

כנס הטכנולוגיות השנתי לניהול חידע

Make IT Double



יום ג', 25.11.08
Avenue, Airport City

EMC Platforms Innovations 2008

Flash , De-Dup, Green , Cloud and more....

Erez Etzyon
SMB & Commercaill Presale Manager



Last Year we Talked About...

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- Thin Provisioning
- De-duplication
- VMware Affinity
- Storage Tiering
- Energy Efficiency
- Information Security
- Consumer Storage
- Cloud Computing



And We Delivered....



- ✓ Thin Provisioning – Available Across All Storage Platforms
- ✓ De-duplication – DL3D 1500 & 3000, DL3D 4000
- ✓ VMware Affinity – SRM support, VDI Solutions, Avamar Virtual Ed.
- ✓ Storage Tiering – Flash Drives, 1TB SATA Disks
- ✓ Energy Efficiency – Spin Down, Adaptive Cooling, LP SATA
- ✓ Information Security – PowerPath Encryption, enVision Integration
- ✓ Consumer Storage – EMC LifeLine, Mozy, Iomega
- ✓ Cloud Computing – EMC Atmos



2008 Hot Topics

1. Flash Drives
2. Unified Storage
3. Data De-duplication
4. CLARiiON CX4 & Green Storage
5. Cloud Computing



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Hot Topic 1: Flash Drives



Flash Drives for Tier “0”

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EMC Delivers Ultra Performance via Enterprise-Class Flash Drives

“Most likely this will create a giant gap against IBM & Hitachi.”

*-- ESG Analyst Steve Duplessie
Wall Street Journal, January 2008*

“EMC Lands a Haymaker... shocked the storage world and ushered in new era .”

*-- Nicholas Allen
Wikibon*

“EMC ushers in new era...adds 'tier 0' storage to Symmetrix”

*-- Simon Robinson
the 451 Group*

“Today the enterprise disk drive market changed forever.”

*-- Techworld
January 2008*

CLARiiON CX4

Symmetrix DMX-4



**High Performance
and
High Utilization**

More than 30x IOPS per Drive

10x Faster Response Time

38% less energy per TB

98% less energy per IOP

58% less weight per TB

Reliability - no moving parts





EMC's Flash Drive Strategy: Flash Drive Support Across All Platforms



Symmetrix DMX-4

Available

Flash
Drives

CLARiiON CX4

Available

Flash
Drives

Celerra NS

Available
DMX-4-Now, CX4-Q1-09
NS Integrated: Q1-09

Flash
Drives

Industry's Only Platform Family with End to End Flash Drive Support



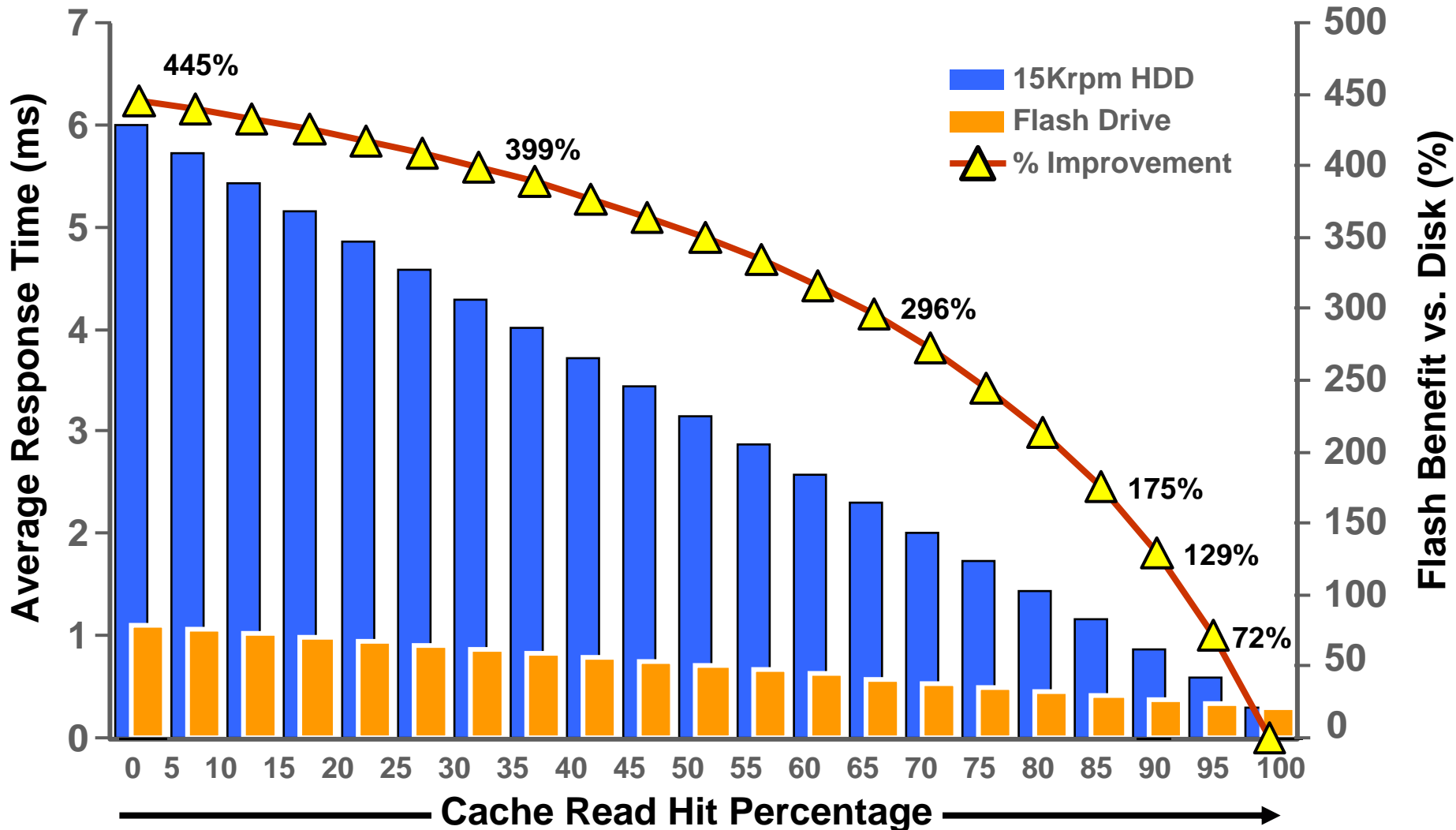
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EFD Response Time Benefits

