



Product Overview

The Cisco MDS 9148S Multilayer Fabric Switch (DS-C9148S48PK9) is the next generation of the highly reliable and flexible Cisco MDS 9100 Series switches. A powerful compact one rack-unit (1RU) form factor can scale from 12 to 48 line-rate 16-Gbps Fibre Channel ports.

The Cisco MDS 9148S switch meets the requirements for a:

- Standalone storage area network (SAN) in small departmental storage environments
- Stop-of-the-rack switch in medium-sized redundant fabrics
- Edge switch in enterprise data center core-edge topologies

The Cisco MDS 9148S switch has the following major features:

- 12, 24, and 48, default licensed ports and an 12-port on-demand license
- 2-, 4-, 8- and, 16-Gbps full line rates
- Port interfaces that support field-replaceable, hot-swappable small form-factor pluggable (SFP) transceivers
- Redundant hot-swappable power supplies and fan trays, PortChannels for Inter-Switch Link (ISL) resiliency, and F-port channeling for resiliency on uplinks from a Cisco MDS 9148S operating in NPV mode
- Enterprise class features such as In-Service Software Upgrades (ISSU), Virtual SANs (VSANs), security features, and quality of service (QoS)
- PowerOn Auto Provisioning (POAP) to automate software image upgrades and configuration file installation on newly deployed switches
- Intelligent diagnostics
- Full compatibility with the Cisco MDS 9000 Family.

This chapter contains the following topics:

- [Chassis Components, page 1-7](#)
- [Power Supplies, page 1-12](#)
- [Fan Modules, page 1-12](#)
- [Cisco MDS 9148S Multilayer Switch Ports, page 1-13](#)

Chassis Components

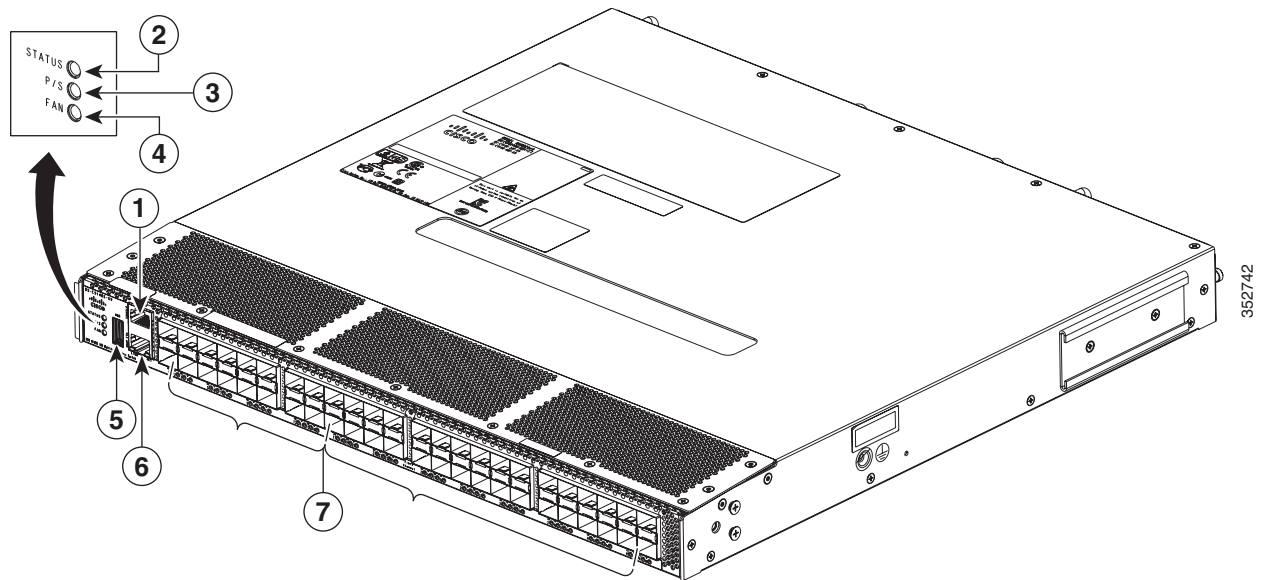
This section describes the different views of the chassis.

