



Product Overview

The Cisco MDS 9396T 32 Gbps 96 Port two rack unit Fibre Channel switch provides high speed Fibre Channel connectivity in the SAN. This switch offers analytics and telemetry capability built into its Application-Specific Integrated Circuit (ASIC) platform. The Non-Volatile Memory express (NVMe)-ready switch allows seamless transition to Fibre Channel Non-Volatile Memory Express (FC-NVMe) workloads whenever available without any hardware upgrade in the SAN. This high density, highly reliable and scalable, enterprise class semi-modular switch is ideal for medium to large departmental SANs.

The Cisco MDS 9396T switch has the following major features:

- 96x32-Gbps line rate Enhanced Small Form-Factor Pluggable (SFP+) ports provide an aggregate bandwidth of 3 Tbps per switch for highly scalable designs for hyperscale environments that drive several thousands of virtual machine instances within the rack. This switch provides at least six ports that can be configured with up to 8270 Buffer-To-Buffer (B2B) credits that can be connected to remote data centers as far as 612 km (380 miles) using native Fibre Channel connectivity at 32 Gbps speeds. These distances become even greater at lower speeds.
- Provides consistent 32-Gbps quality performance for every Fibre Channel port on the switch.
- Provides availability and reliability similar to the previous generations of Cisco MDS 9000 Series Switches. Additionally, port-channel link members can be used across the six 16-port port groups providing additional high availability.
- Provides minimum configuration option of 48x32-Gbps Fibre Channel ports in the base variant, which can be enabled in increments of 16 ports to up to 96 ports. This allows four possible configurations of 48, 64, 80, and 96 ports.
- Supports enterprise-class features such as Slow Drain Detection and Isolation, Virtual SAN (VSAN) identifier, Access Control Lists (ACLs) for hardware-based intelligent frame processing, Smart Zoning, and migration from fabricwide Quality of Service (QoS) from SAN islands to enterprisewide storage networks. Traffic encryption is optionally available to meet stringent security requirements.
- Provides intelligent diagnostics tools such as Inter-Switch Link (ISL) diagnostics, HBA diagnostics with leading HBA vendors, read diagnostic parameters, protocol decoding, network analysis tools, and integrated Cisco Call Home.
- Supports the Virtual Machine Identifier (VMID) feature that provides visibility into virtual machines that are accessing the storage devices in the fabric.
- Supports Representational State Transfer (REST) and Cisco NX-API capabilities.

- Supports onboard hardware that protects the switch from malicious attacks by securing access to critical components such as the bootloader, system image loader, and Joint Test Action Group (JTAG) interface.

This chapter contains the following topics:

- [Chassis Components, on page 2](#)
- [Fan Modules, on page 9](#)
- [Power Supplies, on page 10](#)
- [Linecard Expansion Module, on page 11](#)

