

# Cisco MDS 9000 Family Port Analyzer Adapter

## Highlights

- Encapsulation of Fibre Channel frames into Ethernet frames—Enables transparent, low-cost analysis of Fibre Channel traffic while leveraging existing Ethernet infrastructure
- Lightweight, portable, “plug-and-play device”—Facilitates troubleshooting anywhere in the network
- Non-disruptive traffic analysis—Allows local monitoring of Fibre Channel-2 (FC-2) to Fibre-Channel 4 (FC-4) layers and Enhanced Inter-Switch Link (EISL) headers with no interruption to traffic flow

## Cisco MDS 9000 Port Analyzer Adapter

The Cisco MDS 9000 Port Analyzer Adapter enables effective, low-cost analysis of Fibre Channel traffic anywhere in the network at any time. The device is a standalone Fibre Channel-to-Ethernet adapter that allows for simple, transparent analysis of Fibre Channel traffic in a switched fabric. Specifically, Fibre Channel layers FC-2, FC-3, and FC-4 may be examined without any network disruption. The FC-2 layer specifies the structure, format, and usage of Fibre Channel frames and defines flow control and classes of service. The FC-3 layer defines common

service features like multicast. The FC-4 layer specifies the mapping rules for upper-layer protocols. The Cisco MDS 9000 Port Analyzer Adapter supports all Fibre Channel frame sizes. Additionally, EISL headers can be encapsulated to be included for analysis.

The Cisco MDS 9000 Port Analyzer Adapter is a “plug-and-play” accessory for the Cisco MDS 9000 Family of Directors and Fabric Switches that enables the use of the Switched Port Analyzer (SPAN) feature. SPAN allows storage network administrators to view non-disruptively the traffic between two Fibre Channel ports on a Cisco MDS 9000 Director or Fabric Switch by replicating traffic to a SPAN Destination Port (SD-Port). The Cisco MDS 9000 Port Analyzer Adapter encapsulates the Fibre Channel frames from the SD-Port into Ethernet frames that may be analyzed using a locally attached PC running Ethereal software. Ethereal is a free network protocol analyzer for Unix and Windows that allows examination of data from a live network or from a capture file

Figure 1  
 Cisco MDS 9000 Port Analyzer Adapter



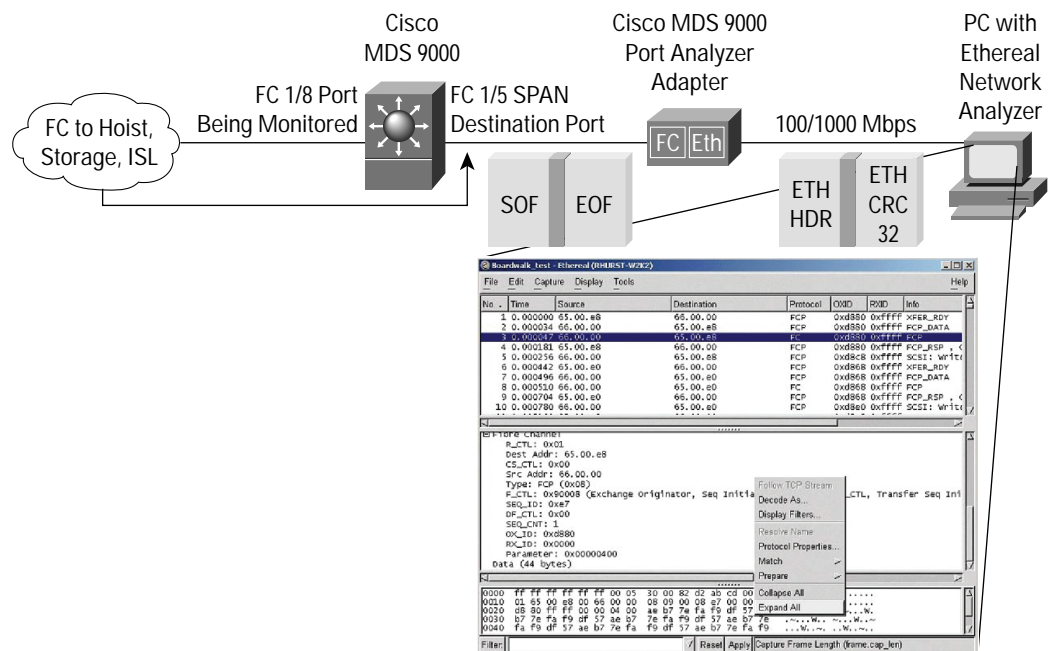


on disk. Cisco enhancements to Ethereal in version 0.9.9 enable decoding of Fibre Channel and Small Computer Systems Interface (SCSI) protocols. Ethereal version 0.9.9 is currently available on the Ethereal Web site (<http://www.ethereal.com/>).

The Cisco MDS 9000 Port Analyzer Adapter is a self-contained hardware device that does not require external software to operate and cannot be field upgraded with software. The adapter ships with one multimode Fibre Channel Small Form-factor Pluggable (SFP) for short wave connectivity. Single-mode Fibre Channel SFPs may be used, as well, and are available from Cisco. The adapter also ships with one AC to DC converter power supply .

