

Cisco Catalyst 4500 Series

Power Supplies and External AC Power Shelf

Overview

The Cisco Catalyst® 4500 Series offers internal power supplies and external power devices for multiple deployment scenarios. These scenarios include small and large deployments in alternating-current (AC) or direct-current (DC) environments for data-only configurations, and scalability up to 15.4 watts (W) per port (per the current IEEE 802.3af draft) for inline-power configurations.

The Cisco Catalyst 4507R (seven slots), 4506 (six slots), and 4503 (three slots) share a common power supply form factor. Each Cisco Catalyst 4500 Series chassis is designed for 1+1 power protection while meeting the needs of inline-power demands. In addition to power resiliency, the Cisco Catalyst 4500 Series includes 1 + 1 supervisor engine redundancy (4507R only) and software-based fault tolerance. Integrated resiliency in both hardware and software minimizes network downtime, ensuring workforce productivity, profitability, and customer success.

Power Supply Configuration Alternatives

Table 1 Cisco Catalyst 4500 Series Power Supply Quick Look

Power Supply	Purpose	Maximum Input	Cisco Phones Supported
1000W AC	data	1.32KVA	NA
1300W ACv	data & inline power	1.76KVA	211 ¹
2800W ACv	data & inline power	3.52KVA	240 ¹
1400W DC	data & inline power	7.5KVA	240

1. In combined mode

Figure 1





Cisco Catalyst 4500 Series Power Supply Options: AC and DC

The Cisco Catalyst 4500 Series offers a variety of power supplies and accessories to meet the diverse needs of Enterprise and Service Provider customers. All of the available Cisco Catalyst 4500 Series power supplies can be used for data-only deployments, which typically require just a few hundred watts. For deployments that dictate support for inline power, Cisco offers several options.

The Cisco Catalyst 4500 Series offers AC power with several internal supplies: 1000W (data only), 1300W (data and in-line power), and 2800W (data and in-line power). When more than 2800W of redundant data and in-line power are required for a Cisco Catalyst 4500 Series chassis in an AC powered environment, Cisco offers an External AC power shelf capable of producing 7500W with N+1 redundant power.

The Cisco Catalyst 4500 Series has one DC power option. Cisco offers a 1400W internal DC power supply option. This supply meets the power needs of all Cisco Catalyst 4500 Series configurations. The 1400W DC power supply can accept 7500W DC from either a direct connection to a DC power plant or from the new external AC power shelf.

Cisco Catalyst 4500 Series External AC Power Shelf and 1400W DC Power Supply with Integrated Power Entry Module

The new Cisco Catalyst 4500 Series external AC power shelf must be used in conjunction with the new 1400W DC Power Supply. In addition to providing power for the chassis, fans, and non inline-powered line cards, the 1400W DC power supply contains a Power Entry Module (PEM). The PEM is used to pass-through additional power to the chassis backplane—power demanded by the inline-power line cards. The chassis power trace used for inline power is independent from the one used by the Supervisor(s), fan tray, and backplane components. The 1400W DC Power Supply can provide up to 1400W of incoming power for data applications (Supervisor(s), fan tray, and so on). The remaining power is passed through the power supply via the PEM and placed on the inline-power trace.

When just one External AC power shelf is used (with two 2500W AC power supplies), it provides the 1400W DC power supply with 5000W of DC power (combined). When two AC power Shelves are strapped together (future), the Cisco Catalyst 4500 Series can provide up to 7500W of DC power (3+1 redundant).

In any deployment scenario whether AC or DC, the Cisco Catalyst 4500 Series has the power supplies and external power devices to meet customers' power needs for data, voice, and video applications.



Figure 2
Cisco Catalyst 4500 1000W AC Power Supply (Data Only)



Figure 5
Cisco Catalyst 4500 1400W DC Power Supply (Data and Inline Power)



Figure 3
Cisco Catalyst 4500 1300W AC Power Supply (Data and Inline Power)



Figure 6
The 2500W AC Power Supply for the Cisco Catalyst 4500 External AC Power Shelf



Figure 4
Cisco Catalyst 4500 2800W AC Power Supply (Data and Inline Power)

