

EMC SYMMETRIX

Hello Guys,

Today I will let you know the detailed introduction to Symmetrix series and about it's journey.

History of Symmetrix

Symmetrix series was initiated at EMC by a team led by visionary **Moshe Yanai** - known as Mr. Symmetrix, who joined EMC in 1987 - and his team of engineers with the a first product, the Symmetrix 4200, introduced in 1990, that began to beat **IBM** for mainframes' storage. It was based on three main ideas: the use of new lower priced 5.25-inch HDDs - and not much bigger IBM 3390 drives -, a big DRAM cache (at this time 4Mb) named Integrated Cache Disk Array, and RAID-1 (mirroring).

The Generations of Symmetrix

First Generation (4200): 1990

Second Generation: 1992

Symmetrix 3.0: 1994

Symmetrix 4.0: 1996

Symmetrix 4.8: 1998

Symmetrix 5.0: 2000

Symmetrix 5.5: 2001

Symmetrix DMX (Generation 6.0): 2003

Symmetrix DMX-2 (Generation 6.5): 2004

Symmetrix DMX-3 (Generation 7.0): 2005

Symmetrix DMX-4 (Generation 7.5): 2007

Symmetrix VMAX (Generation 8.0): 2009

Symmetrix VMAXe (Generation 9.0): 2011



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DMX 4

Yanai left - or was fired - by EMC in 2001 because he disagreed on the pricey acquisition of Data General (at the origin of CLARiiON, then VNX) for \$1.1 billion in 1999, as he wanted the company to design its own open storage system with his engineers, according to several sources. He is now probably one of the healthiest man in the storage industry. He quits EMC with a huge amount of money and some people told us that he got personally a percentage on each Symmetrix sold. The same Yanai was also part owner of Israeli de-dupe start-up Diligent, sold to IBM in 2008 for a reported \$200 million. He then joined IBM after selling another company he co-founded in Israel, XIV, for \$300 million in 2008. Before leaving Big Blue, he was at the origin of another Israeli start-up, Axxana, being now one of its board's director. And the main - and apparently only - partner of this firm, in innovative zero loss disaster recovery, is ... EMC.

Symmetrix was at the origin of the fast growing revenues for EMC and continues to be one of its flagship hardware products. In the company's most recent fiscal 1Q11, revenues of Symmetrix increased 25% compared with the year-ago quarter, putting a lot of pressure on IBM and HDS, its two competitors in storage for mainframes or high-end open systems.

DMX Models

Generation	Models	Production years	Disks (Max)	Memory (Max)
Symm2	4000, 4400, 4800	1992	24	
Symm3	3100, 3200, 3500	1994	32 / 96 / 128	4 GB
Symm 4.0	3330/5330, 3430/5430, 3700/5700	1996	32 / 96 / 128	8 GB / 16 GB
Symm 4.8	3530/5530, 3630/5630, 3900/5930	1998	32 / 96 / 256 / 384	8 GB / 16 GB
Symm 5.0	8430, 8730	2000	96 / 384	32 GB
Symm 5.5	8230, 8530, 8830	2001	48 / 96 / 384	32 GB
DMX, DMX2	DMX-1000, DMX-2000, DMX-3000	2003	144 / 288 / 576	
DMX3, DMX4	1500, 2500, 3500, 4500	2005	240 / 960 / 1440 / 2400	64 / 144 / 216 / 256 GB
VMAX	VMAX, VMAX-SE, VMAX 10K, VMAX 20K, VMAX 40K	2009+	1080 / 2400 / 3200	512 / 1024 / 2048 GB
VMAX 3	VMAX 100K, 200K, 400K	2015	1440 / 2880 / 5760	2TB / 8TB / 16 TB

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DMX Models

DMX Features

TimeFinder, TimeFinder/Clone — Local Replication

Symmetrix Remote Data Facility (SRDF) supports remote replication

Symmetrix Optimizer -- Dynamical swap disks based on workload

Symmetrix command line interface (SymmCli)

SymmWin, Eguinuty -- Symmetrix GUI console (since Symm3, Symm4 models)

AnatMain — Symmetrix Pseudo-GUI console (before Symm 3, Symm4 models)

