Data Sheet

Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules

Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules deliver the intelligence and advanced features required to make multilayer storage area networks a reality. The Cisco Fibre Channel Switching Modules include hardware-enabled innovations designed to dramatically improve scalability, availability, security, and manageability of storage networks, resulting in increased utility and lower total cost of ownership (TCO).

Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules are available in two configurations. The Cisco 16-port 2-Gbps Fibre Channel Switching Module delivers the highest performance for the most demanding storage networking applications. The Cisco 32-port 2-Gbps Fibre Channel Switching Module delivers an optimal balance of performance and port density.

The Cisco MDS 9000 Family 2-Gbps Fibre Channel switching modules are compatible all MDS 9500 Series Multilayer Directors as well as MDS 9200 Multilayer Fabric Switches providing outstanding value and investment protection.

PRODUCT OVERVIEW

16-Port 2-Gbps Fibre Channel Switching Module

For the most demanding storage networking environments, the Cisco MDS 9000 Family 16-port 2-Gbps Fibre Channel Switching Module delivers uncompromising performance. 2-Gbps ports deliver up to 64 Gbps of continuous aggregate bandwidth making the Cisco 16-port 2-Gbps Fibre Channel Switching Module ideal for attachment of high performance storage subsystems and for ISL connections between switches. With its multiprotocol capability, the Cisco 16-port 2-Gbps Fibre Channel Switching Module seamlessly integrates FICON protocol, FICON Control Unit Port (CUP) management, and switch cascading to enable mainframe connectivity. VSANs allow hardware-based separation of Fibre Channel and FICON traffic switched on a single physical SAN, increasing overall TCO without compromising scalability, availability, manageability and network security.

32-Port 2-Gbps Fibre Channel Switching Module

Storage network optimization moves to a new level with the transport optimization provided by the Cisco MDS 9000 Family 32-port 2-Gbps Fibre Channel Switching Module. With Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules, network architects can allocate bandwidth optimally to meet specific application requirements while decreasing the switching footprint and lowering overall storage network deployment cost. The Cisco 32-port 2-Gbps Fibre Channel Switching Module delivers high port density along with 32 Gbps of total bandwidth. Bandwidth is allocated across eight 4-port port-groups, providing 4 Gbps of sustained bandwidth per port-group. By combining Cisco 32-port 2-Gbps Fibre Channel Switching Modules and Cisco 16-port 2-Gbps Fibre Channel Switching Modules in a single, modular chassis, customers can design cost/performance optimized storage networks in a wide range of application environments.

All Cisco 2-Gbps Fibre Channel Switching Modules are hot-swappable and include hot-swappable, small form-factor pluggable (SFP), LC interfaces. Individual ports can be configured with short-wave, long-wave, or extended reach SFPs for connectivity up to 100 kilometers. Up to 255 buffer credits per port are supported for maximum extensibility without requiring additional licensing.

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Figure 1. Cisco MDS 9000 Family Fibre Channel Switching Modules

KEY FEATURES AND BENEFITS

Cisco® MDS 9000 Family Fibre Channel Switching Modules offer the following features:

- **1/2-Gbps autosensing interfaces—**Provide high performance connectivity and compatibility with legacy devices.
- **High-performance Inter Switch Links (ISLs)—**Supports up to sixteen 2-Gbps links in a single PortChannel; links may span any speed-matched ports on any module within a chassis for added scalability and resilience. Up to 255 buffer-to-buffer credits can be assigned to a single Fibre Channel port, providing extension of storage networks up to 500 km at 1 Gbps and 250 km at 2 Gbps while maintaining full link bandwidth.
- **Intelligent network services**—Provide integrated support for VSAN technology, access control lists (ACLs) for hardware-based intelligent frame processing, and advanced traffic-management features such as Fibre Channel Congestion Control (FCC) and fabric-wide quality of service (QoS) to enable migration from SAN islands to enterprise-wide storage networks.
- **Integrated hardware-based VSANs and Inter-VSAN Routing (IVR)**—Enables deployment of large-scale multisite and heterogeneous SAN topologies. Integration into port-level hardware allows any port within a system or fabric to be partitioned into any VSAN. Integrated hardware-based inter-VSAN routing provides line-rate routing between any ports within a system or fabric without the need for external routing appliances.
- **Advanced FICON services**—The 16-port 2-Gbps Fibre Channel module supports FICON environments, including cascaded FICON fabrics, VSAN-enabled intermix of mainframe and open systems environments, and N_Port ID virtualization for mainframe Linux partitions. CUP (Control Unit Port) support enables in-band management of Cisco MDS 9000 Family switches from the mainframe management console.
- **Comprehensive Security Framework—**Supports RADIUS and TACACS+, Fibre Channel Security Protocol (FC-SP), Secure File Transfer Protocol (SFTP), Secure Shell (SSH) and Simple Network Management Protocol Version 3 (SNMPv3) implementing Advanced Encryption Standard (AES), VSANs, hardware-enforced zoning, ACLs, per-VSAN role-based access control.
- **Sophisticated Diagnostics—**Provides intelligent diagnostics, protocol decoding, and network analysis tools as well as integrated Call Home capability for added reliability, faster problem resolution, and reduced service costs.
- **High Port Density and Configuration Flexibility—**Provides 16-port and 32-port configurations to optimize performance, flexibility and density; supports up to 224 Fibre Channel ports per chassis and 672 ports per rack.

Intelligent Scalability

The Cisco MDS 9000 Family offers industry leading port density, scaling from 4 to 528 ports per chassis. Since building a large-scale storage network requires more than just high port density, Cisco has introduced innovative features that make multilayer storage networks a reality. Virtual SANs, advanced traffic management, hardware-enabled serviceability, and comprehensive security features make the Cisco MDS 9000 Family the platform of choice for businesses requiring highest scalability and lowest TCO.

Virtual SANs

Ideal for efficient, secure SAN consolidation, VSANs allow more efficient storage network utilization by creating hardware-based isolated environments within a single physical SAN fabric or switch. Each VSAN can be zoned as a typical SAN and maintains its own fabric services for added scalability and resilience. VSANs allow the cost of SAN infrastructure to be shared among more users, while ensuring absolute segregation of traffic and retaining independent control of configuration on a VSAN-by-VSAN basis.

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Integrated SAN Routing

In another step toward deploying the most efficient, cost-effective, consolidated storage networks, the Cisco MDS 9000 Family Fibre Channel switching modules support IVR functionality for Fibre Channel. IVR allows selective transfer of data traffic between specific initiators and targets on different VSANs while maintaining isolation of control traffic within each VSAN. With IVR, data can transit VSAN boundaries while maintaining control plane isolation, thereby maintaining fabric stability and availability. Integrated IVR eliminates the need for external routing appliances, greatly increasing routing scalability while delivering line-rate performance, simplifying management and eliminating the challenges associated with maintaining separate systems. Integrated IVR means lower total cost of SAN ownership.

Integrated Mainframe Support

Cisco 16-port 2-Gbps Fibre Channel switching module is mainframe ready, with full support for IBM zSeries FICON and Linux environments. Qualified by IBM for attachment to all FICON-enabled devices in an IBM zSeries operating environment, the 16-port 2-Gbps Fibre Channel switching module supports transport of the FICON protocol in both cascaded and noncascaded fabrics, as well as intermix of FICON and open systems Fibre Channel Protocol (FCP) traffic on the same switch. VSANs simplify intermix of SAN resources between z/OS, mainframe Linux, and open systems environments, allowing for increased SAN utilization and simplified SAN management. VSAN-based intermix mode eliminates the uncertainty and instability often associated with zoning-based intermix techniques. VSANs also eliminate the possibility of a misconfiguration or component failure in one VSAN affecting operation in other VSANs. VSAN-based management access control simplifies partitioning of SAN management responsibilities between mainframe and open systems environments, enhancing security. FICON VSANs can be managed using the integrated Cisco Fabric Manager; the Cisco command-line interface (CLI); or IBM CUP-enabled management tools, including SA/390, Resource Measurement Facility (RMF), or Dynamic Channel Path Management (DCM).

