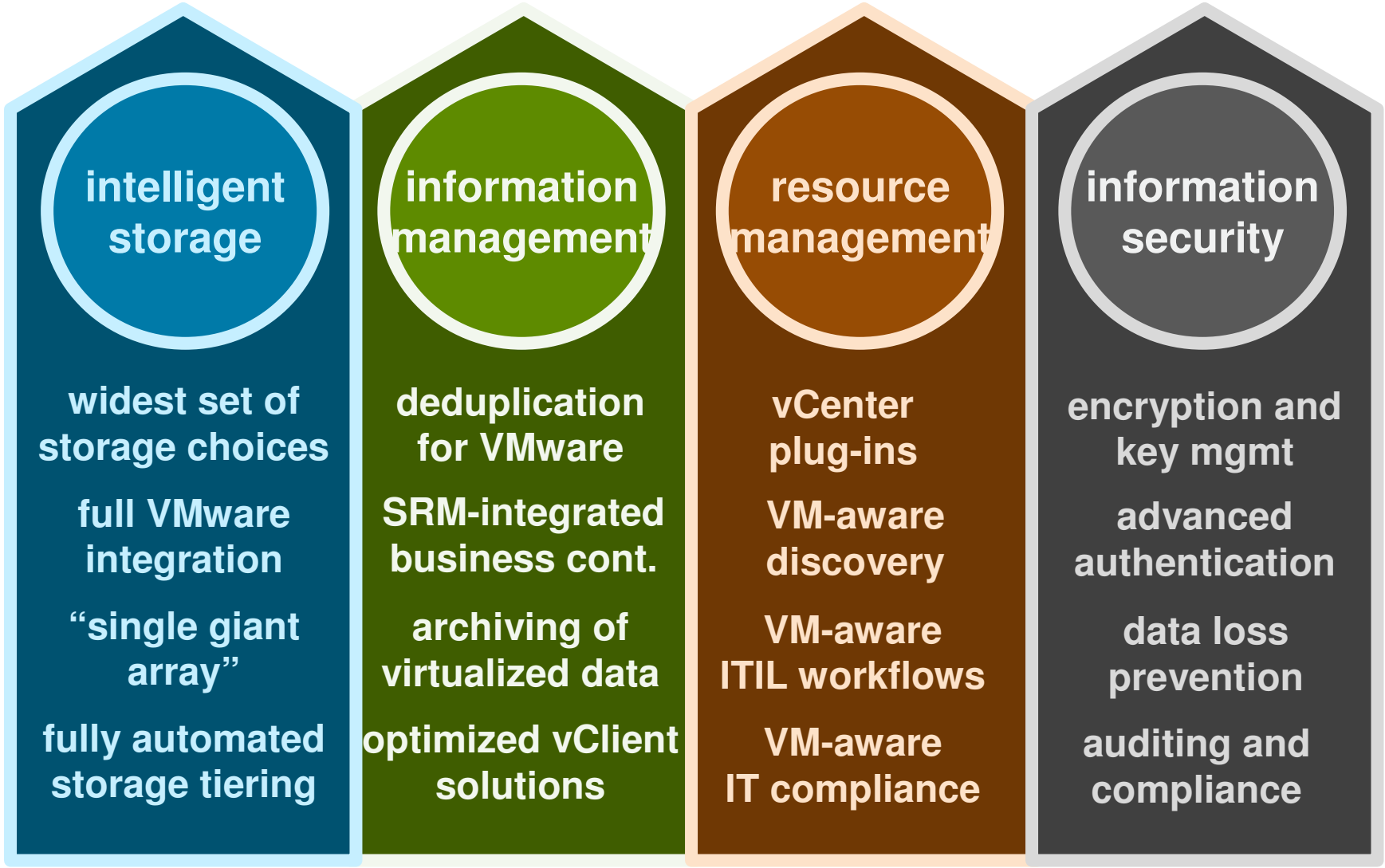
Virtualization in storage infrastructure