Symmetrix remote console (SymmRemote)

FAST -- Fully automated storage tiering

FTS -- Federated tiered storage

ECC --EMC Control Center

The road map for the EMC Symmetrix models

Orion 1 (Kick-Off Symmetrix)

- 1988
- Single-bay, half-height chassis
- 2 directors with dual Block Mux Channel switches
- 2 SCSI disk drives (384 MB)
- Max system capacity: 512 MB



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Orion 1

Symmetrix 1 (Product did not release)

- Single-bay, half-height chassis
- 2 directors
- 64 MB or 256 MB memory board
- Max number of drives: 4 (625 MB)
- Max system capacity up to 2 GB



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Symmetrix 1

Symmetrix 2 (4200/4400)

- 1988
- World's first integrated cached disk array
- 20 slot, single-bay chassis
- Up to 8 directors
- Up to 12 memory boards (Max. Capacity: 3 GB)
- Max number of drives: 24 (1 GB, 2 GB)
- Max system capacity up to 48 GB



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Symmetrix 2

Symmetrix 3 Family

Symmetrix 5500 (Elephant)

- 1990
- World's first terabyte disk array
- 20-slot, 3-bay chassis
- Up to 16 directors
- Up to 6 memory boards (Max Capacity: 24 GB)
- Max number of drives: 128 (3 GB, 9 GB, 12 GB)
- Max system capacity up to 1 TB

Symmetrix 5100 (Roadrunner)

- 1992
- 8-slot, single-bay chassis
- Up to 6 directors (4 host, 2 disk)
- Up to 2 memory boards (Max Capacity: 8 GB)
- Max number of drives: 16 (3 GB, 9 GB)

- Max system capacity up to 144 GB

Symmetrix 5200 (Jaguar)

- 1992
- 12-slot, single-bay chassis
- Up to 8 directors
- Up to 8 memory boards (Max Capacity: 24 GB)
- Max number of drives: 32 (3 GB, 9 GB)
- Max system capacity up to 288 GB



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Symmetrix 3

Symmetrix 4 Family - 3000 Series - Open Systems

Symmetrix 3700/5700 (Ibis)

1994

- "Open Symm" stored data from all major server types
- 20-slot, 3-bay chassis
- Up to 16 directors (8 host, 8 disk)
- Up to 4 memory boards (Max Capacity: 16 GB)

- Max number of drives: 128 5.25" (47 GB)
- Max system capacity up to 13 TB

Symmetrix 3330/5330 (Bobcat)

- 1997
- 8-slot, single-bay chassis
- Up to 6 directors (4 host, 2 disk)
- Up to 2 memory boards (Max Capacity: 8 GB)
- Max number of drives: 32 3.25" (36 GB)
- Max system capacity up to 1 TB

Symmetrix 3430/5430 (Coyote)

- 1997
- 12-slot, single-bay chassis
- Up to 10 directors (6 host, 4 disk)
- Up to 4 memory boards (Max Capacity: 16 GB)
- Max number of drives: 96 3.5" (36 GB)
- Max system capacity up to 3 TB



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Symmetrix 5 Family

Symmetrix 8430 (Greywolf)

- 2000
- Quad Bus design
- CacheStorm memory directors
- 12-slot, single-bay chassis
- Up to 10 directors (Fibre Channel and ESCON)
- Up to 2 memory boards (Max Capacity: 16 GB)
- Max number of drives: 96 (50 GB)
- Max system capacity up to 4 TB

Symmetrix 8730 (Bison)

- 2000
- Quad Bus design
- 20-slot, 3-bay chassis
- Up to 16 directors (Fibre Channel and ESCON)
- Up to 4 memory boards (Max Capacity: 32 GB)
- Max number of drives: 384 (50 GB)
- Max system capacity up to 19 TB



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Symmetrix 5

Symmetrix 6 Family - Direct Matrix Architecture

Symmetrix DMX800

- 2003
- "Rack Mount Symmetrix"
- 8-slot, single-bay chassis
- Up to 4 Fibre directors, 2 FEBE
- Up to 2 memory boards (Max Capacity: 32 GB)
- Max number of drives: 120 (73 GB, 146 GB)
- Max system capacity up to 17 TB

