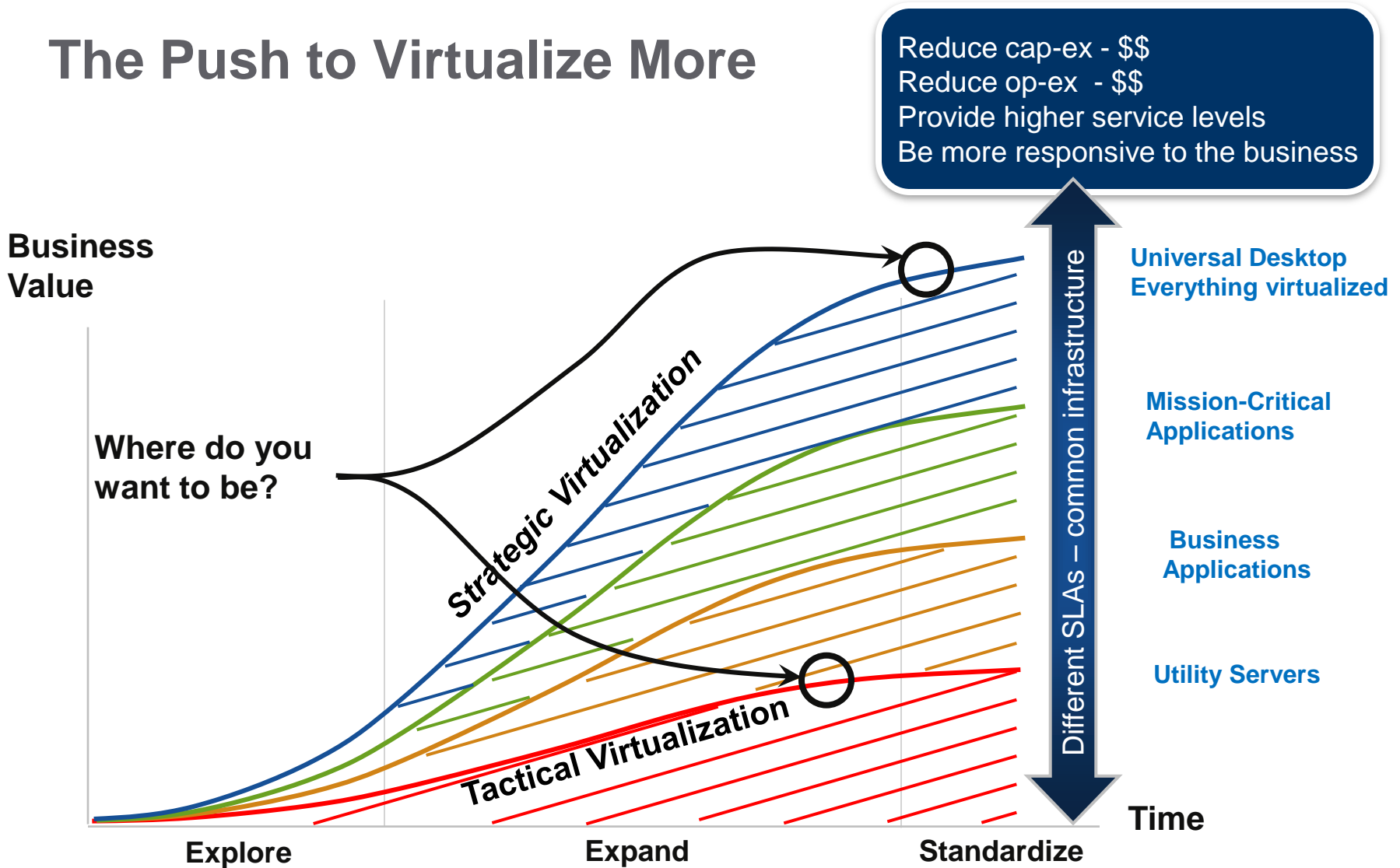




Driving Efficiency. Control. Choice.