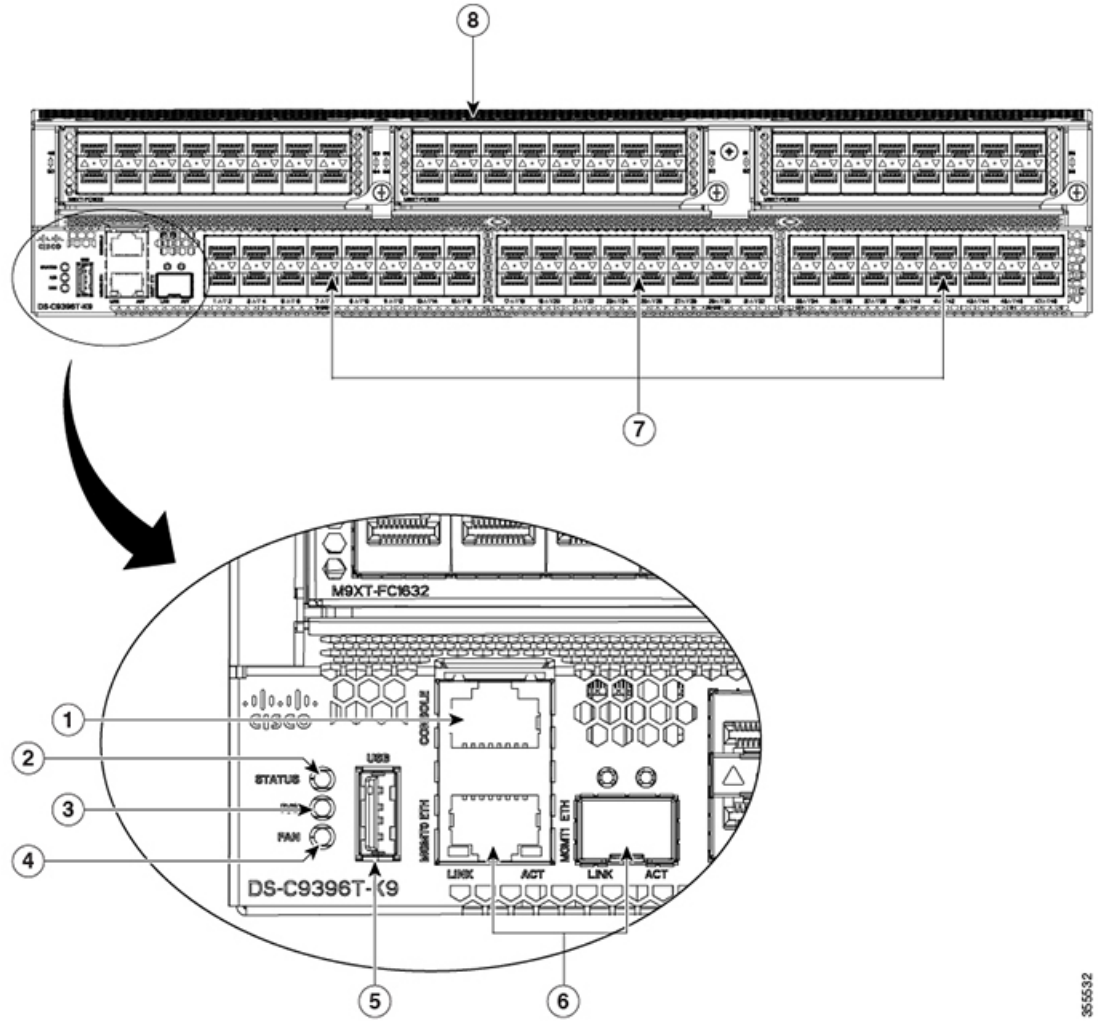
Chassis Components

This section describes the different components of the chassis.

Front View

The following figure shows the front view of a Cisco MDS 9396T Switch:

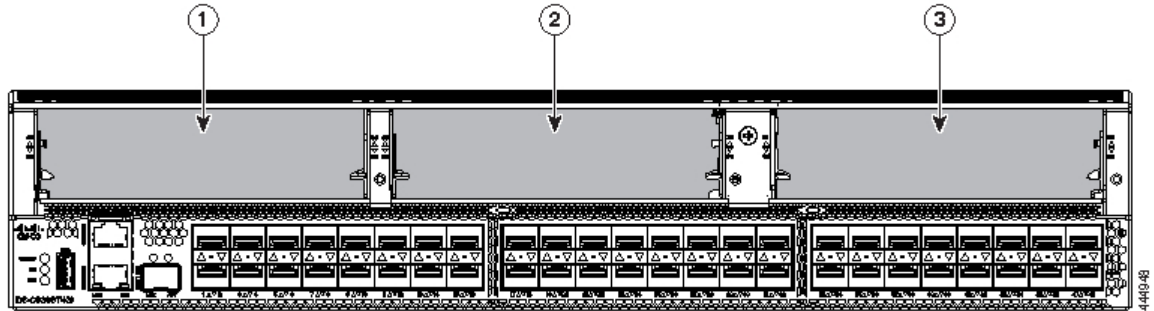
Figure 1: Front View of the Cisco MDS 9396T Switch



