10/100Base-T MDI configuration	Signal for 10/100Base-T MDI-X configuration
	5	TP2-	TP3-
	6	TP1-	TP0-
	7	TP3+	TP2+
	8	TP3-	TP2-

Avaya Ethernet Routing Switch 5600 Series PoE

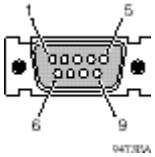
The following table outlines the RJ-45 connector pin assignments in the Avaya Ethernet Routing Switch 5600 Series PoE switches.

Connector	Pin Number	Signal for 10/100Base-T MDI configuration	Signal for 10/100Base-T MDI-X configuration
	1	RX+/power+	Receive Data+/power +
	2	RX-/power+	Receive Data-/power +
	3	TX+/power-	Transmit Data+/ power-
	4	Not applicable	Not applicable
	5	Not applicable	Not applicable
	6	TX-/power-	Transmit Data-/ power-
	7	Not applicable	Not applicable
	8	Not applicable	Not applicable

Console port pin assignments

The following table outlines the console port pin assignments in the Avaya Ethernet Routing Switch 5600 Series.

Table 10: Console port pin assignments

Connector	Pin number	Signal
	1	Carrier detect (not used)
	2	Transmit Data (TXD)
	3	Receive Data (RXD)
	4	Data terminal ready (not used)
	5	Signal ground (GND)
	6	Not used
	7	Request to send (not used)
	8	Not used
	9	Ring indicator (not used)

Power specifications

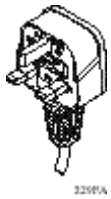
This section describes the AC and DC power specifications for the Ethernet Routing Switch 5600 Series.

AC power cord specifications

The following section outlines the AC power cord specifications for various countries. Ensure that you use the correct cord for your location.

Table 11: International power cord specifications

Country / Plug Specification	Specifications	Typical Plug
Continental Europe: • CEE7 standard VII male plug • Harmonized cord (HAR marking on the outside of the cord jacket to comply with the CENELEC Harmonized Document HD-21)	• 220 or 230 VAC • 50 Hz • Single Phase	
United States of America / Canada / Japan:	• 100 or 120 VAC • 50 - 60 Hz • Single Phase	

Country / Plug Specification	Specifications	Typical Plug
• NEMA5-15P male plug • UL-recognized (UL stamped on cord jacket) • CSA-certified (CSA label secured to the cord)		
United Kingdom: • BS1363 male plug with fuse • Harmonized cord	• 240 VAC • 50 Hz • Single Phase	
Australia: • AS3112-1981 male plug	• 240 VAC • 50 Hz • Single Phase	

Avaya Ethernet Redundant Power Supply 10 power specification

The following table shows the power specifications for the Avaya Ethernet Redundant Power Supply 10 (RPS 10).

Table 12: DC power specifications

Output current	4.2 A maximum
Output voltage	-48 VDC
Output power	200 W maximum

Avaya Ethernet Redundant Power Supply 15 power specification

The following table shows the power specifications for the Avaya Ethernet Redundant Power Supply 15 (RPS 15).

Table 13: DC power specifications

Input voltage	100 to 240 VAC 50/60 Hz
Input current	10 A maximum
Inrush current	40 A maximum (regardless of ambient temperature)

Output current	12.0 A
Output voltage	47.5 VDC
Output power	600 W

Appendix A: Translations of safety messages

This module contains translations of the safety messages found in the Ethernet Routing Switch 5600 Series documentation suite.

Safety messages

Caution:

When mounting this device in a rack, do not stack units directly on top of one another in the rack. Each unit must be secured to the rack with appropriate mounting brackets. Mounting brackets are not designed to support multiple units.

Important:

Achtung: Wenn diese Einheit in einem Rack montiert wird, muß ein gewisser Abstand zur nächsten Einheit gelassen werden. Jede Einheit muß mit geeignetem Befestigungsmaterial gesichert werden. Das Befestigungsmaterial ist nicht für die gleichzeitige Befestigung mehrerer Einheiten geeignet.

Important:

Si vous installez le module dans une baie, ne l'empilez pas directement sur un autre. Chaque module doit être fixé à sa propre baie à l'aide des supports de montage appropriés. Ces supports ne sont pas conçus pour résister à plusieurs modules.

Important:

Precautión: Cuando monte este dispositivo en un bastidor, no apile las unidades directamente una encima de otra. Cada unidad debe fijarse en el bastidor con las abrazaderas de montaje adecuadas. Las abrazaderas de montaje no están diseñadas para sostener varias unidades.

Important:

Se il dispositivo viene installato in un rack, non impilare le unità direttamente una sull'altra. Ogni unità deve essere fissata al rack con le staffe di montaggio appropriate. Le staffe di montaggio non sono state progettate per supportare più unità.