Virtualization^3

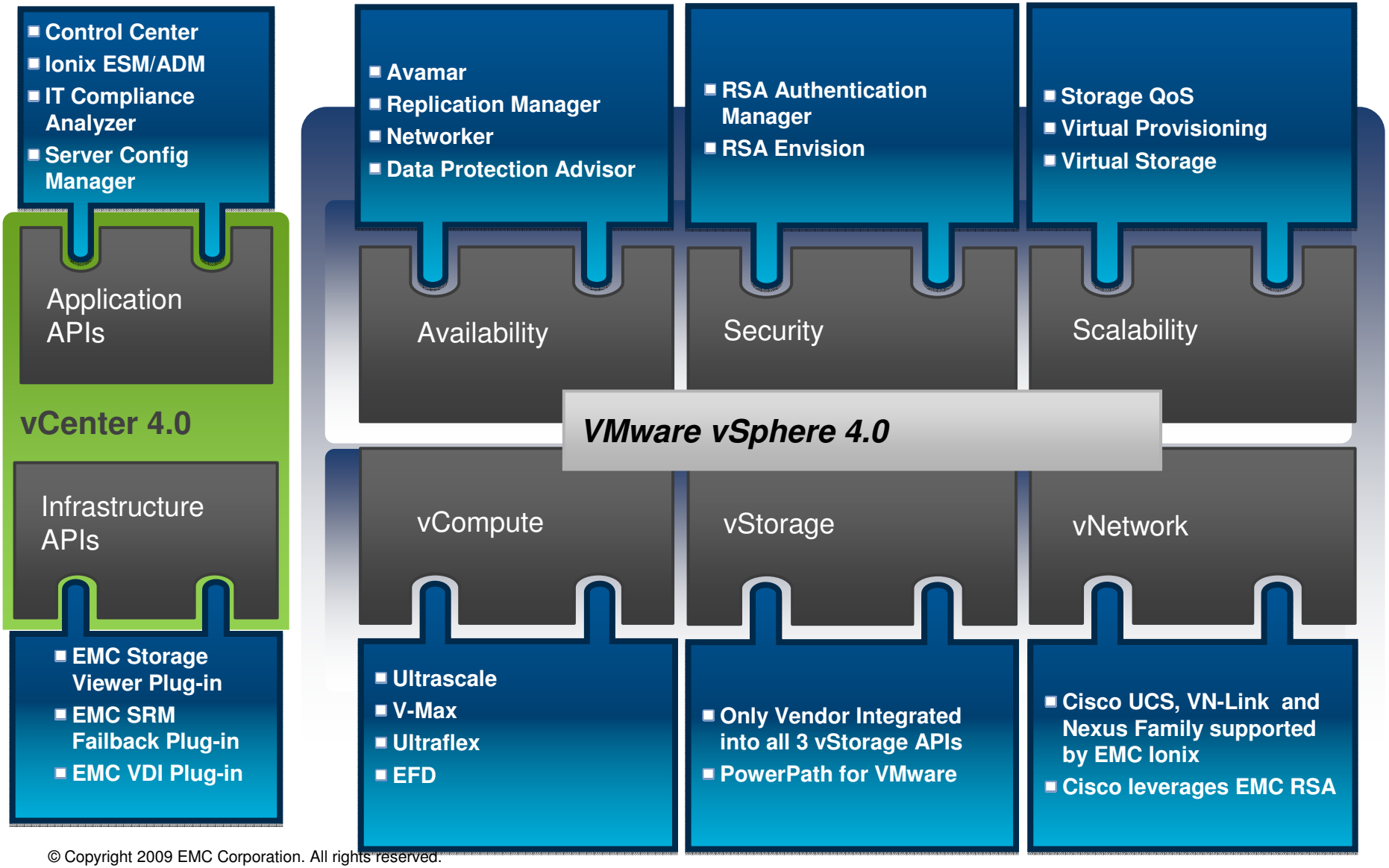
Hotel Mons, 12.11.2009

Iztok Sitar, *Account Technology Consultant*

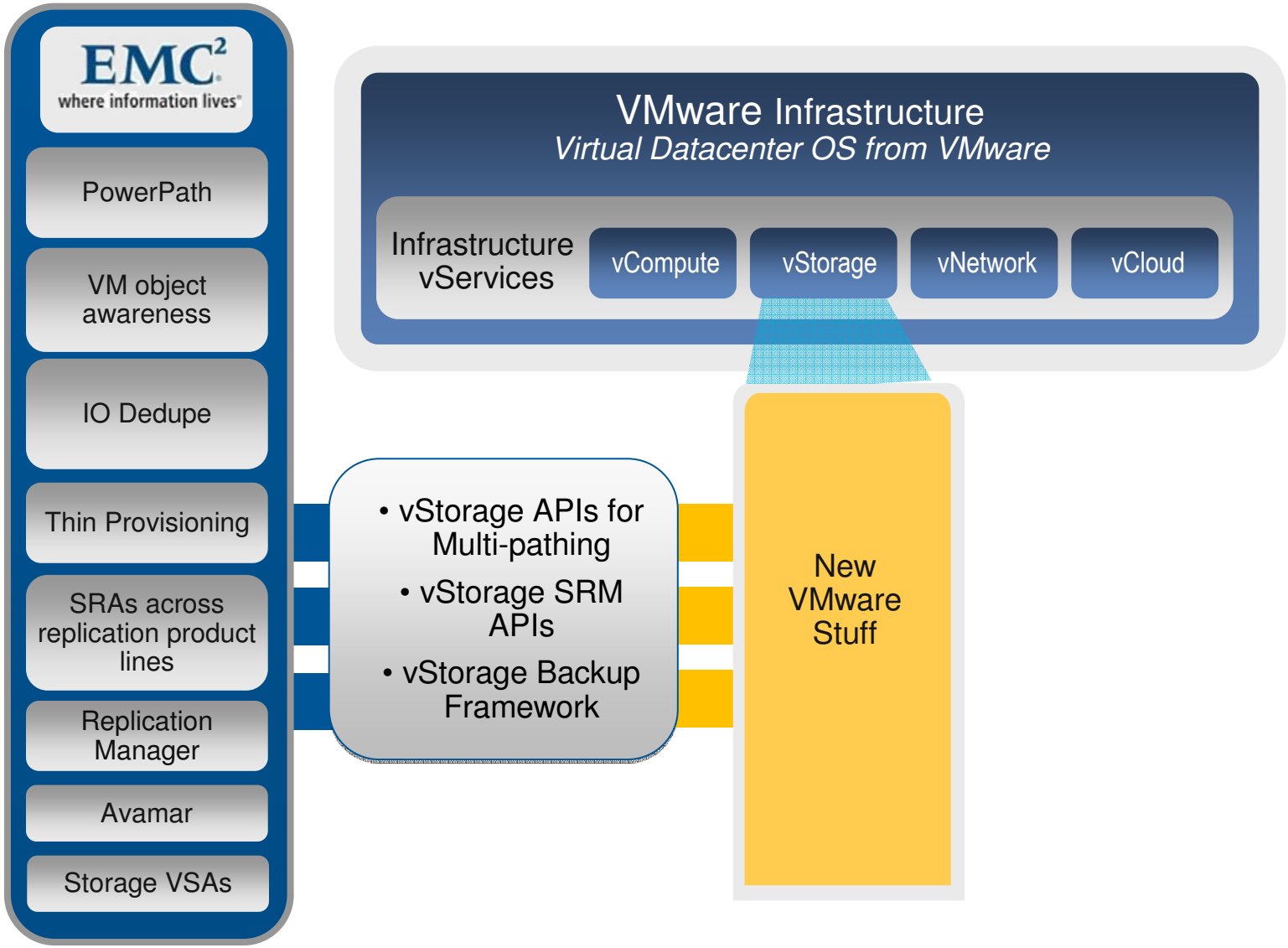
EMC Enabling Technology



EMC and vSphere Integration



What's Coming from EMC vStorage



What's Coming from EMC vStorage

EMC² where information lives®

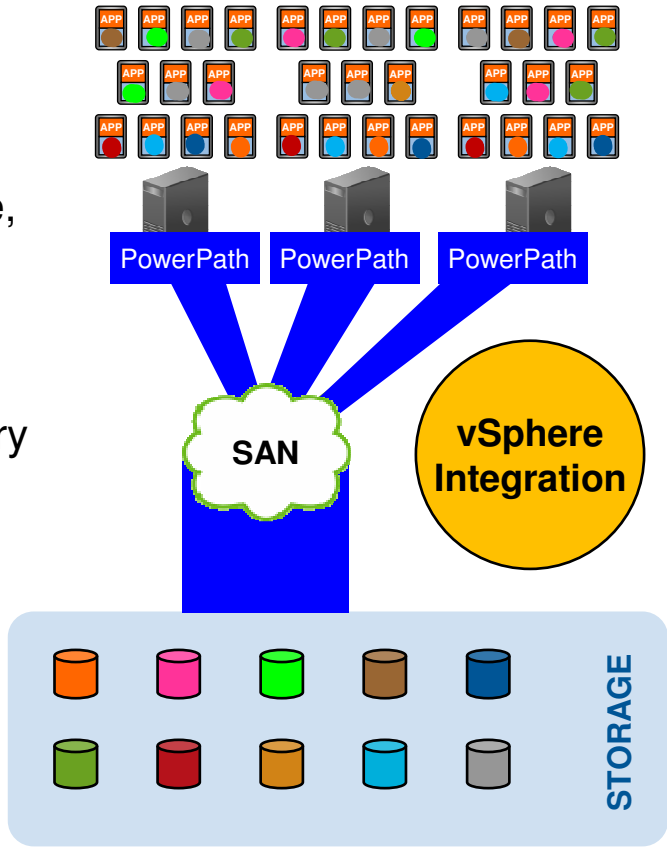
4x better availability, 3x better scale

- PowerPath
- VM object awareness
- IO Dedupe
- Thin Provisioning
- SRAs across replication product lines
- Replication Manager
- Avamar
- Storage VSAs

Storage Manageability
- Simplified Provisioning
- Predictable and Consistent Performance
- Optimize server, storage, and data-path utilization

5-9's App / VM Availability
- Automatic Fault Recovery
  - HBA
  - Path
  - Storage Processor

Platform Support
- FC, iSCSI, FCoE
- Symmetrix
- CLARiiON,
- Celerra iSCSI
- RDM and VMFS



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where information lives®

4x better availability, 3x better scale

"Hardware Offload" **(future)**

2x less IO, 10x faster provisioning **(future)**

EMC²
where information lives®

PowerPath

VM object awareness

IO Dedupe

Thin Provisioning

SRAs across replication product lines

Replication Manager

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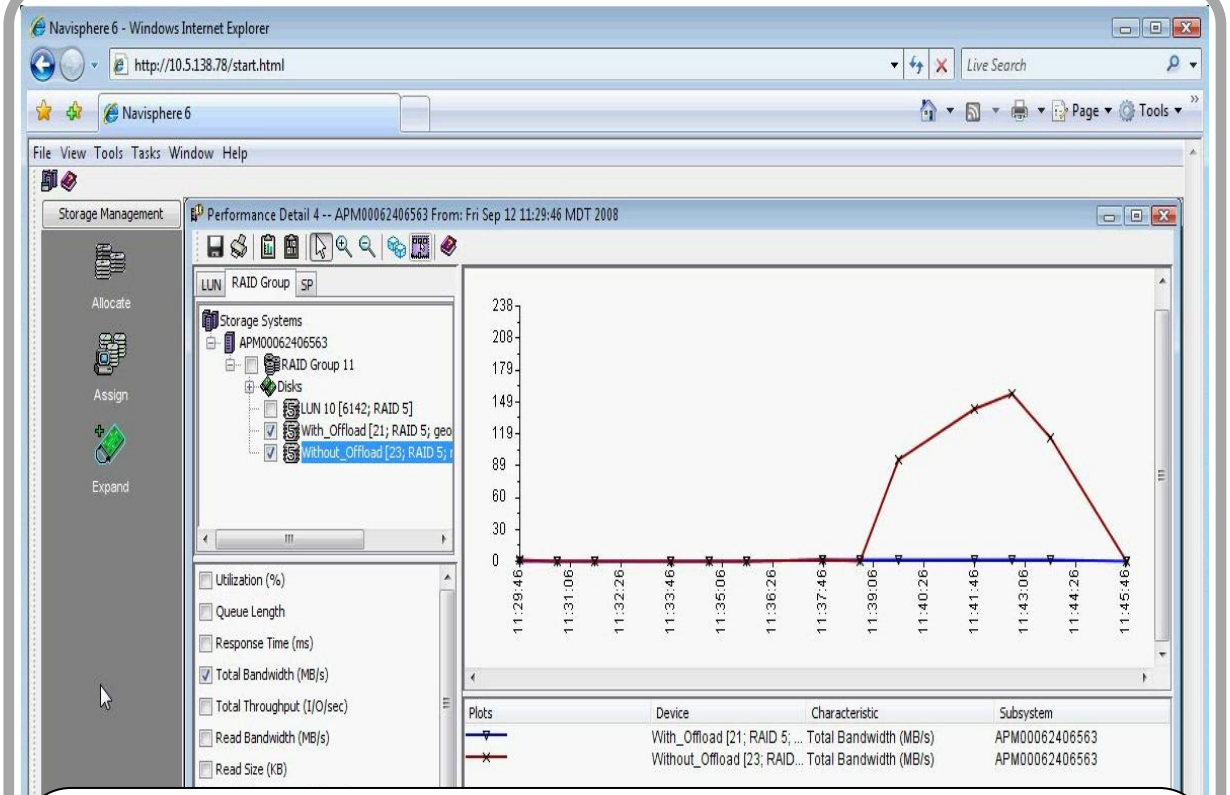
Storage VSAs

