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EX4550 Power System

11-Nov-20

AC Power Supply in EX4550 Switches

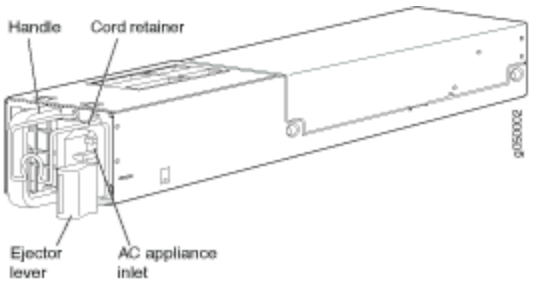
The AC power supply in EX4550 switches is a hot-insertable and hot-removable field-replaceable unit (FRU): You can install it without powering off the switch or disrupting the switching function.

All the EX4550 switches that are powered by AC power supplies, except the EX4550-32F-S switches are shipped with one AC power supply pre-installed in the rear panel of the switches. EX4550-32F-S switches are not shipped with pre-installed power supplies; you must order them separately.

This topic describes the AC power supplies.

The AC power supply in EX4550 switches gives an output of 650 W and supports both low line voltage (100–120 VAC) and high line voltage (200–240 VAC). Figure 1 shows an AC power supply for an EX4550 switch.

Figure 1: AC Power Supply for an EX4550 Switch



The AC power supply in EX4550 switches is a hot-insertable and hot-removable field-replaceable unit (FRU): You can install it without powering off the switch or disrupting the switching function.

Two variants of AC power supplies are available, each with a different airflow:

- Back-to-front airflow, indicated by `AFI` label
- Front-to-back airflow, indicated by `AFO` label

Each power supply has a label `AFI` or `AFO` and an arrow on the handle that depicts the direction of airflow (see Figure 2).

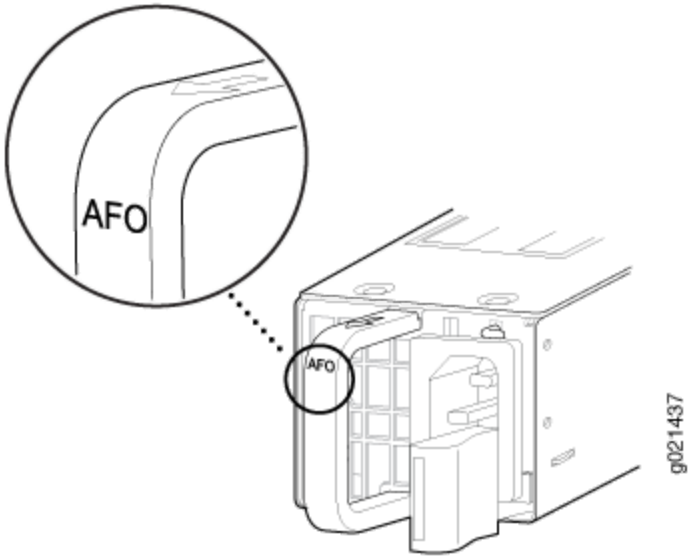
Table 1 shows the AC power supply model numbers and the direction of airflow in them.

Table 1: Airflow Direction in AC Power Supply for EX4550 Switches

Model Number	Label on Power Supply	Direction of Airflow

Model Number	Label on Power Supply	Direction of Airflow
JPSU-650W-AC-AFI	AFI	Back-to-front—air intake to cool the chassis is through the vents on the rear panel of the chassis, and hot air exhausts through the vents on the front panel of the chassis.
JPSU-650W-AC-AFO	AFO	Front-to-back—air intake to cool the chassis is through the vents on the front panel of the chassis, and hot air exhausts through the vents on the rear panel of the chassis.

Figure 2: Label Identifying the Airflow Direction in an AC Power Supply



⚠ CAUTION Do not mix:

- AC and DC power supplies in the same chassis.
- Power supplies with different airflow labels (AFI and AFO) in the same chassis.

To avoid electrical injury while installing or removing AC power supplies, carefully follow instructions in Installing an AC Power Supply in an EX4550 Switch and Removing an AC Power Supply from an EX4550 Switch.

SEE ALSO

- Connecting AC Power to an EX4550 Switch

AC Power Supply LEDs in EX4550 Switches

Figure 3 shows the location of the LEDs on an AC power supply for an EX4550 switch.

