



CHAPTER 3

Technical Specifications

This chapter describes the technical specifications for the Cisco Nexus 7000 Series switches and includes these sections:

- [Environmental Specifications for Cisco Nexus 7000 Series Switches, page 3-1](#)
- [Physical Specifications for the Cisco Nexus 7000 Series Switches, page 3-2](#)
- [Power Specifications for Cisco Nexus 7000 Series Switches, page 3-3](#)
- [Power Supply Cable Specifications, page 3-6](#)
- [Chassis Clearances, page 3-11](#)
- [Facility Cooling Requirements, page 3-12](#)
- [Chassis Airflow, page 3-12](#)

Environmental Specifications for Cisco Nexus 7000 Series Switches

Table 3-1 lists the environmental specifications for the Cisco Nexus 7000 Series switches.

Table 3-1 *Environmental Specifications for the Cisco Nexus 7000 Series Switches*

Description		Cisco Nexus 7010	Cisco Nexus 7018
Temperature	Ambient operating	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)
	Ambient nonoperating	–40 to 158°F (–40 to 70°C)	–40 to 158°F (–40 to 70°C)
Relative humidity	Ambient (noncondensing) operating	5 to 90% (45 to 50% recommended)	5 to 90% (45 to 50% recommended)
	Ambient (noncondensing) nonoperating and storage	5 to 95%	5 to 95%
Altitude	Operating	–500 to 13,000 feet (152 to 4,000 meters)	–500 to 13,000 feet (152 to 4,000 meters)
	Storage	–1,000 to 30,000 feet (–305 to 9,144 meters)	–1,000 to 30,000 feet (–305 to 9,144 meters)

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Table 3-1 Environmental Specifications for the Cisco Nexus 7000 Series Switches (continued)

Description		Cisco Nexus 7010	Cisco Nexus 7018
Noise	Sound pressure levels		
	Without air filter	67.2 dBA	65.0 dBA
	With air filter	70.2 dBA	—
Sound power levels	Without air filter	78.9 dBA	74.2 dBA
	With air filter	81.7 dBA	—

Physical Specifications for the Cisco Nexus 7000 Series Switches

Table 3-2 lists the physical specifications for the Cisco Nexus 7000 Series switches.

Table 3-2 Dimensions for the Cisco Nexus 7000 Series Chassis

Chassis	Width	Depth ¹	Height ²
Cisco Nexus 7010	17.3 inches (43.9 cm)	32.0 inches (81.3 cm)	36.75 inches (93.3 cm) (21.0 RU)
Cisco Nexus 7018	17.3 inches (43.9 cm)	32.0 inches (81.3 cm)	43.75 inches (111.1 cm) (25.0 RU)

1. This is the measure from the mounting bracket to the rear of the chassis (this includes the module handles at the rear). For the cable management system on either chassis, add 6.0 inches (15.4 cm) in front of the mounting brackets. The six inches in front of the mounting brackets includes the optional air filter and the optional front door and frame assemblies on the Cisco Nexus 7010 chassis and it includes the optional front door and air intake frame on the Cisco Nexus 7018 chassis.
2. The height includes the bottom-support rail.

The Cisco Nexus 7010 component weights, quantities, and mean time between failure (MTBF) hours are listed in Table 3-3, and the Cisco Nexus 7018 component weights, quantities, and mean time between failure (MTBF) hours are listed in Table 3-4. The weights in these tables do not include the rack or cabinet that holds the chassis or the interface and power cables. For those weights, see the documentation provided by the manufacturers of those components.