Virtualizing Mission Critical Applications with EMC/VMware

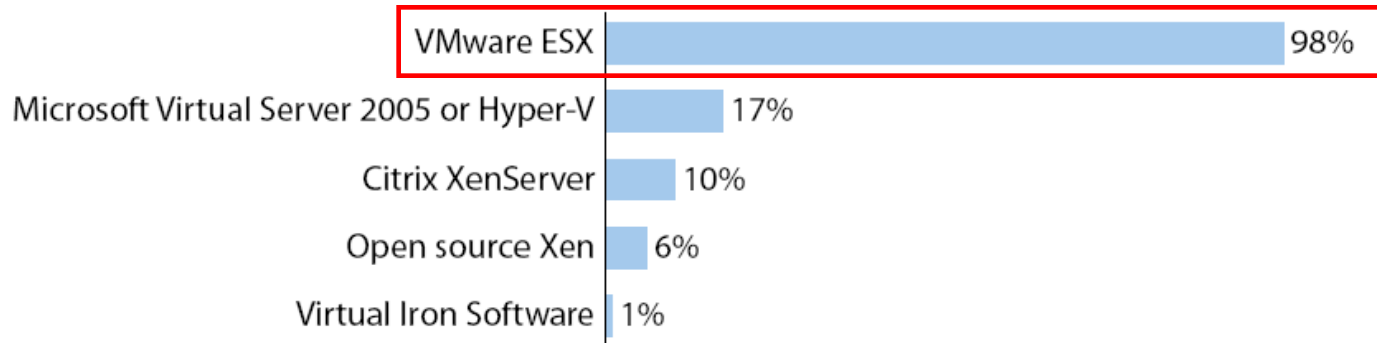
The Push to Virtualize More



January 15, 2009

Storage Choices For Virtual Server Environments

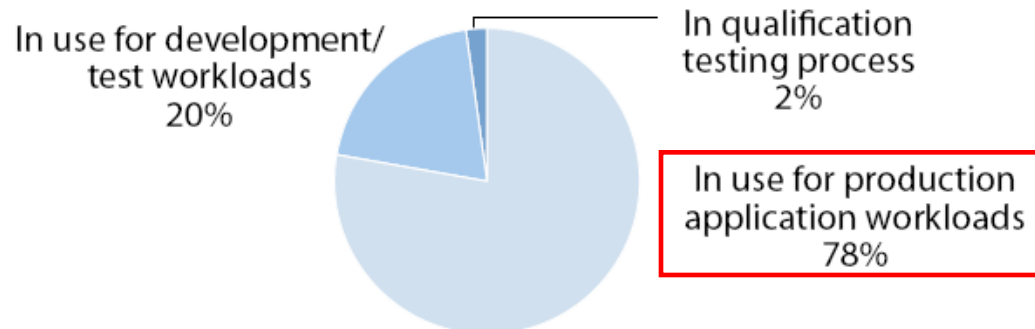
“Which virtual server technology do you have in your environment?”



(multiple responses accepted)

Base: 124 global IT decision-makers currently using x86 server virtualization technology

