SIMPLE AND EFFICIENT STORAGE FOR IT PRODUCTION LEVERAGING EMC’s UNIFIED PLATFORMS

EMC Forum Series 2010
The Journey to The Private Cloud

IT PRODUCTION
- Percent Virtualized
- Lower costs

BUSINESS PRODUCTION
- Improve quality of service

IT-AS-A-SERVICE
- Improve agility
- Run IT as a Business
- 95%
- 85%
- 50%
- 30%
- 15%

Virtualized

Lower costs

Improve quality of service

Improve agility

Gold
Platinum
The Journey to The Private Cloud

Simple & Efficient

Development, Test, and IT-Owned Applications

- Lower costs
- Improve quality of service
- Improve agility

Percent Virtualized
15%
30%
85%

IT PRODUCTION

EMC CONFIDENTIAL—INTERNAL USE ONLY
EMC Unified Storage

- Multi-protocol
- Flash and SATA
- FAST
- Virtual Provisioning
- Deduplication
- Compression
- Spin Down
- Five-9’s reliability
- Self serviceable

EMC’s Fastest Growing Storage Platform
EMC Unified Storage

EMC UNIFIED STORAGE IS 20% MORE EFFICIENT. GUARANTEED.
20% More Storage Efficiency Out of the Box

EMC Unified vs. "Other"

RAID Parity
File Sys Format
Snapshot Reserve
Core Dump Reserve
System Reserve
Usable Capacity

Capacities based on documented out-of-the-box best practices for setup.
20% More Storage Efficiency Out of the Box

Guarantee:
At least 20% More Efficiency
or EMC will make up the difference at no additional cost

Capacities based on documented out-of-the-box best practices for setup.
20% More Storage Efficiency Out of the Box

* Disclaimers: NONE

Capacities based on documented out-of-the-box best practices for setup.
20% More Storage Efficiency Out of the Box

Access the capacity calculator at emc.com
Any Protocol

- iSCSI
- NAS
- Fibre Channel & FCoE

Ethernet
iSCSI SAN
CIFS & NFS
FC/FCoE SAN
UltraFlex

- Flexibility to mix Fibre Channel and iSCSI
- Online expansion via hot pluggable IO modules
- Upgrade to support future I/O technologies

Designed for flexibility and future expansion
Flash Drives

+30x IOPS improvement
10x faster response time
38% less power per drive
98% less power per IO
58% less weight per TB
Better availability & reliability
Flash Drives and ROI

Oracle Database

35% More Transactions/Minute
300%+ More IOPS
25% Lower Response Time
96% Fewer Disk Drives
73% Lower Storage Costs
Energy Efficiency

- Policy-based drive Spin Down
  - Reduce energy for inactive drives
- 2TB Low-power SATA drives
  - 32 percent less energy versus SATA drives
- Adaptive Cooling
  - Dynamic cooling based on activity
- Enterprise Flash drive technology
  - 98 percent better energy efficiency per I/O
- High Density Packaging Option
  - 2X the capacity in ½ the footprint
High Density Configs

Twice the Capacity with Half the Foot Print

- New packaging offers up to 390 SATA Disks in a single rack
- Available for all NSG-2 & 8, CX4 480 & 960 models
- No change to system model maximum drive counts
- Includes supports for 1TB & 2TB LP SATA drives

Standard CX-4 960 with 1TB SATA

- 6 Frames = 945 TB

Dense CX4-960 with 2TB SATA

- 3 Frames = 1,890 TB
Data Deduplication

- Built in deduplication of primary filesystems
- Up to 50% storage savings for typical unstructured file share datasets

Based on integration of key EMC technologies:
Avamar deduplication + RecoverPoint compression
Data Deduplication

- **Dedupe Enhancements**
  - Large file & active file deduplication
  - Compression-aware NDMP backups
  - Tunable deduplication by filesystem
  - File level compression for CIFS

- **New VMware dedupe support**
  - Adds support for deduplication and compression of VMDK images

- **vCenter integration**
  - New plug-in enables VMware File-level snaps and clones
  - Provides more granular replication and recovery
New Capabilities: Simple & Efficient