Table 3-3 Weights, Quantities, and MTBF for the Cisco Nexus 7010 Switch Components

Component	Weight per Unit	Quantity	MTBF ¹ (Hours) per Unit
Chassis	200 lbs. (90.9 kg)	1	264,649
Supervisor module	10 lbs. (4.5 kg)	2	99,491
48-port 10/100/1000-Ethernet I/O module	14 lbs. (6.4 kg)	1 to 8 (mix of either or both types of I/O modules)	75,116
48-port 1-Gbps Ethernet I/O module	15 lbs. (7.7 kg)		75,064
32-port 10-Gbps Ethernet I/O module	18.5 lbs. (8.4 kg)		50,081
Fabric module	4 lbs. (1.8 kg)	3 to 5	651,072
System fan tray	20 lbs. (9.1 kg)	2	433,812
Fabric fan tray	5 lbs. (2.3 kg)	2	1,677,631

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Table 3-3 Weights, Quantities, and MTBF for the Cisco Nexus 7010 Switch Components

Component	Weight per Unit	Quantity	MTBF ¹ (Hours) per Unit
6-kW power supply unit	18 lbs. (8.2 kg)	2 to 3	341,536
7.5-kW power supply unit	25.5 lbs. (11.6 kg)	2 to 3	204,053
Mid-frame doors and frame (optional)	—	0 or 1	—

1. The predicted mean time between failure (MTBF) is based on the Bellcore Methodology.

Table 3-4 Weights, Quantities, and MTBF for the Cisco Nexus 7018 Switch Components

Component	Weight per Unit	Quantity	MTBF ¹ (Hours) per Unit
Chassis	187 lbs. (85.0 kg)	1	206,038
Supervisor module	10 lbs. (4.5 kg)	2	99,491
48-port 10/100/1000-Ethernet I/O module	14 lbs. (6.4 kg)	1 to 16 (mix of either or both types of I/O modules)	75,116
48-port 1 Gbps Ethernet I/O module	15 lbs. (7.7 kg)		75,064
32-port 10 Gbps Ethernet I/O module	18.5 lbs. (8.4 kg)		50,081
Fabric module	7.5 lbs. (3.4 kg)	3 to 5	423,846
Fan tray	25.8 lbs. (11.7 kg)	2	276,352
6-kW power supply unit	18 lbs. (8.2 kg)	2 to 4	341,536
7.5-kW power supply unit	25.5 lbs. (11.6 kg)	2 to 4	204,053
Front door (optional)	—	0 or 1	—

1. The predicted mean time between failure (MTBF) is based on the Bellcore Methodology.

Power Specifications for Cisco Nexus 7000 Series Switches

The number of power supplies that a Cisco Nexus 7000 Series switch requires depends on the quantities and types of modules that you include in the switch chassis, the type of power supply units that you are using, and the power redundancy mode that you are using.

The following topics explain how to calculate the switch power requirements and the amount of power available for each type of power supply configuration mode:

- [Power Requirements for Switch Components, page 3-3](#)
- [Power Supply Configuration Modes, page 3-4](#)

Power Requirements for Switch Components

To determine the power requirements of the Cisco Nexus 7000 Series switches, add the power requirements of each of its components. For each component, multiply the number of its modules by its maximum or typical power requirement. To find the quantities and power requirements for each Cisco Nexus 7010 switch, see [Table 3-5](#). To find the quantities and power requirements for each Cisco Nexus 7018 switch, see [Table 3-6](#).

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Table 3-5 Power Requirements for the Cisco Nexus 7010 Switch

Component	Quantity	Maximum	Typical
Supervisor module	2	210 W	190 W
48-port 10/100/1000-Ethernet I/O module	1 to 8	400 W	358 W
48-port 1 Gbps Ethernet I/O module		400 W	358 W
32-port 10 Gbps Ethernet I/O module		750 W	611 W
Fabric module	3 to 5	60 W	55 W
All fan trays (total)	—	2184 W	300 W

Table 3-6 Power Requirements for the Cisco Nexus 7018 Switch

Component	Quantity	Maximum	Typical
Supervisor module	2	210 W	190 W
48-port 10/100/1000-Ethernet I/O module	1 to 16	400 W	358 W
48-port 1 Gbps Ethernet I/O module		400 W	358 W
32-port 10 Gbps Ethernet I/O module		750 W	611 W
Fabric module	3 to 5	100 W	90 W
All fan trays (total)	N.A.	1433 W	569 W

Power Supply Configuration Modes

You can configure one of the following power modes to either use the combined power provided by the installed power supply units or to provide power redundancy when there is a power loss:

- **Combined mode**—Provides the maximum amount of available power by utilizing the combined power output from all installed power supply units for switch operations. This mode does not provide redundancy.
- **Power-supply redundancy mode**—Allows you to replace a power supply during switch operations. All power supplies are active. The available power is calculated as the least amount of power available from all but one of the power supply units (N+1). The reserve power is the amount of power output by the power supply unit that can output the most power. For example, if three power supply units output 3 kW, 6 kW, and 6 kW, the available power is 9 kW (3 kW + 6 kW) and the reserve power is 6 kW.
- **Input source redundancy mode**—Takes power from two electrical grids so that if one grid goes down, the other grid can provide the power needed by the switch. Each grid powers half of each power supply unit (grid A is connected to the Input 1 receptacle on each power supply unit and grid B is connected to the Input 2 receptacle on each power supply unit). The available power is the amount of power output by the portions of the power supply units that are connected to the same grid. For example, if three power supply units are connected to a 110-V grid and a 220-V grid, each power supply outputs 1.2 kW for the 110-V grid and 3.0 kW for the 220-V grid. The available power would be 3.6 kW (1.2 kW + 1.2 kW + 1.2 kW) and the reserve power would be 9.0 kW (3.0 kW + 3.0 kW + 3.0 kW).

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- Full redundancy mode—Provides both power-supply redundancy and input-source redundancy. This mode allows you to replace a power supply unit without interrupting switch operations or continue powering the switch if one of two grids goes down. The available power is the lesser amount of output power for power supply redundancy or input source redundancy.

The amount of power available for use with your Cisco Nexus 7000 Series switch depends on the number of power supply units, input voltage used, and the power mode used. To determine the amount of available power for 6-kW power supply units, see [Table 3-7](#). To determine the amount of power available for 7.5-kW power supply units, see [Table 3-8](#).

Table 3-7 Power Availability for 6-kW Power Supply Units

	Combined mode	Power supply redundancy mode	Input source redundancy mode	Full redundancy mode
Dual inputs per power supply unit				
220-V and 220-V inputs				
1 power supply unit	6000 W	—	3000 W	—
2 power supply units	12,000 W	6000 W	6000 W	6000 W
3 power supply units	18,000 W	12,000 W	9000 W	9000 W
4 power supply units ¹	24,000 W	18,000 W	12,000 W	12,000 W
220-V and 110-V inputs				
1 power supply unit	4200 W	—	1200 W	—
2 power supply units	8400 W	4200 W	2400 W	2400 W
3 power supply units	12,600 W	8400 W	3600 W	3600 W
4 power supply units ¹	16,800 W	12,600 W	4800 S	4800 W
110-V and 110-V inputs				
1 power supply unit	2400 W	—	1200 W	—
2 power supply units	4800 W	2400 W	2400 W	2400 W
3 power supply units	7200 W	4800 W	3600 W	3600 W
4 power supply units ¹	9600 W	7200 W	4800 W	4800 W
Single input per power supply unit				
220-V input				
1 power supply unit	3000 W	—	—	—
2 power supply units	6000 W	3000 W	—	—
3 power supply units	9000 W	6000 W	—	—
4 power supply units ¹	12,000 W	9000 W	—	—
110-V input				
1 power supply unit	1200 W	—	—	—
2 power supply units	2400 W	1200 W	—	—
3 power supply units	3600 W	2400 W	—	—
4 power supply units ¹	4800 W	3600 W	—	—

1. A fourth power supply unit can be added to only the Cisco Nexus 7018 switch. The Cisco Nexus 7010 holds up to three power supply units.

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Table 3-8 Power Availability for 7.5-kW Power Supply Units

	Combined Mode	Power Supply Redundancy Mode	Input Source Redundancy Mode	Full Redundancy Mode
Dual inputs per power supply unit				
220-V and 220-V inputs				
1 power supply unit	7500 W	—	3750 W	—
2 power supply units	15,000 W	7500 W	7500 W	7500 W
3 power supply units	22,500 W	15,000 W	11,250 W	11,250 W
4 power supply units ¹	30,000 W	22,500 W	15,000 W	15,000 W
Single input per power supply unit				
220-V input				
1 power supply unit	3750 W	—	—	—
2 power supply units	7500 W	3750 W	—	—
3 power supply units	11,250 W	7500 W	—	—
4 power supply units ¹	15,000 W	11,250 W	—	—

Power Supply Cable Specifications

For specifications of the AC power cables that you can connect to a 6-kW power supply unit, see [Table 3-9](#). For specifications of the AC power cord connectors attached to the 7.5-kW power supply units, see [Table 3-10](#).