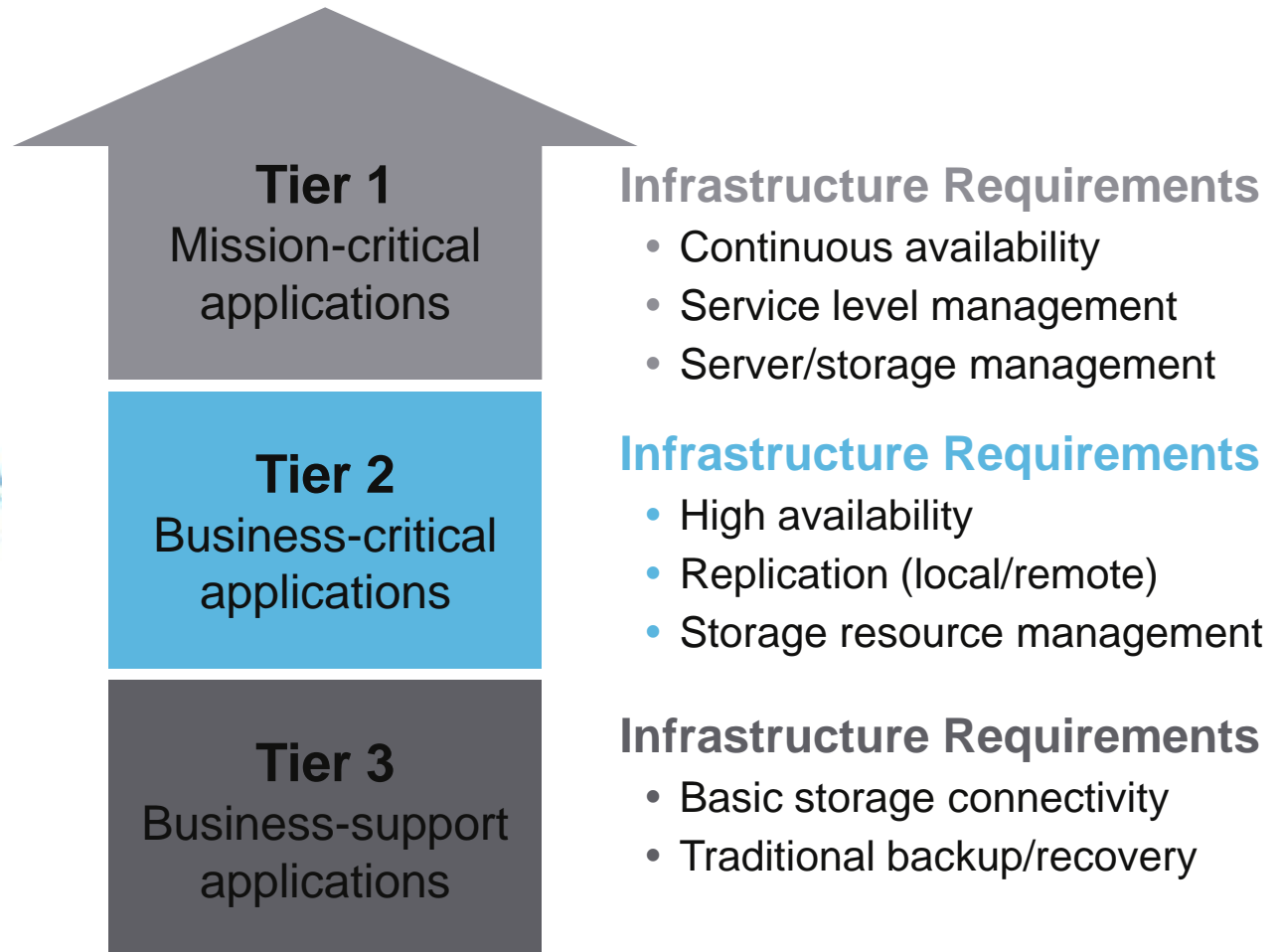
“At what phase of implementation is your deployment of virtual server technology?”



Base: 124 global IT decision-makers currently using x86 server virtualization technology



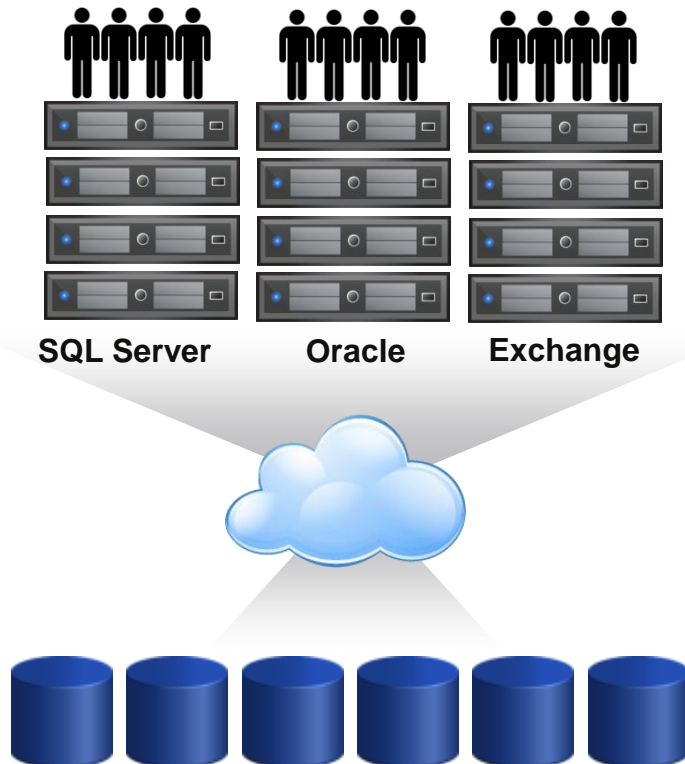
Evolution of VMware Infrastructure Requirements