**Unisphere Manager**
Simple, unified control point for block and file data types

**Virtual Storage Integrator**
View, provision, manage storage services via vSphere

**vSphere VAAI-Ready**
VMware integration to accelerate storage operations

**Sub-LUN FAST**
Policy based data movement across tiers based on activity

**FASTCache**
Flash Drives as cache to improve array response time

**LUN Compression**
Space efficiency feature for both block and file data

Available Q3-10 for CX4 and NS Series
Unisphere: Simple, Unified Management

- Common experience for SAN and NAS
- Single sign-on for multiple arrays
- Built in access to support community
- Supports CLARiiON CX4 & Celerra NS

No Charge Upgrade
EMC Virtual Storage Integrator

Integrated point of control to improve storage efficiency

vCenter
- Create file system
- Enlarge file system
- FullClone
- FastClone
- Deduplicate VMs
- Compress VMs

Now Available on Powerlink
VMware Array API Integration (VAAI) Ready

- **Write Same/Zero**
  10x less IO for common tasks

- **Hardware Offloaded Locking**
  10x more VMs per datastore

- **Thin Provisioning Stun**
  Avoid “out-of-space” issues

- **Fast/Full Copy**
  10x faster VM deployment, clone, snapshot, and Storage VMotion
Sub LUN FAST and FASTCache

Efficient & Granular Sub LUN Tiering

Automated policies for performance and/or cost optimization

Extend Array Cache via Flash Drives

Increase cache efficiency for large capacity arrays to optimize response time
FAST: Efficiency Made Simple

Before
- 90 Drives
- 54 TBs
- 19,000 TPM
- 100% FC HDD

After
- 65 Drives
- 54 TBs
- 20,000 TPM
- 2% EFD
- 33% FC
- 65% SATA

- Similar performance
- Similar capacity
- Less power
- Less footprint

15% Lower Cost
Fully Automated
The FAST Cache Effect

2X more users
2X more transactions

Baseline: 25,000 TPS, 1,228 Users
w/ FAST Cache: 50,000 TPS, 2,445 Users
Increased Space Efficiency via Compression

LUNs within a Pool  Reclaimed Capacity

Compression

50% (Data type dependent)

User enabled or disabled at the LUN Level

Minimal overhead – Compression run in background

Application independent – supports all data types
Putting it All Together

FAST

+ FAST Cache

+ Compression

More performance for lower cost
FAST for File-based and Unstructured Data

Flash + SATA
FAST
Virtual Provisioning
Deduplication
Compression
Cloud Federation

Store More with Less

Public Cloud
File Archiving – FAST with FMA and Atmos

FAST integration with cloud storage

Automated file tiering via policy with transparent application and user access

New operational model to deliver storage services via internal or external providers
Use Cases for EMC Atmos Cloud Storage

Content-rich Web Apps
- App integration in a week through Web services
- Solves global content access challenges
- Gives developers control and IT easier management

Infrastructure-as-a-Service
- Scales to multiple PBs elastically
- Makes protection and distribution easy
- Supports multiple tenants natively

Archiving to the Cloud
- Makes protection across sites easy
- Extends to Atmos-based clouds
- Can separate archives into isolated tenants
EMC Atmos Family

**Atmos Platform**
- Software with integrated server and storage
- Factory configured, racked & cabled
- Flexible, service model with user-serviceable

**Atmos Software**
- Open solution for policy-driven object storage
- Support for industry standard HW platforms
- Easy integration (~1 week, 1 engineer)

**Atmos Virtual Ed.**
- Runs on VMware ESX and starts at 10TB
- Supports third party servers and storage
- Certified with EMC Arrays (NFS and FC)
The Journey to The Private Cloud

15% or more savings with enhanced FAST
2x performance with FAST Cache
50% capacity reduction with compression
Single pane of glass management
Industry’s best VMware integration

Get Started Now
Getting Started with the Help of EMC Education

Featured EMC Education & Certification Courses

• Celerra Unified Storage Implementation and Management
• VMware vSphere integration with CLARiiON, Celerra, and Symmetrix
• Cloud Computing Foundations via e-Learning

Why Users Invest in EMC Training and Certification

• 45% demonstrate increased competence and expertise
• 26% increased credibility & respect from peers & managers
• 29% play a more strategic role in their team and organization
• 85% exploit more EMC product features and functions

Source: Voice of the Customer (Q3-09); 30/60 day customer feedback; EMC Proven Survey w/IDC Dec’09

Learn more ➔ http://education.EMC.com
THANK YOU