SPECIFICATION SHEET

EMC Symmetrix DMX-4

The EMC® Symmetrix® DMX-4 delivers scalable capacity and performance to consolidate systems, applications, and/or hosts while maintaining high service levels. Incrementally scalable packaging facilitates the online addition of independent storage bays. The Direct Matrix infrastructure accommodates non-disruptive addition of disk directors enabling increased performance when needed.

System Resources

Symmetrix DMX™-4 systems are built on the field-proven Direct Matrix Architecture® which provides dedicated, non-blocking interconnects between I/O directors and global memory regions. To support the massive scalability of DMX-4 configurations, the DMX architecture has been expanded and enhanced to deliver higher throughput (1 GB/s links) and increased I/O performance (four dual 1.3 GHz PPC processors per director).

DMX data paths	32–128	8 per I/O director, 16 per Global Memory director
DMX data bandwidth	32–128 GB/s	
DMX message bandwidth	4.0–6.4 GB/s	
PowerPC processors	16–130	4 dual 1.3 GHz processor complexes per director
Global Memory	32–512 GB*	Available in 8, 16, 32, and 64 GB Global Memory directors
Concurrent memory transfers	16–32	4 per Global Memory director

*256 GB effective

EMC Symmetrix DMX-4 systems are available in two- to nine-bay configurations for more than one petabyte of raw storage capacity in a single system. With incremental tiered storage capability for maximum TCO value, Symmetrix DMX-4 systems are the highest capacity, fastest, most scalable, most capable storage systems available and serve as the foundation of today's most demanding intelligent information infrastructures.

Connectivity

Symmetrix DMX-4 is available in configurations supporting up to ten (10) 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. IPv6 and IPsec support are available with GigE ports.

Protocol	Usable System Ports	Channel Director
4 Gb/s Fibre Channel host/SAN ports	2–64	1–8 per Fibre Channel Director
4 Gb/s Fibre Channel remote replication ports	2 –8	1–4 per Fibre Channel Director
1 Gb/s iSCSI ports	2–48	1–4 per Multi-protocol Channel Director
4 Gb/s FICON host ports	2–48	1–4 per Multi-protocol Channel Director
1 Gb/s GigE remote replication ports	2–8	1–4 per Multi-protocol Channel Director
ESCON host ports	2–64	1–8 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 the configuration. Higher numbers of usable front-end ports are only supported on configurations with fewer disk channels. 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 DMX disk drive infrastructure is architected with the latest 4 Gb/s dual-ported Fibre Channel disk drives, each supported by two independent disk I/O directors with automatic failover and fault isolation.

	Min.	Max.	
Disk Directors	2	8	8 ports per Director
Disk Channels	16	64	Each drive supported by 2 disk channels for redundancy
2/4 Gb/s FC Disk Drives	16	2,400*	
Drives per Channel Pair	4	60	

Available Disk Drives:									
Capacity	146 GB	300 GB	300 GB	400 GB	450 GB	450 GB	600 GB	600 GB	1 TB
Rotational Speed (rpm)	15,000	10,000	15,000	10,000	10,000	15,000	10,000	15,000	7,200
Interface	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s FC	4 Gb/s SATA-II
Internal Data Rate (Mb/s)	685–1,142	470–944	685–1,142	725–1,211	1,010–1,840	1,051–2,225	1,010–1,840	1,490–2,370	470-1,070
Average Seek Time (read/write)	3.5/4.0 ms	4.7/5.4 ms	3.5/4.0 ms	3.9/4.2 ms	4.7/5.4 ms	3.4/4.1 ms	4.7/5.4 ms	3.5/4.0 ms	9.2/10.2 ms
Raw Capacity	146.8 GB	300.0 GB	300.0 GB	400.0 GB	450 GB	450 GB	600 GB	600 GB	1 TB
Formatted Capacity—Open Systems	146.7 GB	299.8 GB	299.8 GB	399.7 GB	449.6 GB	449.6 GB	599.5 GB	599.5 GB	999.4 GB
Formatted Capacity—Mainframe	144.8 GB	292.5 GB	292.5 GB	394.6 GB	443.9 GB	443.9 GB	591.8 GB	591.8 GB	986.5 GB
Formatted Capacity—iSeries	145.7 GB	295.9 GB	295.9 GB	399.7 GB	438.7 GB	438.7 GB	584.9 GB	584.9 GB	n/a