Business Challenge

Managing Tier 1 Applications in Separate Physical Environments

Separate Infrastructure



Business Challenges

Separate infrastructures lead to higher costs, lower ROI and increased environment complexity:

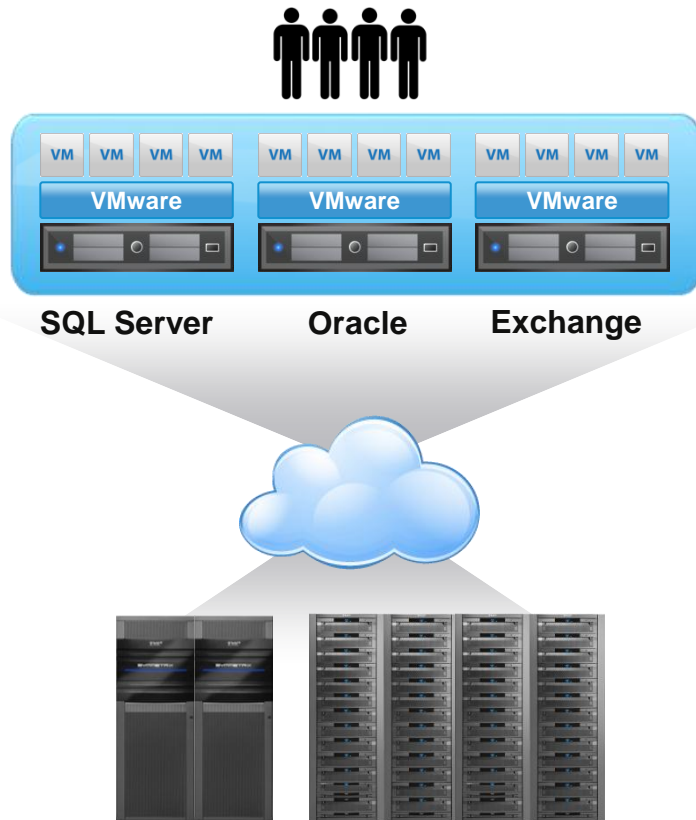
- Lower server and storage utilization
- Difficulty meeting service levels
 - Maintaining and managing separate environments
 - Provisioning inefficiencies
 - Inconsistent data protection strategies

