

כנס הטכנולוגיות השנתי לניהול מידע

**Make IT Double**



יום ג', 25.11.08  
Avenue, Airport City

## DMX4 - The High End Just Got Higher

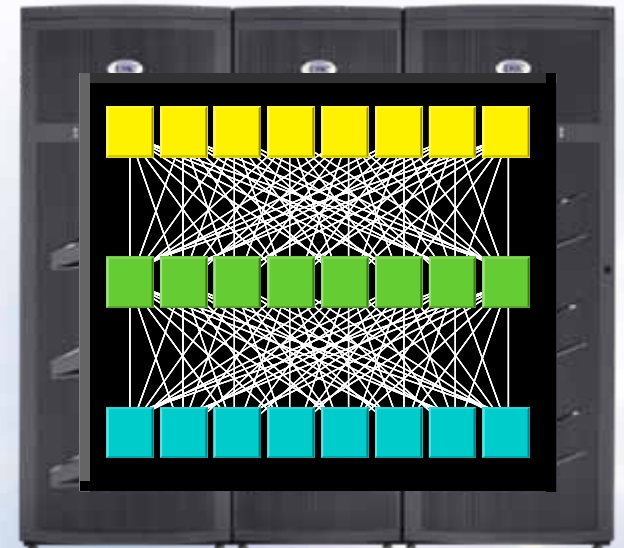
Rafi Ben-Shahar  
Senior System Engineer  
EMC



# Why Symmetrix DMX

## #1 in High-End External RAID (IDC, Q2 2008\*)

- Information availability
  - Most advanced and widely deployed business continuity platform
- Tiered-storage optimization
  - Advanced Quality of Service, Mobility, and Management capabilities to consolidate application tiers, including Tier 0
- Simplified management and operations
  - Simplified storage allocation, resource management and tiering
- Information-centric security, built in
  - Advanced security and integrated RSA technology
- Energy efficiency
  - Best green data center solutions for today's IT requirements



## Direct Matrix Architecture

The world's most trusted  
storage platform

\* EMC analysis based on IDC product-line estimates



# Symmetrix DMX-4 Tiered Storage Platform



## The World's Most Trusted Storage Platforms

### Symmetrix DMX-4: World's Largest High-End Storage Array



- 96 to 2,400 disks
- 2 to 12 channel directors\*
- 2 to 8 4Gb disk directors\*
- Fibre Channel, iSCSI, Gigabit Ethernet, FICON, ESCON connectivity
- Up to 512 (256 usable) GB Global Memory

### DMX-4 950: High-End Entry Point



- 32 to 360 disks
- 2 or 4 front-end/back-end directors
- FICON (DMX-4), Fibre Channel, iSCSI, Gigabit Ethernet connectivity
- Up to 128 (64 usable) GB Global Memory

### New with DMX-4

- Enterprise Flash Drives
- 4 Gb/s Disk Adapter pairs
- Point-to-Point Back-end
- 4Gb/s Drive Enclosures
- High performance 4 Gb/s 15K FC drives
- High capacity SATA II disks

**CAPACITY AND PERFORMANCE SCALABILITY**

\*Combinations may be limited or restricted based on configuration

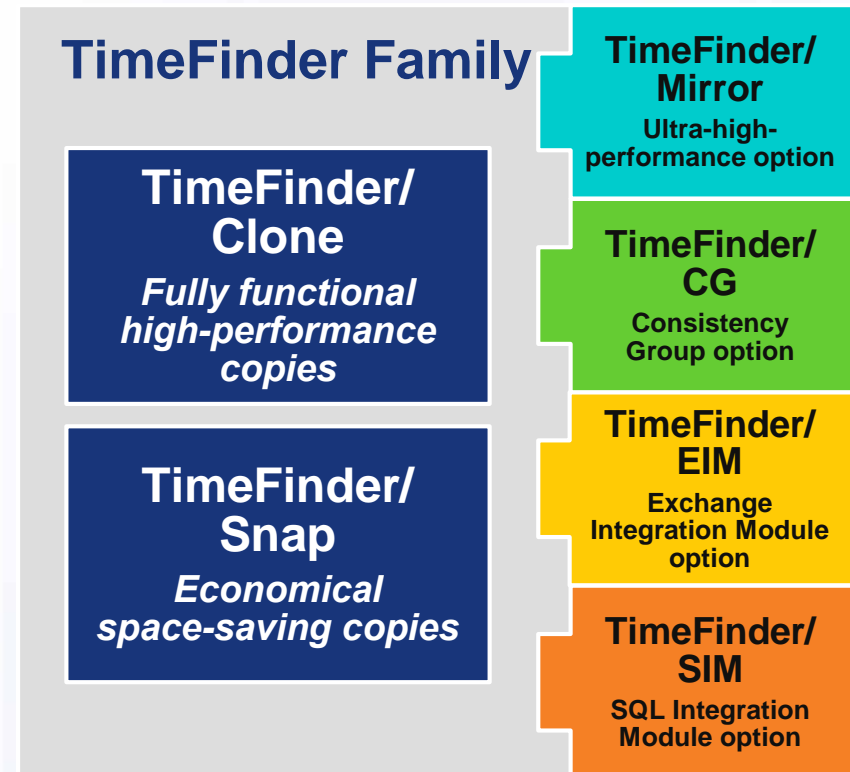


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# TimeFinder Family

## Family of Local Replication Products

- Increase application availability
- Minimize/eliminate impact on application
- Reduce downtime
- Improve recovery time and recovery point objectives
- Provide near instant recovery
- Reduce backup windows
- Enable parallel processing