- [Front View, page 1-8](#)
- [Rear View, page 1-8](#)
- [Switch LEDs, page 1-10](#)

Front View

The front of the Cisco MDS 9148S switch contains the LEDs, the console and management ports, and 48 16-Gbps Fibre Channel Ports. See [Figure 1](#).

Figure 1 Front View of the Cisco MDS 9148S Multilayer Fabric Switch

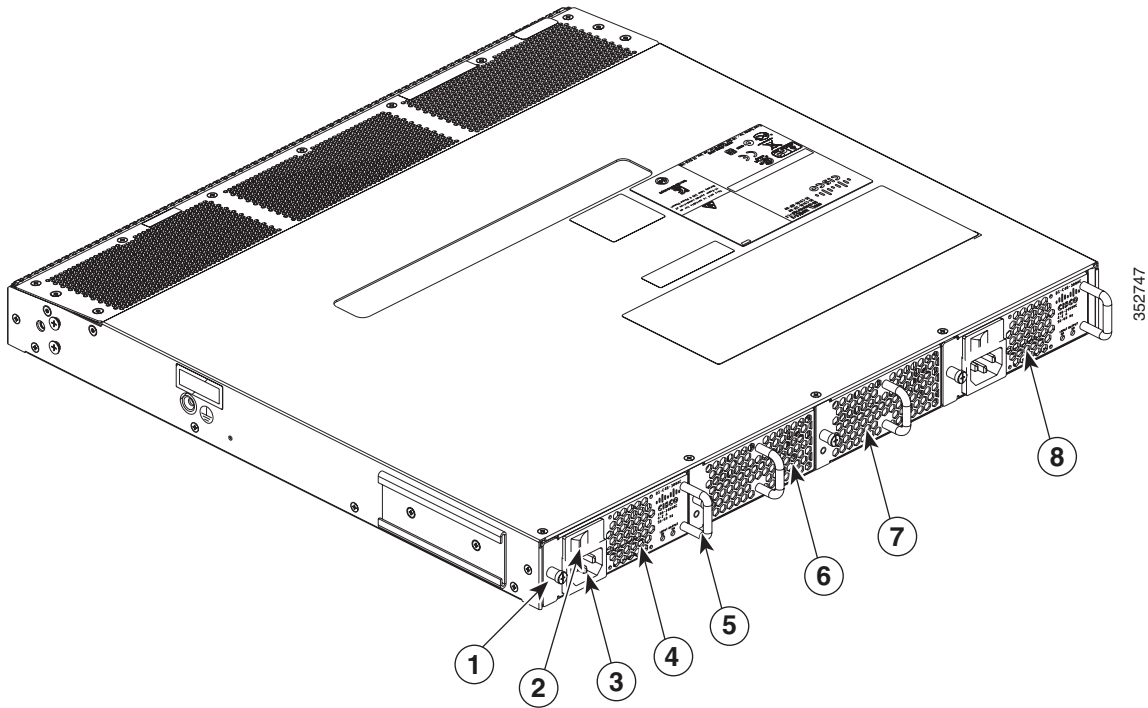


1	Console port	5	USB port
2	Status LED	6	Ethernet port
3	Power supply LED	7	Fibre Channel ports
4	FAN LED		

Rear View

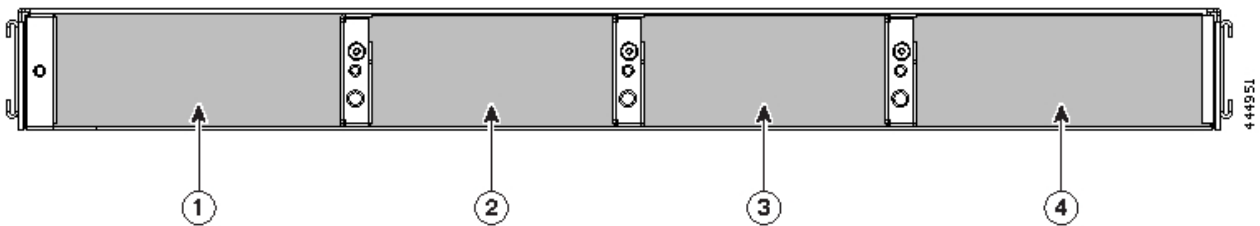
The rear of the Cisco MDS 9148S switch contains the redundant power supplies, the AC power receptacle, and the fans. See [Figure 2](#).