Symmetrix DMX1000 (Leopard)

- 2003
- 12-slot, single-bay chassis
- Up to 8 directors
- P-model option available
- Up to 4 memory boards (Max Capacity: 64 GB)

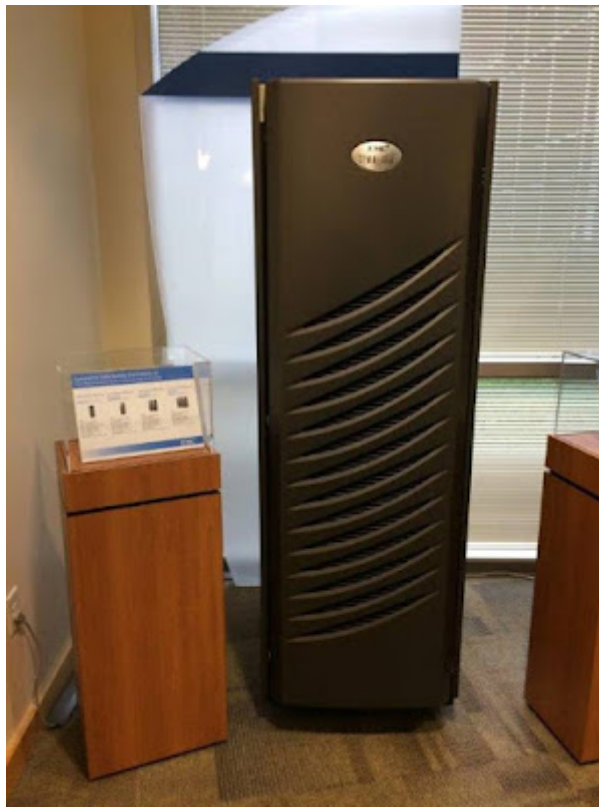
- Max number of drives: 144 (73 GB, 146 GB)
- Max system capacity up to 20 TB

Symmetrix DMX2000 (Panther)

- 2003
- 24-slot, 2-bay chassis
- Up to 16 directors
- P-model option available
- Up to 8 memory boards (Max Capacity: 128 GB)
- Max number of drives: 288 (73 GB, 146 GB)
- Max system capacity up to 41 TB

Symmetrix DMX3000 (Rhino)

- 2003
- 24-slot, 3-bay chassis
- Up to 16 directors
- Up to 8 memory boards (Max Capacity: 288 GB)
- Max number of drives: 576 (73 GB, 146 GB)
- Max system capacity up to 82 TB



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Symmetrix 6 DMX

Symmetrix 7 Family - DMX-3 and DMX-4

Symmetrix DMX-3

- 2005
- World's first petabyte disk array
- 24-slot, scalable (2 to 9 bays)
- Up to 16 directors
- Up to 8 memory boards (Max Capacity: 512 GB)
- Max number of drives: 2,400 (73 GB, 146 GB, 300 GB, 500 GB)
- Max system capacity up to 1 PB

Symmetrix DMX-4

- 2007
- World's first enterprise class flash drive array
- 24-slot, scalable (2 to 9 bays)
- Up to 16 directors
- Up to 8 memory boards (Max Capacity: 512 GB)
- Max number of drives: 2,400
- 73 GB, 146 GB, 200 GB, 400 GB EFD

- 73 GB, 146 GB, 300 GB, 450 GB FC
- 500 GB, 1 TB SATA
- Max system capacity up to 2 PB



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Symmetrix DMX 3 & 4

Symmetrix VMAX Virtual Matrix Architecture Family

Symmetrix VMAX

- 2009
- World's first high-end array purpose built for virtual environments
- Virtual Matrix sRIO interface
- 1 system bay, up to 10 storage bays
- Up to 8 VMAX Engines, running Intel multi-core CPUs
- Up to 16 Symmetrix directors
- Up to 1 TB of global memory
- Max number of drives: 2,400
- 200 GB, 400 GB EFD
- 146 GB, 300 GB, 450 GB, 600 GB FC

- 1 TB, 2 TB SATA
- Max system capacity up to 3 PB



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Symmetrix VMAX

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