1	Serial console port	5	USB port
2	System status LED	6	Ethernet management ports (2)
3	Power supply status LED	7	Base Fibre Channel ports
4	Fan status LED	8	Airflow Grill

355532

Figure 2: Front Panel Slot Numbering of Cisco MDS 9396T Switch

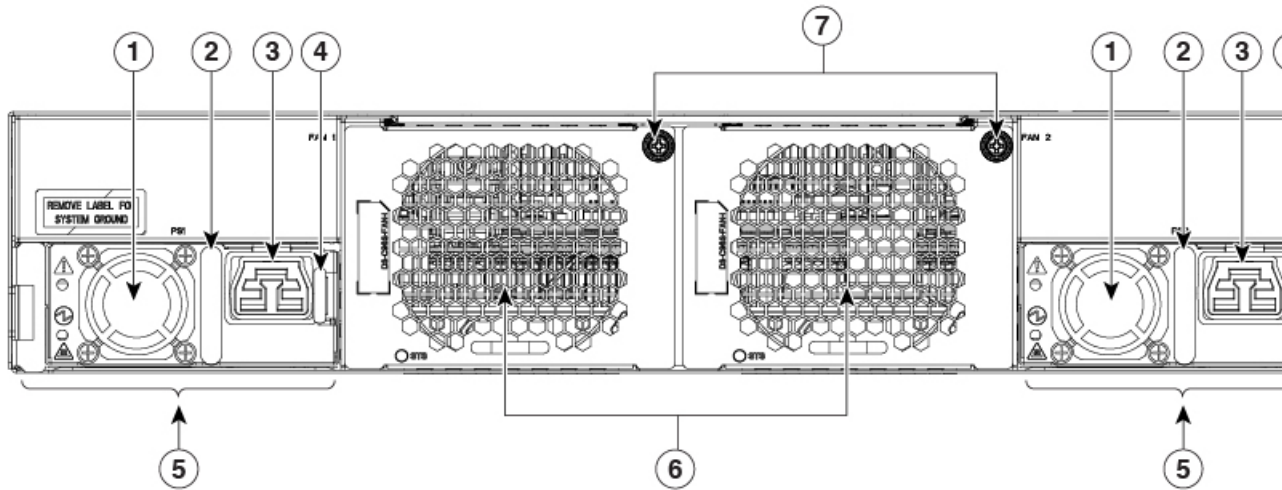


1	LEM slot 1	3	LEM slot 3
2	LEM slot 2		

Rear View

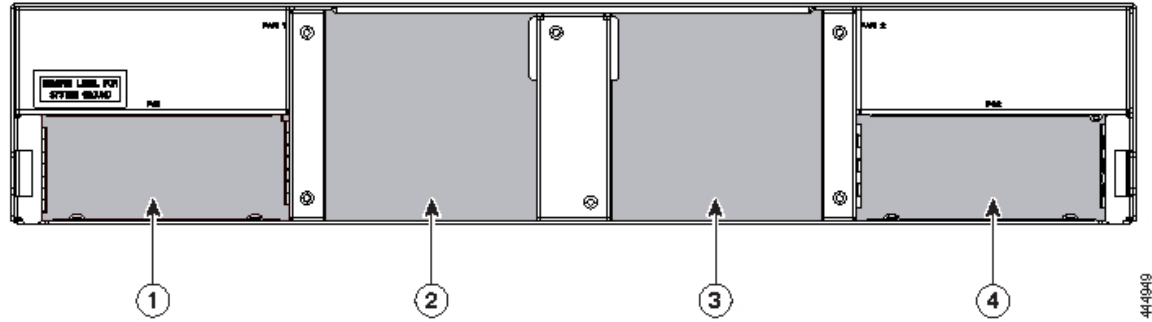
The following figure shows the rear view of a Cisco MDS 9396T Switch:

Figure 3: Rear View of the Cisco MDS 9396T Switch



1	Power supply unit fan	5	Power supply units (2)
2	Power supply unit handle	6	Chassis fan modules (2)
3	Power receptacle	7	Fan module locking screw
4	Power supply unit locking latch		

Figure 4: Rear Panel Slot Numbering of Cisco MDS 9396T Switch

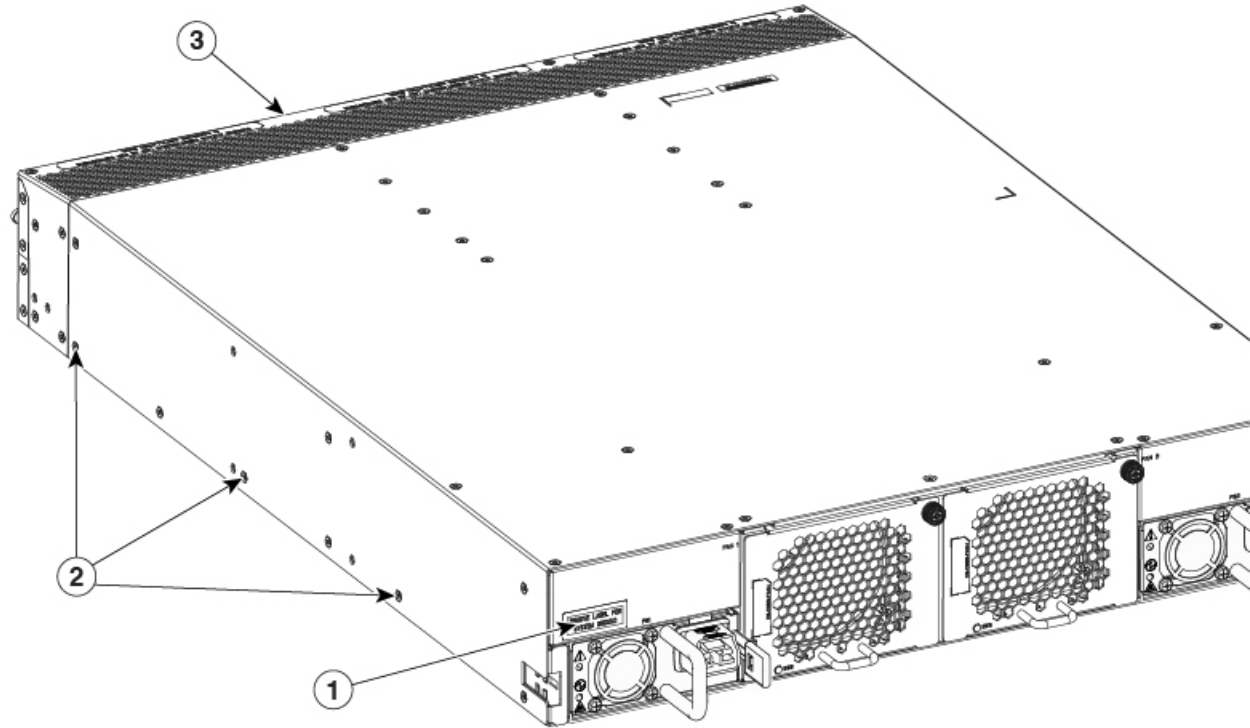


1	Power supply unit slot 1	3	Chassis fan module slot 2
2	Chassis fan module slot 1	4	Power supply unit slot 2

Grounding Point

The rear of the Cisco MDS 9396T switch also contains the grounding point which is located under a label.