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Measurable Improvements Even in High Read Hit Scenarios





Flash Drive Status

- Wide customer adoption across all major geographies
- Over 1 million run hours – reliability test + field
- All major application vendors now have flash drives

8 Industry Verticals

- Technology
- BFSI
- Retail
- Government
- TELCO
- Automotive
- Healthcare
- Transportation

Common Applications

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



Identifying Opportunities for EFD Oracle Automatic Workload Repository (AWR)



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Symmetrix DMX-4
32 X 15K FC Disks



AWR Report Analysis

Oracle 10g – ASM - Linux

Event	Wait	Time(s)	Ave Wait (ms)	% Total Call Time	Wait Class
db file sequential read	546,872	6,764	12	96.6	User I/O
CPU time		263		3.8	
library cache pin	44	16	366	.2	Concurrency
SGA: Allocation forcing component growth	1,118	12	11	.2	Other
SQL *Net more data to client	1,347	2	2	.0	System I/O



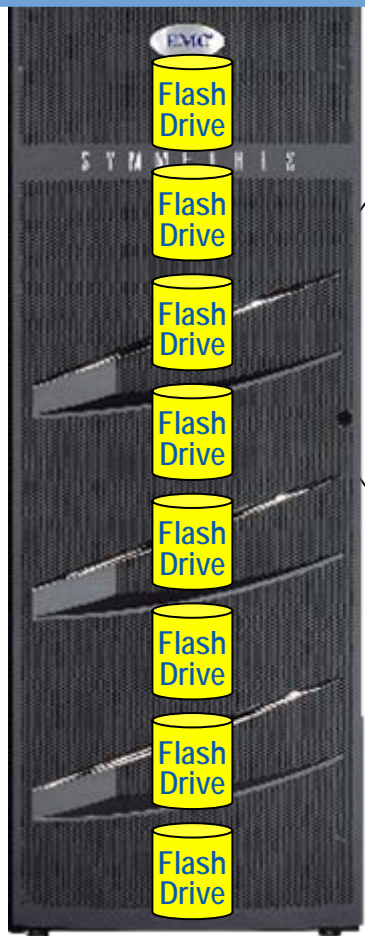
Top wait event (96.6%) is random reads with 12 ms response time



Identifying Opportunities for EFD Oracle Automatic Workload Repository (AWR)



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Symmetrix DMX-4
8 x Flash Drives



AWR Report Analysis

Oracle 10g – ASM - Linux

Event	Wait	Time(s)	Ave Wait (ms)	% Total Call Time	Wait Class
db file sequential read	11,746,145	16,681	1	83.8	User I/O
CPU time		5,283		26.5	
library cache pin	408	283	694	1.4	Concurrency
SGA: Allocation forcing component growth	4,495	49	11	.2	Other
SQL *Net more data to client	714,421	39	0	.2	Network