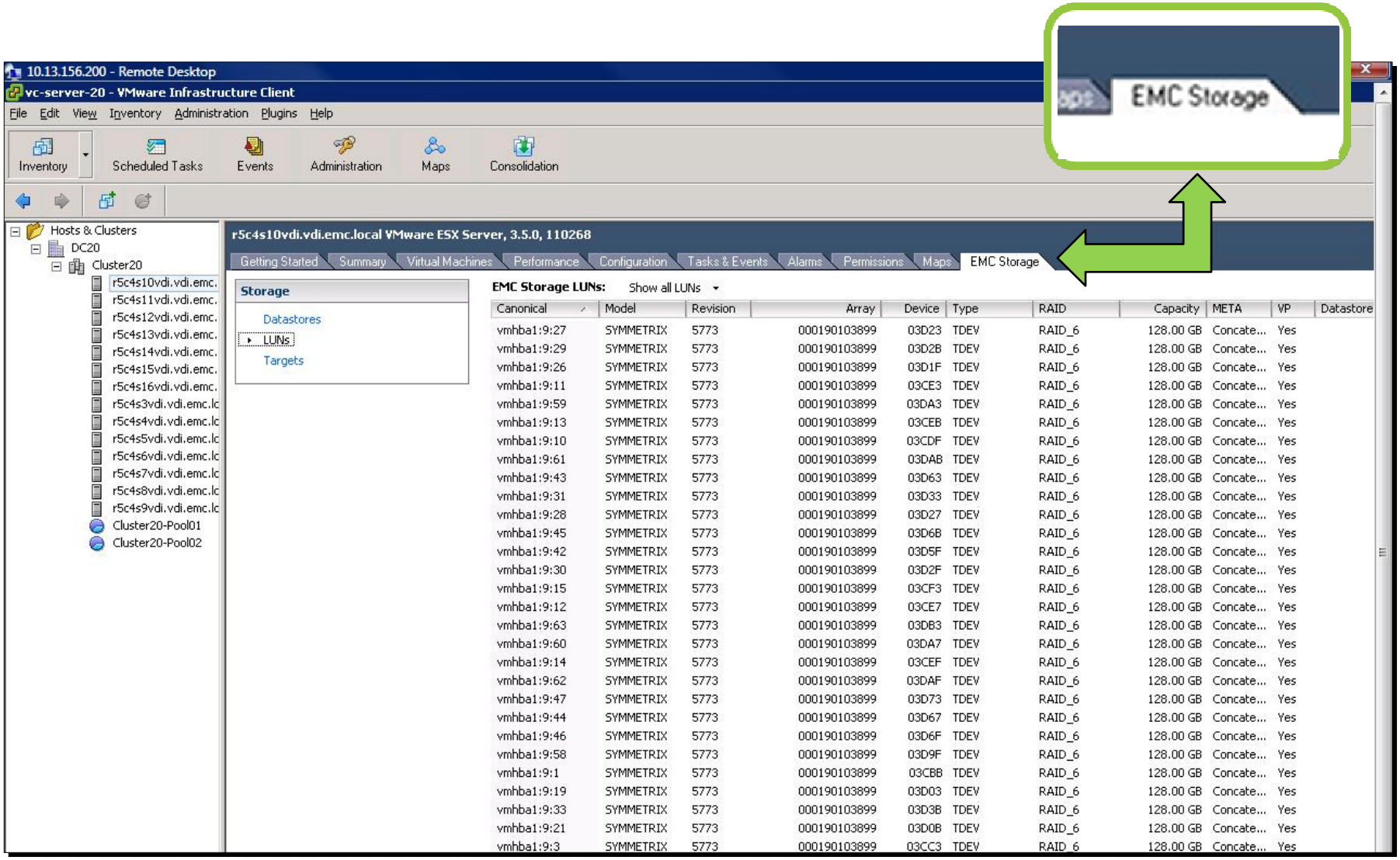


Array Offload of I/O Intensive Operations

- Reduce network traffic
- Reduce ESX workload
- Drastically increase completion time of operations

Array will be able to perform block-level operations on VMs

Not Everyone Needs Uber-managers…



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Save 40% of your storage cost

EMC² where information lives®

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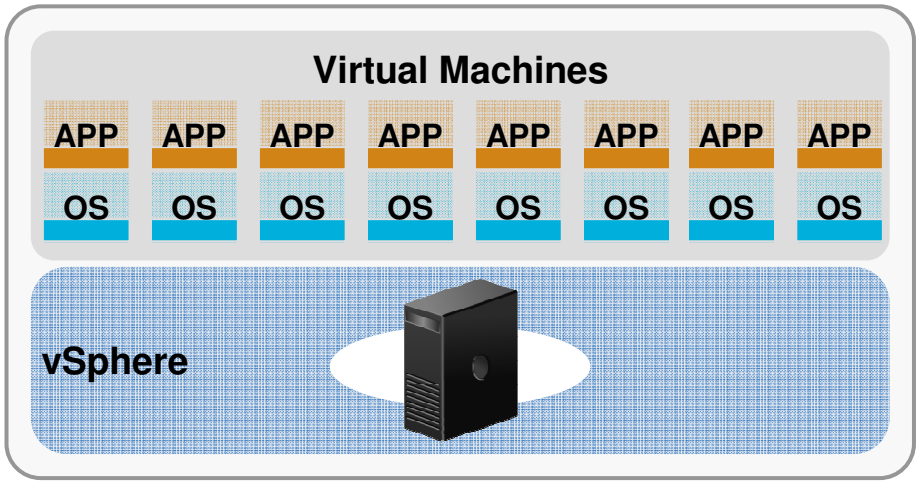
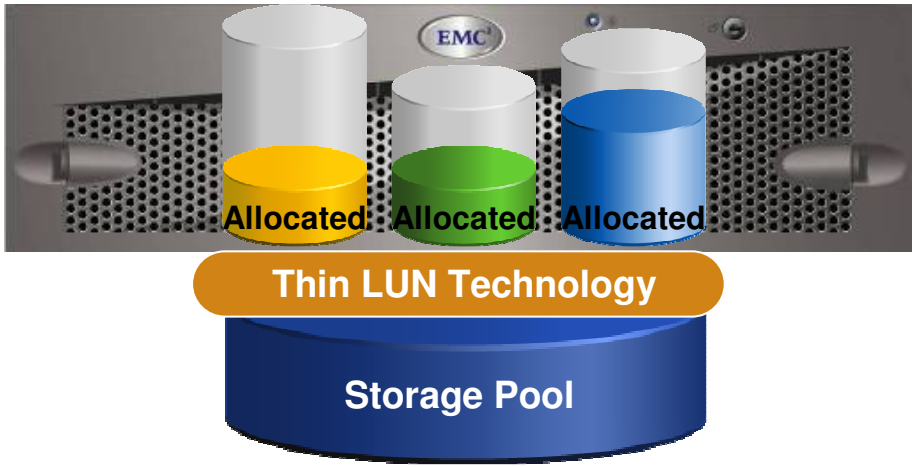




What's Coming from EMC vStorage

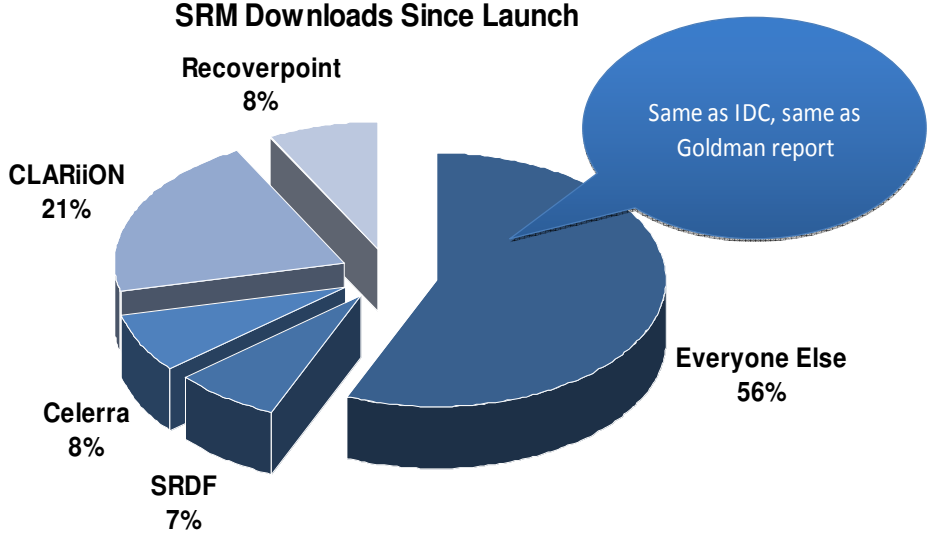
EMC² where information lives®

- 4x better availability, 3x better scale → PowerPath
- "Hardware Offload" **(future)** → VM object awareness
- 2x less IO, 10x faster provisioning **(future)** → IO Dedupe
- Save 40% of your storage cost → Thin Provisioning
- Easier DR testing, 10x easier DR → **SRAs across replication product lines**
- Replication Manager
- Avamar
- Storage VSAs