Business Solution

Efficient, Consolidated, Virtualized Infrastructure

Consolidated Infrastructure

Business Solution

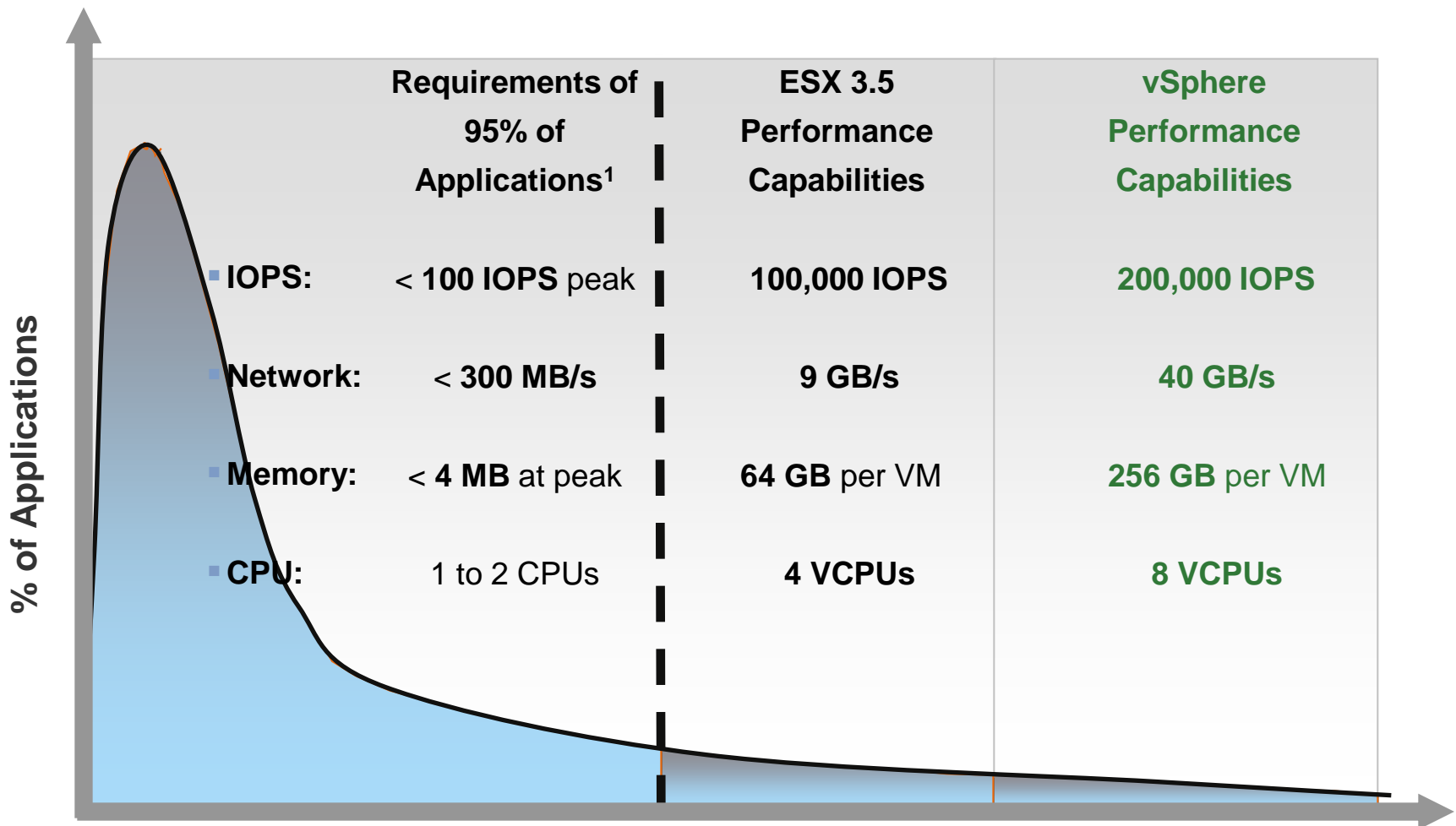


Consolidated, virtual infrastructure simplifies the environment and increases ROI

- **Increase** storage utilization
- **Simplify** management
- **Decrease** maintenance costs
- **Reduce** provisioning time
- **Unify** data protection strategy