Figure 3: AC Power Supply LEDs in an EX4550 Switch

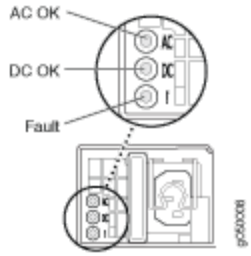


Table 2 describes the AC power supply LEDs.

Table 2: AC Power Supply LEDs in EX4550 Switches

LED	Color	State	Description
AC (AC OK)	Unlit	Off	Indicates one of the following: • Power supply is disconnected from AC power feed. • AC power input voltage is not within normal operating range. • No AC power input.
	Green	On steadily	Power supply is functioning normally.
DC (DC OK)	Unlit	Off	Indicates one of the following: • The power supply is disconnected from the power feed. • The power supply is not delivering power correctly.
	Green	On steadily	The power supply is functioning correctly.
! (Fault)	Yellow	On steadily	The power supply has failed and must be replaced.

NOTE If the AC LED and the DC LED are unlit, either the AC power cord is not installed properly or the power supply fuse has failed.

If the AC LED is lit and the DC LED is unlit, the AC power supply is installed properly, but the power supply has an internal failure.

AC Power Supply Specifications for EX4550 Switches

Table 3 lists the power supply specifications for an AC power supply used in an EX4550 switch.

Table 3: AC Power Supply Specifications for an EX4550 Switch

Item	Specification
AC input voltage	Operating range: • Low-voltage line—100–120 VAC • High-voltage line—200–240 VAC
AC input line frequency	50–60 Hz
AC input current rating	• Low-voltage line—7.8 A • High-voltage line—3.8 A
AC output power	• Low-voltage line—650 W • High-voltage line—650 W
Maximum System Power Requirement for EX4550-32F switches with two EX4550-EM-8XT expansion modules installed	336 W
System Thermal Output of EX4550-32F switches with two EX4550-EM-8XT expansion modules installed = (Maximum System Power Requirement) * 3.41 Note: 1 W = 3.41 BTU/Hour	1146 BTU/Hour

Item	Specification
Maximum System Power Requirement for EX4550-32T switches with two EX4550-EM-8XT expansion modules installed	403 W
System Thermal Output of EX4550-32T switches with two EX4550-EM-8XT expansion modules installed = (Maximum System Power Requirement) * 3.41 Note: 1 W = 3.41 BTU/Hour	1375 BTU/Hour
Power required by each fan module	• When operating in normal speed—4.8 W • When operating in high speed—16.8 W

AC Power Cord Specifications for an EX4550 Switch

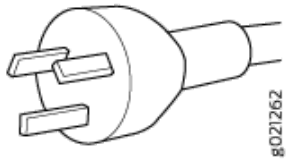
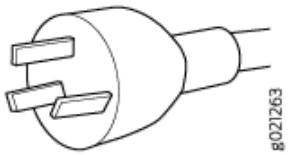
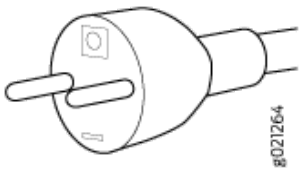
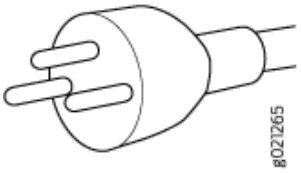
A detachable AC power cord is supplied with the AC power supplies. The coupler is type C13 as described by International Electrotechnical Commission (IEC) standard 60320. The plug end of the power cord fits into the power source outlet that is standard for your geographical location.

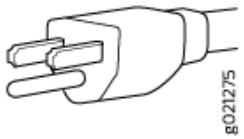
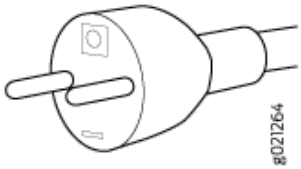
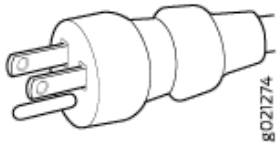
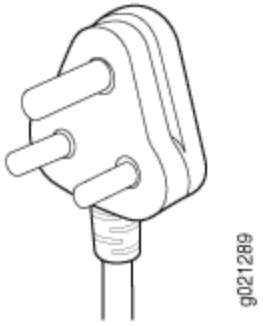
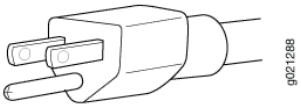
NOTE In North America, AC power cords must not exceed 4.5 meters (approximately 14.75 feet) in length, to comply with National Electrical Code (NEC) Sections 400-8 (NFPA 75, 5-2.2) and 210-52 and Canadian Electrical Code (CEC) Section 4-010(3). The cord supplied with the switch is in compliance.