Figure 7
Cisco Catalyst 4500 External AC Power Shelf





Table 2 Cisco Catalyst 4500 Series Power Supply Minimum Software Support

	1000W AC	1300W ACv	2800W ACv	1400W DC with Integrated PEM	External AC Power Shelf
Minimum IOS software requirement	Cisco IOS® Software Version 12.1(12c)EW	Cisco IOS Software Version 12.1(12c)EW	Cisco IOS Software Version 12.1(12c)EW	Cisco IOS Software Version 12.1(13)EW	Cisco IOS Software Version 12.1(13)EW
Minimum CATOS software requirement	Cisco CatOS Software Version 7.4(1)	Cisco CatOS Software Version 7.4(1)	Cisco CatOS Software Version 7.4(1)	Cisco CatOS Software Version 7.5(1)	Cisco CatOS Software Version 7.5(1)

Table 3 Cisco Catalyst 4500 Series Power Supply Specifications

Power Supply	1000W AC—Data Only	1300W AC	2800W AC	1400W DC	2500W AC—Power Shelf P/S
Integrated In-line Power	No (Data Only)	Yes (Up to 800W)	Yes (Up to 1400W)	Up to 7500W (minus the power consumed for data) when connected directly to a DC power plant or 2 External AC Power Shelves	2500W per power supply; 5000W per shelf (minus the power consumed for data)
Input Current (Rated)	12A @ 100 VAC, 5A @ 240 VAC	16A @ 100 VAC, 7A @ 240 VAC	16A @ 200 VAC	26A @ –60 VDC (data only) 180A @ –48 VDC (inline power)	15A @ 200 VAC
Output Current (Data)	12V @ 83.4A 3.3V @ 12.2A	12V @ 84.7A 3.3V @ 12.5A	12V @ 113.3A 3.3V @ 12.1A	12V @ 120A 3.3V @ 10A	–52 VDC @ 50A (total output per supply)
Output Current (In-line power)	N/A	–50V @ 16.7A	–50V @ 28A	140A @ –48/–60 VDC	52 VDC @ 50A (total output per supply)
KVA rating (Maximum)	1.32 KVA	1.76 KVA	3.52 KVA	Data: 1.87 KVA Data & Voice: 7.5 KVA	2.6 KVA
Output Power Redundant Mode (Data)	1000W + 40W	1000W + 40W	1360W + 40W	1367 W + 33W	Up to 1400W (via DC Supply)
Output Power Redundant Mode (In-line power)	N/A	800W max. per power supply	1400W max. per power supply	Up to 7500W (minus the power consumed for data)	2500W per supply (minus the power consumed for data)
Output Power Combined Mode (Data)	1667 Watts	2166W	2473W	N/A	N/A
Output Power Combined Mode (In-line power)	N/A	1333W (max.)	2333W	N/A	N/A

**Table 3** Cisco Catalyst 4500 Series Power Supply Specifications (Continued)

Power Supply	1000W AC— Data Only	1300W AC	2800W AC	1400W DC	2500W AC— Power Shelf P/S
Heat Dissipation	943 BTU/Hr.	1568 BTU/Hr.	2387 BTU/Hr.	Data only:1591 BTU/Hr. Data and voice: 2427 BTU/Hr.	1210 BTU/Hr. per power supply
Holdup Time	20 ms	20 ms	20 ms	4 ms	20 ms
Cisco Phones Supported with integrated in-line power	None	Up to 211 ¹	Up to 240 ¹	240	240
Hot Swappable	Yes	Yes	Yes	Yes	Yes

1. Measured in combined mode

Table 4 Cisco Catalyst 4500 Power Supply Ordering Information

Power Supplies	Description
PWR-C45-1000AC	Cisco Catalyst 4500 1000W AC power supply (data only)
PWR-C45-1300ACV	Cisco Catalyst 4500 1300W AC power supply (with inline power)
PWR-C45-2800ACV	Cisco Catalyst 4500 2800W AC power supply (with inline power)
PWR-C45-1400DC-P	Cisco Catalyst 4500 1400W DC power supply with Integrated PEM
External AC Power Shelf and Accessories	
WS-P4502-1PSU	Cisco Catalyst 4500 Aux. Power Shelf (2 slot), incl. 1 PWR-4502
PWR-4502	Cisco Catalyst 4500 Aux. Power Shelf Redundant Power Supply
CAB-4502-DC-2M	Cisco Catalyst 4500 2 meter DC Cable set for Aux. Power Shelf
CAB-4502-DC-60CM	Cisco Catalyst 4500 60 cm DC Cable set for Aux. Power Shelf