Consistent support of Service Level Agreements across the infrastructure

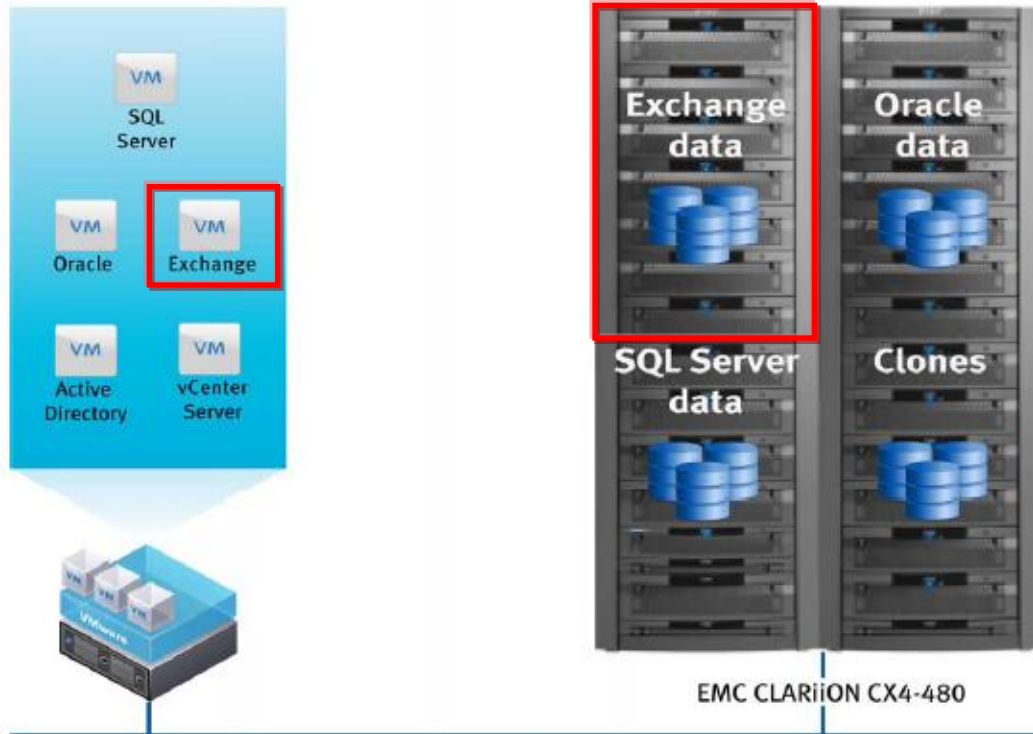
vSphere – Ready for 100% Virtualization



1. Source: VMware Capacity Planner assessments

Application's Performance Requirements

Solution Spotlight: Virtualized Exchange 2007



- EMC PowerPath/VE**
VMware vSphere 4
EMC FLARE 29 for CLARiON CX4
 New features include:
- Disk-drive Spin Down
 - Virtualization-aware Navisphere
 - 10 Gb/s iSCSI

Parameters of the Solution Tested

- Physical Scaling – 8 cores / 32GB RAM
- Building Block Design

| Parameter | Value |
|-------------------------------|--------------------------------|
| Number of mailboxes supported | 4,000 |
| Virtual machine OS | Windows 2003 x64 R2 SP2 |
| Virtual machine memory | 24 GB |
| Virtual machine CPU | 4 vCPU |
| Mailbox I/O profile | 0.48 (Very Heavy) ² |
| Mailbox size limit | 350 MB |
| Server under test | Dell R900, 16 core/128 GB RAM |
| CPU type on test system | Intel Xeon 7350 |

- Goal was to model a typical 24-Hour Period (Day)
- OLM and run a RM Backup
- 178 Tasks / User - 8 Hour Work Day
- 2.85 Million Daytime Tasks / 3.4 Million Total