*"I ran 13 sessions of the hands on LAB for SRM at VMworld 2008 and 80% were looking to integrate this with EMC storage ..**As well as from a pure documented solution, EMC is the winner by far at this time** ... Just my 2 cents …"*
Rodney Rock – VMware Sr. Systems Engineer

*"I'd say at least **75% of the traffic visiting the SRM booth at VMworld asked questions about SRM on top of EMC storage and replication**. "* – Jonathan McCormick, VMware Sr Systems Engineer

SRM Downloads Since Launch



What's Coming from EMC vStorage

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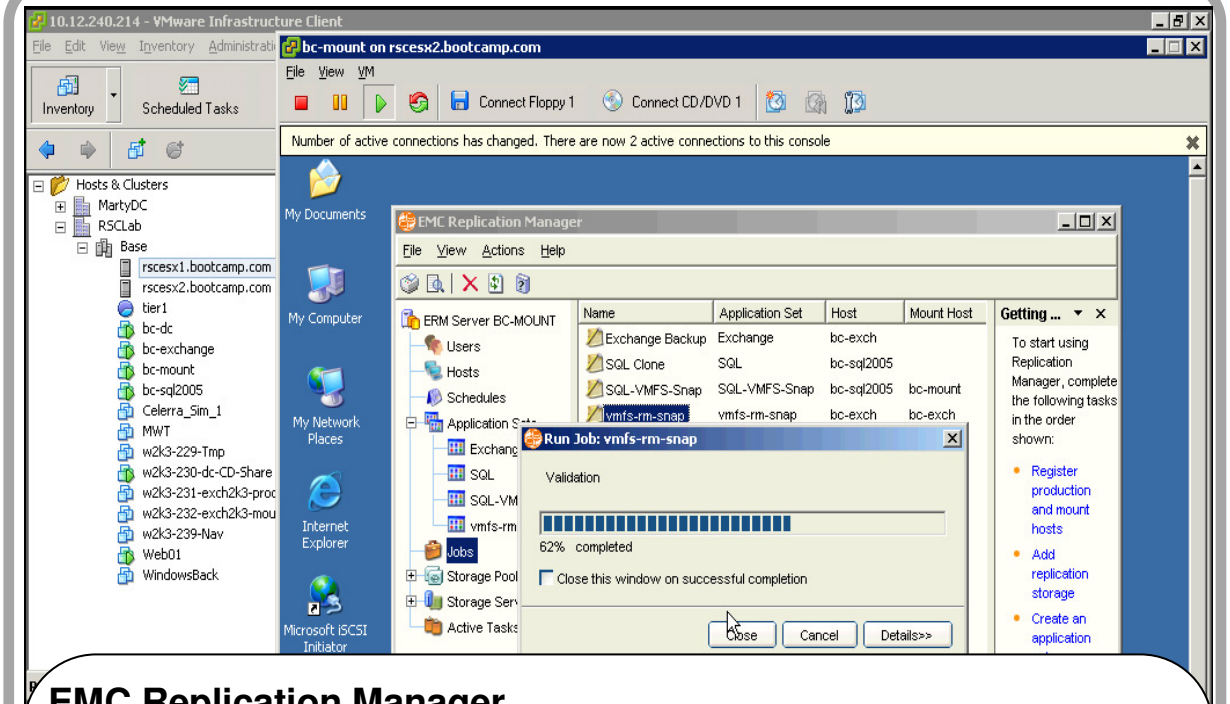
Instant VM Recovery	**Replication Manager**
	Avamar
	Storage VSAs



EMC Replication Manager

- Integrates array snapshots with VMware
- Instant recovery at single VM & Datastore levels
- Automated Replication and Backup Scheduling
- Exchange, SQL, Oracle, and VMware Consistent Snapshots
- Application Integrated Backup (VSS, Oracle hot backup)

What's Coming from EMC vStorage

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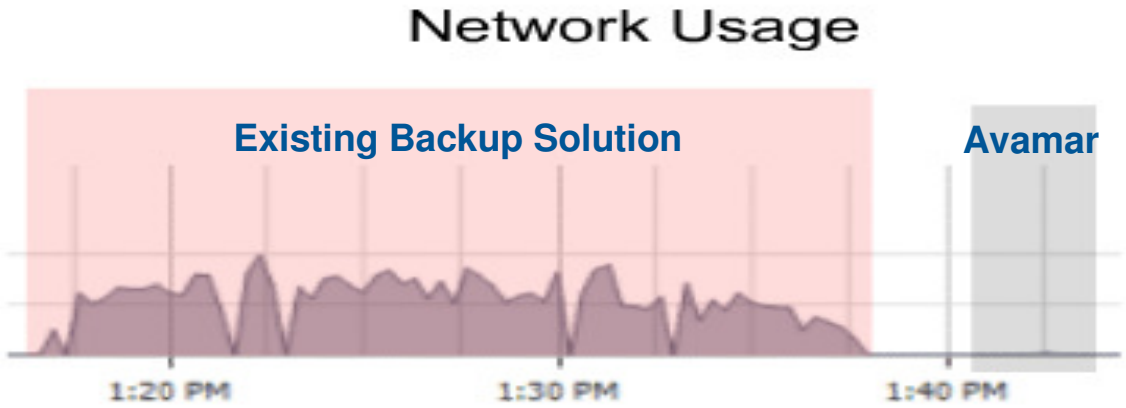
Easier DR testing, 10x easier DR	SRAs across replication product lines
Instant VM Recovery	Replication Manager
Save 500%, get 2x consolidation	**Avamar**
	Storage VSAs

VMware and Source-based Dedupe Backup

Real-world results:
Customer analysis: Jan 4 – Feb 5, 2009

Host Name	New Data	Total Data-set	% Saved	Avg Daily BU Time
ora-edwprod-d1	17.43 GB	126.27 GB	86.20%	1.06 hrs
ora-dmqa-d1	10.16 GB	132.45 GB	92.33%	0.77 hrs
ftpsite	21.25 GB	415.89 GB	94.88%	0.67 hrs
ora-test-siebel-d1	5.63 GB	203.15 GB	95.86%	1.73 hrs



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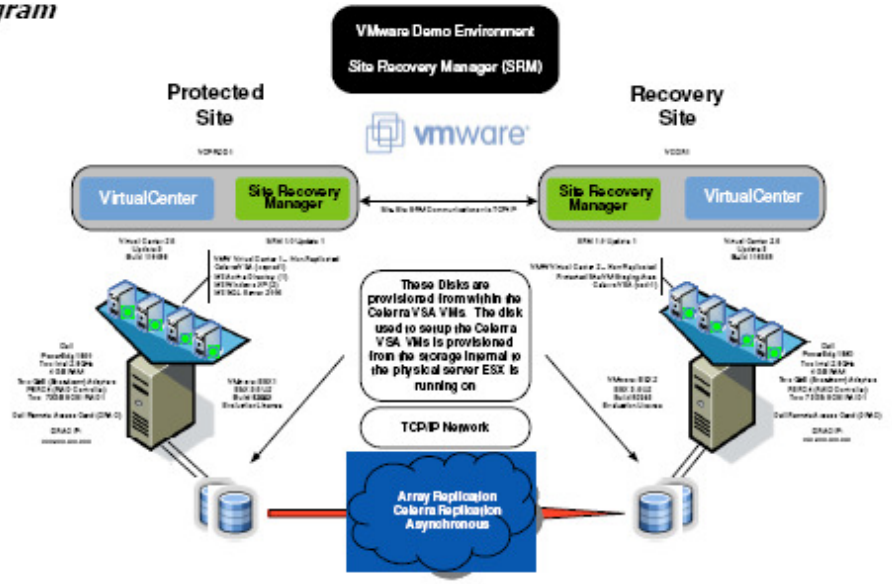
Partner Tools	**Storage VSAs**

EMC Celerra
Virtual Storage Appliance (VSA)