**EMC offers choice and flexibility to meet any service level requirement**

# Symmetrix Remote Data Facility (SRDF) Family

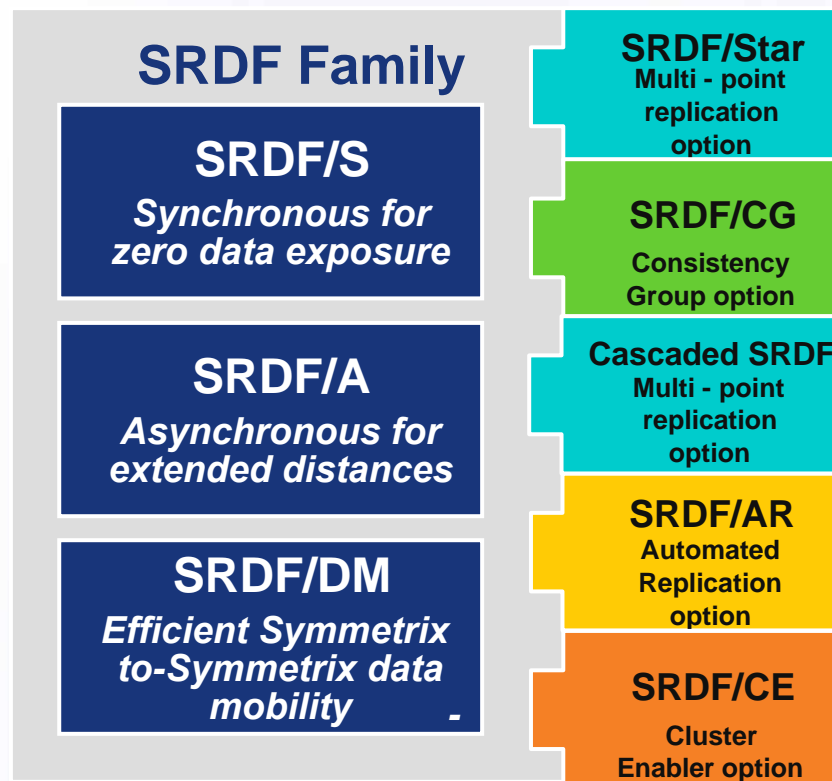
EMC<sup>2</sup>  
where information lives™



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## Family of Remote Replication Products

- Protect against local and regional disruptions
- Increase application availability
- Minimize/eliminate impact on application
- Reduce downtime
- Improve recovery-time and recovery-point objectives
- Provide near-instant recovery
- Enable parallel processing



**EMC offers choice and flexibility to meet any service level requirement**

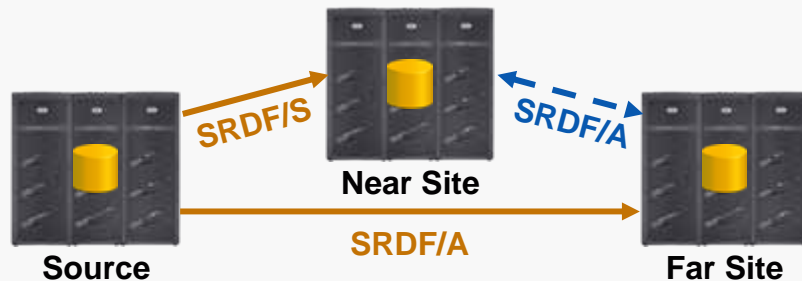


# SRDF Family Multi-Site Protection Options

## SRDF Family Addresses the Broadest Range of Replication Use Cases

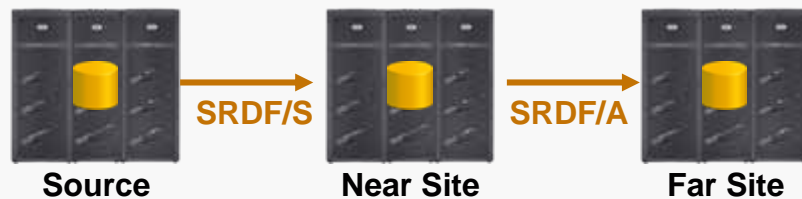
### SRDF/Star

- Multi-site protection leveraging SRDF
- Includes standby SRDF/A links between remote sites to continue protection if any site fails



### Cascaded SRDF

- Multi-site protection SRDF/S between Source and Near Site; SRDF/A between Near Site and Far Site
- Eliminates BCV cycling at Near Site; improves recovery-point objectives at Far Site



### Concurrent SRDF

- Multi-site protection leveraging a single source and concurrently replicating to two remote sites





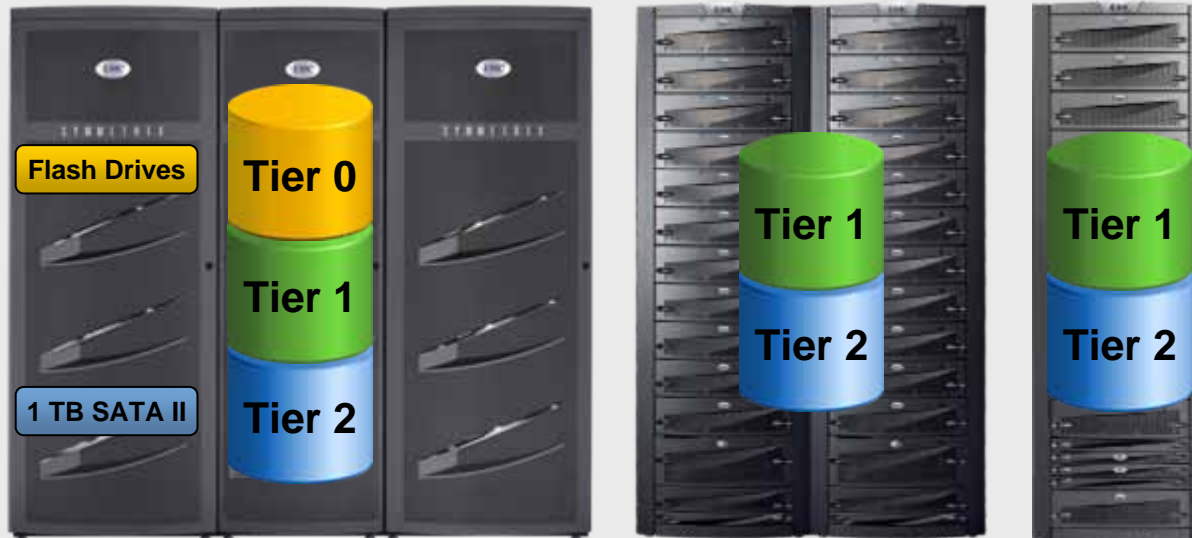
# EMC Tiered Storage Options

## SOFTWARE-BASED TIERING CAPABILITIES

Cache Partitioning    ControlCenter Symmetrix Optimizer    Quality of Service Management    Virtual LUN Technology    Virtual Provisioning