Virtualized Exchange 2007 VMware / EMC Solution

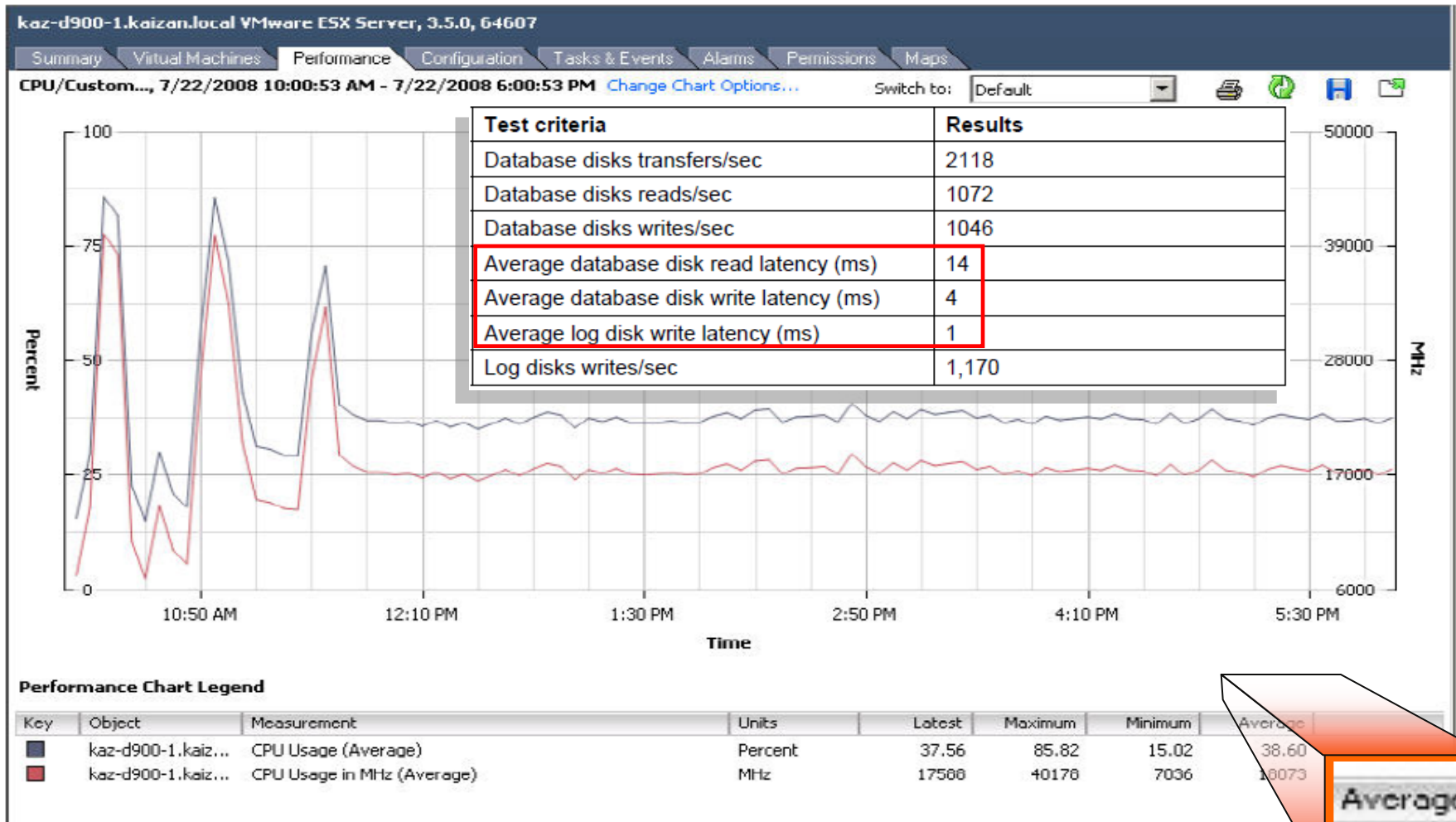
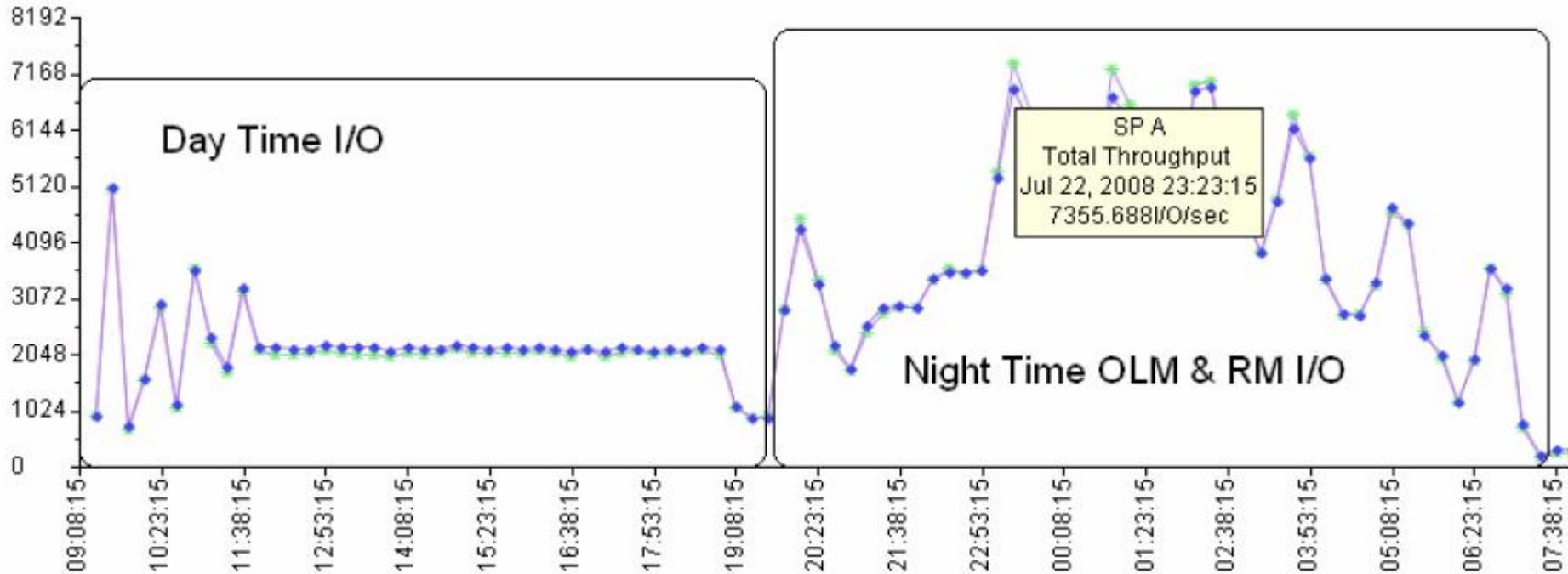