**Flash Drives Reduce
Response Time to 1ms**

TCO Calculator

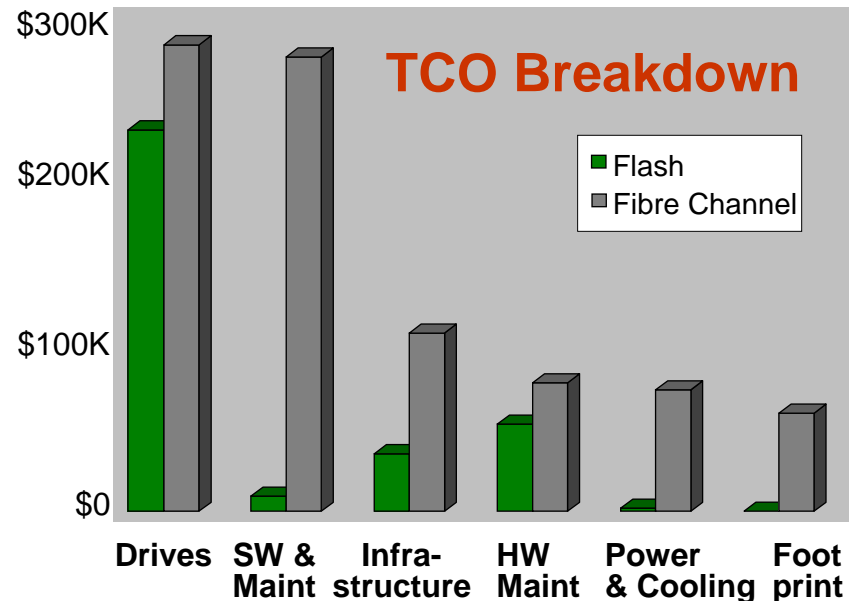
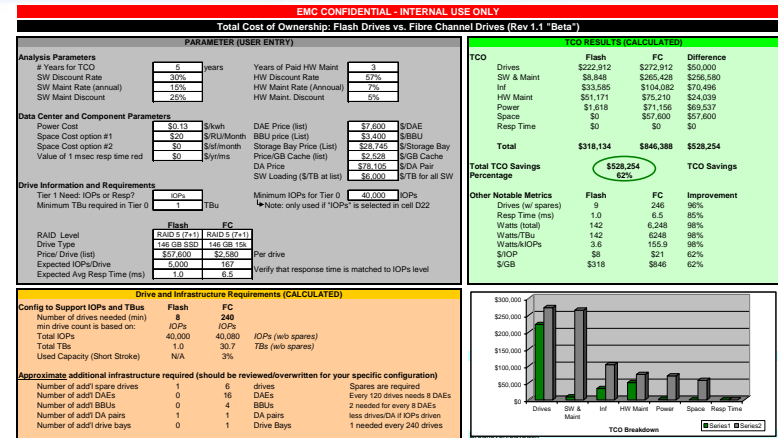
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Flash Drive TCO Calculator Helps Quantify Business Value