Advanced Traffic Management

Advanced traffic management capabilities integrated into every Cisco MDS 9000 Family Fibre Channel Switching Modules simplify deployment and optimization of large-scale fabrics.

- **Virtual Output Queuing**—Helps ensures line rate performance on each port, independent of traffic pattern, by eliminating head-of-line blocking.
- **255 Buffer-to-Buffer Credits**—Are assigned to each port for optimal bandwidth utilization across distance.
- **PortChannels**—Allow users to aggregate up to 16 physical ISLs into a single logical bundle, providing optimized bandwidth utilization across all links. The bundle can consist of any speed-matched ports from any module in the chassis, ensuring that the bundle remains active even in the event of a module failure.
- **Fabric Shortest Path First (FSPF)-Based Multipathing**—Provides the intelligence to load balance across up to 16 equal cost paths and, in the event of a switch failure, dynamically reroute traffic.
- **Quality of Service**—Can be used to manage bandwidth and control latency to prioritize critical traffic.
- **Fibre Channel Congestion Control (FCC)**—An end-to-end feedback-based congestion control mechanism that augments the Fibre Channel buffer-to-buffer credit mechanism to provide enhanced traffic management.

Advanced Diagnostics and Troubleshooting Tools

Management of large-scale storage networks requires proactive diagnostics, tools to verify connectivity and route latency, and mechanisms for capturing and analyzing traffic. The Cisco MDS 9000 Family integrates the industry's most advanced analysis and debug tools. Power-on self test (POST) and online diagnostics provide proactive health monitoring. The Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules provide the integrated hardware functionality required to implement diagnostic capabilities such as Fibre Channel Traceroute for detailing the exact path and timing of flows and Switched Port Analyzer (SPAN) and Remote Switched Port Analyzer (RSPAN) to intelligently capture network traffic. Once traffic has been captured, it can then be analyzed with the Cisco Fabric Analyzer, an embedded Fibre Channel analyzer. Comprehensive port-based and flow-based statistics enable sophisticated performance analysis and service-level agreement (SLA) accounting. With the MDS 9000 Family, Cisco Systems® delivers the most comprehensive toolset for troubleshooting and analysis of storage networks.

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Comprehensive Solution for Robust Security

Addressing the need for failproof security in storage networks, the Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules offer an extensive security framework to protect highly sensitive data crossing today's enterprise networks. The Cisco 2-Gbps Fibre Channel Switching Modules employ intelligent packet inspection at the port level, including the application of ACLs for hardware enforcement of zones, VSANs, and advanced Port Security features.

Extended zoning capabilities are enabled to ensure that LUNs are accessible only by specific hosts (LUN zoning), to limit SCSI read command for a certain zone (read-only zoning), and to restrict broadcasts to only the selected zones (broadcast zones). VSANs are used to achieve higher security and greater stability by providing complete isolation among devices that are connected to the same physical SAN. In addition, Fibre Channel Security Protocol (FC-SP) provides switch-switch and host-switch Diffie-Hellman Challenge Handshake Authentication Protocol (DH-CHAP) authentication supporting RADIUS or TACACS+, to ensure that only authorized devices access protected storage networks.

PRODUCT SPECIFICATIONS

Table 1 lists the product specifications for the Cisco MDS 9000 Family 2-Gbps Fibre Channel Switching Modules.

