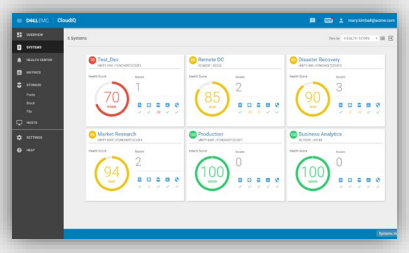
DELL Technologies

Data Sheet

Connectrix

Storage Networking for the Data Era



live optics with SAN Health

Connectrix Enables Business Applications

The Connectrix™ family of directors and switches moves your vital business information to where it's needed securely, with the highest performance, the highest availability and unsurpassed reliability. Connectrix is the only storage networking platform that offers Dell EMC E-Lab™ interoperability testing. Connectrix products can connect physical or virtual servers through Fibre Channel Storage Area Networks (SAN) technology. Connectrix enables all application environments from Oracle, Microsoft and SAP to local backup/restore, and business continuity/disaster recovery solutions over distance.

Connectivity Matters for All Flash Storage: FC-NVMe

All-flash storage environments require a network that is deterministic, and easy to manage with low latencies. Connectrix has always delivered low latency, deterministic behavior, scalability and reliability. So, as you move to Solid State Drives (SSD) or Storage Class Memory (SCM), make sure your storage network can keep pace. Today's storage networks deliver up to 32 Gigabit per second (Gb/s) Fibre Channel speeds. The latest Connectrix systems include exclusive diagnostic and error-collection capabilities, as well as the ability to monitor, analyze and identify specific data to avoid errors, reduce bottlenecks and automate your networking resources.

Connectrix models allow seamless transition to Fibre Channel Non-Volatile Memory Express (FC-NVMe) workloads without any hardware upgrade in the SAN. In addition, Connectrix platforms support the concurrent use of both traditional Fibre Channel and NVMe storage traffic, allowing organizations to easily integrate Fibre Channel networks with NVMe-based storage.

Live Optics with SAN Health – Free SAN Assessment

If you're thinking about upgrading your storage environment, make sure your SAN isn't a bottleneck by running Live Optics with SAN Health. This is a free tool that creates comprehensive analysis about your storage network including performance graphs, detailed spreadsheets and topology diagrams. Live Optics creates a consolidated view of the data in digital presentation form.

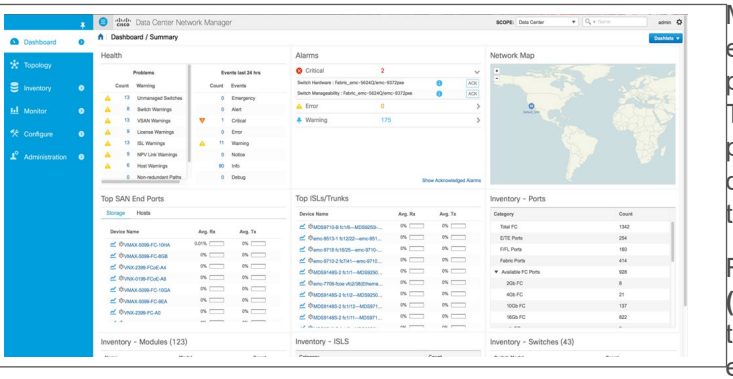
Connectrix Delivers High Performance, High Availability, Flexible Scalability with Unsurpassed Reliability

The Connectrix offering allows you to start small and scale as you grow—whether you begin by implementing a small storage networking solution for one department or a large configuration for an enterprise-wide application. With Connectrix you can concurrently support multiple hosts and operating systems as well as accommodate storage environments from other suppliers. This extensible connectivity frees you to consolidate more information onto fewer storage systems.

To meet your storage networking requirements, we offer two Connectrix product lines. Both the Connectrix B-Series and Connectrix MDS product lines include enterprise directors, switches and multi-purpose switch offerings. Enterprise Directors are ready for the most demanding mission-critical environments, providing immediate, non-disruptive and automatic failover.