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

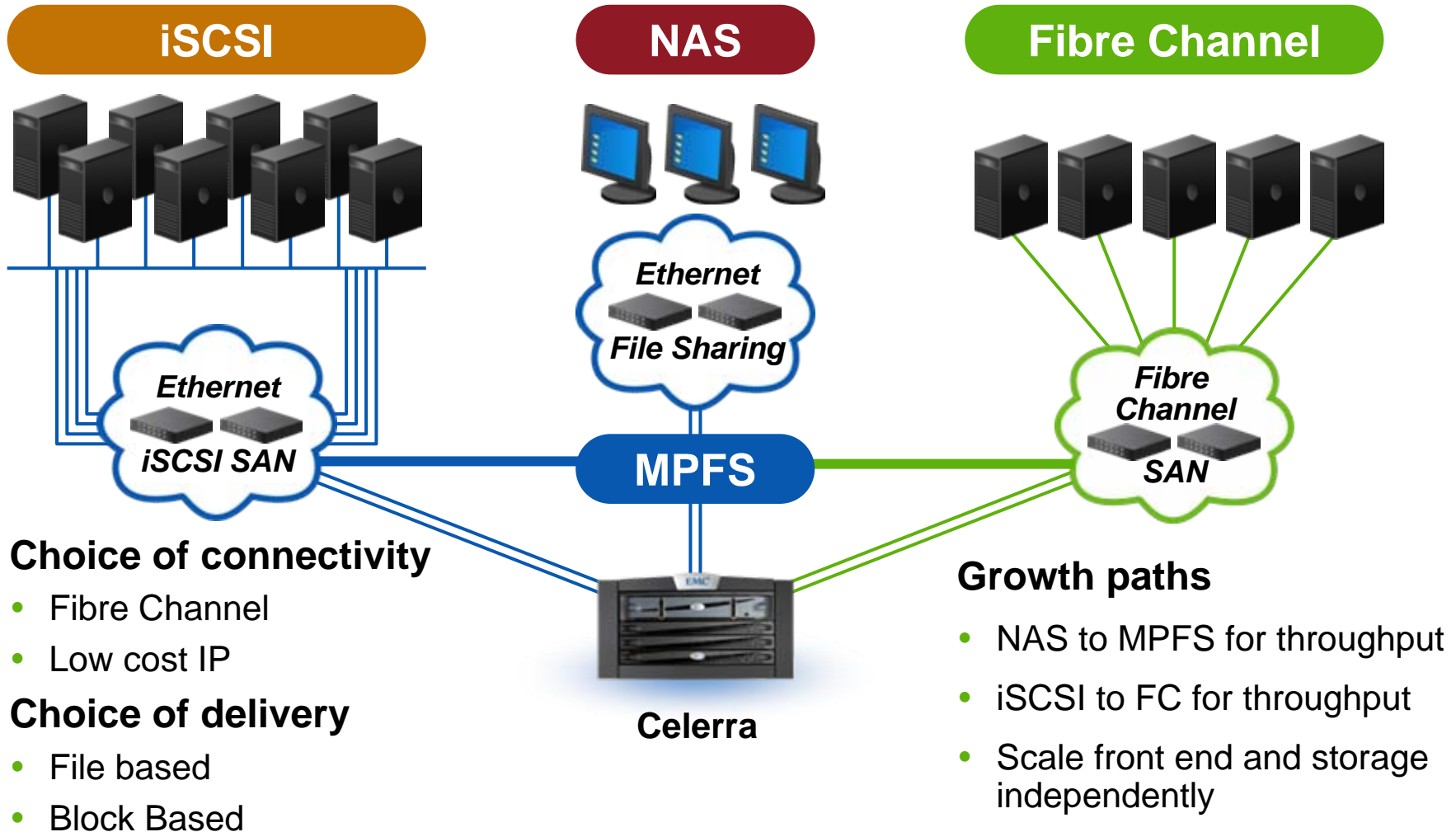




Hot Topic 2: Unified Storage



Celerra Unified Storage





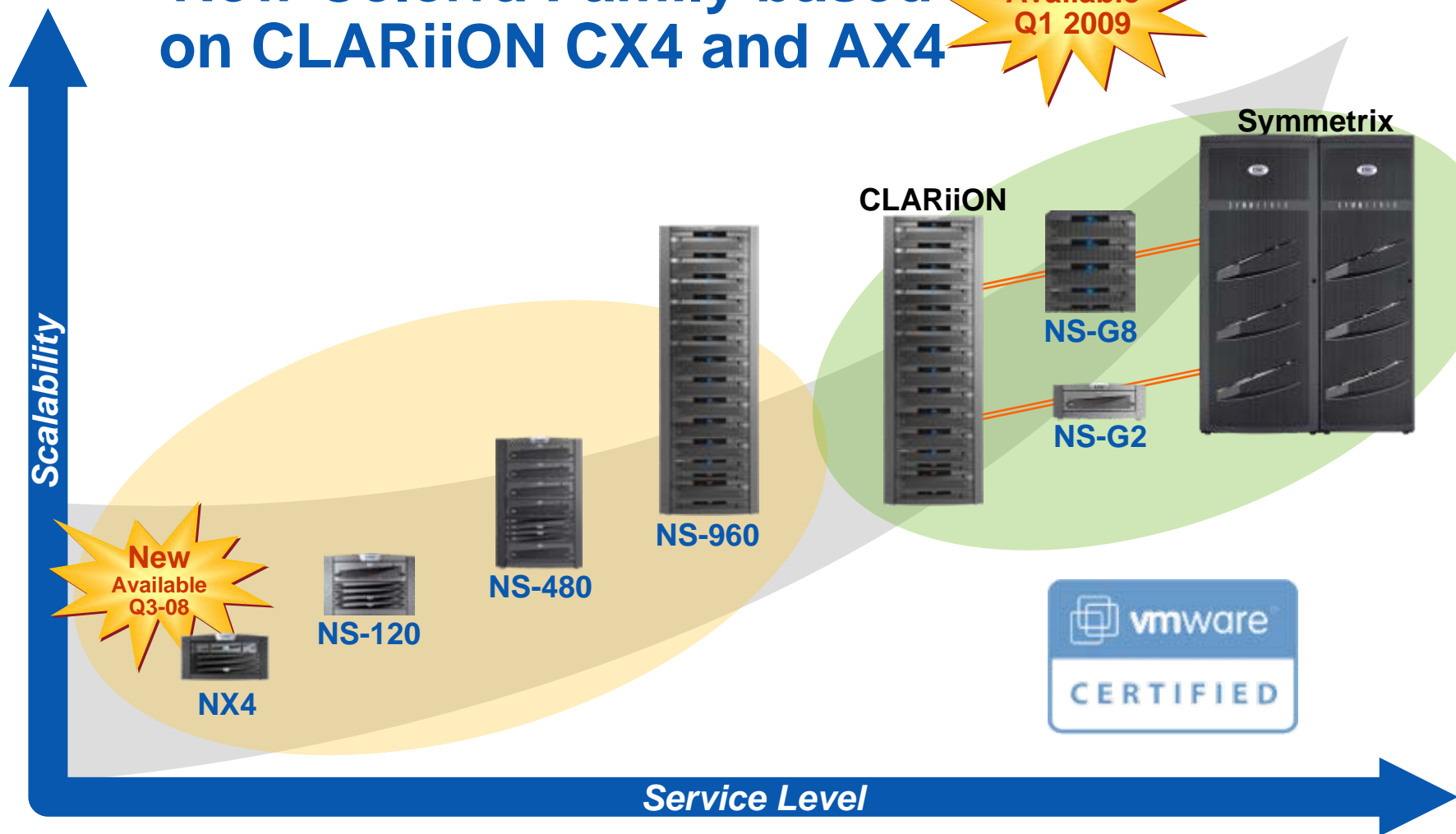
Next Gen Celerra Unified Storage

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New Celerra Family based on CLARiION CX4 and AX4

Available
Q1 2009





New Celerra NX4 Entry Level Unified Storage



“I hate to say it, but congratulations to EMC on the NX4. Some things are hard to say, but I think EMC did a nice job with their mini-fashionable NX4. Small business customers are likely to agree”

Marc Farley, 3Par

“NX4 is positioned against NetApp's FAS2020 but offers better raw NFS performance, better price performance, and better TCO over a 3-year timeframe”

Analyst, Silverton Consulting, Inc



- Integrated CLARiiON AX4 backend
- Multi-protocol - NAS, iSCSI, & FC connectivity
- SAS and SATA disk configurations available

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Coming in Q1-2009

Built in de-duplication of primary filesystems

Based on Integration of Key EMC Technologies

- De-duplication uses Avamar
- Compression uses RecoverPoint

....De-duplicate



....Compress



It's all about Storage Efficiency **EMC²** where information lives[®] **vmware[®]**

It's not a discussion of block versus variable block or compression, it's about how much can we decrease your storage needs

Store more data in less space = Saves Customers Money

**EMC Design Goal:
Deliver maximum storage efficiency**

Using De-dupe to Increase Storage Efficiency

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Our Initial Target: Traditional File Share Environments (office files, home directories, etc.)

Technology	“Typical” savings	Resource footprint
File Level Dedupe	10%	Low
Fixed block dedupe	20%	High
Variable block dedupe	28%	High
Compression	40% - 50%	Medium

File de-dupe +compression = best “bang for the buck”

- Allows an average of 30-40% storage savings
- Maintains a reasonable resource cost because we intelligently target the best candidates