Available Flash Drives:				
Capacity	73 GB	146 GB	200 GB	400 GB
Interface	2 Gb/s	2 Gb/s	4 Gb/s	4 Gb/s
Internal Data Rate (Mb/s)	800-1,600	800-1,600	800–1,600	800–1,600
Usable Capacity	73.4 GB	146.8 GB	200 GB	400 GB
Formatted Capacity—Open Systems	73.3 GB	146.7 GB	199.9 GB	399.7 GB
Formatted Capacity—Mainframe	72.4 GB	144.8 GB	197.3 GB	394.6 GB
Formatted Capacity—iSeries	n/a	n/a	n/a	n/a

System Capacities in TB

	146 GB Drives		1 TB Drive	
Capacity	**Min.**	**Max.**	**Min.**	**Max.**
Number of Drives	96	1,920	96	1,920
Raw Capacity				
Open	14.08	281.66	95.94	1,918.88
Mainframe	13.90	278.04	94.71	1,894.24
Mirrored Capacity				
Open	7.04	140.83	47.97	544.68
Mainframe	6.95	139.02	47.36	543.61
RAID 5 3+1 Capacity				
Open	10.56	211.24	71.96	577.16
Mainframe	10.43	208.53	71.03	575.67
RAID 5 7+1 Capacity				
Open	12.32	246.45	83.95	585.91
Mainframe	12.16	243.29	82.87	585.29
RAID 6 6+2 Capacity				
Open	10.56	211.24	71.96	577.16
Mainframe	10.43	208.53	71.03	575.67
RAID 6 14+2 Capacity				
Open	12.32	246.45	83.95	585.91
Mainframe	12.16	243.29	82.87	585.29

Configurations with mixed drive capacities and speeds are allowed depending upon configuration.
24 GB of total capacity will be reserved for internal Symmetrix File System use.

160 to 640 GB of total capacity will be reserved for vaulting data from memory during system power down.

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

Actual usable capacity may vary depending upon configuration.

Disk Emulation

	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	27,844	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	65,472	2,655	1,113	2,226	3,339	10,017	32,760	65,520

* Capacities greater than 1,920 drives available by RPQ.

Data Protection Options

RAID 0*: Data striped across two to eight hypervolumes (unprotected)
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
RAID 6: Data striped on 8 or 16 hypervolumes with dual 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.

Physical & Cooling Specifications

	Height**	Width	Depth	Front and Rear Service Area	Weight	Power	Cooling
	(in/cm)	(in/cm)	(in/cm)	(in/cm)	(lb/kg)	(kVA)	(Btu/hr)
System Bay	76.66/194.7	24.02/61.0	41.16/104.5	42.0/106.7	1,626/737.5	6.4	21,850
Storage Bay	76.66/194.7	30.02/76.3	41.88/106.4	42.0/106.7	2,422/1,098.6	6.1	19,800

All dimensions are cabinet/enclosure size without shipping brackets or securing brackets.
Weight, power, and cooling are typical for a full configuration.
Cooling is front to top of all bays.
**An additional 18 in. (45.7 cm) is required for ceiling/top clearance.

Power Specifications

Redundant main and auxiliary power connections requiring two separate power sources.
2 (N) power zone redundancy in each bay.

	North America and 3-phase (Delta—4 Wire)	International 3-phase (Wye—5 Wire)
Input Voltage (VAC)	200–240	200–240
Frequency (Hz)	50–60	50–60
Circuit Breaker (Amps), Recommended	50	32
AC Power Connections	2 per bay	2 per bay
Power Connector	CS8365	Country specific
User Connector	CS8364	Country specific

Environmental Specifications (operating)

Temperature °F/°C)	50–90/10–32
Altitude (ft/m), Max.	7,500/2,286
Humidity (%), Non-condensing	20–80
Raised Floor	Recommended

EMC² where information lives®

EMC Corporation
Hopkinton
Massachusetts
01748-9103
1-508-435-1000
In North America 1-866-464-7381
www.EMC.com