

# EMC Symmetrix DMX2000

The EMC® Symmetrix® DMX2000 is a double-bay storage system that can be configured with up to 288 2Gb/s high-performance Fibre Channel disk drives providing a maximum raw capacity of over 118 TB. The 24-slot Direct Matrix backplane accommodates configurations of up to eight global memory directors, up to twelve channel I/O directors, and either four or eight dedicated disk I/O directors.

## System Throughput

The Symmetrix Direct Matrix Architecture® provides dedicated, non-blocking interconnects between I/O directors and global memory regions. With up to 128 dedicated data paths operating at 500 MB/s, the Direct Matrix delivers virtually unrestricted concurrent I/O throughput. A separate low-latency message matrix supports inter-processor communications between processors for maximum efficiency.

DMX data paths	32–128	8 per I/O Director, 16 per Global Memory Director
DMX data bandwidth	16–64 GB/s	
DMX message bandwidth	3.2–6.4 GB/s	
PowerPC CPUs	20–116	1GHz
Global Memory	4–256 GB	Available in 2, 4, 8, 16 and 32 GB increments
Concurrent Memory transfers	16–32	4 per Global Memory Director

## Connectivity

The Symmetrix DMX2000 supports up to twelve (12) high-speed Channel I/O Directors with four SMP-driven pipeline slices each. Optimized hardware logic and data protection encoding ensures end-to-end data integrity with automated channel failover for maximum availability and load balancing.

Symmetrix DMX systems support all popular hardware and operating system platforms, storage area networks (SANs), and high-availability cluster environments.

2Gb/s Fibre Channel host/SAN ports	16–64	8 per Fibre Channel Director
2Gb/s Fibre Channel remote replication ports	2–8	1–4 per Fibre Channel Director
1Gb/s Ethernet iSCSI ports	2–48	1–4 per Multi-protocol Channel Director
1Gb/s Ethernet remote replication ports	2–8	1–4 per Multi-protocol Channel Director
2Gb/s FICON host ports	2–48	1–4 per Multi-protocol Channel Director
ESCON host ports	16–64	8 per ESCON Channel Director
ESCON remote replication ports	2–8	1–4 per ESCON Channel Director

Mixed combinations of the above port types depend upon configuration. Refer to the EMC Support Matrix on EMC.com or contact your local EMC sales representative for specific configuration support.

## Disk Drives & Drive Connectivity

The Symmetrix DMX2000 disk drive infrastructure is architected with the latest 2Gb/s dual-ported Fibre Channel disk drives, each supported by two independent disk I/O directors with automatic failover and fault isolation.

	Min Capacity	Max Capacity				
Disk Directors	4	8	8 ports per Director			
Disk Channels	32	64	Each drive supported by 2 channels			
2Gb/s FC Disk Drives	128	288				
Drives per Channel Pair	9	18				
<b>Available Drives:</b>						
Capacity	73 GB	73 GB	146 GB	146 GB	300 GB	500 GB
Rotational Speed	10,000 rpm	15,000 rpm	10,000 rpm	15,000 rpm	10,000 rpm	7,200 rpm
Interface	2Gb/s FC	2Gb/s FC	2Gb/s FC	2Gb/s FC	2Gb/s FC	2Gb/s FC
Internal data rate	470–944 Mb/s	685–1,142 Mb/s	470–944 Mb/s	685–1,142 Mb/s	470–944 Mb/s	470–944 Mb/s
Average access time (read/write)	4.9/5.5 ms	3.8/4.1 ms	4.9/5.5 ms	3.8/4.1 ms	4.9/5.5 ms	8.5/9.5 ms
Raw Capacity	73.3 GB	73.3 GB	146.8 GB	146.8 GB	300.0 GB	500.00 GB
Formatted capacity—open systems	73.10 GB	73.10 GB	146.00 GB	146.00 GB	299.32 GB	499.00 GB
Formatted capacity—mainframe	72.17 GB	72.17 GB	144.60 GB	144.60 GB	295.71 GB	492.98 GB
Formatted capacity—iSeries	68.71 GB	68.71 GB	137.42 GB	137.42 GB	n/a	n/a

## Data Protection Options

- RAID 0\*: Data striped across two to eight hypervolumes
- RAID 1: Mirrored pair of two hypervolumes
- RAID 1/0: Data striped across four mirrored pairs of hypervolumes
- RAID 5: Data striped on four or eight hypervolumes (with rotating parity)
- Configurable global hot-spare pool

\* Not recommended as a drive failure in a RAID 0 group will result in data unavailability and data loss.

Symmetrix DMX systems can be integral elements of a comprehensive information lifecycle management strategy—a strategy that helps your enterprise attain the maximum value from its information, at the lowest TCO, at every point in the information lifecycle. Information lifecycle management maps the right service level to the right application at the right cost—at the right time.