Table 4 lists AC power cord specifications provided for each country or region.

Table 4: AC Power Cord Specifications for an EX4550 Switch

Country/Region	Electrical Specifications	Plug Standards	Juniper Model number	Graphic
Argentina	250 VAC, 10 A, 50 Hz	IRAM 2073 Type RA/3	CBL-EX-PWR-C13-AR	No graphic available

Country/Region	Electrical Specifications	Plug Standards	Juniper Model number	Graphic
Australia	250 VAC, 10 A, 50 Hz	AS/NZS 3112 Type SAA/3	CBL-EX-PWR-C13-AU	
Brazil	250 VAC, 10 A, 50 Hz	NBR 14136 Type BR/3	CBL-EX-PWR-C13-BR	No graphic available
China	250 VAC, 10 A, 50 Hz	GB 1002-1996 Type PRC/3	CBL-EX-PWR-C13-CH	
Europe (except Italy, Switzerland, and United Kingdom)	250 VAC, 10 A, 50 Hz	CEE (7) VII Type VIIG	CBL-EX-PWR-C13-EU	
India	250 VAC, 10 A, 50 Hz	IS 1293 Type IND/3	CBL-EX-PWR-C13-IN	No graphic available
Israel	250 VAC, 10 A, 50 Hz	SI 32/1971 Type IL/3G	CBL-EX-PWR-C13-IL	
Italy	250 VAC, 10 A, 50 Hz	CEI 23-16 Type I/3G	CBL-EX-PWR-C13-IT	

Country/Region	Electrical Specifications	Plug Standards	Juniper Model number	Graphic
Japan	125 VAC, 12 A, 50 Hz or 60 Hz	SS-00259 Type VCTF	CBL-EX-PWR-C13-JP	
Korea	250 VAC, 10 A, 50 Hz or 60 Hz	CEE (7) VII Type VIIGK	CBL-EX-PWR-C13-KR	
North America	125 VAC, 13 A, 60 Hz	NEMA 5-15 Type N5-15	CBL-EX-PWR-C13-US	
South Africa	250 VAC, 10 A, 50 Hz	SABS 164/1:1992 Type ZA/13	CBL-EX-PWR-C13-SA	
Switzerland	250 VAC, 10 A, 50 Hz	SEV 6534-2 Type 12G	CBL-EX-PWR-C13-SZ	No graphic available
Taiwan	125 VAC, 10 A, 50 Hz	NEMA 5-15P Type N5-15P	CBL-EX-PWR-C13-TW	

Country/Region	Electrical Specifications	Plug Standards	Juniper Model number	Graphic
United Kingdom	250 VAC, 10 A, 50 Hz	BS 1363/A Type BS89/13	CBL-EX-PWR-C13-UK	 g021271

⚠ CAUTION The AC power cord for the EX4550 switch is intended for use with this switch only. Do not use the cord with any other product.

⚠ CAUTION Power cords must not block access to switch components.

DC Power Supply in EX4550 Switches

The DC power supply in EX4550 switches is a hot-insertable and hot-removable field-replaceable unit (FRU): You can install it without powering off the switch or disrupting the switching function.

