



Technical Specifications

This appendix includes the following information for the Cisco MDS 9216 Switch:

- [Switch Specifications, page C-1](#)
- [Module Specifications, page C-3](#)
- [Weight of Modules, page C-4](#)
- [Supported Power Cords and Plugs, page C-6](#)



Note

Specifications for cables and connectors are provided in [Appendix D, “Cable and Port Specifications.”](#)

Switch Specifications

[Table C-1](#) lists the environmental specifications for the Cisco MDS 9216 Switch.

Table C-1 Environmental Specifications for the Cisco MDS 9216 Switch

Description	Specification
Temperature, ambient operating	32 to 104°F (0 to 40°C)
Temperature, ambient nonoperating and storage	-40 to 158°F (-40 to 70°C)
Humidity (RH), ambient (noncondensing) operating	10 to 90%
Humidity (RH), ambient (noncondensing) nonoperating and storage	5 to 95%
Altitude, operating	-197 to 6500 ft (-60 to 2000 m)
Noise levels	70 dB

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Table C-2 lists the physical specifications for the Cisco MDS 9216 Switch.

Table C-2 Physical Specifications for the Cisco MDS 9216 Switch

Description	Specification
Dimensions (HxWxD)	5.25 x 17.5 x 22.75 in. (13.3 x 44.5 x 57.8 cm) Chassis requires 3 RU ¹ . Chassis depth including cable guide is 27.75 in. (70.3 cm).
Weight	Chassis only: 31 lb (14.1 kg). Chassis configured with one supervisor module, fan module, and two power supplies: 45 lb (20.4 kg)
Power supply	845-W AC input for each power supply
Airflow	300 lfm ² through system fan module, or 80 cfm ³ per supervisor, switching, or services module. Total of 160 cfm if slot 2 is filled. Spacing requirements: <ul style="list-style-type: none"> • If installed in a cabinet, a minimum of 2.5 in. (6.4 cm) is required between the chassis air vents and the cabinet walls. • If installed in an open rack (no side panels), the horizontal distance required between the chassis and any devices that exhaust air towards the chassis is a minimum of 6 in. (15.2 cm), and the distance required between the chassis air vents and any walls is a minimum of 2.5 in. (6.4 cm).

1. RU = rack unit; 1 RU = 1.75 inches (4.45 cm)

2. lfm = linear feet per minute

3. cfm = cubic feet per minute

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Module Specifications

Table C-3 lists the specifications for the Cisco MDS 9216 Switch supervisor module (which is fixed in the chassis) and the switching and services modules.

Table C-3 Cisco MDS 9216 Switch Module Specifications

Description	Specification
Environmental Requirements	
Temperature, ambient operating	32 to 104°F (0 to 40°C)
Temperature, ambient nonoperating and storage	-40 to 167°F (-40 to 75°C)
Humidity (RH), ambient (noncondensing) operating	10 to 90%
Altitude operating	-197 to 6500 ft (-60 to 2000 m)
Physical Characteristics	
Dimensions	1.75 x 15.5 x 16.5 in. (4.4 x 39.4 x 41.9 cm) Note These are the maximum dimensions of faceplate and board, and include connectors on board.
Weight	8 to 11.5 lb (1.4 to 5.2 kg)

Table C-4 lists the specifications for the batteries on the Cisco MDS 9000 Family Caching Services Module.

Table C-4 Caching Services Module Battery Specifications

Attribute	Value
Nominal voltage	9.6 V
Rated capacity	Typical discharge capacity at 0.2C rate: 2100 mAh
	Minimum discharge capacity at 0.2C rate: 2000 mAh
	Minimum discharge capacity at 5C rate: 1800 mAh (1V/cell discharge cut-off)
Discharge	The battery is capable of continuous discharge from +5 to +60°C at 5C-rate
Charge	From 0 to 15°C at C/10 rate and from +15 to +40°C at C/2-rate
Storage temperature	0 to +35°C
Relative humidity range	From 5 to 90%

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Weight of Modules

Table C-5 lists the weight for each module in the Cisco MDS 9000 Family.