Table 1. Technical Specifications

Feature	Description
Product Compatibility	• Cisco MDS 9000 Family
Software Compatibility	• Cisco MDS SAN-OS Release 1.0(1) or later
Protocols	• Fibre Channel standards – FC-PH, Revision 4.3 (ANSI/INCITS 230-1994) – FC-PH, Amendment 1 (ANSI/INCITS 230-1994/AM1 1996) – FC-PH, Amendment 2 (ANSI/INCITS 230-1994/AM2-1999) – FC-PH-2, Revision 7.4 (ANSI/INCITS 297-1997) – FC-PH-3, Revision 9.4 (ANSI/INCITS 303-1998) – FC-PI, Revision 13 (ANSI/INCITS 352-2002) – FC-PI-2, Revision 10 (ANSI/INCITS 404-2006) – FC-FS, Revision 1.9 (ANSI/INCITS 373-2003) – FC-FS-2, Revision 0.91 – FC-LS, Revision 1.2 – FC-AL, Revision 4.5 (ANSI/INCITS 272-1996) – FC-AL-2, Revision 7.0 (ANSI/INCITS 332-1999) – FC-AL-2, Amendment 1 (ANSI/INCITS 332-1999/AM1-2003) – FC-AL-2, Amendment 2 (ANSI/INCITS 332-1999/AM2-2006) – FC-SW-2, Revision 5.3 (ANSI/INCITS 355-2001) – FC-SW-3, Revision 6.6 (ANSI/INCITS 384-2004) – FC-SW-4, Revision 7.5 (ANSI/INCITS 418-2006) – FC-GS-3, Revision 7.01 (ANSI/INCITS 348-2001) – FC-GS-4, Revision 7.91 (ANSI/INCITS 387-2004) – FC-GS-5, Revision 8.2

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Feature	Description
	– FC-BB, Revision 4.7 (ANSI/INCITS 342-2001) – FC-BB-2, Revision 6.0 (ANSI/INCITS 372-2003) – FC-BB-3, Revision 6.8 (ANSI/INCITS 414-2006) – FCP, Revision 12 (ANSI/INCITS 269-1996) – FCP-2, Revision 8 (ANSI/INCITS 350-2003) – FCP-3, Revision 4 (ANSI/INCITS 416-2006) – FC-SB-2, Revision 2.1 (ANSI/INCITS 349-2001) – FC-SB-3, Revision 1.6 (ANSI/INCITS 374-2003) – FC-VI, Revision 1.84 (ANSI/INCITS 357-2002) – FC-FLA, Revision 2.7 (INCITS TR-20-1998) – FC-PLDA, Revision 2.1 (INCITS TR-19-1998) – FC-Tape, Revision 1.17 (INCITS TR-24-1999) – FC-MI, Revision 1.92 (INCITS TR-30-2002) – FC-MI-2, Revision 2.6 (INCITS TR-39-2005) – FC-SP, Revision 1.6 – FC-DA, Revision 3.1 (INCITS TR-36-2004) – FAIS, Revision 0.7 • IP over Fibre Channel (RFC 2625) • IPv6, IPv4 and ARP over FC (RFC 4338) • Extensive IETF-standards based TCP/IP, SNMPv3, and remote monitoring (RMON) MIBs • Class of Service: Class 2, Class 3, Class F • Fibre Channel standard port types: E, F, FL, B • Fibre Channel enhanced port types: SD, ST, TE
Cards/Ports/Slots	• Sixteen or thirty-two fixed auto-sensing 1 or 2-Gbps Fibre Channel ports
Features and Functions	
Fabric Services	• Name server • Registered State Change Notification (RSCN) • Login services • Fabric Configuration Server (FCS) • Private loop • Public loop • Translative loop • Broadcast • In-order delivery
Advanced Functionality	• VSAN • Inter-VSAN Routing • PortChannel with Multipath Load Balancing • QoS—flow-based, zone-based

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Feature	Description
	• Fibre Channel Congestion Control
Diagnostics and Troubleshooting Tools	• Power-on-self-test (POST) diagnostics • Online diagnostics • Internal port loopbacks • SPAN and Remote SPAN • Fibre Channel Traceroute • Fibre Channel Ping • Fibre Channel Debug • Cisco Fabric Analyzer • Syslog • Online system health • Port-level statistics • Real Time Protocol Debug
Network Security	• VSANs • Access Control Lists • Per-VSAN role-based access control • Fibre Channel Zoning – N_Port WWN – N_Port FC-ID – Fx_Port WWN – Fx_Port WWN and interface index – Fx_Port domain ID and interface index – Fx_Port domain ID and port number – LUN – Read-only – Broadcast • Fibre Channel Security Protocol (FC-SP) – DH-CHAP switch-switch authentication – DH-CHAP host-switch authentication • Port Security and Fabric Binding • Management access – SSH v2 implementing AES – SNMPv3 implementing AES – SFTP
FICON	• FC-SB-3 compliant (16-port module) • Cascaded FICON fabrics (16-port module) • Intermix of FICON and Fibre Channel FCP traffic (16-port module)