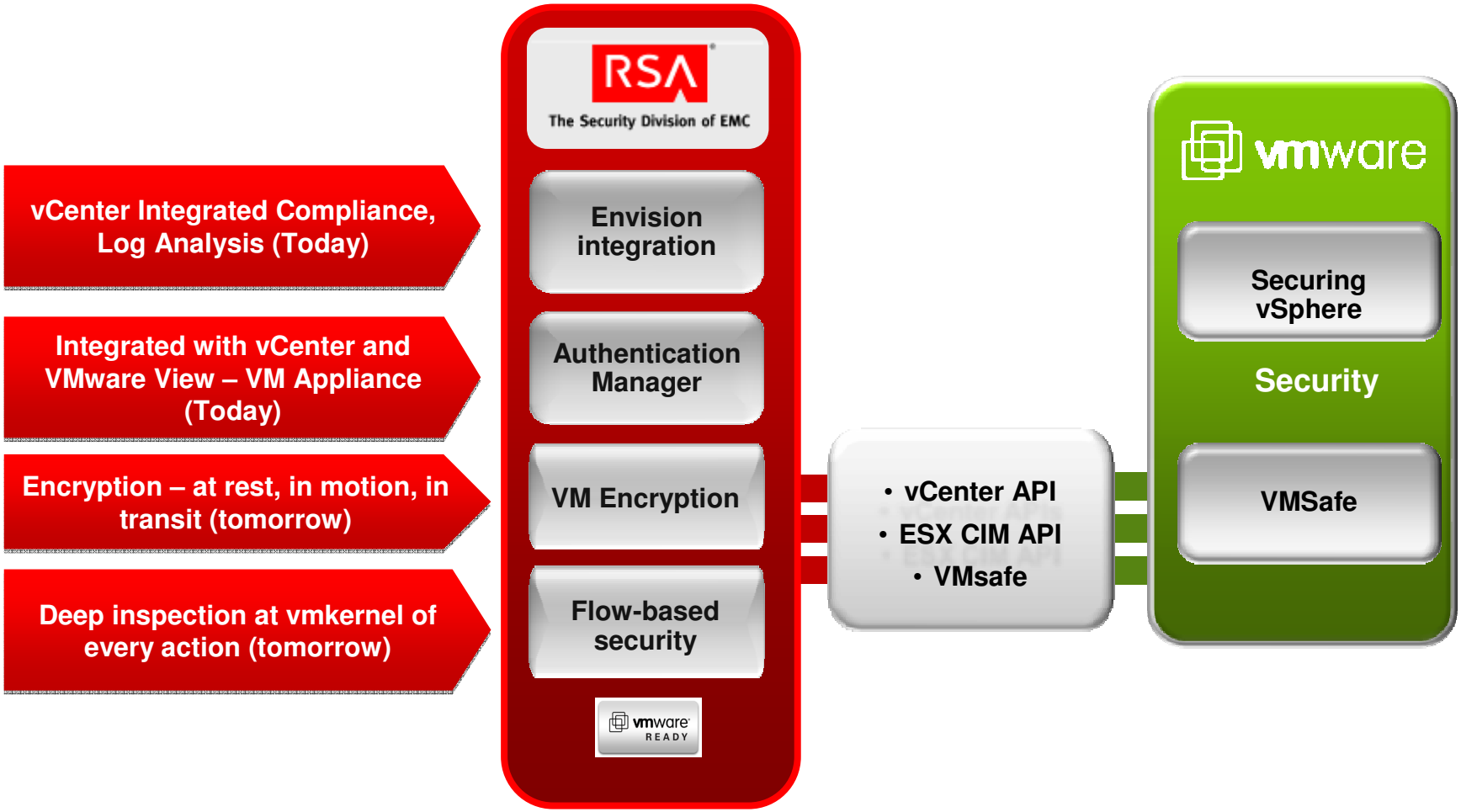
&

VMware Site Recovery Manager

Diagram



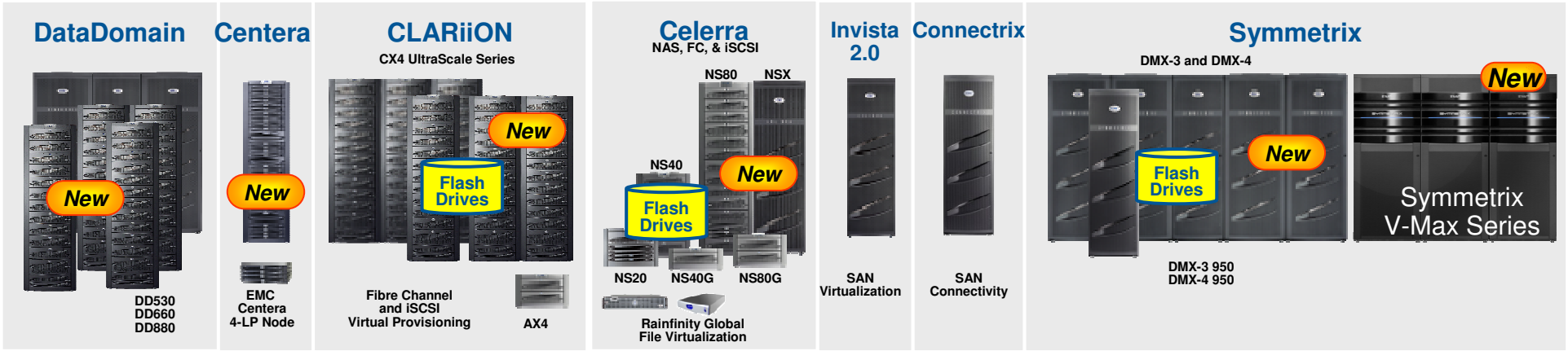
Example: How we are Building our Security Suite for the 100% Virtualized Datacenter



EMC's Storage Innovation

EMC² where information lives®

Broadest Range of Function, Performance, and Connectivity



EASE OF USE

IMPROVED ENERGY EFFICIENCY

INFORMATION-CENTRIC SECURITY

INVESTMENT PROTECTION


SYMMETRIX
EMC Symmetrix V-Max.
Built on the industry's first Virtual Matrix Architecture

The Impact of Storage Architecture

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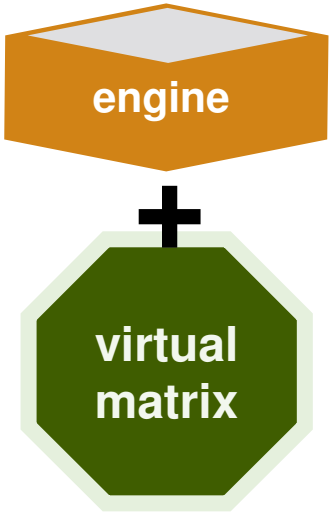
start small