警告：在机架中安装此设备时，请勿将多个部件叠放在机架中。必须用合适的安装托架将各个部件固定在机架中。安装托架无法支撑多个部件。

注意：この装置をラックに設置する場合は、ラック内のユニットを直接積み重ねないようにしてください。各ユニットは専用の取り付けブラケットでラックに固定する必要があります。取り付けブラケットは複数のユニットを支えるようには設計されていません。

注意：在機箱中掛載此裝置時，請不要直接在機箱中的另一個裝置上直接堆放裝置。每一裝置都必須使用適當的掛載托架以固定在機架中。掛載托架不能用來支撐多個裝置。

Caution:

If you are not installing a module in the slot, be sure to keep the metal cover plate in place over the slot. Removing the cover plate impedes airflow and proper cooling of the unit.

Important:

Achtung: Wenn Sie kein Modul im Schacht verwenden, muß die Metallabdeckung über dem Schacht montiert sein. Eine Entfernung der Abdeckung führt zu einer Verschlechterung der Luftzirkulation und damit zu einer nicht ausreichenden Kühlung der Einheit.

Important:

Si vous n’installez pas le module dans une baie, veillez à laisser la plaque métallique sur la baie. Si vous la retirez, l’aération du module ne peut pas s’effectuer correctement.

Important:

Precaution: Si no instala ningún módulo en la ranura, asegúrese de mantener la placa de la cubierta de metal en la misma. Si la retira, impedirá que el aire circule y la unidad se refrigere adecuadamente.

Important:

Attenzione: Se nello slot non vengono installati moduli, assicurarsi di mantenere la piastra di copertura metallica in sede sopra lo slot. La rimozione della piastra impedisce la ventilazione e il corretto raffreddamento dell’unità.

注意：この装置をラックに設置する場合は、ラック内のユニットを直接積み重ねないようにしてください。各ユニットは専用の取り付けブラケットでラックに固定する必要があります。取り付けブラケットは複数のユニットを支えるようには設計されていません。

注意：スロットにモジュールを取り付けない場合は、スロットにある金属製のカバープレートが外れないように注意してください。カバープレートを動かすと気流が妨げられ、適切なユニット冷却が行われなくなります。

警告：如果您不打算在该插槽中安装任何模块，请务必使金属盖板正确地盖住该插槽。如果取下盖板，将妨碍通风及部件散热。

注意：如果您未在插槽中安裝模組，請確定金屬殼板正確地蓋在插槽上。移除殼板會阻礙空氣流通以及裝置的適當冷卻度。

警告：若要關閉此裝置的電源，拔掉插頭是唯一的方法。 爲了因應緊急狀況，請將電源線連接到可以快速插拔的地方。

Warning:

Disconnecting the AC power cord is the only way to turn off AC power to this device. Always connect the AC power cord in a location that can be reached quickly and safely in case of an emergency.

Important:

Warnung: Das Gerät kann nur durch Ziehen des Netzsteckers ausgeschaltet werden. Schließen Sie das Netzkabel an einer Steckdose an, die in Notfällen schnell und sicher zugänglich ist.

Important:

Avertissement: Pour mettre le module hors tension, vous devez impérativement déconnecter le cordon d'alimentation. En outre, vous devez dégager un espace minimal dans la zone de câblage pour pouvoir y accéder facilement en cas d'urgence.

警告：断开交流电源线是切断本设备的交流电源的唯一方法。交流电源线一定要连接到在紧急时刻可以快速安全地接触到的位置。

Important:

Advertencia: Para apagar el dispositivo debe desenchufar el cable. Conecte siempre el cable de alimentación a una toma segura y de fácil acceso por si se produjera alguna situación de emergencia.

Important:

Avviso: L'unico modo per disattivare questo dispositivo consiste nello scollegare il cavo di alimentazione. Collegare sempre il cavo di alimentazione ad una presa che sia facilmente e rapidamente accessibile in caso di emergenza.

Danger:

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 may result in excessive emissions.

Important:

Vorsicht: Verwenden Sie nur Netzkabel mit Schutzerdung. Ohne ordnungsgemäße Schutzerdung besteht für Personen, die den Switch berühren, die Gefahr eines elektrischen Schlages. Eine nichtvorhandene Schutzerdung kann zu sehr starken Abstrahlungen führen.

Danger:

N’utilisez que des cordons d’alimentation équipés de trajet de mise à la terre. Sans mise à la terre adaptée, vous risquez de recevoir une décharge électrique en touchant le commutateur. Par ailleurs, l’absence de trajet de mise à la terre peut générer des émissions excessives.

Important:

Peligro: Utilice únicamente cables de alimentación con toma de tierra. De lo contrario, al tocar el interruptor puede recibir una descarga eléctrica. Si no hay un circuito de toma de tierra en el enchufe, puede producirse un exceso de emisiones.

Important:

Pericolo: Utilizzare esclusivamente cavi di alimentazione dotati di un percorso per la messa a terra. Senza un’adeguata messa a terra, chiunque tocchi lo switch corre il rischio di ricevere una scossa elettrica. L’assenza di un percorso per la messa a terra verso lo switch può comportare un eccesso di emissioni.

危険：接地経路を持つ電源コードを必ず使用するようにしてください。適切な接地がない状態でスイッチに触ると、感電する危険性があります。また、スイッチへの接地経路がないと、過度な放電を引き起こす可能性があります。

危险：请仅使用接地的电源线。如果电源线不接地或接地不当，接触交换机的人员可能会受到电击。如果交换机不接地，则可能导致放电过量。