Figure 2 Rear View of the Cisco MDS 9148S Multilayer Fabric Switch



1	Captive screw	5	Power module handle
2	On/Off switch	6	Fan module (fans 4 & 2)
3	Power receptable	7	Fan module (fans 3 & 1)
4	Power supply 2	8	Power supply 1

Figure 3 Rear Panel Slot Numbering of Cisco MDS 9148S Multilayer Fabric Switch



1	Power supply 2	3	Fan module (fans 3 and 1)
2	Fan module (fans 4 and 2)	4	Power supply 1

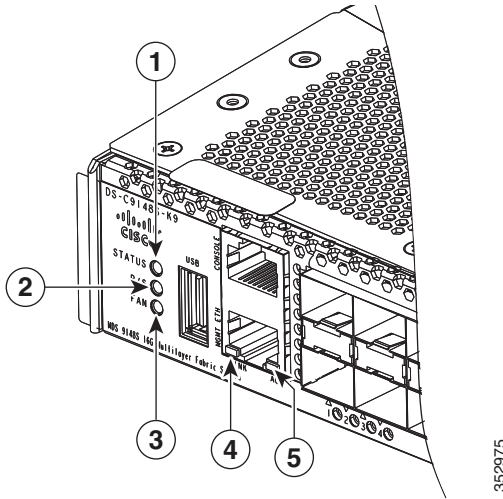
Switch LEDs

The front panel of the Cisco MDS 9148S switch includes the LEDs shown in [Figure 1-4](#). You can use the LEDs on this panel to quickly identify system status.



Note Cisco MDS 9148S switch LEDs do not indicate the port speed.

Figure 1-4 Cisco MDS 9148S Switch LEDs



1	Switch status LED	4	10/100/1000 Ethernet management port link LED
2	Power supply LED	5	10/100/1000 Ethernet management port activity LED
3	Fan module status LED		

Table 1-1 describes the front panel LEDs for the Cisco MDS 9148S switch.

Table 1-1 Switching Module LEDs

LED	Status	Description
Switch status	Green	All diagnostics pass. The module is operational. (normal initialization sequence).
	Orange	The module is booting or running diagnostics (normal initialization sequence) An over temperature condition has occurred. (A minor temperature threshold has been exceeded during environmental monitoring.)
	Red Blinking	The diagnostic test failed. The module is not operational because a fault occurred during the initialization sequence. An over temperature condition has occurred. (A major temperature threshold has been exceeded during environmental monitoring.)
	Red	Board is power on, but didn't boot up Diag or iSAN image.
	Off	The module is not receiving power.
Power supply status	Green	Both power supplies are working.
	Orange	One power supply has failed or has been removed. Note that from Cisco NX-OS Release 6.2.13 and later, the power supply status changes to Red when the power supply fails on a module.
	Red or all LEDs off	Both power supplies have failed.
Fan module status	Green	Both fan modules are working properly.
	Red	One or both fan modules have failed.
Port link	Solid green	Link is up.
	Steady flashing green	Link is up (beacon used to identify port). ¹
	Intermittent flashing green	Link is up (traffic on port).
	Solid orange	Link is disabled by software.
	Flashing orange	A fault condition exists.

- The flashing green light turns on automatically when an external loopback is detected that causes the interfaces to be isolated. The flashing green light overrides the beacon mode configuration. The state of the LED is restored to reflect the beacon mode configuration after the external loopback is removed.

Table 1-2 describes the management port LEDs for the Cisco MDS 9148S switch.

Table 1-2 Management Port LEDs

LED	Status	Description
Left	Off	There is no link.
	Solid Green	Indicates a physical link.
Right	Off	There is no link.
	Solid Amber	There is no link traffic.
	Blinking Amber	Indicates link traffic.

This chapter describes hardware information about the Cisco MDS 9148S switch and its components, and it includes the following sections:

- [Power Supplies, page 1-12](#)
- [Fan Modules, page 1-12](#)
- [Cisco MDS 9148S Multilayer Switch Ports, page 1-13](#)
- [Supported SFP+ Transceivers, page 1-13](#)

Power Supplies

The Cisco MDS 9148S switch supports only AC power supplies. Each power supply provides sufficient power to maintain switch operation in the event of a single power supply failure. Power supplies are hot swappable and can be individually replaced without disruption to the system.