Hot Topic 3: Data De-duplication



EMC's Broadest De-dupe Portfolio in the Industry



Use Case

EMC Offering

Primary Storage



Celerra De-duplication for File Systems

Remote office backup

Avamar: Global source de-duplication

VMware backup

Avamar: Global source de-duplication

Bandwidth constrained backup

Avamar: Global source de-duplication

LAN backup to disk

Disk Library DL3D 1500 and DL3D 3000

SAN backup to virtual tape

Disk Library 3D 4000 option for DL4000 series

Consolidated management

NetWorker with Avamar and/or Disk Library

File and e-mail archive

DiskXtender & OneSource: Single instance

Active archive

EMC Centera : Single instance storage

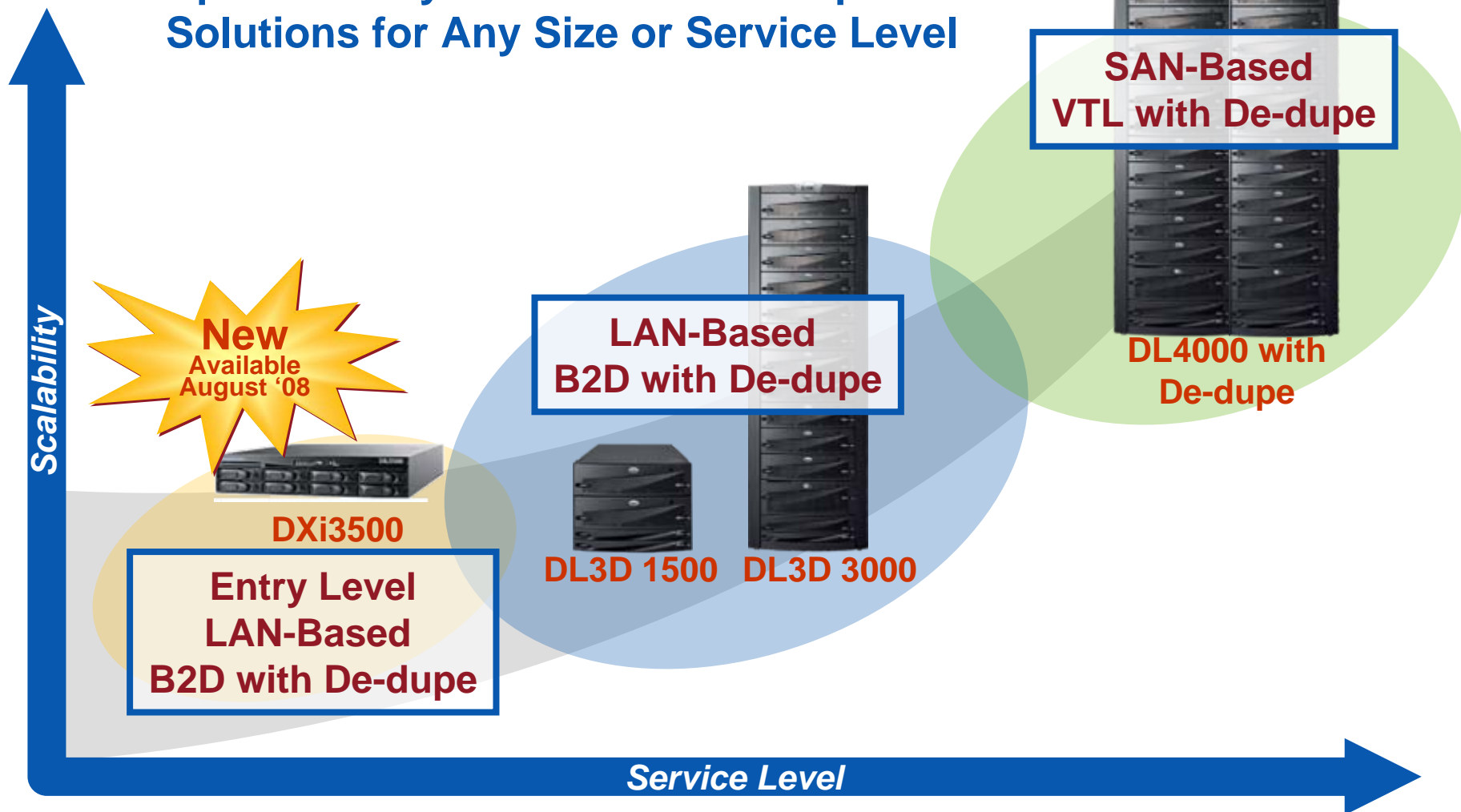


EMC Disk Library Based Data De-duplication

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Complete Family of DL-based De-duplication Solutions for Any Size or Service Level





Hot Topic 4:

CLARiiON CX4

Green Storage



CLARiiON CX4

Next Generation Innovation for the Mid-Tier



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Virtual Provisioning
Increased utilization
and easy provisioning

New Energy Efficiency
Spin-Down, Low Power SATA
and Adaptive Cooling

Flash Drives
Tier "0" storage
with more than 30x IOPS

UltraFlex™ Technology
Dual protocol, Hot
pluggable, Future-ready

64 bit FLARE + Multi-core
Up to 2x Performance & Scale



Continuous Local & Remote CDP Replication
RecoverPoint integration
to simplify deployments

Optimized for All Virtual Environments
Integration and Advanced
Capabilities

New Security Capabilities
enVision integration,
PowerPath encryption
IPv6 support

CLARiiON CX4
Next Generation Architecture

CLARiiON CX4

Next Generation Innovation for
the Mid Tier



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Market Reaction to the CLARiiON CX4 Product Launch