Figure 5: Grounding point



1	Grounding point	3	Port side of the switch
2	Rack mount holes		

Switch LEDs

The following table describes the chassis activity LEDs for a Cisco MDS 9396T switch:

Indicator	Location	Function	Color	Status	State
Power LED	Front panel of chassis	Chassis power/Health	Off	Off	Either of the following conditions exists: <ul style="list-style-type: none"> • The system is not receiving sufficient power from the PSUs. • The operating system is not running.
			Green	Solid On	Both PSUs are installed and operating
			Red	Solid On	Either of the following conditions exists: <ul style="list-style-type: none"> • A PSU has failed. • A PSU has been removed.

Indicator	Location	Function	Color	Status	State
Status LED	Front panel of chassis	System Status	Green	Solid On	All diagnostics have passed, Cisco NX-OS is running and the system is operational.
			Orange	Solid On	Any of the following conditions exists: <ul style="list-style-type: none"> The system is running bootup diagnostics. The system is booting. A minor temperature threshold is currently exceeded.
			Red	Blinking	Mismatched airflow direction observed in one of the following modules: <ul style="list-style-type: none"> Fan modules—The switch will go down in 10-15 seconds. PSUs—The switch will go down after 10 minutes. Fan modules and PSUs—The switch will go down after 10 minutes.
				Solid On	One of the following conditions exists: <ul style="list-style-type: none"> A diagnostic test failed or another fault occurred during bootup. A major temperature threshold is currently exceeded.
Fan Status	On the front panel	Fan health	Green	Solid On	Fan is operating normally
			Red	Solid On	Fan failure
Fan Status	Faceplate of each fan module	Fan tray health	Green	Solid on	Fan module is operating normally.
			Red	Solid on	The fan in the fan module has failed.

Indicator	Location	Function	Color	Status	State
PSU Status	Faceplate of each PSU	PSU input/output	Green	Off	No input to the PSU.
				Solid on	PSU output is OK.
				Blinking	PSU output is not OK, but input is OK.
		PSU Operation	Amber	Solid on	One of the following conditions exists in the PSU: Over voltage Over current Over temperature Fan failure.
				Blinking	PSU has a fault, but is still operational.
Off	PSU is operating normally.				

The following table describes the Ethernet port LEDs for a Cisco MDS 9396T switch.

LED Position	Status	State
Left	Off	There is no link.
	Solid Green	Indicates a physical link.
Right	Off	There is no activity.
	Blinking Amber	Indicates activity.

The following table describes the Fibre Channel port LEDs for a Cisco MDS 9396T switch.

Status	State
Solid Green	The link is up.
Regular Blinking Green	The link is up and the port beacon is active.
Intermittent Blinking Green	The link is up (indicates traffic on the port).
Solid Orange	The link is disabled by the software.
Blinking Orange	A faulty condition exists.
Off	No link.

Fan Modules

The Cisco MDS 9396T Multilayer Fabric 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 9396T switch has two fans.

The direction of the airflow through a fan module is denoted by colors on the module faceplate:

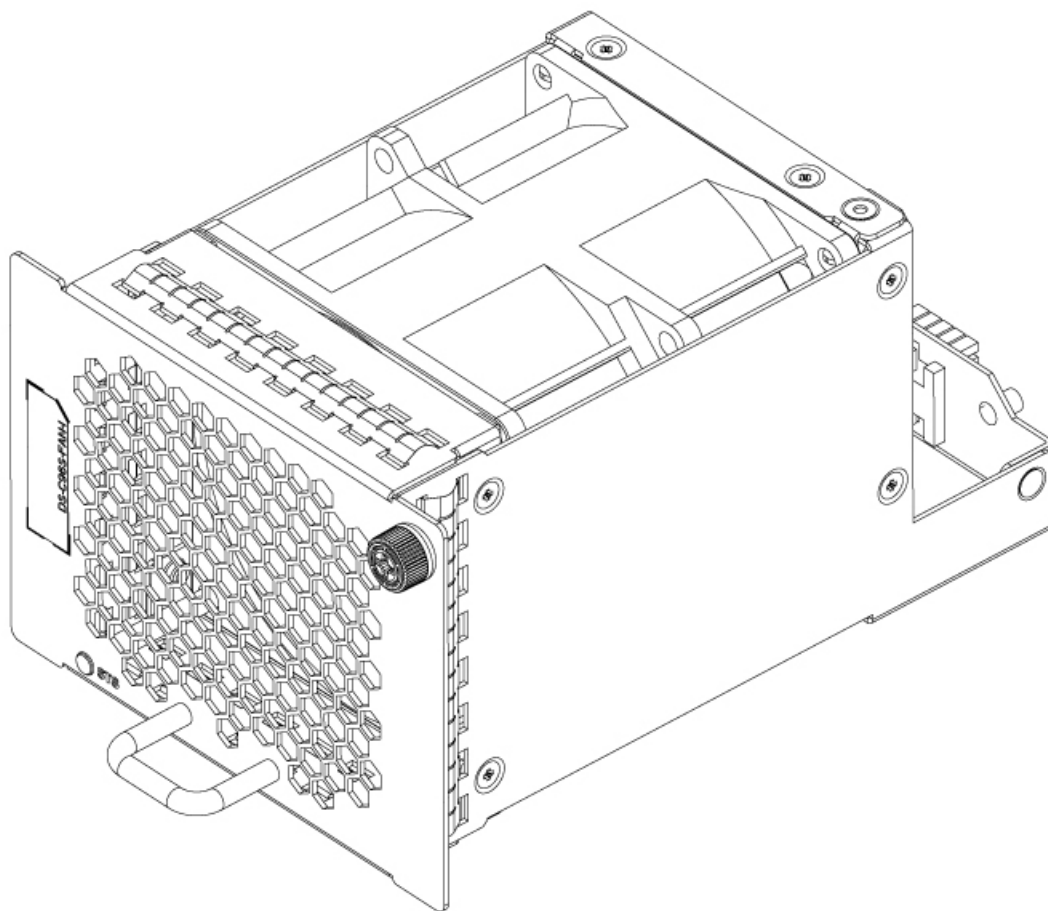
- Red—Port-side intake airflow (DS-C96S-FAN-I)
- Blue—Port-side exhaust airflow (DS-C96S-FAN-E)

If a chassis has two different fan modules, one supporting port-side exhaust airflow and the other supporting port-side intake airflow, the switch is immediately powered down.



Note To verify the current fan module on the switch, use the **show inventory fan** command.