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<table>
<tr><th>Feature</th><th>Description</th></tr>
<tr><td></td><td>• CUP management interface (16-port module)</td></tr>
<tr><td>Serviceability</td><td>• Configuration file management
• Non-disruptive software upgrades for Fibre Channel interfaces
• Call Home
• Power-management LEDs
• Port beaconing
• System LED
• SNMP traps for alerts
• Network boot</td></tr>
<tr><td>Performance</td><td>• Port speed: 1 or 2-Gbps autosensing, optionally configurable
• Buffer credits: Up to 255 per port (DS-X9016), 12 per port (DS-X9032)
• PortChannel: Up to 16 2-Gbps ports
• Supported optics, media and transmission distances:
<table>
<tr><th>Optics</th><th>Media</th><th>Distance</th></tr>
<tr><td>1 Gbps—SW, LC SFP</td><td>50/125 micron multimode</td><td>500 m</td></tr>
<tr><td>1 Gbps—SW, LC SFP</td><td>62.5/125 micron multimode</td><td>300 m</td></tr>
<tr><td>1 Gbps—LW, LC SFP</td><td>9/125 micron single-mode</td><td>10 km</td></tr>
<tr><td>1 Gbps—CWDM, LC SFP</td><td>9/125 micron single-mode</td><td>Up to 100 km</td></tr>
<tr><td>2 Gbps—SW, LC SFP</td><td>50/125 micron multimode</td><td>300 m</td></tr>
<tr><td>2 Gbps—SW, LC SFP</td><td>62.5/125 micron multimode</td><td>150 m</td></tr>
<tr><td>2 Gbps—LW, LC SFP</td><td>9/125 micron single-mode</td><td>10 km</td></tr>
<tr><td>2 Gbps—CWDM, LC SFP</td><td>9/125 micron single-mode</td><td>Up to 100 km</td></tr>
</table></td></tr>
<tr><td>Reliability and Availability</td><td>• Hot-swappable module
• Hot-swappable SFP optics
• Online diagnostics
• Stateful Process Restart
• Non-disruptive Supervisor Failover
• Any module, any port configuration for PortChannels
• Fabric-based multipathing
• Per-VSAN fabric services
• Port Tracking
• Virtual Routing Redundancy Protocol (VRRP) for management</td></tr>
</table>

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Feature	Description
Network Management	• Access methods through Cisco MDS 9500 Series Supervisor module – Out-of-band 10/100 Ethernet port (Supervisor-1 Module) – Out-of-band 10/100/1000 Ethernet port (Supervisor-2 Module) – RS-232 serial console port – In-band IP-over-Fibre Channel – DB-9 COM port • Access methods through Cisco MDS 9000 Family Fibre Channel Swtiching Modules – In-band FICON CUP over Fibre Channel (16-port module only) • Access protocols – CLI—via console and Ethernet ports – SNMPv3—via Ethernet port and in-band IP-over-Fibre Channel access – Storage Networking Industry Association (SNIA) Storage Management Initiative Specification (SMI-S) • Distributed Device Alias service • Network security – Per-VSAN role-based access control using RADIUS and TACACS+ based authentication, authorization, and accounting (AAA) functions – SFTP – SSH v2 implementing AES – SNMPv3 implementing AES • Management applications – Cisco MDS 9000 Family CLI – Cisco Fabric Manager – Cisco Device Manager – CiscoWorks Resource Manager Essentials (RME) and Device Fault Manager (DFM)
Programming Interfaces	• Scriptable CLI • Fabric Manager GUI • Device Manager GUI
Environmental	• Temperature, ambient operating: 32 to 104°F (0 to 40°C) • Temperature, ambient non-operating and storage: 40 to 167°F (–40 to 75°C) • Relative humidity, ambient (non-condensing) operating: 10 to 90 percent • Relative humidity, ambient (non-condensing) non-operating and storage: 10 to 95 percent – Altitude, operating: –197 to 6500 feet (–60 to 2000 meter)
Physical Dimensions	• Dimensions (H x W x D): 1.75 x 14.4 x 16 in (3.0 x 35.6 x 40.6 cm) – Occupies one slot in a Cisco MDS 9200 Series or MDS 9500 Series chassis • Weight: Fibre Channel Switching Module only: 10 pound (4.5 kilogram)