“EMC's CLARiiON Has Everything But the Kitchen Sink” - CRN US

“Clariion Refresh Could Trigger New SAN Trend” - InternetNews.com

“EMC introduces massive VMware support in new CX4” - Virtualization.Info

“Clariion's got it MAID” - SearchStorage

EMC to lock on the mid-range storage market with CX4 series - IT DAILY - Korea

EMC CX4 Redefines the Paradigm of Midrange Storage - IDEAS Insight Australia



“Unlike other 'upgrades' from competitors whom simply dropped a bigger engine in the same chassis, the CX4 represents a well thought out design with great consideration for the channel and end-user”

Benjamin Woo, an analyst at IDC

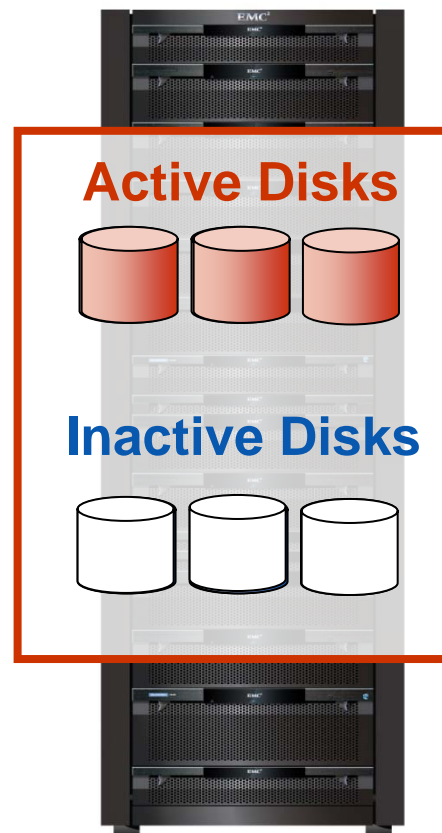




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Consume Less Power and Cooling Resources

- Flash drive technology
 - 98 percent better efficiency per IO compared to 15K Fibre Channel disks
- Low power SATA II drives
 - Consume 32 percent less energy compared to 7.2K SATA drives
- Policy-based drive Spin Down
 - Reduce energy for inactive drives while maintaining online access
- Adaptive Cooling
 - Dynamically adjust cooling based on system activity



The Only Mainstream Storage Array with Support for Policy Based Spin Down



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Hot Topic 5: Cloud Computing

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EMC Unveils EMC Atmos



There are new market requirements..EMC²  vmware[®]
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- Unstructured content
- Multi-petabyte
- Global-scale
- Managed as a single entity
- Extensible
- Low cost hardware





Nothing Seems to Fit

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**Atmos is a multi-petabyte platform
for content storage and global
distribution**



Introducing EMC Atmos



- What is it?
 - A global platform for information storage and distribution
- Business Benefit
 - Efficiently deliver content and information services whenever and wherever needed
- Target markets
 - Telcos/Service providers
 - New-media
 - Web 2.0 application providers
- Top 5 Features
 - Massively scalable
 - Policy-based information management
 - Object meta-data
 - All-in-one data services
 - Flexible access mechanisms



EMC Atmos Differentiated Approach

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Scalability

- Multi-petabyte scale
- Globally distributed
- Unified namespace



Policy-based Management

Information

- Meta-data and policy
- Where to go and what to do
- *Set-it and forget it*



All-in-one data services

- Replication, Compression, de-duplication, versioning, spin-down
- REST / SOAP
- Legacy file access



Operational Efficiency

- Auto-config, healing and managing
- Standard hardware
- Multi-tenancy



Managing at Global Scale - A New Approach

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Disperse Copies Address Geographic Performance and Reliability

By Maintaining:

1 Copy



2 Copies



N Copies



...



N



- Susceptible to failures of the system, site, and network connectivity
- May not meet required performance because limits of device and or location of access
- Improves resilience to failures of the system, site, and network connectivity
- Potentially improves performance of remote access
- Greatly improves resilience to failures of the system, site, and network connectivity
- Greatly improves performance of remote access