Table C-5 Weight of Modules in the Cisco MDS 9000 Family

Module	Weight
16-port FC switching module	9 lb (4.1 kg)
32-port FC switching module	9 lb (4.1 kg)
ASM	11 lb (5 kg)
SSM	11 lb (5 kg)
CSM	11.5 lb (5.2 kg)
IPS-4	9 lb (4.1 kg)
IPS-8	10 lb (4.5 kg)
MPS-14/2	10 lb (4.5 kg)
Supervisor for MDS 9500 Series	9 lb (4.1 kg)
Supervisor for MDS 9200 Series	9 lb (4.1 kg)

Power Specifications

This section includes the following information:

- [Specifications for the Cisco MDS 9216 Switch Power Supplies, page C-4](#)
- [Component Power Requirements and Heat Dissipation Specifications, page C-5](#)

Specifications for the Cisco MDS 9216 Switch Power Supplies

Table C-6 lists the specifications for the Cisco MDS 9216 Switch power supply, which is 845 W and accepts AC input.

Table C-6 Specifications for the Cisco MDS 9216 Switch Power Supply

Type	Autoranging input with power factor corrector
Voltage	100 to 240 VAC ($\pm 10\%$)
Current rating	12 A at 100 to 120 VAC 5 A at 200 to 240 VAC
Frequency	50/60 Hz (nominal) (± 3 Hz for full range)
Output capacity	845 W
Output voltage	+3.3 V at 10 A +50 V at 16.2 A



Note

For plug current ratings, see [Figure C-1 on page C-7](#).

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Component Power Requirements and Heat Dissipation Specifications

Consider heat dissipation when sizing the air-conditioning requirements for an installation. The power and heat associated with a Cisco MDS 9216 Switch varies based upon the following considerations:

- Switching module type and number of switching modules installed
- Average switching traffic levels

Table C-7 lists the power requirements and heat dissipation for the components of the Cisco MDS 9216 Switch.



Note

Unless noted otherwise, the data in Table C-7 is based on worst-case conditions. Typical numbers are approximately 30 percent below the numbers listed here.

Table C-7 Power Requirements and Heat Dissipation for the 845-W Power Supply

Module Type / Product Number	Power Required (watts)	Heat Dissipation (BTU/hr)	Input Current			
			90 VAC (amps)	120 VAC (amps)	180 VAC (amps)	240 VAC (amps)
Cisco MDS 9216 chassis with fan module DS-C9216-K9	38	164	0.53	0.40	0.27	0.20
Fixed Cisco MDS 9216 supervisor module (16-port FC module, 1Gbps/2Gbps)	220	940	3.05	2.29	1.53	1.15
16-port FC module, 1Gbps/2Gbps DS-X9016	220	940	3.05	2.29	1.53	1.15
32-port FC module, 1Gbps/2Gbps DS-X9032	200	855	2.78	2.08	1.39	1.04
MPS-14/2 DS-X9302-14K9	227	970	3.15	2.37	1.57	1.19
4-port IPS module DS-X9304- SMIP	185	789	2.57	1.93	1.28	0.96
8-port IPS module DS-X9308- SMIP	220	940	3.05	2.29	1.53	1.15
32-port ASM, DS-X9032-SMV	295	1260	4.10	3.07	2.05	1.54
32-port SSM, DS-X9032-SSM	295	1260	4.10	3.07	2.05	1.54
CSM DS-X9560-SMC	210	907	2.95	2.22	1.48	1.11

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CCisco MDS 9216 Sample Power and Heat Dissipation Calculation

Table C-8 provides a sample calculation of power and heat dissipation for the following hardware configuration at maximum wattage:

- Cisco MDS 9216 chassis, including two 845-W AC power supplies
- Fixed supervisor module, with 16 Fibre Channel ports
- One 32-port Fibre Channel switching module

Table C-8 Sample Calculation for Power and Heat Dissipation for Cisco MDS 9216 Switch