The power supply has two LEDs, INPUT OK and OUTPUT OK. Power supply status is also indicated on a front panel LED.

Procedures for replacing and installing the power supplies are available in the [Removing and Installing AC Power Supplies](#) section.

Fan Modules

The Cisco MDS 9148S switch supports two hot-swappable fan modules that allow the switches to continue to run if a fan module is removed, provided that the preset temperature thresholds have not been exceeded. You can swap out a fan module without having to bring the system down. Each fan module on the Cisco MDS 9148S switch has two fans.



Caution

The Cisco MDS 9148S switch has internal temperature sensors that can shut down the system if the temperature at different points within the chassis exceed certain safety thresholds. To be effective, the temperature sensors require the presence of airflow; therefore, in the event a fan module is removed from the chassis, the Cisco MDS 9148S switch will shut down after five minutes to prevent potentially undetectable overheating. However, the switches will shut down sooner if the higher-level temperature threshold is exceeded. For normal operation, the Cisco MDS 9148S Switch requires four fans. Fan module status is also indicated on a front panel LED.

Procedures for replacing and installing the fan modules are available in the [Removing and Installing Fan Modules](#) section.

Cisco MDS 9148S Multilayer Switch Ports

The Cisco MDS 9148S switch provides host, target, and Inter-Switch Link (ISL) connectivity. It provides up to 48 autosensing and autonegotiating Fibre Channel ports capable of speeds of 2-, 4-, 8-, and 16-Gbps. The first 12 ports are licensed by default. On-Demand Port Activation Licensing allows expansion up to 48 ports, with additional ports available as an 12-port group.

Supported SFP+ Transceivers

The following types of SFP+ transceivers are available from Cisco Systems and are supported on the Cisco MDS 9148S switch:

- Cisco MDS 4/8/16-Gbps Fibre Channel SW SFP+, LC: DS-SFP-FC16G-SW
- Cisco MDS 4/8/16-Gbps Fibre Channel LW SFP+, LC: DS-SFP-FC16G-LW
- Cisco MDS 2/4/8-Gbps Fibre Channel SW SFP+, LC: DS-SFP-FC8G-SW
- Cisco MDS 2/4/8-Gbps Fibre Channel LW SFP+, LC: DS-SFP-FC8G-LW
- Cisco MDS 2/4/8-Gbps Fibre Channel Extended Reach SFP+, LC: DS-SFP-FC8G-ER
- Cisco MDS 2/4/8-Gbps CWDM Long Distance SFP, LC: DS-CWDM8Gxxxx
- Cisco MDS 4/8/16-Gbps Fibre Channel LW SFP+, DWDM, SM, DDM, 13 dB, 40 km: DS-16G-ER-Dxxx
- Cisco MDS 4/8/16-Gbps Fibre Channel LW SFP+, CWDM, SM, DDM, 13 dB, 40 km: DS-16G-ER-Cxx
- Cisco MDS 4/8/16-Gbps Fibre Channel/FICON LW SFP+, DWDM, SM, DDM, 1550nm, 13 dB, 40 km: DS-16G-ER
- Cisco MDS 2/4/8-Gbps Fibre Channel LW SFP+, DWDM, SM, DDM, 80 km: DS-8G-ZR-Dxxx
- Cisco MDS 2/4/8-Gbps Fibre Channel LW SFP+, CWDM, SM, DDM, 23dB, 70 km: DS-8G-ZR-Cxx
- Cisco MDS 2/4/8-Gbps Fibre Channel LW SFP+, SM, DDM, 80 km: DS-8G-ZR

SFP transceivers are field-replaceable. You can use any combination of SFP transceivers that are supported by the switch. The only restrictions are that SW transceivers must be paired with SW transceivers, and LW transceivers with LW transceivers, and the cable must not exceed the stipulated cable length for reliable communications.

For the list of supported SFP transceivers, see the *Cisco MDS 9000 Family Release Notes for Cisco MDS NX-OS Releases*. For more information about a specific Cisco SFP transceiver, see the [“SFP Transceiver Specifications” section on page 1-56](#). SFP transceivers can be ordered separately or with the Cisco MDS 9148S Switch.

**Note**

Use only Cisco SFP transceivers on the Cisco MDS 9148S switches. Each Cisco SFP transceiver is encoded with model information that enables the switch to verify that the SFP transceiver meets the requirements for the switch.