Advanced functionality to optimize storage tiering

## PLATFORM-BASED TIERING CAPABILITIES



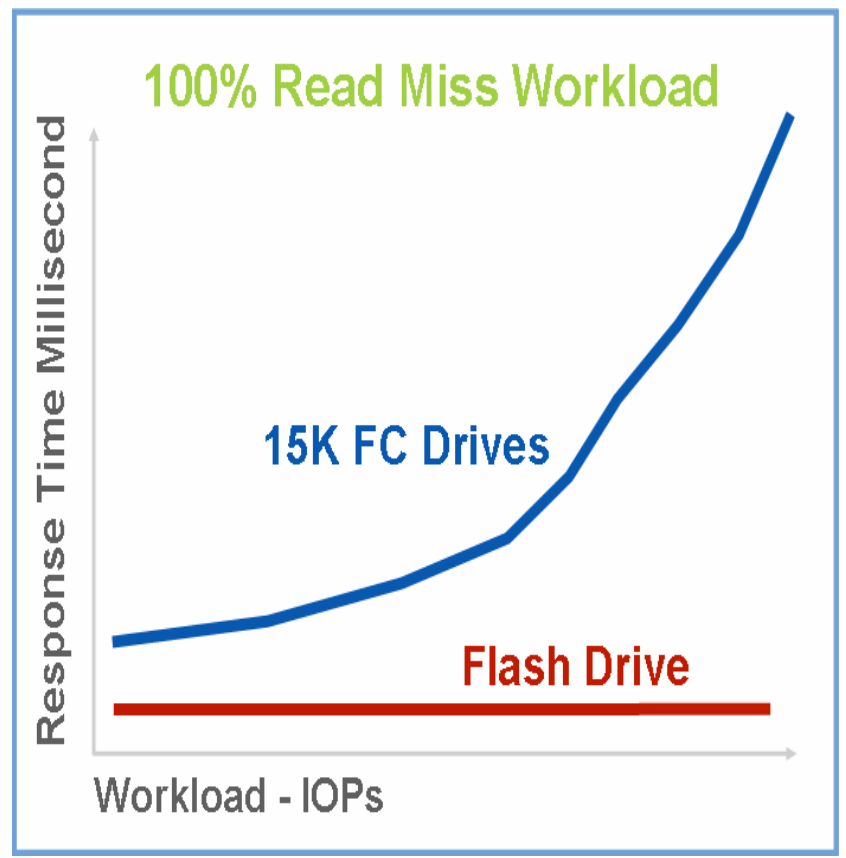
Best of-breed storage systems and technology



# Enterprise Flash Drive: A Game Changing Technology

## Unprecedented Performance and Energy Efficiency

- 10x faster response time
- 30x IOPS improvement
- 38% less power per drive
- 98% less power per IO
- 58% less weight per drive
- Reliable - no moving parts



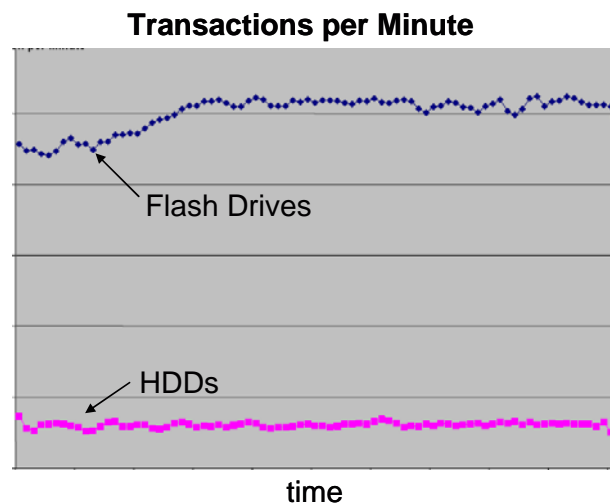
# Flash Drives for Tier “0” Requirements



## Ultra Performance via Enterprise-Class Flash

- First and Only High End Array to support Flash Drives
  - Fully integrated with Symmetrix supporting software functionality
  - Multi-year planning and development program
  - Design specifications, design, integration, qualification
- Ideal for Low Latency, High Transaction Workloads
  - Enables database acceleration
  - Reduces batch processing windows
  - Consolidates islands of DRAM storage or dedicated servers
- Flash Drive technology optimized for enterprise environments
  - FC interface to front end RAM cache with many parallel read/write engines
  - Wear leveling algorithms and self-healing capabilities for reliability
  - End-to-end ECC for data integrity

### Oracle Workload



**ORACLE** CERTIFIED ADVANTAGE PARTNER



# Industry Use Cases

## Common Industries

- Technology
- Banking
- Financial Services
- Retail
- Government
- Telecommunications
- Automotive
- Healthcare
- Transportation

## Common Applications

- Exchange
- Electronic trading
- Online banking
- Backend stock settlement
- Credit card authorization
- Claims processing
- Order processing
- Shipment tracking
- Fraud/criminal detection database