- 8-16 ports
- 16 processor cores
- 32-128 GB of memory
- 48-256 drives

can be uniquely assembled into extremely large arrays

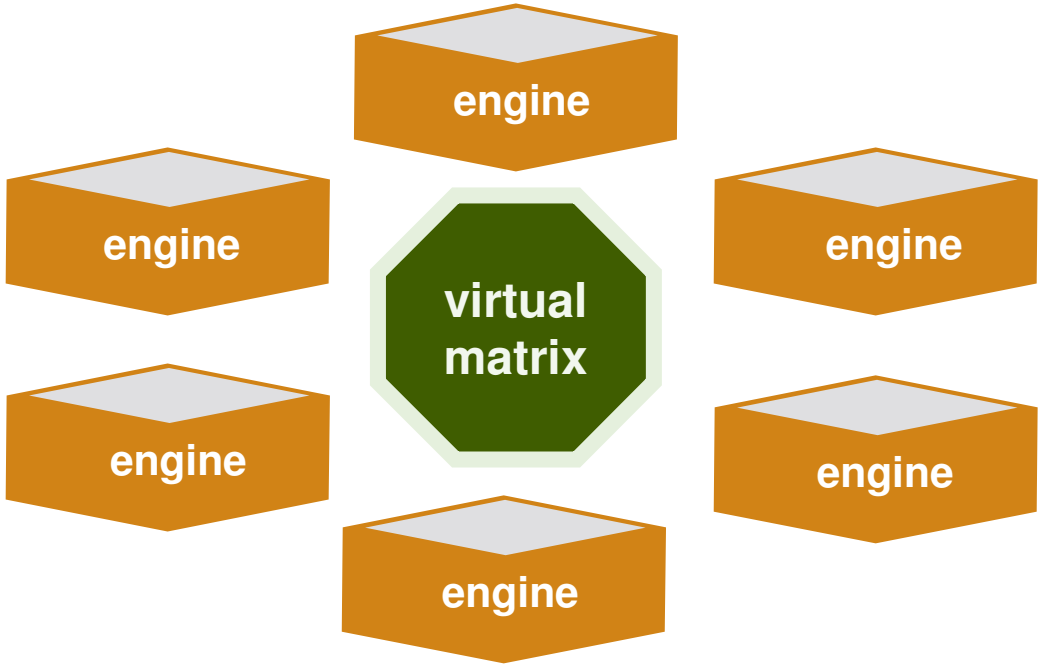


The Impact of Storage Architecture

EMC² where information lives®

get big

- hundreds of ports
- hundreds of cores
- TB's of memory
- thousands of disks



build a large array from smaller ones

The Impact of Storage Architecture

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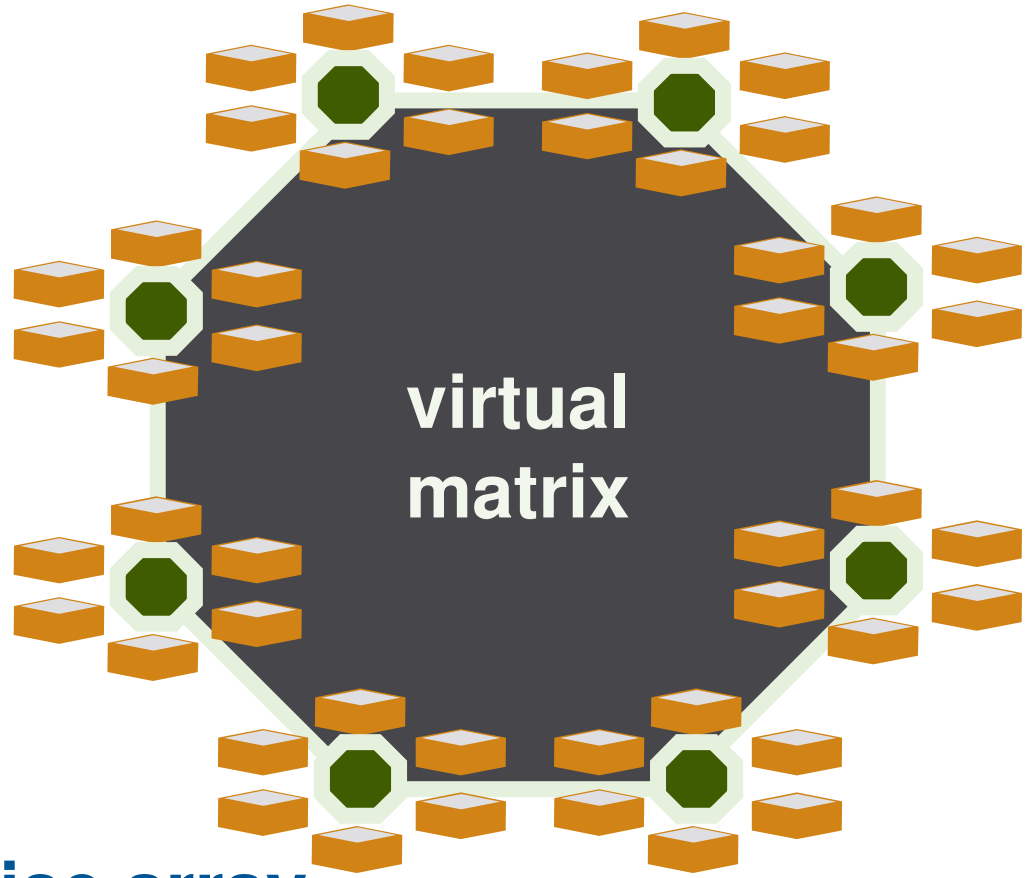
future

get *really* big

- thousands of ports
- thousands of cores
- hundreds of TB of memory
- tens of thousands of disks
- multiple frames, multiple locations



a single, giant enterprise array

Easy, Quick, and Automated Storage Provisioning for Virtual Servers with a Single Action

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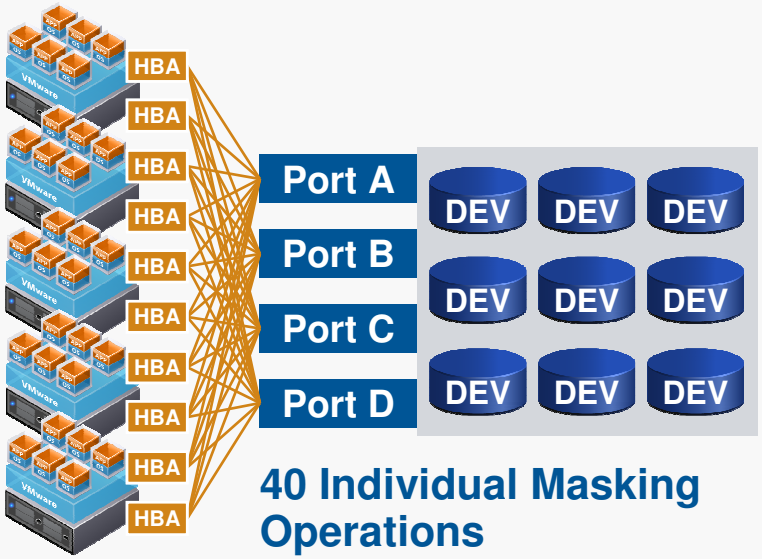
Traditional Mapping and Masking



40 Individual Masking Operations

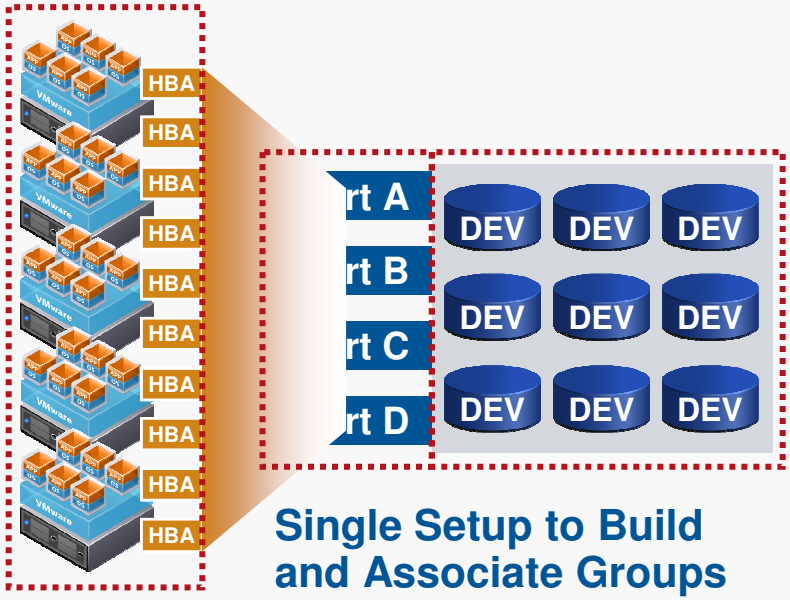
5 ESX servers x 2 HBAs x
4 storage ports

~160 clicks to complete

Includes initial configuration and repeated for every change or add

Auto-provisioning Groups

New



Single Setup to Build and Associate Groups

15 clicks to complete

Simplifies initial configurations and all future changes and additions

Fully Automated Storage Tiering

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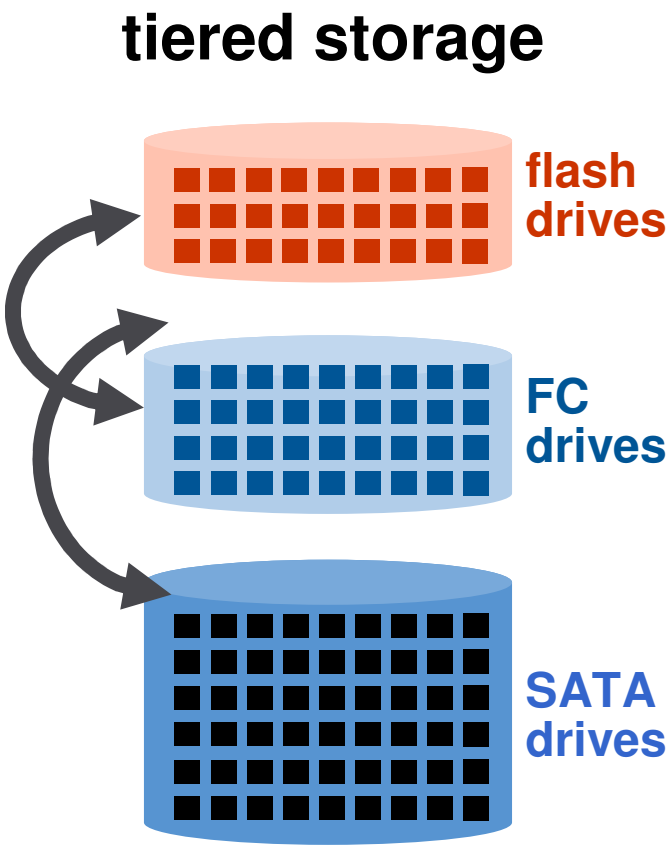
FAST