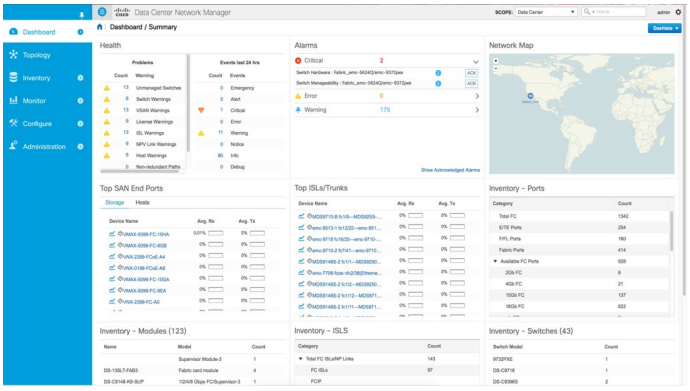
Connectrix Network Monitoring, Management and Reporting

Dell EMC CloudIQ™ provides cloud-based IT analytics and monitoring for Connectrix switches and directors. This free tool is available as a mobile app so you can check in from anywhere. With CloudIQ you get proactive health scores, predictive analytics and anomaly detection.



SANnav Portal and Global View is the next generation Management software for the Connectrix B-Series. SANnav empowers IT administrators to be more efficient and productive by providing comprehensive visibility into the SAN environment. These tools transform information about SAN behavior and performance into actionable insights, allowing administrators to quickly identify, isolate and correct problems before they impact the business.

For Connectrix MDS customers, **Data Center Network Manager (DCNM)** enables storage and network administrators to troubleshoot the health and performance of their Connectrix MDS environment. DCNM simplifies network deployment by providing wizard and template-based provisioning and configuration with an easy-to-use Graphical User Interface. DCNM also provides proactive monitoring and problem diagnosis, which results in less time spent on troubleshooting problems.



Connectrix Director and Switch Model Numbers

All Connectrix models listed in the tables below support auto-sensing speeds for backward compatibility, non-disruptive code upgrades and redundant hot-swappable components for high availability. All 16Gb/s and 32Gb/s switches and directors support NVMe over Fabric. **Note:** Some models below are marked "64Gb/s ready". These models will support 64Gb/s Fibre Channel when the 64Gb/s optics become available in the SAN marketplace.

Table 1: Switch Models

Connectrix Fibre Channel Switch Models	Maximum Fibre Channel Speed	Maximum Ports	Minimum Ports
DS-6520B	16Gb/s	Up to 96 ports	48-port base
DS-6610B	32Gb/s	Up to 24 ports	8-port base
DS-6620B and DS-6620B-V2	32Gb/s	Up to 64 ports	24-port base
DS-6630B and DS-6630B-V2	32Gb/s	Up to 128 ports	48-port base
DS-7720B	32Gb/s and 64Gb/s ready	Up to 56 ports	24-port base
MDS-9148S	16Gb/s	Up to 48 ports	12-port base
MDS-9396S	16Gb/s	Up to 96 ports	48-port base
MDS-9132T	32Gb/s	Up to 32 ports	8-port base
MDS-9148T	32Gb/s	Up to 48 ports	24-port base
MDS-9396T	32Gb/s	Up to 96 ports	48-port base

Note: Some of the DS-xxxxB models above have optional features. See Table 4 below for descriptions. The -V2 models above have updated hardware components. The MDS-9000x optional features are listed in Table 5.

Table 2: Multi-purpose Switch Models

Connectrix Multi-Purpose Switch Models	Ports and Maximum Speeds	Use Cases and Protocols
MP-7810B	Twelve 32Gb capable Fibre Channel ports and six 1/10GbE SFP+ ports	Distance Extension with FCiP, Fibre Channel Protocol (FCP) and IP Extension (IPEX)
MP-7840B	24 16Gb FCP ports, sixteen 1/10 Gigabit Ethernet (GbE) ports and two 40GbE ports.	Distance Extension with FCiP, Fibre Channel Protocol (FCP), IP Extension (IPEX) and Mainframe FICON
MDS-9250i	40 16Gb FCP ports, two 10GbE ports and eight FCoE	Distance Extension with FCiP, Mainframe FICON, FCoE and Fibre Channel