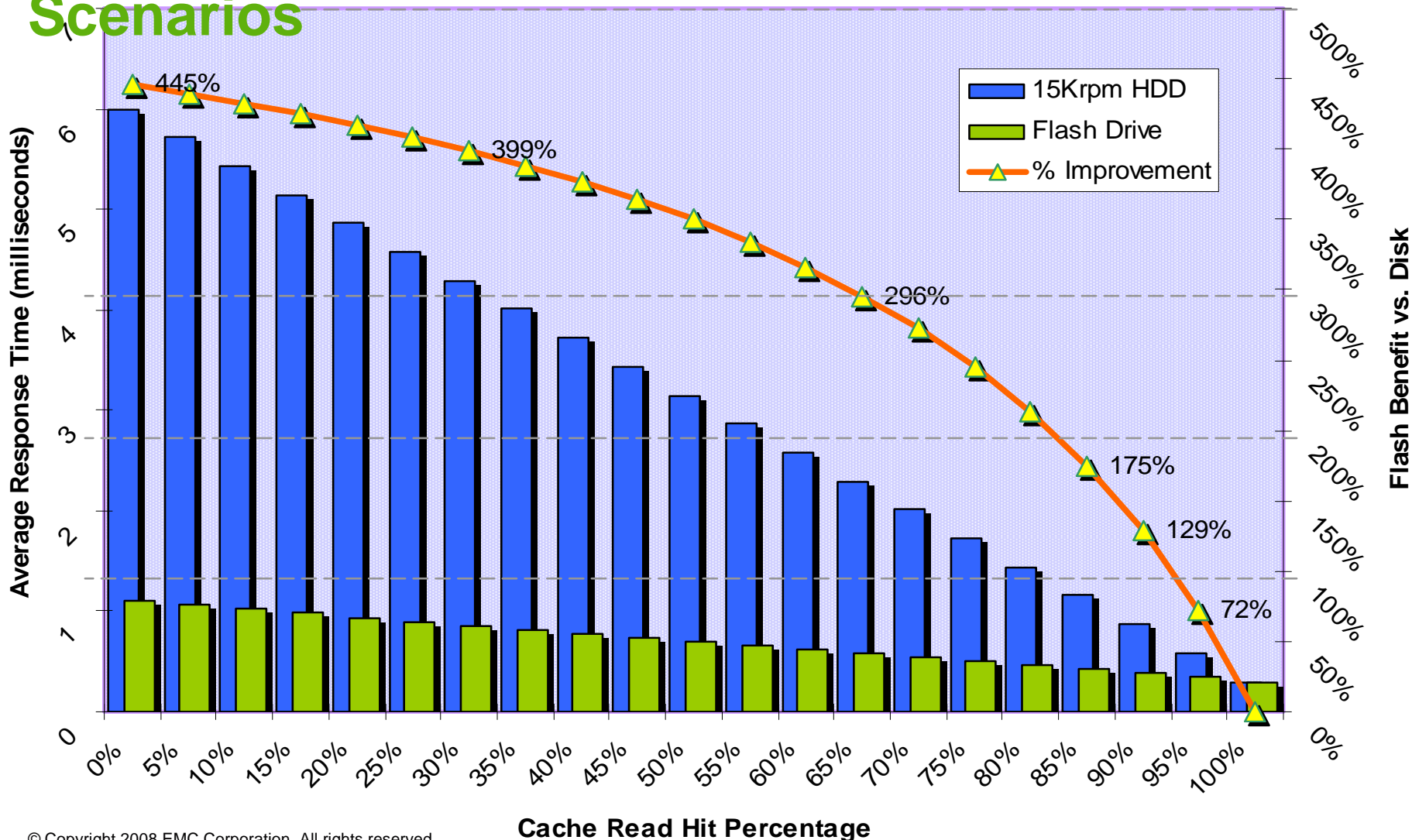
**Techworld: “EMC has changed enterprise disk storage for ever”**



# EFD Delivers Significant Response Time Benefits

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## Measurable Improvements Even in High Read Hit Scenarios



# Leverage Your Resources: TCO Calculator

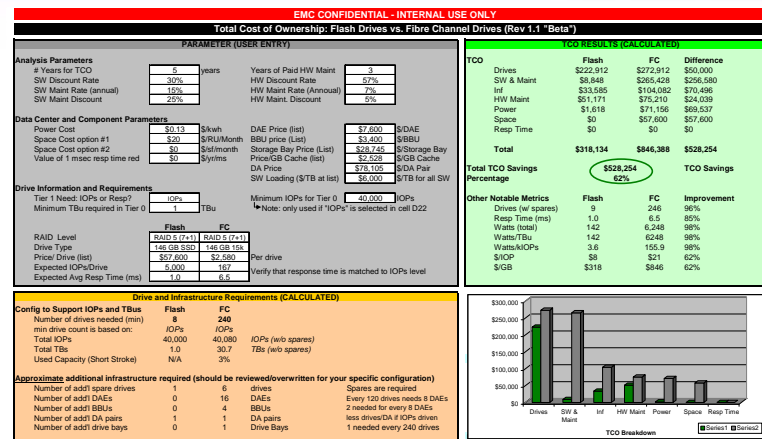
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## Flash Drive TCO Calculator Helps Quantify Business Value

**Example: 40,000 IOPs via 240 FC drives replaced with 8 flash drives**

- Cost of 8 flash drives cheaper than 240 High Speed FC drives
- Pay only for the software on 8 drives (as opposed to 240 drives)
- Supporting hardware, maintenance, and space costs are lower
- Power efficiency is also a source of savings (6kW vs. 143 W)