Table 3-9 6-kW Power Supply AC Power Cords

Locale	Power Cord Part Number	Cord Set Rating	Power Cord Reference Illustration
Australia and New Zealand	CAB-AC-16A-AUS	16A, 250 VAC	Figure 3-1
Peoples Republic of China	CAB-AC-16A-CH	16A, 250 VAC	Figure 3-2
Continental Europe	CAB-AC-2500W-EU	16A, 250 VAC	Figure 3-3
International	CAB-AC-2500W-INT	16A, 250 VAC	Figure 3-4
Israel	CAB-AC-2500W-ISRL	16A, 250 VAC	Figure 3-5
Japan and North America (nonlocking) 200 to 240 VAC operation	CAB-AC-2500W-US1	16A, 250 VAC	Figure 3-6
Japan and North America (locking) 200 to 240 VAC operation	CAB-AC-C6K-TWLK	16A, 250 VAC	Figure 3-7
Japan and North America 100 to 120 VAC operation	CAB-7513AC	16A, 250 VAC	Figure 3-8

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Table 3-9 6-kW Power Supply AC Power Cords (continued)

Locale	Power Cord Part Number	Cord Set Rating	Power Cord Reference Illustration
North America 125 VAC operation	CAB-L5-20P	20A, 250 VAC	Figure 3-9
Power distribution unit (PDU)	CAB-C19-CBN		Figure 3-10
Switzerland	CAB-ACS-16	16A, 250 VAC	Figure 3-11

Figure 3-1 CAB-AC-16A-AUS Power Cord and Connectors for the 6-kW Power Supply



Figure 3-2 CAB-AC-16A-CH Power Cord and Connectors for the 6-kW Power Supply



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Figure 3-3 CAB-AC-2500W-EU Power Cord and Connectors for the 6-kW Power Supply



Figure 3-4 CAB-AC-2500W-INT Power Cord and Connectors for the 6-kW Power Supply



Figure 3-5 CAB-AC-2500W-ISRL Power Cord and Connectors for the 6-kW Power Supply



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Figure 3-6 CAB-AC-2500W-US1 Power Cord and Connectors for the 6-kW Power Supply



Figure 3-7 CAB-AC-C6K-TWLK Power Cord and Connectors for the 6-kW Power Supply



Figure 3-8 CAB-7513AC Power Cord and Connectors for the 6-kW Power Supply



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Figure 3-9 CAB-L520P-C19-US Power Cord and Connectors for the 6-kW Power Supply



Figure 3-10 CAB-C19-CBN Power Cord and Connectors for the 6-kW Power Supply



Figure 3-11 CAB-ACS-16 Power Cord and Connectors for the 6-kW Power Supply



Table 3-10 7.5-kW Power Supply AC Power Cords

Local	Cord rating	Power cord reference illustration
Japan and North America	30 A, 250 VAC	Figure 3-12
International	32 A, 250 VAC	Figure 3-13

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Figure 3-12 NEMA L6-30 Power Connector for the 7.5-kW Power Supply



Figure 3-13 IEC 603090 Power Connector for the 7.5-kW Power Supply



Chassis Clearances

You must provide adequate clearance for installing the switch, replacing switch modules, and allowing airflow to and from the switch. All Cisco Nexus 7000 Series switches require at least 38.0 inches (96.5 cm) of clearance in front of the switch and at least 30 inches (76.2 cm) of clearance in back of the switch to install and replace the switch and its components.



Note

If you need more space for the mechanical lift, include the additional space with the clearance for the front of the chassis.

For the Cisco Nexus 7010 switch, the clearances for installation and replacement of components is adequate for the switch airflow. Side clearance is not needed for installation, replacement, or airflow, but should be planned anyway for the cables that connect to the switch (see the documentation provided by the cable manufacturer for this information). Cabinets used to hold the chassis typically provide the side clearance required for cable routing.