automates movement and placement of data based on changing needs



Flash Drives Shatter Performance Barriers

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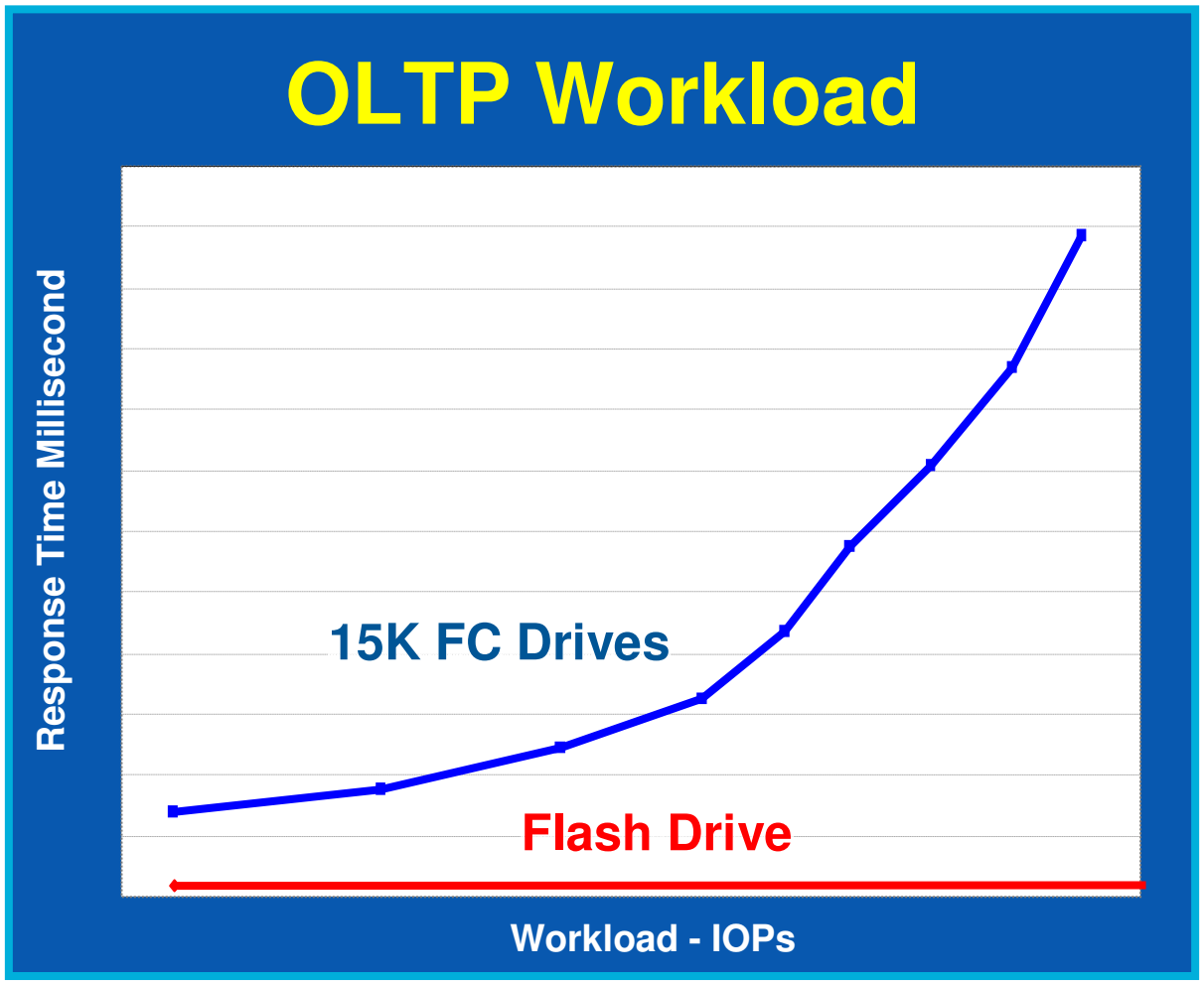
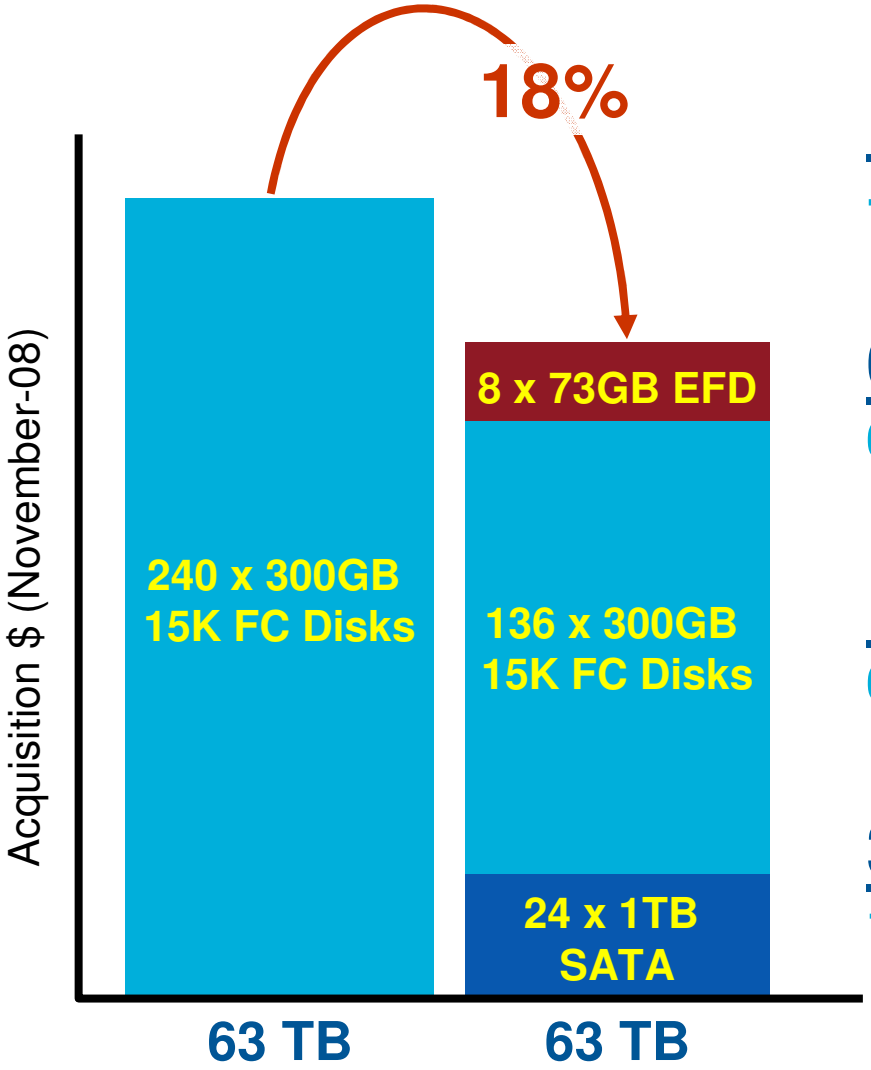
Unprecedented Application Performance Characteristics

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



Efficiency is not just for Servers Anymore



18% Lower Storage Costs
+ Reduce Maintenance & SW costs

60% More Disk IOPS
64,000 vs 40,000 Aggregate IOPS*

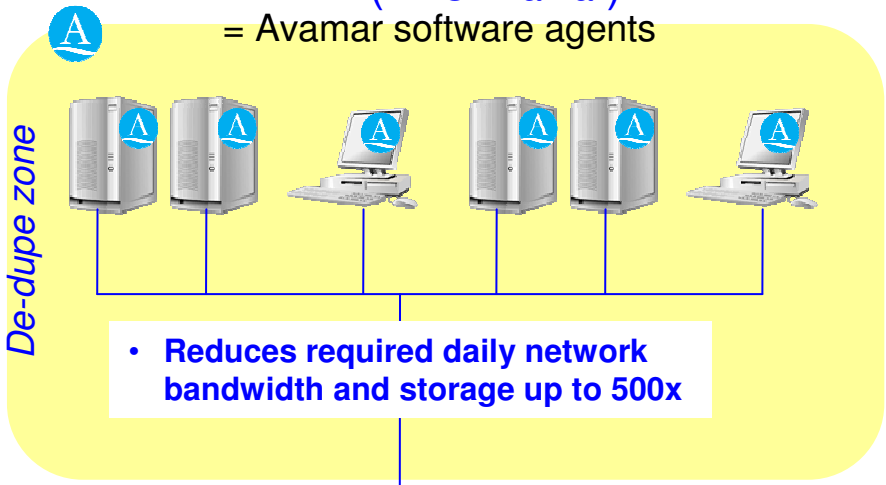
17% Less Power & Cooling
6.48 kVA vs 7.82 kVA