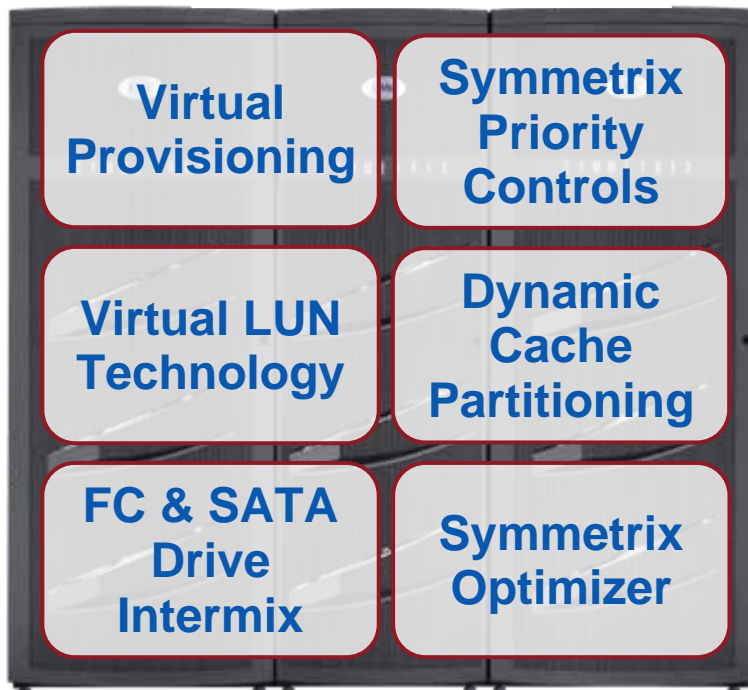
→ **TCO savings 60%+ in example**



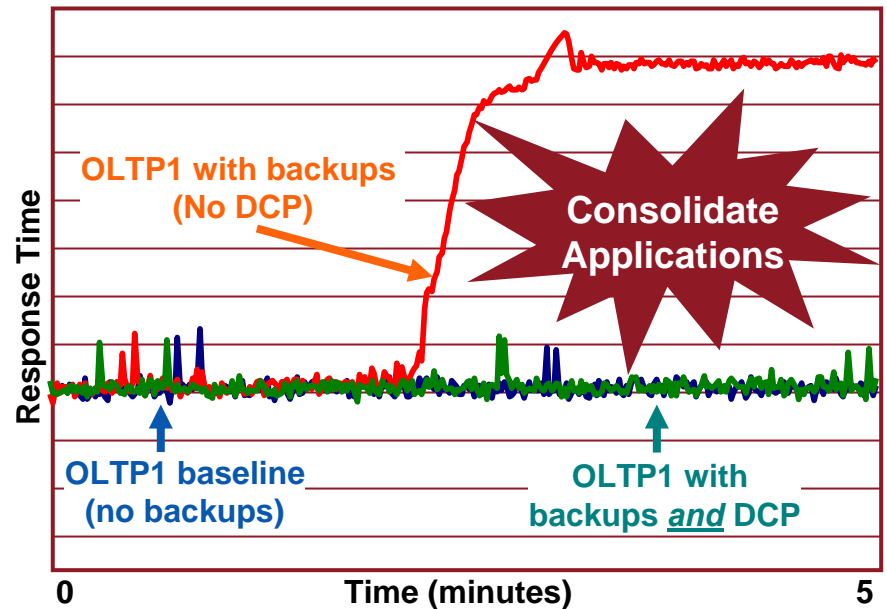


## Software Based Tiering Capabilities

### Symmetrix DMX-4



Dynamic Cache Partitioning on shared OLTP and Backup-to-Disk workload



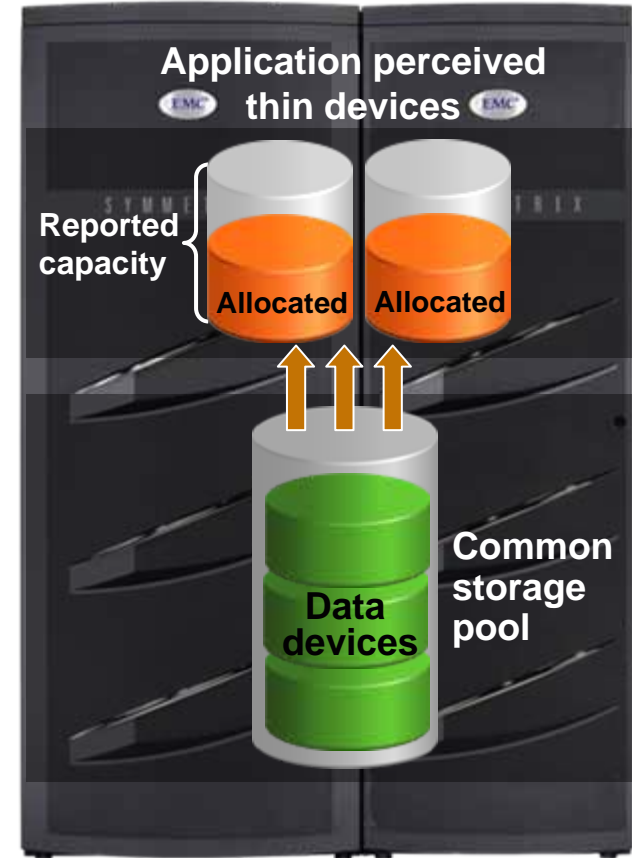


# Symmetrix Virtual Provisioning

## Available for Symmetrix DMX-3 and DMX-4

- Efficient Tiering
- Ease and speed of provisioning
  - Simplifies data layout and growth
- Comprehensive monitoring, reporting, and automation
- Support for Advanced Capabilities
  - Local & Remote Replication

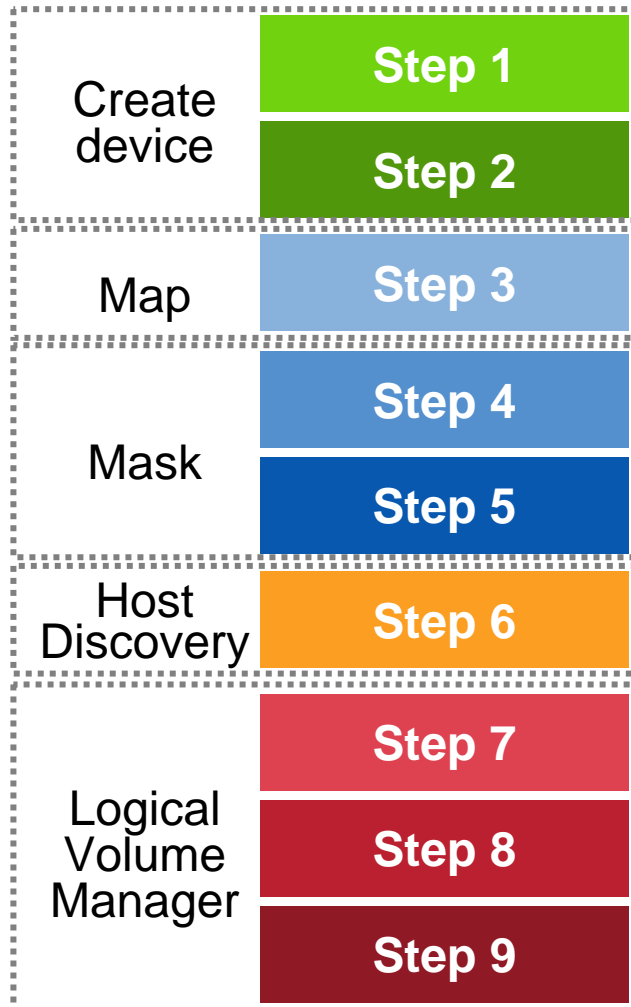
**Virtual Provisioning is a foundation feature enabling simplified array management and improved utilization**





# Ease of Symmetrix DMX Virtual Provisioning

## Growing with Traditional Symmetrix Provisioning



## \* Growing with Symmetrix Virtual Provisioning



\*Applies after setup, when host is presented with enough “virtual” capacity for application lifetime



