



CISCO MDS ADVANTAGE—QUICK REFERENCE GUIDE FOR IBM

HARDWARE OVERVIEW



Switch Type	Cisco MDS 9120/9140 Multilayer Fabric Switches	Cisco MDS 9216A Multilayer Fabric Switches	Cisco MDS 9216i Multilayer Fabric Switch	Cisco MDS 9500 Series Multilayer Directors (Data Center)
IBM Part Number	2061-020 / 2061-040	2062-D1A	2062-D1H	2062-D04, 2062-D07
Description	Fixed Configuration Fabric Switch, 1RU, FC. Routing support (IVR) both for Cisco-based and Heterogeneous SAN deployments.*	Semi-Modular, Multilayer, Multiprotocol, One Fixed Slot with 16 FC ports and one open slot; 3RU, support for FC, iSCSI, FCIP, FICON. Routing support (IVR) both for Cisco-based and Heterogeneous SAN deployments.	Semi-Modular, Multilayer, Multiprotocol, One Fixed Slot containing 14 FC ports + 2 GE ports and one open slot; 3RU, Integrated support FC, iSCSI, FCIP, FICON. Does not require any additional licenses and includes bundled support for SAN Extension (FCIP), Hardware based encryption and compression for GE ports, and routing support for FCIP in the base price.	Modular, Multilayer, Multiprotocol, Highly Available, Dual Supervisor modules, four and seven module slots for MDS 9506 (7RU) and MDS 9509 (14RU) respectively; support for FC, iSCSI, FCIP, FICON. Routing support (IVR) both for Cisco-based and Heterogeneous SAN deployments.
Maximum Ports	20/40	48	48	128/224
Target Group	SAN Edge or SMB	Departmental SAN or Remote Branch; Business Continuation	Departmental SAN or Remote Branch Office; Optimized for SAN Extension	SAN Core or Large Enterprise
Supported Modules	N/A	16- and 32-port Fibre Channel Switching, 14/2-port Multiprotocol Services, 4- and 8-port IP Storage Services, and Storage Services Modules.	16- and 32-port Fibre Channel Switching, 14/2-port Multiprotocol Services, 8-port IP Storage Services, and Storage Services Modules.	16- and 32-port Fibre Channel Switching, 14/2-port Multiprotocol Services, 4- and 8-port IP Storage Services, and Storage Services Modules.

* Inter-VSAN routing is enabled via a separate software license.



Switching Modules	16-port Fibre Channel/FICON and 32-port Fibre Channel Switching Module	4-port/8-port GE IP Storage Services Module	14 FC/2GE Multiprotocol Services Module	Storage Services Module (SSM)
IBM Part Number	2116/2132	2218/2208	2214	2400
Advanced Feature Highlights	<ul style="list-style-type: none"> 16 auto-sensing 1/2 G FC or FICON 32 auto-sensing 1/2 G FC ports FICON CUP and Cascading Support (16-port module) PortChannel support for up to 32Gbps per link Any port is PortChannel capable 255/12 buffer-to-buffer credits per port for 16/32 port cards respectively Over 4K Virtual Output Queues Advanced traffic management and diagnostics 	<ul style="list-style-type: none"> Supports industry standard iSCSI and FCIP Concurrent iSCSI and FCIP per port FCIP SAN Extension (needs license) for business continuance <ul style="list-style-type: none"> 3 FCIP tunnels per port Supports software compression and FCIP Write Acceleration EtherChannel Support iSCSI support for cost-effective IP host connection to FC storage Up to 200 iSCSI sessions per port Advanced Traffic Management and Diagnostics 	<ul style="list-style-type: none"> 14 FC and 2 GE ports per module Up to 3500 buffer credits per port Hardware based compression for optimal bandwidth utilization Hardware based encryption for secure iSCSI and FCIP IPsec authentication FCIP Write Acceleration for enhanced remote copy FCIP Tape Acceleration for improved tape extension Advanced traffic management and diagnostics 	<ul style="list-style-type: none"> 32-port fibre channel switching Fibre Channel Write Acceleration (FC-WA) and Small Computer System Interface (SCSI) flow-statistics monitoring Network-Accelerated Serverless Backup with standards-based Extended Copy Network-Assisted Applications with the SANTap protocol Capable of delivering network-hosted Applications Supports Inter-VSAN Routing (IVR)
SFP Optics Supported	Short-wave, Long-wave, and Extended reach with CWDM.	Tri-Rate SW and LW.	Short-wave, Long-wave, and Extended reach with CWDM.	Short-wave, Long-wave, and Extended reach with CWDM
Target Connection	High Performance Storage Subsystems and Servers, Inter-switch Links. Host Connectivity, Tape Drives, Mid-Range Disk Connections.	Ethernet-attached servers (iSCSI), WAN Connection (FCIP).	High Performance Storage Subsystems and Servers, Inter-switch Links, Ethernet-attached servers (iSCSI), WAN Connection (FCIP). Designed for optimized SAN extension.	Environments requiring disk pooling, replication, data migration, continuous data protection, and Network-Accelerated Serverless Backup.