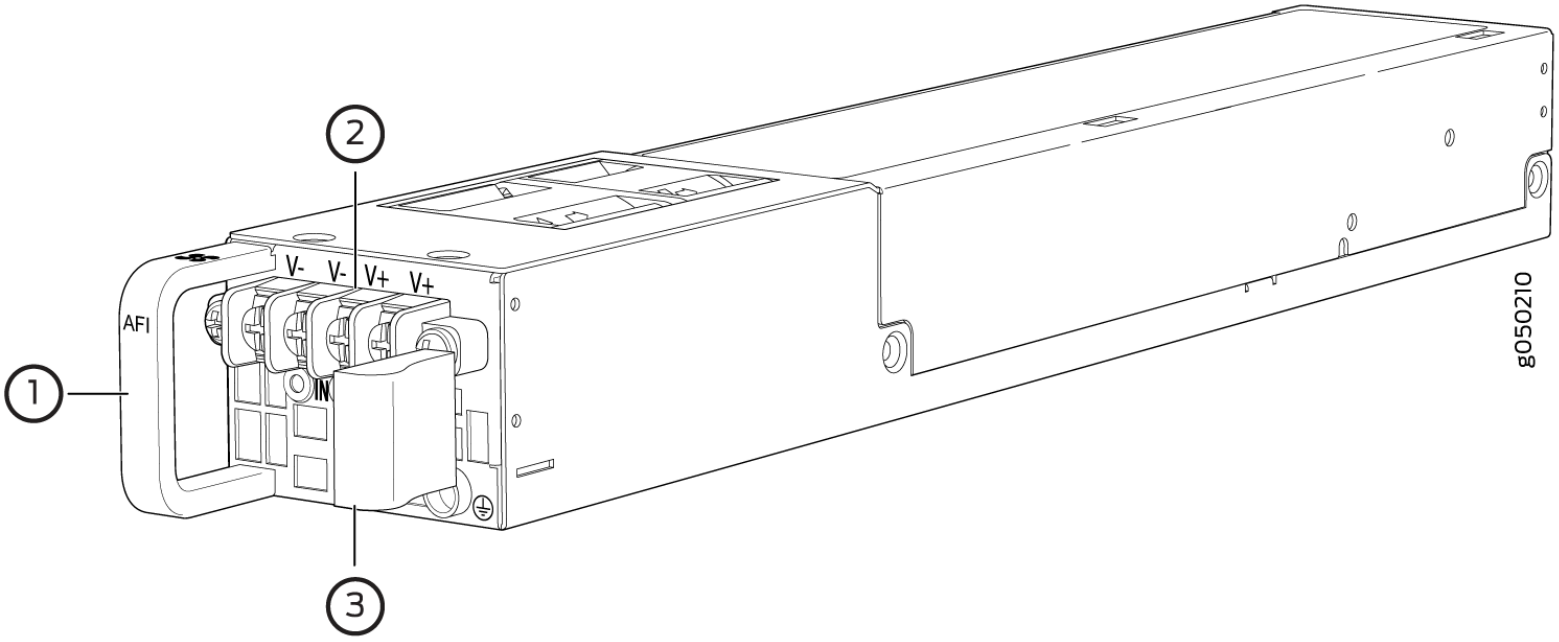
All the EX4550 switches that are powered by DC power supplies, except the EX4550-32F-S switches are shipped with one DC power supply pre-installed in the rear panel of the switches. EX4550-32F-S switches are not shipped with pre-installed power supplies; you must order them separately.

This topic describes the DC power supplies used in EX4550 switches.

The DC power supply gives an output power of 650 W. Figure 4 shows a DC power supply for an EX4550 switch.

ⓘ NOTE The V+ terminals are shunted internally together, as are the V- terminals. The same polarity terminal can be wired together from the same source to provide an additional current path in a higher power chassis. Each power supply must be connected to a single source only.

Figure 4: DC Power Supply for an EX4550 Switch



1 — Handle

3 — Ejector lever

2 — Terminal block

The DC power supply in EX4550 switches is a hot-insertable and hot-removable field-replaceable unit (FRU): You can install it without powering off the switch or disrupting the switching function.

Two variants of DC power supplies are available, each with a different airflow:

- Back-to-front airflow, indicated by `AFI` label
- Front-to-back airflow, indicated by `AFO` label

Each power supply has a label `AFI` or `AFO` and an arrow on the handle that depicts the direction of airflow (see Figure 5).