# Virtual Provisioning Use Cases

## When to Use Virtual Provisioning

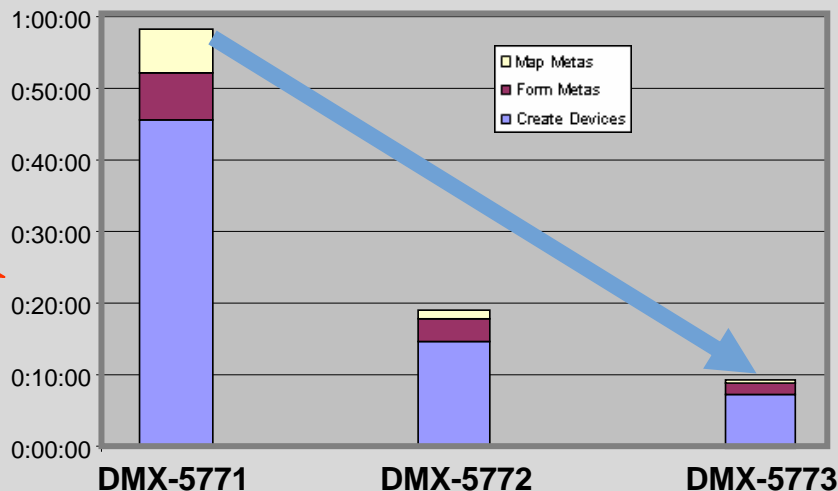
- “General purpose” performance requirements
- To simplify data layout
- To accommodate growth more easily
  - Best with predictable and controllable growth for application (s) bound to pool
  - Reduce steps to make more physical storage available to host
- To improve capacity utilization
  - Multiple applications share a pool
  - Depends on file system and database allocation methods
    - Might allocate space before using it
- Examples:
  - Document/media repositories
  - Test/development and QA

# Faster Storage Provisioning and Device Setup



**Over 6 X  
Faster  
Than 5771!**

**Time to Create & Allocate 1TB  
7 x 135GB LUNs**



Product	Number of Panels	Number of clicks	User active time	User Wait Time	Speed of Config
DMX-4 & 5773	13	19	<1 min	<10 min	<10 min
HDS USP-V	36	92	8 min	12 min	20 min

**Over 2 X  
Faster  
Than HDS**



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# Ease of Use

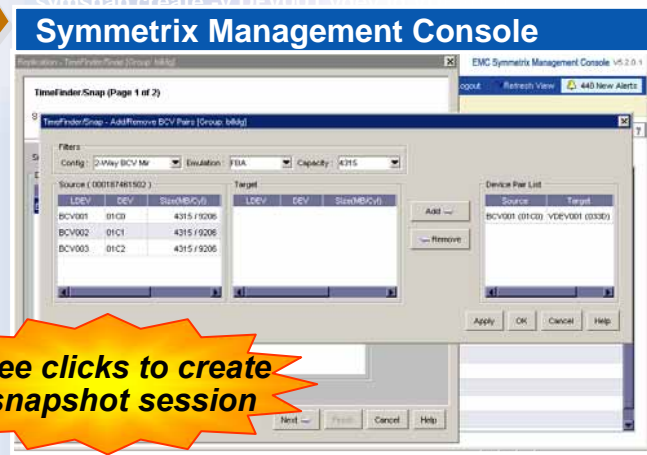
## Symmetrix Management Console

- Intuitive, browser-based GUI
  - Available free with CC Symmetrix Manager
  - Graphical interface for all major CLI commands
  - Minimal infrastructure required to run software
- Accelerates deployment and management of Symmetrix systems
  - Repeatable, easy-to-use templates
  - Fewer steps required to manage devices and replicas with Symmetrix Management Console
- Complements ControlCenter tools
- Support for CKD device management
  - Complements EzSM

```

CLI
symdev list
symdmg create 3vdevs - type regular
set SYMCLI_DG=3vdevs
symdmg add dev 76
symdmg addall dev -range 4F:51 - vdev
symdmg list
symdmg snapshot list
symdmg snapshot list -savedevs
symdmg snapshot create -v DEV001 vdev Id VDEV001 -
noprompt
symdmg snapshot activate -v DEV001 vdev Id VDEV001 -
noprompt
symdmg snapshot querysymdev list
symdmg create 3vdevs - type regular
set SYMCLI_DG=3vdevs
symdmg add dev 76
symdmg addall dev -range 4F:51 - vdev
symdmg list
symdmg snapshot list
symdmg snapshot list -savedevs
  
```

**21 Commands to set up and activate a TimeFinder/Snap snapshot session**



**Three clicks to create a snapshot session**

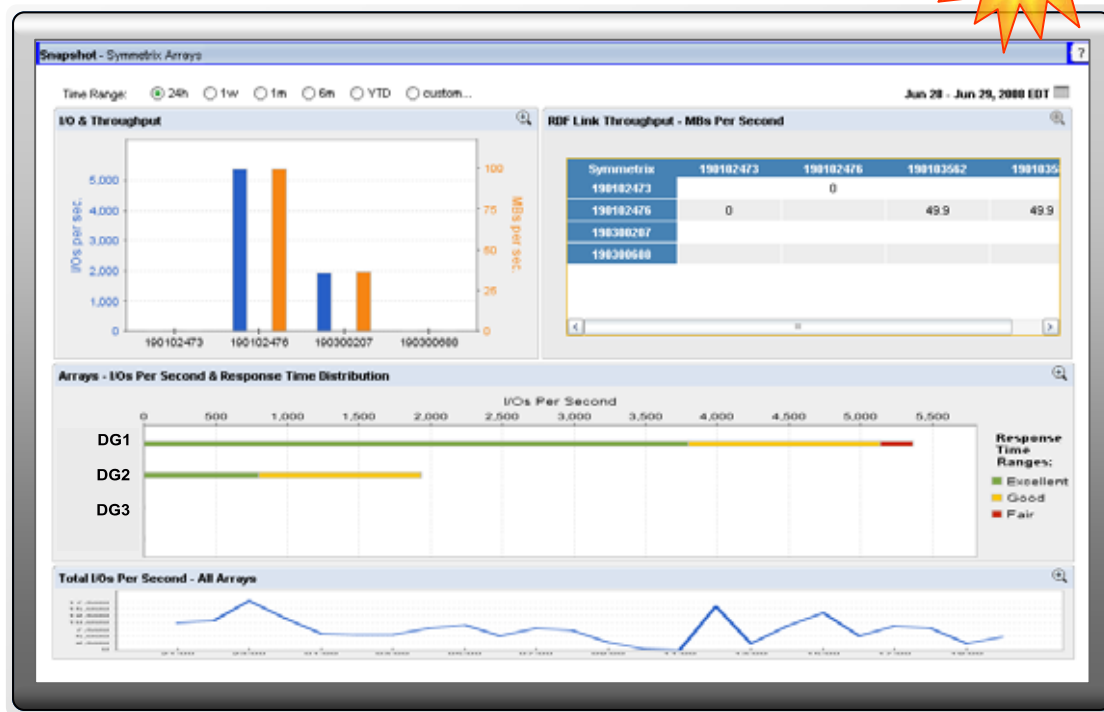
**Available at no cost to ControlCenter Symmetrix Manager customers on maintenance**