Table 3: Enterprise Director Models

Connectrix Director Models	Maximum Fibre Channel Speed	Maximum Ports	Protocols
ED-DCX7-8B	64Gb;s-ready	Up to 512 32Gb/s ports	FCP, FCiP and FICON
ED-DCX7-4B	64Gb;s-ready	Up to 256 32Gb/s ports	FCP, FCiP and FICON
ED-DCX6-8B	32Gb/s	Up to 512 ports	FCP, FCiP and FICON
ED-DCX6-4B	32Gb/s	Up to 256 ports	FCP, FCiP and FICON
MDS-9718, MDS-9718-V3	32Gb/s (-V3 model 64Gb/s ready)	Up to 768 ports	FCP, FCiP, FCoE
MDS-9710-V2	32Gb/s (-V2 model 64Gb/s ready)	Up to 384 ports	FCP, FCiP, FCoE and FICON
MDS-9706-V2	32Gb/s (-V2 model 64Gb/s ready)	Up to 192 ports	FC, FCiP, FCoE and FICON

Note: The ED-DCX7 and ED-DCX6 director models include the Enterprise Software Bundle which contains the optional features listed in Table 4. Please see the MDS optional features described below in Table 5.

Table 4: Connectrix B-Series Optional Features.

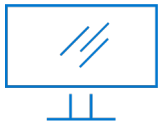
Feature	Description
Fabric Vision	Provides visibility and insight across storage networks through the Monitoring and Alerting Policy Suite (MAPS), Fabric Performance Impact (FPI) Monitoring, ClearLink Diagnostics, Flow Vision and Single Bulk Configurations.
ISL Trunking	Provides the ability to aggregate multiple physical links to one logical link for enhanced network performance and fault tolerance.
Extended Fabrics	Provides greater than 10 kilometers of switched fabric connectivity at full bandwidth over long distances depending on the platform this can be up to 3000 kilometers. Extended Fabric is required for any Inter-Switch Link (ISL) that is greater than 10 kilometers.

Mainframe FICON CUP	Includes FICON management features required for mainframe environments. FICON supports high speed connectivity between mainframes and I/O devices. Control Unit Port (CUP) allows mainframe tools to manage connectivity between ports, monitor fabric performance and collect critical diagnostic information

Table 5: Connectrix MDS Series Optional Features

Feature	Description	Features
Enterprise Package	Includes advanced traffic engineering and advanced security features for enterprise SANs	Advanced traffic management includes Inter-VSAN Routing, Quality of Service (QoS) features, Extended credits. Security features include switch-to-switch and host-to-switch authentication, LUN zoning, read-only zones, port security, VSAN based access control, IP Sec for iSCSI and FCiP, IKE Digital Certificates and fabric binding for Fibre Channel
SAN Extension over IP	Provides integrated, cost-effective and reliable business continuance solutions that use the existing IP infrastructure	Supports SAN Extension Tuner, Inter-VSAN Routing for FCiP and FCiP protocol support, FCiP compression, FCiP Write Acceleration, FCiP Read/Write Tape Acceleration
I/O Acceleration (IOA)	IOA capability is available on MDS 9700 series directors from NX-OS 8.2(1) release. It can be enabled using the I/O acceleration package license which is available to configure separately on a module	Transport and speed-independent acceleration that accelerates disk and tape traffic over any 2/4/8/16/32G Fibre Channel port. Works over Metropolitan Area Networks (MANs) and WANs. Data compression in conjunction with FCIP ISLs. High availability using Port-Channels with acceleration over Fibre Channel and FCIP ISLs. Transport Independent Write Acceleration (WA) of Disk Replication traffic and Tape Acceleration (TA) of Tape Replication Traffic.
Mainframe Package	Includes features required for mainframe environments. FICON supports high-speed connectivity between mainframe servers and I/O devices	VSAN for FICON and FCP Intermixing, FICON Control Unit Port (CUP), Fabric Binding, Switch Cascading, FICON Native Mode Channel-to channel operation, persistent FICON FCID assignment, Port Swapping for host channel cable connections, FICON tape acceleration.
SAN Analytics	The 32Gb director switching module and switch platforms support SAN Analytics	SAN Insights was designed for customers that would like to leverage the data gathering, computation and end-to-end visualization of data provided by the analytics engine that resides on the MDS 32Gb/s switching module through DCNM. SAN Telemetry Streaming is for customers who use Virtual Instruments (VI) or another 3rd party or custom solution to display the data provided by the MDS analytics engine.

Note: Not all Connectrix B-Series and MDS Series models support all the optional features listed in the tables above.



Learn More about Connectrix solutions

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