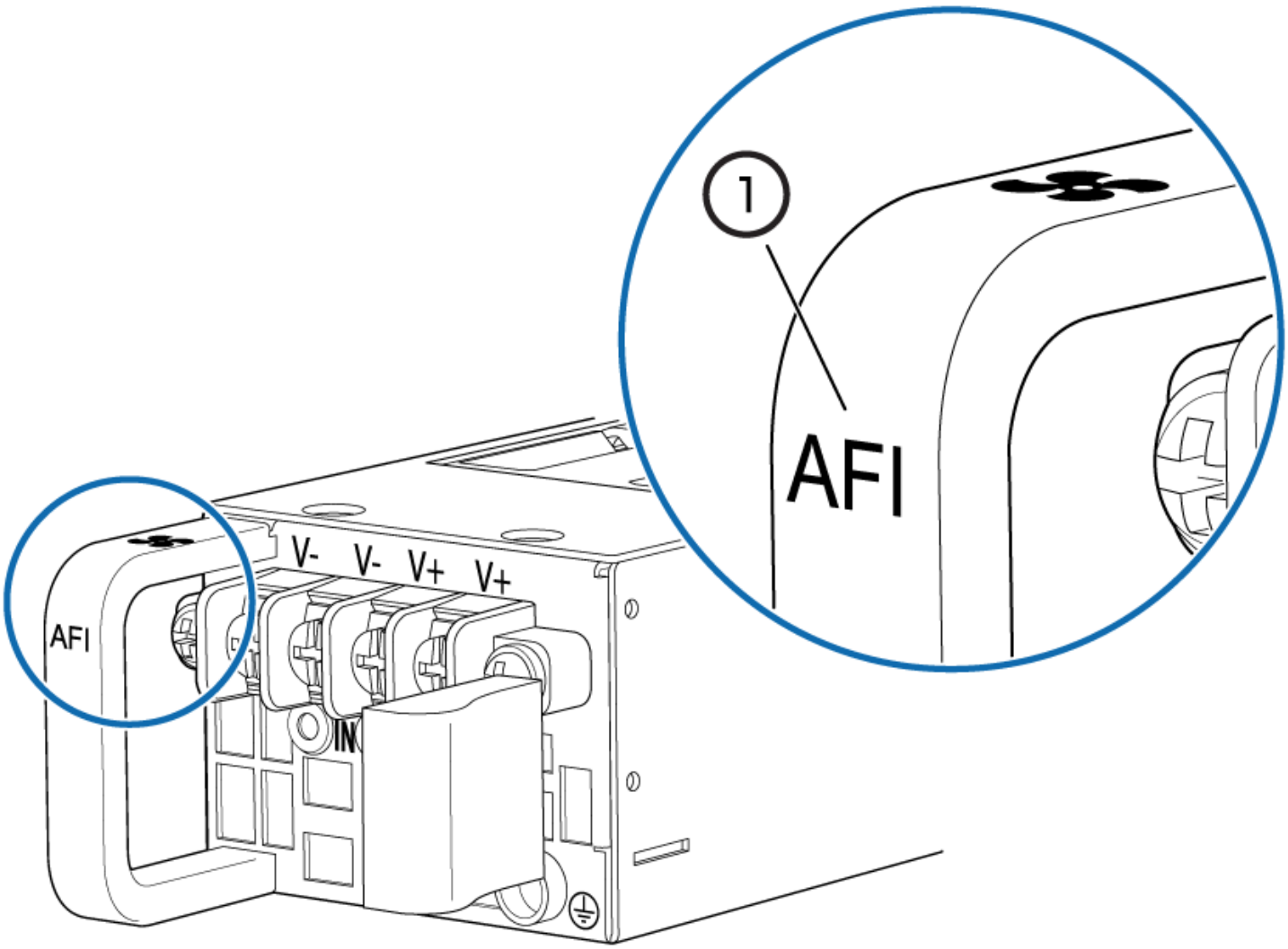
Table 5 shows the DC power supply model numbers and the direction of airflow in them.

Table 5: Airflow Direction in DC Power Supply Used in EX4550 Switches

Model Number	Label on Power Supply	Direction of Airflow
JPSU-650W-DC-AFI	`AFI`	Back-to-front—air intake to cool the chassis is through the vents on the rear panel of the chassis, and hot air exhausts through the vents on the front panel of the chassis.

Model Number	Label on Power Supply	Direction of Airflow
JPSU-650W-DC-AFO	AFO	Front-to-back—air intake to cool the chassis is through the vents on the front panel of the chassis, and hot air exhausts through the vents on the rear panel of the chassis.