30% Fewer Disk Drives
168 EFD+FC+SATA vs 240 FC

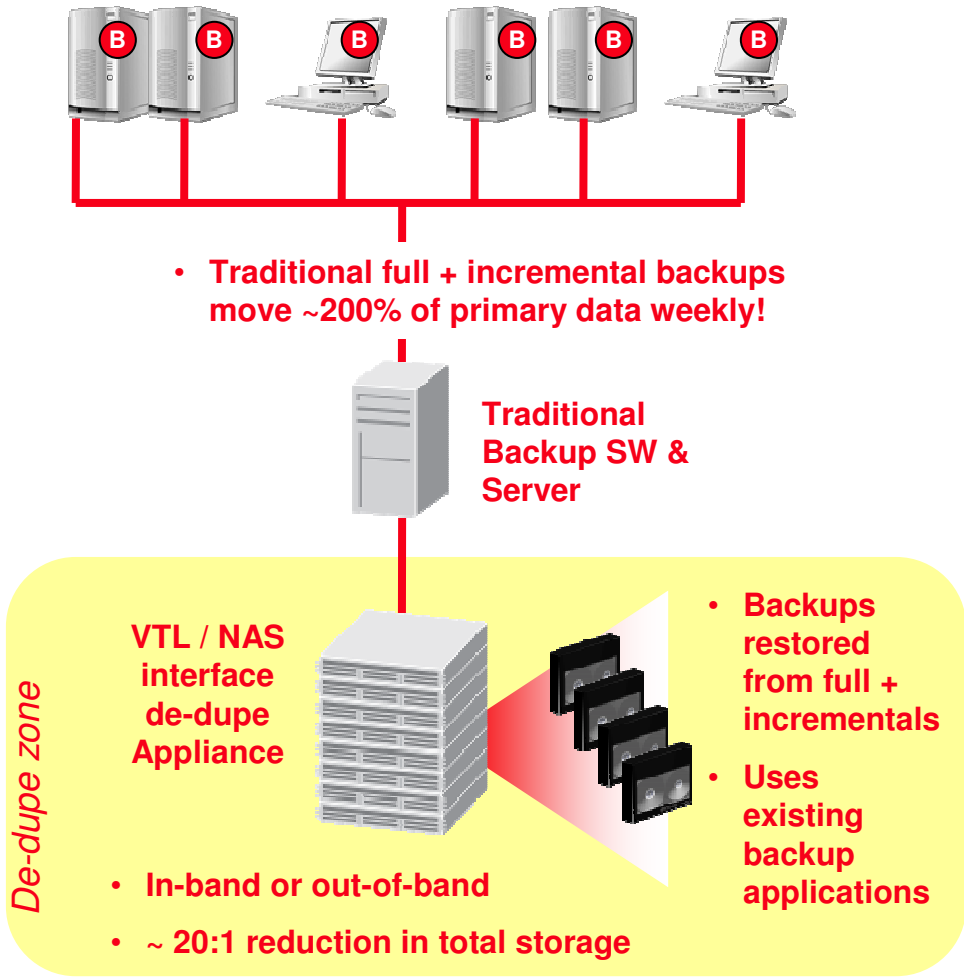
* EFD = 5,000 IOP/disk
FC 15K = 167 IOP/disk
SATA = 80 IOP/disk

De-duplication

Source de-duplication
(EMC Avamar)
= Avamar software agents



Target de-duplication
(EMC Data Domain)
B = traditional backup software agent (no de-dupe)



Unified Vblock Element Management

Single Point of Management, Extensible Integration Framework

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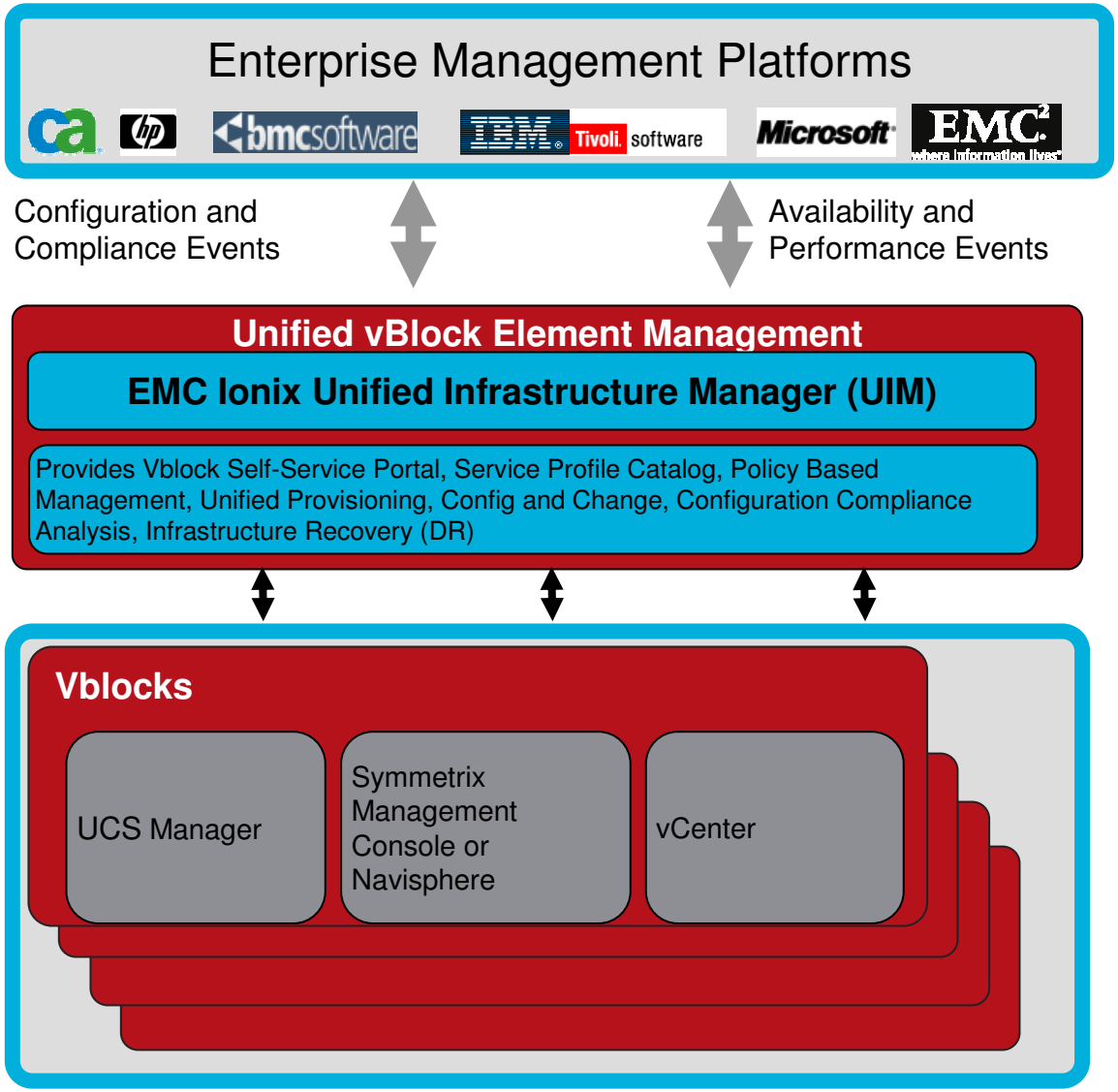
- Unified Vblock Management Interface
  - Consolidated view into all Vblock infrastructure
  - Single integration point
- IT self-service portal
  - Mini service catalog and dashboard for self-provisioning
- Policy-based management
  - Fine-grained tracking, traceability, reproducibility
  - System-wide compliance and remediation
- Automated discovery and deployment



Our Own Experiences With Data Center Virtualization

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where information lives®

EMC Statistics

4068 VMs on 272 ESX servers

First Rollout - 5:1 (adhoc)

New Norm - 40:1 using vPods

Virtual Desktops – 800 now, 100% EOY

100% Virtualized EOY, including 60K Exchange 2007 mailboxes

Savings

$42M saved from Storage Consolidation

$13M saved from Server Virtualization ($80M cost avoidance)

$30M datacenter build avoided

64% Reduction in on-going Power Consumption

Deployment time reduced from 8 weeks to 3 days

Cisco Statistics

14,250 servers, 3,780 apps

2,720 VM's on 162 ESX Servers

50% of existing, 75% of all new servers virtualized

Savings

$19+ Million in Server Virtualization

$50+ Million from Storage Consolidation

Deployment time reduced from 8-12 weeks to 3 days


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