# EMC Symmetrix Performance Analyzer



- Simplify storage management
  - Intuitive, automated trending of Key Performance Indicators (KPIs)
  - Improve long-term planning for upgrades, consolidation, etc.
- Monitor Symmetrix operations at application (device group) level
  - Measure KPIs to characterize workloads and resource usage
- Reduce risks with SRDF/A configurations
  - Track cycle times, cache utilization, and link utilization
  - Anticipate and prevent bottlenecks
- Add new Symmetrix intelligence to SAN monitoring
  - Complement ControlCenter
  - Manage through Symmetrix Management Console





# Symmetrix DMX Security Foundation



## EMC Symmetrix

- **built secure**
- **deployed secure**
- **supported secure**

### Built Secure

- Administrator access controls
- Native IPSEC secures SRDF traffic from snooping
- Secure Audit Log provides comprehensive audit trail of management and service actions

### Deployed Secure

- PowerPath software encrypts data at rest
- Audit integration with RSA enVision

### Supported Secure

- EMC Certified Data Erasure for Symmetrix eliminates exposure to data theft
- Symmetrix Service Credential, Secured by RSA, prevents unauthorized service actions



Common Criteria



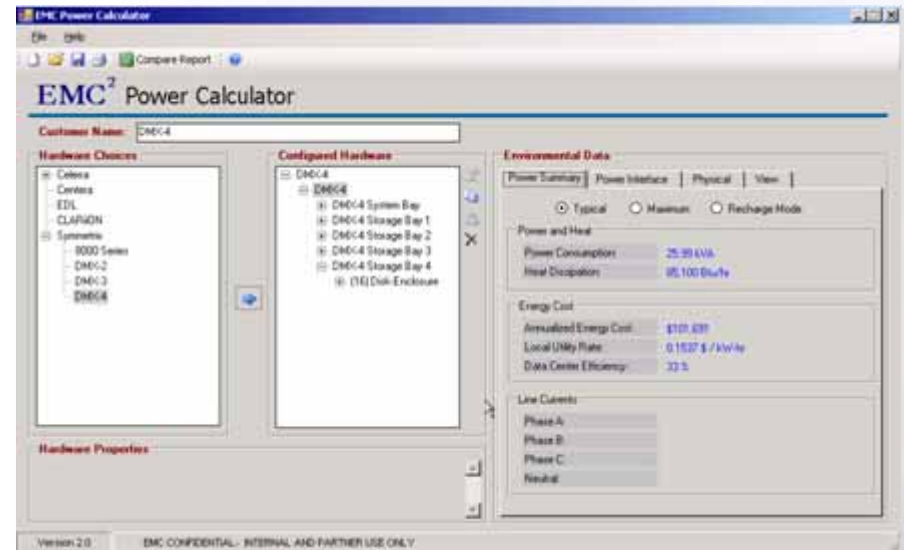
IPv6





# Energy Efficiency Capabilities

- Gain efficiencies with Enginuity 5773 to increase performance without increasing power consumption
- Expand tiered storage options with support for Flash drives and 1 TB SATA-II drives
- Get accurate energy requirements using the EMC Power Calculator