Figure 5: Label Identifying the Airflow Direction in a DC Power Supply



⚠ CAUTION Do not mix:

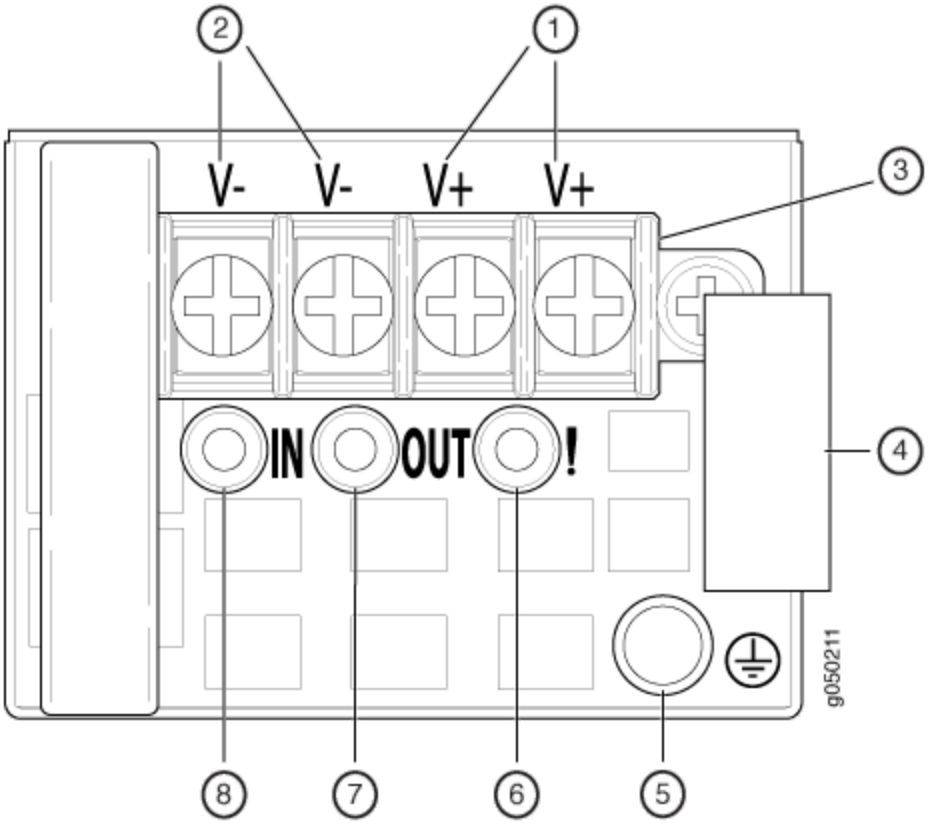
- AC and DC power supplies in the same chassis.
- Power supplies with different airflow labels (AFI and AFO) in the same chassis.

To avoid electrical injury, carefully follow instructions in Installing a DC Power Supply in an EX4550 Switch and Removing a DC Power Supply from an EX4550 Switch.

DC Power Supply LEDs in EX4550 Switches

Figure 6 shows the location of the LEDs on a DC power supply for an EX4550 switch.

Figure 6: DC Power Supply Faceplate on an EX4550 Switch



1 — V+ input terminals	5 — ESD grounding point
2 — V– input terminals	6 — ! (Fault) LED
3 — Terminal block	7 — OUT (Output) LED
4 — Ejector lever	8 — IN (Input) LED

Table 6 describes the LEDs on the DC power supplies.

Table 6: DC Power Supply LEDs on an EX4550 Switch

Name	Color	State	Description

Name	Color	State	Description
IN	Unlit	Off	Indicates one of the following: • Power supply is disconnected from DC power feed. • DC power input voltage is not within normal operating range. • No DC power input.
	Green	On steadily	The power supply is receiving power.
OUT	Unlit	Off	Indicates one of the following: • The power supply is disconnected from the power feed. • The power supply is not delivering power correctly.
	Green	On steadily	The power supply is functioning correctly.
! (Fault)	Yellow	On steadily	The power supply has failed and must be replaced.

DC Power Supply Specifications for EX4550 Switches

Table 7 lists the power supply specifications for a DC power supply used in an EX4550 switch.

Table 7: DC Power Supply Specifications for an EX4550 Switch

Item	Specifications
DC input voltage	• Minimum operating voltage: –36 VDC • Nominal operating voltage: –48 VDC • Operating voltage range: –36 VDC through –72 VDC
DC input current rating	7 A maximum at nominal operating voltage (–48 VDC)
Output power	650 W

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