Two Choices of Hardware



Capacity Configuration

- 1:60 Server-to-drive ratio
- 360 TB total capacity
- GbE or 10GbE connectivity

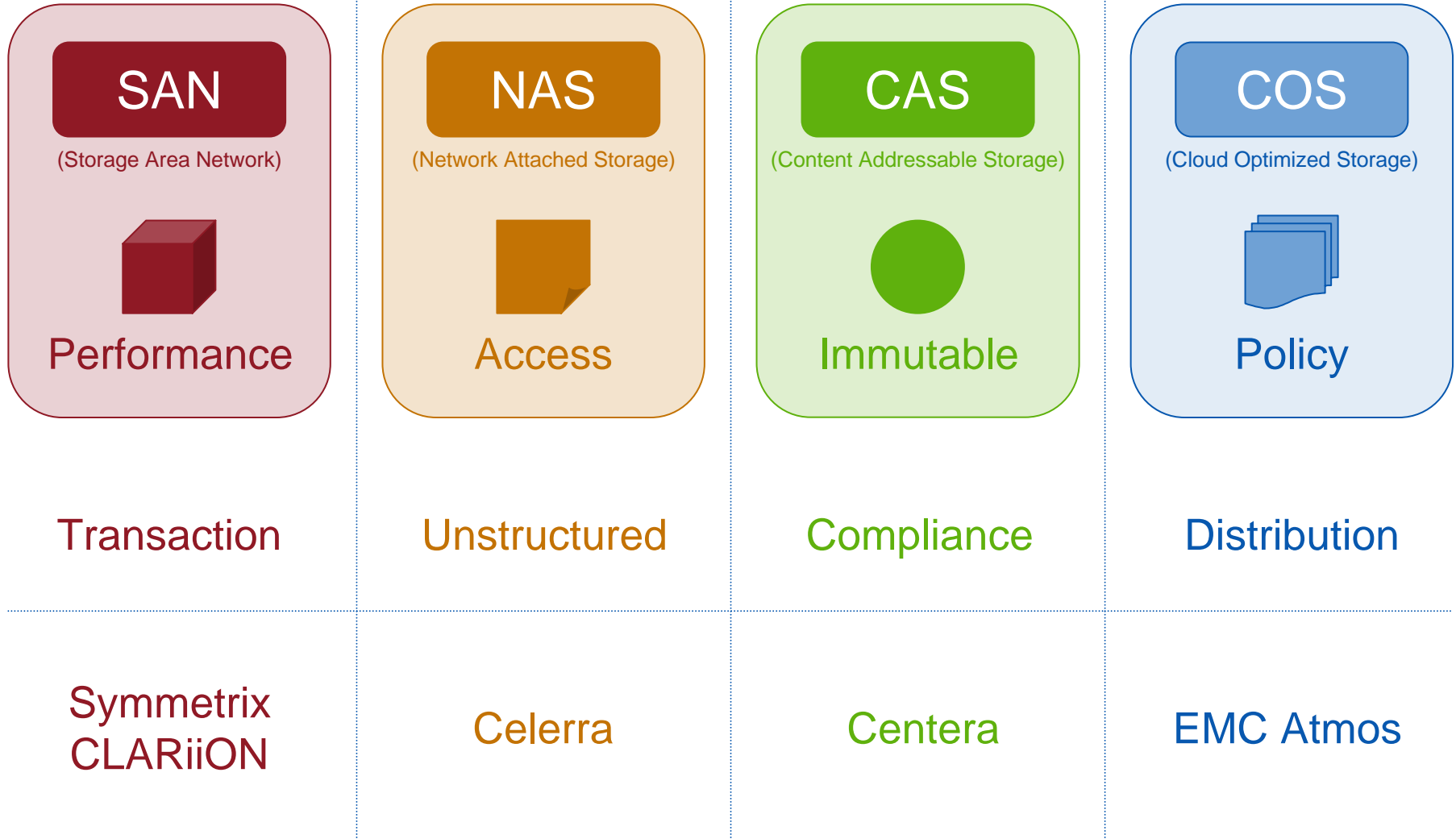


Compute Configuration

- 1:15 Server-to-drive ratio
- 240 TB total capacity
- GbE or 10GbE connectivity



A New Category of Storage





EMC Cloud Division

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Cloud Division

Cloud Infrastructure Group



MaaS Product
Cloud Optimized Storage

MaaS Project
Storage as a Service

CaaS Project
Compute as a Service

Services



Mozy
On-line backup

piWorx



Summary

- A global platform for information storage and distribution
- Scale, policy-based information management, operational efficiency
- Media & Entertainment, Telco, “Web 2.0”

A scenic landscape featuring a paved road with white lane markings that curves through a green, rolling countryside. In the distance, there are hills, a stone wall, and a few buildings. The sky is a vibrant blue with large, fluffy white clouds. A large, stylized white world map is superimposed on the sky, centered over the horizon. The text "EMC's Internet-delivered storage and compute services" is overlaid in the center of the image in a bold, white, sans-serif font.

EMC's
Internet-delivered storage and
compute services

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