MDS Connectrix
Quick Reference Guide

Redefining the Data Center

One of the most important and dynamic areas in IT today is the evolution of enterprise data centers. As the volume and value of information increases dramatically, the network and associated systems must be able to scale to support these new loads. Therefore, Cisco and EMC are partnering with customers in the data center to meet the needs of the ever increasing complexity in the IT infrastructure. With a joint vision, we provide a portfolio of technologies and services to address immediate and long-term information infrastructure challenges.

Why EMC?

- Every solution is rigorously tested and qualified
- EMC is the single point of contact for end to end support
- EMC's eLab minimizes risk, saves time and simplifies operations
- Parts depots are located worldwide, making parts available within a two to four hour response

Why Cisco MDS?

- Keeping investment protection in mind, MDS is built for a variety of protocols including FC, FICON, FCP, iSCSI and FCoE and for speeds of 8-Gb and 10-Gb

- MDS is flexible. A customer can start with as few as 8 ports in an MDS switch and grow to a 528 port Director

- MDS Directors are built with redundant logic and components throughout for a true 99.999% uptime availability

- Cisco's NX-OS on the MDS platform is the same software/management operating system used for all Cisco Nexus, Catalyst and other IP products. The GUI has the same look and feel across all products

- Fabric Path option with DCNM allows a VM path to be monitored from the VM instance all the way to the storage port

MDS Directors

EMC Model	MDS-9506-V2	MDS-9509-V2	MDS-9513
Configuration	Chassis, Dual Sup2A and 1900W Power Supply	Chassis, Dual Sup2A and 3000W Power Supply	Chassis, Dual Sup2A and 6000W Power Supply
Maximum 10-Gbps FCoE Ports per Chassis	32	56	88
Maximum 1/2/4/8-Gbps Fibre Channel Ports per Chassis	192	336	528
Maximum 10-Gbps Fibre Channel Ports per Chassis	16	28	264
Maximum FCP Ports per Chassis	64	112	176
Port Speed	4, 8, 10Gb FC autosensing and 1-GbE	4, 8, 10Gb FC autosensing and 1-GbE	4, 8, 10Gb FC autosensing and 10-GbE
Expandability	4 Blade slots	7 Blade slots	11 Blade slots
Rack Units	7	14	14
Chassis per Rack	4	2	2
Fibre Channel Ports per Rack	768	672	1056
Port Modules	MDS-PBF-ADV48, MDS-PBF-ADV32, MDS-FCOE-8, MDS-SSN-16, MDS-PBF-48-8G, MDS-PBF-44-8G, MDS-PBF-24-8G, MDS-PBFI-1804, MDS-PBF-4SR, MDS-PBF-4LR		
License Keys	MDS-DCNM-95, MDS-EXT95-SSN, MDS-IOA95-SSN, MDS-SME95-SSN, MDS-IOA95-MSM, MDS-FCIP95-4, MDS-ENT-9500, MDS-MAIN-9500, MDS-SME-9500		
Miscellaneous	MDS-9513-FAB3, MDS-FLASH-512, MDS-95CAB-KIT, MDS-3000W-PSU, MDS-SC, MDS-SCR		
Features	The Cisco MDS 9500 series provides an ideal platform for: • Data Center SAN Consolidation • Business Continuance • Centralized SAN Management • Encryption of Data-at-Rest • Data Mobility and Migration • I/O Acceleration • Advanced SAN Security for Compliance and Regulation • Centralized Backup, Recovery and Archive through Intelligent Fabric Applications		