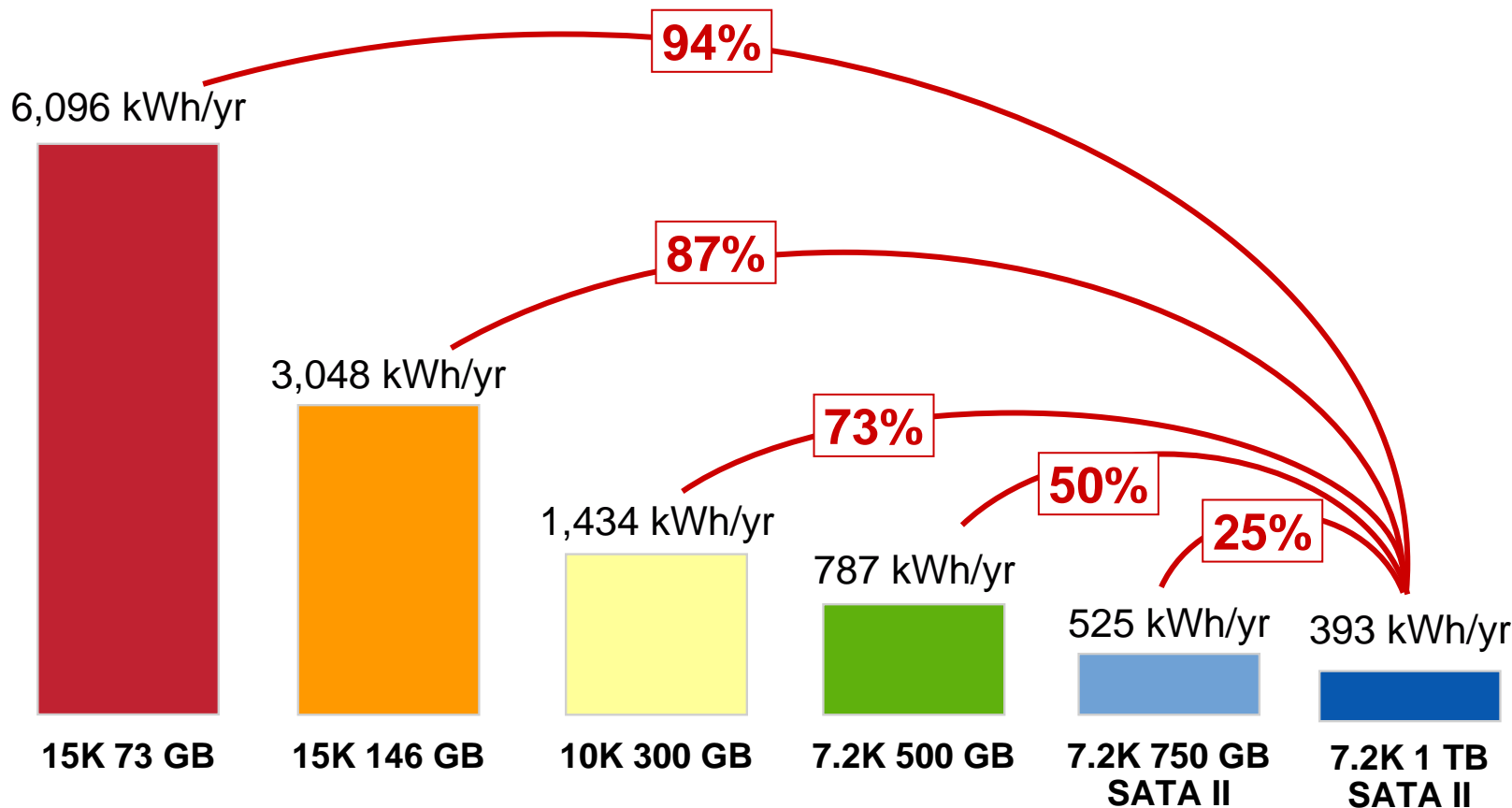




# Today: Energy-Efficient Storage Design

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1 TB Data on Different Capacity/Performance Drives



**High Capacity Disks Consume Less Energy**

# Symmetrix Capabilities: Application Integration



Double



<p><b>EMC &amp; Microsoft®</b></p>	<ul style="list-style-type: none"> <li>• Dedicated engineering team at Microsoft focuses on testing and documenting best practices.</li> <li>• \$20+ million EMC equipment installed at Microsoft, including the SQL Server and Exchange Labs.</li> <li>• EMC has a Microsoft Gold Certified Support Center.</li> </ul>
<p><b>EMC &amp; Oracle</b></p>	<ul style="list-style-type: none"> <li>• Dedicated EMC engineering team drives joint Oracle-based product testing and validation, API integration, and co-development of new technologies.</li> <li>• Oracle-based EMC team for design and delivery of EMC-based services for Oracle products</li> <li>• More than 30,000 of the world's largest mutual installations, including 90 of the Fortune 100.</li> </ul>
<p><b>EMC &amp; SAP®</b></p>	<ul style="list-style-type: none"> <li>• 20+ joint engineering projects focusing on optimizing performance, business continuity, and management for SAP environments</li> <li>• 4,000+ joint customers, including the largest, most complex SAP environments in the world</li> <li>• EMC is the only storage vendor with which SAP integrates at the API level.</li> </ul>
<p><b>EMC &amp; IBM</b></p>	<ul style="list-style-type: none"> <li>• EMC and IBM multi-year licensing agreement developed in 2003</li> <li>• Access to a range of storage interfaces and functionality to fully support IBM's server platforms to assure compatibility through access to future IBM technologies</li> <li>• Cooperative Support Agreement for server platforms, operating systems, application, databases, and storage</li> </ul>



# EMC Symmetrix Value Proposition with VMware



- Consolidation and ILM for VMware Stored Data with Symmetrix DMX
  - Non-disruptive, transparent movement of data between tiers
  - Provides common management layer across all VMware resources
  - Single processes for each activity consistently applied across VMware stored data
- Symmetrix DMX Business Continuity and Disaster Restart
  - SRDF remote replication of business and mission critical data
  - TimeFinder local replication for point-in-time operations
  - Open Replicator for data vaulting and/or data migration
- VMware Site Recovery Manager with SRDF
  - Integrates VI3 with SRDF/S and SRDF/A for simplified DR
  - Automates storage mgmt activities for SRDF resulting in reduced RTO
  - Automated set-up with TimeFinder for non-disruptive DR testing
- E-Lab Proven
  - Significant investment in ensuring DMX interoperability with ESX Server 3.x





# EMC and IBM for Mainframe Support



## IBM/EMC Mainframe Relationship

- IBM/EMC Partnership for Mainframe
- License key technologies extended through 2011 with support through 2015
- EMC member of IBM zSeries Early Ship Program (ESP)
- IBM member of EMC Symmetrix Phased Production Release (PPR)
- First vendor GDPS lab (EMC)

### EMC News Release

#### EMC and IBM Extend Interoperability with Licensing Agreement for IBM System Z Storage Interfaces

EMC Corporation (NYSE: EMC) today announced the extension of a licensing agreement with IBM Corporation that will enable customers to continue to install and utilize EMC and IBM products in their heterogeneous IBM System z environments.

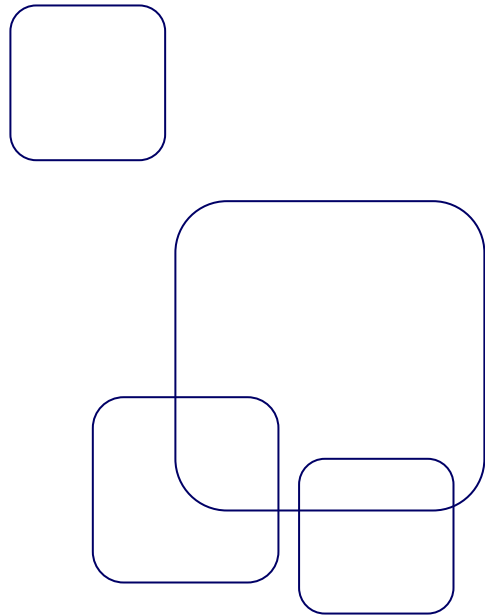
The multi-year agreement facilitates interoperability of EMC® Symmetrix® DMX storage systems with IBM Peer-to-Peer Remote Copy and Extended Remote Copy (XRC) functions. The licensing agreement also covers additional IBM interfaces, including Flash Copy, Multiple Allegiance, Parallel Access Volume (PAV), and HyperPAV, which will be

**IBM z10  
Qualified &  
Supported**

## z/OS Compatibility Features

- **Compatible HyperPAV**
- **Compatible Native Flash for mainframe**





***תודה רבה !***

**EMC<sup>2</sup>**<sup>®</sup>

**where information lives<sup>®</sup>**