Figure 2 illustrates a common network topology using the Cisco MDS 9000 Port Analyzer Adapter.

Figure 2  
Cisco MDS 9000 Port Analyzer Adapter Implementation



The key advantage of the Cisco solution is its simplicity. The portable, lightweight adapter can be connected to any port on any Director or Fabric Switch in the MDS 9000 Family. Storage administrators can troubleshoot anywhere in the network quickly and cost-effectively, with no network disruption.

The Cisco MDS 9000 Port Analyzer Adapter allows analysis of Fibre Channel frames in the following modes:

- No Truncate Mode: Fibre Channel frames are passed without any modification to the payload.
- Ethernet Truncate Mode: Fibre Channel frames are truncated to 1496 bytes to fall within the maximum Ethernet frame size.
- Shallow Truncate Mode: Fibre Channel frames are truncated if the payload of the frame is more than 256 bytes.
- Deep Truncate Mode: Fibre Channel frames are truncated if the payload of the frame is more than 64 bytes.
- Management Mode: Only fixed 288 byte Ethernet frames that contain internal debug information are transmitted.

These modes may be configured via a four-position DIP switch located at the rear of the adapter.



## Specifications

### Interfaces

- One Fibre Channel interface, SFP Type LC
- One Ethernet interface

### Performance

- Fibre Channel Port speed: 1.0625 Gbps – 2.1250 Gbps
- Ethernet Port speed: 100 Mbps – 1.25 Gbps

Table 1 gives supported Fibre Channel optics, media, and transmission distances.

**Table 1** Fibre Channel Optics, Media, and Transmission Distances Supported by Cisco MDS 9000 Port Analyzer Adapter

Optics	Media	Distance
1-Gbps—SW, LC SFP	50/125 micron multimode	500 m
1-Gbps—SW, LC SFP	62.5/125 micron multimode	300 m
1-Gbps—LW, LC SFP	9/125 micron single mode	10 km
2-Gbps—SW, LC SFP	50/125 micron multimode	300 m
2-Gbps—SW, LC SFP	62.5/125 micron multimode	150 m
2-Gbps—LW, LC SFP	9/125 micron single mode	10 km

### Indicators

- Status LED: Green (operational); Red (faulty); Off (no power)
- Fibre Channel Status LED: Green (2 Gbps); Off (1 Gbps)
- Fibre Channel Link LED: Green (link is up); Off (link is down)
- Ethernet LED for 100 Mbps: Green (link is up); Blinking Green (transmit); Off (link is down)
- Ethernet LED for 1 Gbps: Green (link is up); Blinking Green (transmit); Off (link is down)

### Environmental

- Temperature, ambient operating
  - 32 F (0 C) to 104 F (40 C)
- Temperature, ambient nonoperating and storage
  - -40 F (-40 C) to 158 F (70 C)
- Humidity (RH), ambient (noncondensing) operating
  - 10% to 90%
- Humidity (RH), ambient (noncondensing) nonoperating and storage
  - 5% to 95%
- Altitude, operating
  - Sea level to 6500 feet (2000 m)



### **Physical Characteristics**

- Dimensions (H x W x D)
  - 1.13 x 6.00 x 4.25 in. (2.87 x 15.24 x 10.79 cm)
- Weight
  - 1.0 lb (0.5 kg)

### **Power**

- One 20W AC to DC Converter Power Supply
  - Input: 100–240VAC ~ 1A nominal ( 10% for full range)  
50–60Hz nominal ( 3 Hz for full range)
  - Output: 20W (12VDC @ 1.7A)

### **Safety Compliance**

The Cisco MDS 9000 Port Analyzer Adapter meets the following compliance and safety standards:

#### Safety Compliance

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

#### EMC Compliance

- FCC Part 15 (CFR 47) Class A
- ICES-003 Class A
- EN 55022 Class A
- CISPR 22 Class A
- AS/NZS 3548 Class A
- VCCI Class A
- EN 55024
- EN 50082-1
- EN 61000-6-1
- EN 61000-3-2
- EN 61000-3-3

## Industry EMC, Safety, and Environmental Standards

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

## Ordering Information

Table 2 gives ordering information for the Cisco MDS 9000 Port Analyzer Adapter.

**Table 2** Ordering Information for the Cisco MDS 9000 Port Analyzer Adapter

Part Number	Description
DS-PAA	Cisco MDS 9000 Port Analyzer Adapter
DS-SFP-FC-2G-SW <sup>1</sup>	1/2-Gbps Fibre Channel-SW, Small Form Factor Pluggable, LC <sup>1</sup>
DS-SFP-FC-2G-SW=	1/2-Gbps Fibre Channel-SW, Small Form Factor Pluggable, LC, spare
DS-SFP-FC-2G-LW	1/2-Gbps Fibre Channel-LW, Small Form Factor Pluggable, LC
DS-SFP-FC-2G-LW=	1/2-Gbps Fibre Channel-LW, Small Form Factor Pluggable, LC, spare

<sup>1</sup>The Cisco MDS 9000 Port Analyzer Adapter automatically ships with one DS-SFP-FC-2G-SW



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