Module Type / Product Number	Qty	Power Required (watts)	Heat Dissipation (BTU/hr)	Input Current			
				90 VAC (amps)	120 VAC (amps)	180 VAC (amps)	240 VAC (amps)
Cisco MDS 9216 chassis with fan module DS-C9216-K9	1	38	164	0.53	0.40	0.27	0.20
Fixed supervisor module (16-port FC module, 1Gbps/2Gbps)	1	220	940	3.05	2.29	1.53	1.15
32-port FC module, 1Gbps/2Gbps DS-X9032	1	200	855	2.78	2.08	1.39	1.04
Total		458	1959	6.36	4.77	3.19	2.39

Supported Power Cords and Plugs

A separate power cord is provided for each power supply. Standard power cords or jumper power cords are available for connection to a power distribution unit having IEC 60320 C13 outlet receptacles. The jumper power cords, for use in cabinets, are available as an option instead of the standard power cords.

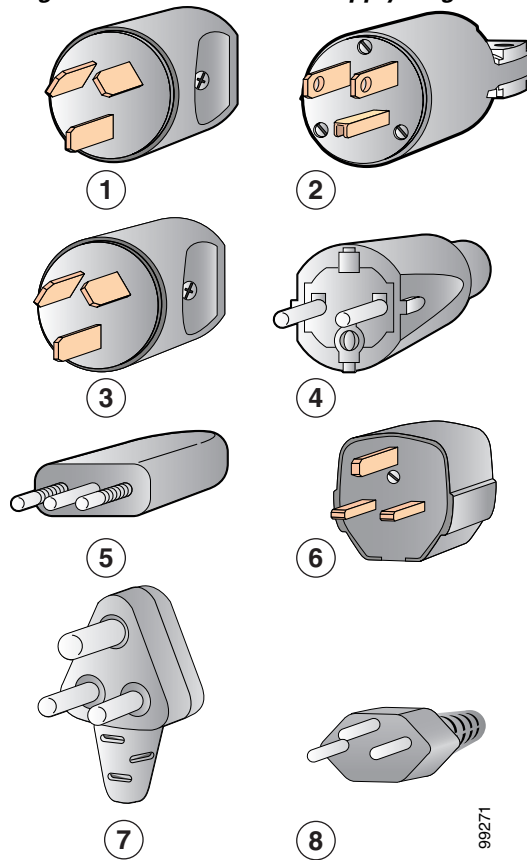
Power Cords

The standard power cords have an IEC C15 connector on the end that plugs into the switch. The optional jumper power cords have an IEC C15 connector on the end that plugs into the switch, and an IEC C14 connector on the end that plugs into an IEC C13 outlet receptacle. Only the standard power cords or jumper power cords provided with the switch are supported.

Figure C-1 shows the supported power supply plugs for the Cisco MDS 9216 Switch.

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Figure C-1 845-W Power Supply Plugs



1	Argentina, IRAM 2073 plug (10 A)	5	Italy 1/3G plug, CEI 23-16 (10 A)
2	North America NEMA 5-15P plug (15 A)	6	United Kingdom BS89/13, BS 1363/A (13A; replaceable fuse)
3	Australia, New Zealand SAA/3 plug, AS/NZS 3112-1993 (10 A)	7	South Africa EL 208, SABS 164-1 (10 A)
4	Europe VIIG Plug, CEE (7) VII (16 A)	8	Switzerland 12G SEV 1011 (10 A)

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Jumper Power Cord

Figure C-2 shows the 250 VAC 13 A C14 and C15 connectors on the optional jumper power cord for the Cisco MDS 9216 Switch. The C15 connector connects into the C16 inlet on the Cisco MDS 9216 Switch power supply, while the C14 connector connects into the C13 receptacle of a power distribution unit for a cabinet. The power cord product ID is CAB-C15-CBN.

Figure C-2 End of C14 and C15 Connectors on Jumper Power Cord for Cisco MDS 9216 Switch