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Feature	Description
Approvals and Compliance	• Safety Compliance – CE Marking – UL 60950 – CAN/CSA-C22.2 No. 60950 – EN 60950 – IEC 60950 – TS 001 – AS/NZS 3260 – IEC60825 – EN60825 – 21 CFR 1040 • 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

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ORDERING INFORMATION

Table 2 provides ordering information for the Cisco MDS 9000 Family Fibre Channel Switching Modules.

Table 2. Ordering Information

Part Number	Product Description
DS-X9016	Cisco MDS 9000 Family 1/2-Gbps 16-port Fibre Channel Switching Module
DS-X9032	Cisco MDS 9000 Family 1/2-Gbps 32-port Fibre Channel Switching Module
DS-SFP-FC-2G-SW	Cisco MDS 9000 Family 1/2-Gbps Fibre Channel—Shortwave, SFP, LC
DS-SFP-FC-2G-LW	Cisco MDS 9000 Family 1/2-Gbps Fibre Channel—Longwave, SFP, LC
DS-SFP-FCGE-SW	Cisco MDS 9000 Family 1 Gbps Ethernet, 1/2-Gbps Fibre Channel—Shortwave, SFP, LC
DS-SFP-FCGE-LW	Cisco MDS 9000 Family 1 Gbps Ethernet, 1/2-Gbps Fibre Channel—Longwave, SFP, LC
Advanced Software Packages	
M9200ENT1K9	Cisco MDS 9200 Enterprise Package
M9200FMS1K9	Cisco MDS 9200 Fabric Manager Server Package
M9200FIC1K9	Cisco MDS 9200 Mainframe Package
M9500ENT1K9	Cisco MDS 9500 Enterprise Package
M9500FMS1K9	Cisco MDS 9500 Fabric Manager Server Package
M9500FIC1K9	Cisco MDS 9500 Mainframe Package
Spare Components	
DS-X9016=	Cisco MDS 9000 Family 1/2-Gbps 16-port Fibre Channel Switching Module, Spare
DS-X9032=	Cisco MDS 9000 Family 1/2-Gbps 32-port Fibre Channel Switching Module, Spare
DS-SFP-FC-2G-SW=	Cisco MDS 9000 Family 1/2-Gbps Fibre Channel—Shortwave, SFP, LC
DS-SFP-FC-2G-LW=	Cisco MDS 9000 Family 1/2-Gbps Fibre Channel—Longwave, SFP, LC
DS-SFP-FCGE-SW=	Cisco MDS 9000 Family 1 Gbps Ethernet, 1/2-Gbps Fibre Channel—Shortwave, SFP, LC
DS-SFP-FCGE-LW=	Cisco MDS 9000 Family 1 Gbps Ethernet, 1/2-Gbps Fibre Channel—Longwave, SFP, LC
DS-CWDM-1470=	Cisco 1470 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1490=	Cisco 1490 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1510=	Cisco 1510 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1530=	Cisco 1530 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1550=	Cisco 1550 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1570=	Cisco 1570 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1590=	Cisco 1590 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
DS-CWDM-1610=	Cisco 1610 NM CWDM Gigabit Ethernet and 1/2-Gbps Fibre Channel SFP, Spare
M9200ENT1K9=	Cisco MDS 9200 Enterprise Package, Spare
M9200FMS1K9=	Cisco MDS 9200 Fabric Manager Server Package, Spare
M9200FIC1K9=	Cisco MDS 9200 Mainframe Package, Spare

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Part Number	Product Description
M9500ENT1K9=	Cisco MDS 9500 Enterprise Package, Spare
M9500FMS1K9=	Cisco MDS 9500 Fabric Manager Server Package, Spare
M9500FIC1K9=	Cisco MDS 9500 Mainframe Package, Spare

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