For the Cisco Nexus 7018 switch, the side-to-side airflow requires 11 inches (27.9 cm) of space on each side of the switch (or 22 inches [55.8 cm] between Cisco Nexus 7018 switches). You can route the I/O cables on the left front side of the chassis, but on the right side, you can route cables only on the upper right side of the chassis. This cabling configuration allows coolant air to enter the lower front side or from the floor to the air intake areas on the right side of the switch.

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Facility Cooling Requirements

The Cisco Nexus 7000 Series switches dissipate considerable power that generates much heat. The following is the heat dissipation requirement for these switches:

- Cisco Nexus 7010 dissipates up to 35,162 BTUs per hour
- Cisco Nexus 7018 dissipates up to 51,195 BTUs per hour

Chassis Airflow

The Cisco Nexus 7000 Series switches use either front-to-back or side-to-side airflow for switch cooling. The Cisco Nexus 7010 switch uses front-to-back airflow as shown in [Figure 3-14](#), and the Cisco Nexus 7018 switch uses side-to-side airflow to cool its modules and front-to-back airflow to cool its power supply units as shown in [Figure 3-15](#). Both switches are designed to work in a hot-aisle/cold-aisle environment, but the Cisco Nexus 7018 switch design also requires side clearances to allow airflow in and out the sides.

Figure 3-14 *Airflow for the Cisco Nexus 7010 Chassis*



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1	Airflow for cooling the supervisor and I/O modules	2	Airflow for cooling the fabric modules
3	Airflow for cooling the power supply units		

Figure 3-15 ***Airflow for the Cisco Nexus 7018 Chassis***



1	Airflow for cooling the supervisor and I/O modules	2	Airflow for cooling the fabric modules
3	Airflow for cooling the power supply units		

To allow for the Cisco Nexus 7018 switch to take in air from the cold aisle and floor on the right side, you should route cables on the left front side of the switch. If necessary, you can route cables on the upper right front side of the chassis, which leaves the lower right side open to cooling air from the cold aisle in front of the chassis. By having the cables on the left side and leaving the left rear side unobstructed, the exhaust is directed to the hot aisle in back.

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For the clearances required on each side of the switch, see the “Chassis Clearances” section on page 3-11.

To determine the clearances required on each side of the switch, see the “Chassis Clearances” section on page 3-11.

To determine the maximum amount of airflow for a fully configured switch, see Table 3-11 for the Cisco Nexus 7010 switch or see Table 3-12 for the Cisco Nexus 7018 switch.



Note

Systems with fewer than the maximum number of supervisor, I/O, or fabric modules will have less airflow.

Table 3-11 *Airflow for a Fully Configured Cisco Nexus 7010 Switch*

Temperature	System Airflow (cfm)	Fabric Airflow (cfm)	Total Airflow (cfm)
<55°F (13°C)	480	34	514
55 to 64°F (13 to 18°C)	596	39	635
64 to 73°F (18 to 23°C)	638	44	682
73 to 82°F (23 to 28°C)	680	54	734
82 to 91°F (28 to 33°C)	775	63	838
91 to 100°F (33 to 38°C)	873	69	942
100 to 109°F (38 to 43°C)	967	75	1042
>109°F (>43°C)	1670	197	1867

Table 3-12 *Airflow for a Fully Configured Cisco Nexus 7018 Switch*

Temperature	System Airflow (cfm)	Fabric Airflow (cfm)	Total Airflow (cfm)
<55°F (13°C)	1458	71	1529
55 to 64°F (13 to 18°C)	1458	87	1545
64 to 73°F (18 to 23°C)	1458	95	1553
73 to 82°F (23 to 28°C)	1458	101	1559
82 to 91°F (28 to 33°C)	1458	130	1588
91 to 100°F (33 to 38°C)	1458	157	1615
100 to 109°F (38 to 43°C)	1710	186	1896
109 to 118°F (43 to 48°C)	2160	198	2358
118 to 127°F (48 to 53°C)	2466	213	2679
127 to 136°F (53 to 58°C)	2772	235	3007