MDS Switches

EMC Model	MDS-9124	MDS-9148-16 MDS-9148-32 MDS-9148-48	MDS-9222i
Configuration	MDS-9124-8 MDS-9124-PWR (optional) MDS-9124-4GSW	MDS-9148-POD	Chassis, Sup2 and 845W Power Supply
Ports	24 4-Gb FC in 1RU	32 4-Gb FC, 2 10-Gb FC(x2) in 1RU 48 4-Gb FC and 8-Gb FC	18 4-Gb FC and 4 1-Gb Ethernet
Port Speed	4-Gb FC autosensing	8-Gb FC autosensing	1/2/4-GB FC autosensing and 1-GbE
License Keys	MDS-DCNM-91, MDS-ENT-9100, MDS-MAIN-9100	MDS-DCNM-91, MDS-ENT-9100, MDS-MAIN-9100	MDS-DCNM-92, MDS-EXT92-SSN, MDS-IOA92-SSN, MDS-SME92-SSN, MDS-IOA92-MSM, MDS-IO92i-MSM, MDS-FCIP92-4, MDS-ENT-9200, MDS-MAIN-9200, MDS-SME-9200, MDS-SME-9200E
Optics	MDS-4G-SR, MDS-4G-LR10K	MDS-SFP-8GSW, MDS-SFP-8GLW, MDS-4G-SR, MDS-4G-LR10K	Fully populated with 4-Gb FC and 4 1-Gb Ethernet SW
Features	· 24-port SAN Fibre Channel switch platform in 1RU · High performance, scalability with very low TCO/ROI · Available with DC power supplies · High availability option for mission-critical deployments · Industry's lowest cost entry-level FC switch · Simplified plug-and-play installation and management · Features to enable Virtual Machine-aware SANs · Includes enterprise-class software features as standard · Comprehensive security framework	48-port SAN Fibre Channel switch platform in 1RU · High performance, scalability with very low TCO/ROI · Industry's lowest power consumption · High availability option for mission-critical deployments · Highest density with up to 48 line-rate 8-Gbps ports · Simplified plug-and-play installation and management · Features to enable Virtual Machine-aware SANs · Includes enterprise-class software features as standard · Comprehensive security framework	Modular, multiservice, multiprotocol 3RU chassis with base 18 4-Gb FC ports and 4 GE ports plus one modular expansion slot · Platform for Intelligent Fabric Services such as network hosted volume management, SANTap enabled 3rd-party applications, Fibre Channel Write I/O Acceleration, Security Media Encryption (SME), Storage Security Erase and Data Mobility Manager (DMM) · Dual redundant AC Power Supplies · High availability option for mission-critical deployments · Support for Fibre Channel, iSCSI, FCIP and IBM FICON · Simplified plug-and-play installation and management · Features to enable Virtual Machine-aware SANs · Includes enterprise-class software features as standard · Comprehensive security framework

Note: SR stands for Short Range; LR stands for Long Range

MDS Software License Packages

	Description	Features	
Enterprise License Package	EMC Connectrix MDS 9000 Family enterprise package includes advanced traffic engineering and advanced security features for enterprise SANs.	Advanced traffic management: • Inter-VSAN Routing • QoS • Extended Credits Security: • Switch-Switch and Host-Switch authentication	• LUN Zoning • Read-Only Zones • Port Security • VSAN Based Access Control • IPsec for iSCSI and FCIP • IKE Digital Certificates • Fabric Binding for Fibre Channel
Data Center Network Manager (DCNM)	Cisco DCNM is designed to help customers efficiently implement and manage next-generation virtualized data centers. It provides timely management support for data center hardware platforms and Cisco NX-OS innovations.	SAN Management • Virtual Machine-Aware path management • Monitoring and Troubleshooting • Single Pane-of-Glass Management • Scalability: Federation and VSAN Scoping	LAN Management • Network virtualization by creating VDCs • fully automates vPC operations • Cisco FabricPath
SAN Extension over IP	SAN Extension over IP package provides an integrated, cost-effective, and reliable business continuance solution that uses the existing IP infrastructure.	• FCIP Protocol Support • FCIP Compression • FCIP Write Acceleration • FCIP Read/Write Tape Acceleration	• SAN Extension Tuner • Inter-VSAN Routing for FCIP
I/O Accelerator (IOA)	IOA provides a fabric-based service to accelerate SCSI disk write and tape read and write I/O operations across MAN and WAN links. The Cisco IOA feature is a highly available service with clustering capability, increasing reliability, performance, scalability, and application stability.	• Accelerate disk write and tape read and write operations over WAN FCIP and MAN Fibre Channel links • Transparent insertion of fabric service • Cluster IOA service engines with load balancing and failover	• Port Channels across line cards for Fibre Channel and FCIP • Fibre Channel link compression
Storage Media Encryption (SME)	The Cisco Storage Media Encryption feature for EMC Connectrix MDS 9000 Family switches encrypts data at rest on heterogeneous tape devices and virtual tape libraries.	• Secure encryption of data at rest on heterogeneous tape drives and virtual tape libraries • Transparent fabric service integrates seamlessly into SAN • No SAN rewiring or reconfiguration	• High availability with clustering and fail-over capabilities • Comprehensive key management with integration to enterprise key managers • Secure role-based management, using CLI and Fabric Manager
Storage Services Enabler (SSE)	The EMC Connectrix MDS 9000 Storage Services Enabler (SSE) package provides the underlying infrastructure and programmatic interface to enable intelligent fabric applications.	Network-hosted storage applications (such as storage virtualization for heterogeneous volume management, non-disruptive data migration, and heterogeneous data replication and snapshots) using FAIS-based Intelligent Storage API	• SANTap Protocol for network-assisted storage applications • Secure Erase
Mainframe Package	This package includes features required in mainframe environments. FICON is an architecture for high-speed connectivity between mainframe and I/O devices.	• VSAN for FICON and FCP inter-mixing • FICON Control Unit Protocol (CUP) • Fabric Binding • Switch Cascading • IBM TotalStorage Virtual Tape Server • IBM TotalStorage Extended Remote Copy (XRC)	• FICON Native Mode and Native Mode Channel-to-Channel Operation • Persistent FICON FCID assignment • Port Swapping for host channel cable connectors • FICON Tape Acceleration

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