Figure 6: Cisco MDS 9396T Fan Module



365561

**Caution**

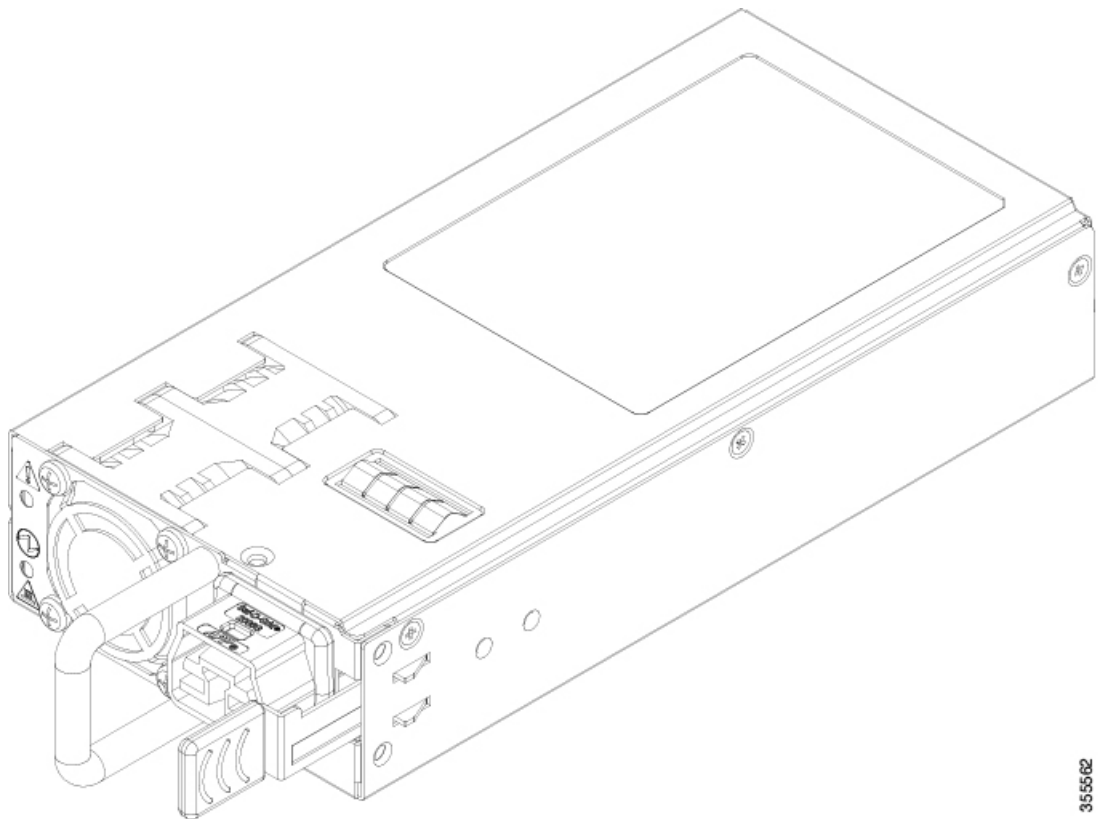
The Cisco MDS 9396T switch has internal temperature sensors that can shut down the system if the temperature at different points within the chassis exceeds certain safety thresholds. Temperature control within the chassis is dependant on airflow created by the fan modules; therefore, in the event a fan module is removed from the chassis, the Cisco MDS 9396T switch will shut down after five minutes to prevent potentially undetectable overheating. However, the switch will shut down sooner if a higher-level temperature threshold is exceeded. For normal operation, the Cisco MDS 9396T switch requires two fans. Fan module status is indicated on a front panel LED. To check temperature threshold values, use the **show environment temperature** command.

Procedures for replacing and installing the fan modules are available in the [Installing and Remvoing Components](#) section.

Power Supplies

The Cisco MDS 9396T Multilayer Fabric switch supports two hot swappable AC/ HVAC/ HVDC Bidirectional airflow power supply units (PSUs). Each unit has a power receptacle and a status LED on the faceplate, and a handle for inserting and removing the unit from the chassis. The Cisco MDS 9396T switch requires a minimum of 1 PSU for normal operation and 2 PSUs for normal operation with PSU redundancy. In the event of a PSU or AC supply (in grid redundant mode) failure, the system will continue to run. PSUs are hot swappable and can be individually replaced without shutting down the system. Procedures for installing and removing PSUs are detailed in the [Installing and Removing AC Power Supplies](#) section.

Figure 7: Cisco MDS 9396T PSU



935562

The PSUs support bidirectional airflow (DS-CAC-1200W), port-side exhaust airflow and port-side intake airflow, of fan modules. The PSUs automatically configure themselves to work in port-side exhaust airflow mode if the switch has Blue system fan modules installed. Similarly, the PSU automatically configures itself to work in port-side intake airflow mode if the switch has Red fan modules installed. For more information on the direction of airflow in fan modules, see the [Fan Modules](#), on page 9 section.

Linecard Expansion Module

The Linecard expansion module (LEM) is a pluggable expansion module for the Cisco MDS 9396T Switch. The switch is shipped with three LEMs. Each LEM has 16 x 32-Gbps ports that may then be used when port licenses are installed.



Note LEMs are not field replaceable in the Cisco MDS 9396T switch. Although they can be removed, these modules are not field replaceable and should not be removed from the chassis.

Figure 8: Cisco MDS 9396T LEM