INDUSTRY RECOGNITION FOR CISCO MDS 9000 FAMILY SOLUTIONS





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SOFTWARE OVERVIEW

SAN-OS FEATURES

	Business Continuance	SAN Consolidation	SAN Management	Application and Service Convergence
SAN-OS 1.X Features	Non-disruptive upgrades, Stateful Switchover, Virtual Router Redundancy Protocol (VRRP), FCIP, FCIP Compression, FICON w/CUP.	Virtual SANs (VSANs), Multi-protocol functionality (FC, iSCSI, FCIP, FICON), Hardware-enforced Zoning, FSPF, PortChannels, E-port interop w/external B-Ports, LUN Zoning, Read-only Zones, Port Security, iSNS Client, Host/Switch Authentication, Fabric Binding, TACACS+, Inter-VSAN Routing (IVR), Stateful Process Restarts, QoS.	IP-over-FC, Fibre Channel Congestion Control (FCC), RADIUS based AAA, RBAC, SNMPv3, SSHv2, Fabric Manager (Discovery, Topology Management, Traps, Monitoring, Zone Merge Analysis), IP ACLs for Management, VSAN-based Access Control, RSPAN, SMI-S, FDMI, Fabric Management Server (FMS), Device Manager, Online diagnostics, and Integration with SRM Applications.	Support for SSM-based TotalStorage Proven Intelligent Fabric Applications with 3rd party appliances. For more information use the following URL: http://www.developer.ibm.com/en_US/welcome/storage/proven.html
SAN-OS 2.X Features	Hardware-based FCIP compression, hardware-based encryption, IPsec for FCIP and iSCSI, Extended Credits, Tape Acceleration, SAN Extension Tuner, SANTap Protocol, and Auto-compression.	AES for SNMPv3 and SSH, WWN based VSANs, Zone-Based QoS Policy, PortChannel Protocol, Zoning Enhancements (GS-4, SW-3), iSNS Services, Inter-VSAN Routing (IVR) with Network Address Translation (NAT), and Small Computer System Interface over IP (iSCSI) Cut-Through. Fibre Channel Write Acceleration (FC-WA) right after Inter-VSAN Routing (IVR) with Network Address Translation (NAT)	Unified SNMP and CLI usernames, passwords, and roles, Cisco Fabric Services Protocol, Distributed Device Alias Services, PortTracking, Web-based operational view of fabric, Hot Spot Analysis, Threshold Monitoring for performance management, Cisco Fabric Manager Server (FMS) Proxy Services, and User-Interface Modules.	

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ENABLING INTELLIGENT FABRIC APPLICATIONS WITH CISCO STORAGE SERVICES MODULE (SSM)



For more information use:
<http://www.cisco.com/go/storagenetworking>

CISCO MDS 9000 FAMILY SOFTWARE LICENSE PACKAGES

License Type	Enterprise License Package	SAN Extension over IP	Mainframe Package	Fabric Manager Server (FMS)	Storage Services Enabler (SSE)
Description	Cisco MDS 9000 Family Enterprise package includes advanced traffic engineering and advanced security features for enterprise SANs.	Cisco MDS 9000 Family SAN Extension over IP package provides an integrated, cost-effective, and reliable business continuance solution that uses the existing IP infrastructure.	This package provides a comprehensive collection of features required in mainframe environments. FICON, an architecture for high-speed connectivity between mainframe and I/O devices, is supported in Software version 1.3(4a) or later.	Cisco Fabric Manager Server (FMS) package extends Cisco Fabric Manager by providing historical performance monitoring for network traffic hot-spot analysis, centralized management services, and advanced application integration. All standard Cisco Fabric Manager features and functions are fully integrated with the Cisco FMS capabilities.	When used with the Cisco® MDS 9000 Storage Services Module (SSM) the Cisco MDS 9000 Storage Services Enabler (SSE) package provides the underlying infrastructure and programmatic interface to enable intelligent fabric applications. Without the SSE package, the SSM can be used for normal FC switching.
Features	Includes advanced traffic mgmt (Inter-VSAN Routing with Network Address Translation [NAT] for Cisco-based and Heterogeneous SANs, FC Write Acceleration for optimized SAN Extension over FC).	FCIP Protocol Support, FCIP Compression, Inter-VSAN Routing for FCIP, FCIP Tape Acceleration, SAN Extension Tuner.	VSAN for FICON and FCP intermixing, 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.	Fibre Channel Statistics Monitoring, Reporting and Graphing, Intelligent Setup, Performance Database, Management Server, Multiple Fabric Management, Continuous Health and event monitoring, Common discovery, roaming user profiles, Cisco traffic analyzer integration, Performance Threshold, Web Client.	Network-Accelerated Serverless Backup, Network-hosted storage applications with FAIS-based Intelligent Storage API, SANTap Protocol for network-assisted Storage Applications.