## System Capacities

	73 GB Drives		146 GB Drives		300 GB Drives		500 GB Drives*	
	Min. Capacity	Max. Capacity	Min. Capacity	Max. Capacity	Min. Capacity	Max. Capacity	Min. Capacity	Max. Capacity
Number of Disks	128	288	128	288	128	288	128	288
Raw Capacity								
Open	9.36	21.05	18.69	42.05	38.31	86.20	38.31	118.25
Mainframe	9.25	20.81	18.51	41.64	37.85	85.16	37.85	116.76
Mirrored Capacity								
Open	4.68	10.53	9.34	21.02	19.16	43.10	19.16	59.12
Mainframe	4.62	10.40	9.25	20.82	18.93	42.58	18.93	58.38
Parity 3+1 Capacity								
Open	7.02	15.79	14.02	31.54	28.73	64.65	28.73	88.69
Mainframe	6.94	15.61	13.88	31.23	28.39	63.87	28.39	87.57
Parity 7+1 Capacity								
Open	8.19	18.42	16.35	36.79	33.52	75.43	33.52	103.47
Mainframe	8.09	18.21	16.20	36.44	33.12	74.52	33.12	102.17

Configurations with mixed drive capacities and speeds are allowed depending upon configuration.

12 GB of total capacity will be reserved for internal Symmetrix file system use.

All capacities are based on 1 GB = 1,000,000,000 bytes.

Actual usable capacity may vary depending upon operating system.

\* Actual capacity, using 300 GB drives for minimum count.

## Disk Emulation

DMX2000	Open Systems	3380K	3390-1	3390-2	3390-3	3390-9	3390-27	3390-54
MB/Volume	30,720	1,891	946	1,892	2,838	8,514	27,845	55,688
Bytes/Track	32,768	47,476	56,664	56,664	56,664	56,664	56,664	56,664
Bytes/Cylinder	491,520	712,140	849,960	849,960	849,960	849,960	849,960	849,960
Cylinders/Volume	65,536	2,655	1,113	2,226	3,339	10,017	32,760	65,520

## Available Software\*

The Engenuity™ operating environment delivers the highest levels of performance and systems and data integrity, while providing a foundation for storage applications such as the TimeFinder™ and SRDF® families of local and remote replication.

### Platform Software

AutoSwap  
 Catalog Solution  
 Double Checksum  
 InfoMover  
 Enterprise Storage Platform (ESP)  
 Performance Essential  
 ResourcePak for TPF  
 ResourcePak for Windows  
 SRDF/Synchronous  
 SRDF/Asynchronous  
 SRDF/Star  
 SRDF/Data Mobility  
 SRDF/Automated Replication  
 SRDF/Consistency Groups  
 SRDF/Cluster Enabler for MSCS  
 SRDF/Cluster Enabler for VCS  
 SRDF/Automated Availability Manager  
 SRDF/Host Component  
 SRDF/Mode Change  
 SRDF/Adaptive Copy  
 COMPAV/MA  
 Open Replicator for Symmetrix  
 ResourcePak Base for OS/390 and z/OS  
 ResourcePak Extended for OS/390 and z/OS  
 Data Relocation Utility

TimeFinder/Clones  
 TimeFinder/Mirror  
 TimeFinder/Snap  
 TimeFinder/Consistency Groups  
 TimeFinder/Exchange Integration Module  
 TimeFinder/SQL Integration Module  
 VSAM Assist  
 TPF Controls for SRDF  
 TPF Controls for TimeFinder  
 CopyPoint for OS/400  
 CopyCross  
 EMC Compatible Peer (providing IBM PPRC function)  
 EMC Compatible Extended (providing IBM XRC function)

### Information Management Software

Replication Manager/Remote (SDMM)  
 Replication Manager/Local (ERM)  
 EMC Data Manger (EDM)  
 EMC Automated Availability Manager

### ControlCenter Storage Management Software

Storage Device Management  
 Symmetrix Manager  
 Symmetrix Optimizer  
 SRDF/TimeFinder Manager for OS/400

### SRM Monitoring and Reporting

StorageScope  
 StorageScope File Level Reporter  
 Workload Analyzer

### SRM Planning and Provisioning

SAN Manager  
 SAN Advisor  
 Automated Resource Manager

### Infrastructure Software

PowerPath

\* Contact your EMC sales representative for software license model numbers, prerequisites, and additional information.

## Physical & Cooling Specifications

Height** (in/cm)	Width (in/cm)	Depth (in/cm)	Front Service Area (in/cm)	Rear Service Area (in/cm)	Weight (lb/kg)	Power (kVA)	Cooling (Btu/hr)
75.4/191.5	48.0/121.9	37.5/95.3	36.0/91.4	36.0/91.4	3,154/1,433	9.5	32,785

All dimensions are cabinet/enclosure size without shipping brackets, stabilizers, or sound mufflers. Weight, power, and cooling are maximum for a full configuration.

\*\*An additional 18 in. (45.7 cm) is required for ceiling/top clearance.

## Power Specifications

Redundant main and auxiliary power connections

2 (N+1) power supply redundancy

Modular power zones with two to six power modules

	North America and International single-phase	North America and International 3-phase (Delta—4 Wire)	International* 3-phase (Wye—5 Wire)
Input Voltage (VAC)	200–240	200–240	200–240
Frequency (Hz)	47–63	47–63	47–63
Circuit Breaker (Amps), recommended	60	50	32
Power Drops	4	4	4
Power Connector	(4) 9P63U2T	(4) 9P54U2T	Country Specific
User Connector	(4) 9C63U2T	(4) 9C54U2T	Country Specific

\* For higher voltage installations (380-415 VAC line to line) a 32 amp rated breaker is recommended.

## Environmental Specifications (operating)

Temperature (°F/°C)	50–90°F/10–32°C
Altitude (ft/m), max.	8,000/2,500
Humidity (%), non-condensing	20–80
Raised Floor	Recommended

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