Table 5 Cisco Catalyst 4500 Series Power Cord Options

Part Numbers	Cisco Catalyst 4500 1000W Power Supply	Cisco Catalyst 4500 1300W Power Supply ²	Cisco Catalyst 4500 2800W Power Supply	Cisco Catalyst 4500 1400W DC Power Supply ³	Internal 2500W AC Power Supply for the AC Power Shelf
Product ID	PWR-C45-1000AC	PWR-C45-1300ACV	PWR-C45-2800ACV	PWR-C45-1400DC-P	PWR-4502
Europe	CAB-7KACE=	CAB-7513ACE=	CAB-AC-2800W-EU=	N/A	CAB-4502AC-EU
International	N/A	N/A	CAB-AC-2800W-INT=	N/A	CAB-4502AC-INT
United States	CAB-7KAC=	CAB-7513AC=	CAB-AC-2800W-TWLK= CAB-AC-2800W-6-20=	N/A	CAB-4502AC-US
Australia	CAB-7KACA=	CAB-7513ACA=	Same as international	N/A	Future
Italy	CAB-7KACI=	CAB-7513ACI=	Same as international	N/A	Future
United Kingdom	CAB-7KACU=	CAB-7513ACU=	Same as international	N/A	CAB-4502AC-UK
Argentina	CAB-7KACR=	CAB-7513ACR=	Same as international	N/A	Future
South Africa	N/A	CAB-7513ACSA=	Same as international	N/A	Future

2. The 1300W AC Power Supply may also use the power cords for the 2800W AC Power Supply.

3. When connecting the 1400W DC Power Supply to the Cisco External AC power shelf, a Cisco cord is required. When connecting directly to a DC power source, consult local codes; the cord must not be longer than 10 Meters.

Power Supply Indicators and Interfaces

- Fan cooling: integrated in hot-insertion/hot-extraction unit
- Good: green
- Fail: red
- Simple Network Management Protocol (SNMP) Management Information Base (MIB) supported

Environmental Conditions

- Operating temperature: 32° to 104°F (0° to 40°C)
- Storage temperature: –40° to 167°F (–40° to 75°C)
- Relative humidity: 10 to 90 percent, noncondensing
- Operating altitude: –60 to 4000 m



Regulatory Standards Compliance

Safety

- UL 60950
- CAN/CSA-C22.2 No. 60950
- EN 60950
- IEC 60950
- TS 001
- AS/NZS 3260

Electromagnetic Compatibility (EMC)

- FCC Part 15 (CFR 47) Class A
- ICES-003 Class A
- EN55022 Class A
- CISPR22 Class A
- AS/NZS 3548 Class A
- VCCI Class A
- EN 55022
- EN 55024
- EN 61000-6-1
- EN 50082-1
- EN 61000-3-2
- EN 61000-3-3
- ETS 300 386

Industry EMC, Safety, and Environmental Standards

- GR-63-Core Network Equipment Building Standards (NEBS) Level 3
- GR-1089-Core Level 3
- ETS 300 019 Storage Class 1.1
- ETS 300 019 Transportation Class 2.3 (pending)
- ETS 300 019 Stationary Use Class 3.1
- ETS 300 386

Warranty

The warranty for the Cisco Catalyst 4500 Series is 90 days; it includes hardware replacement with a 10-day turnaround from return materials authorization (RMA).

Service and Support

Cisco Systems® offers life-cycle service and support for the Cisco Catalyst 4500 Series, directly and for resale through Cisco distributors. From implementation to operation and optimization, Cisco offers advanced service and technical support.

Advanced Service

Cisco Total Implementation Solutions (TIS) offers a full range of implementation solutions, including project management, project engineering, configuration, and staging and rollout coordination, and helps ensure correct installation and deployment. For more information about TIS, visit:

<http://www.cisco.com/warp/public/cc/serv/mkt/sup/ent/tis/>

Technical Support

Cisco SMARTnet™ online and telephone support augments the customer's operations-staff resources. Support includes the ability to refresh system software at will as well as a range of advance-replacement hardware options. Cisco SMARTnet onsite support adds the services of a field engineer, which can be critical when customer staffing is insufficient or unavailable for parts-replacement activities. For more information about Cisco SMARTnet support, visit:

<http://www.cisco.com/warp/public/cc/serv/mkt/sup/ent/snet/>

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