Figure 2. CPU utilization on the ESX server with four mailbox virtual machines

Virtualized Exchange 2007 VMware / EMC Solution



- Storage Array I/O
- Test Closely Mimics “Real Life”

EMC IT: At a Glance

USER PROFILES

- 48,000 internal users (employees & vendors)
- 250,000+ registered customers and partners on EMC websites
- > 80 countries
- ~ 400 offices worldwide

IT ENVIRONMENT

- 5 datacenters
- 5,900+ servers & virtual machines
- 6.5 PB storage across 5 tiers (incl. BURA)
- 2,500 database instances
- EMC, RSA, and VMware solutions at work
- 230 PBX's
- 219,000 data ports / 87,000 voice ports
- 460 "3rd parties" connected (3,900 users)

BUSINESS APPLICATIONS

- 400+ applications / tools
- 150+ active initiatives
- 8,500 annual enhancements (2008)
- 950,000 B2B transactions (2008)

VIRTUALIZATION

- 1,600 servers to be consolidated down to ~40
- 33% eligible apps migrated to date
- 70% reduction in power and cooling
- 60% reduction in space requirements
- Reduced emissions by 60 million lbs. of CO₂
- Equivalent to 67,000 trees over 27 years

SUPPORTING THE BUSINESS

- End user support in 20 languages
- 39,000 monthly support requests
- 1,100 monthly system changes
- 23,000 devices monitored

EMC² SOLUTIONS DEPLOYED

where information lives[®] **EMC Ionix**  **vmware**

 **salesforce.com**  **CISCO**

The Security Division of EMC Success. Not Software.™

ORACLE **CAPTIVA** **AVAMAR**

EMC² documentum

Virtualization Status – as of 1/1/10

Statistics:

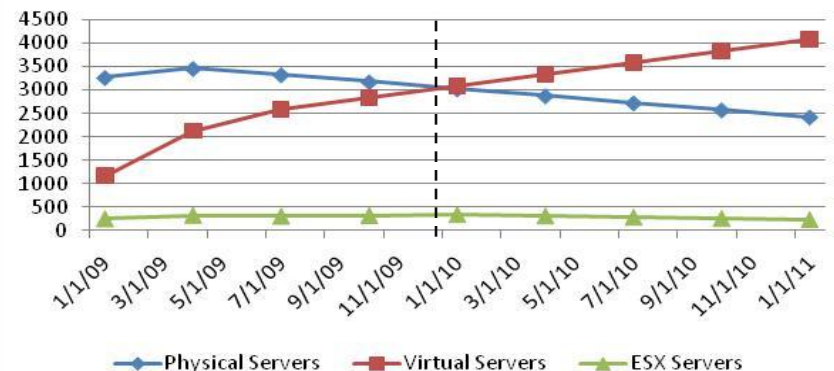
| | |
|------------------------|--------------|
| OS Images | 5959 |
| Physical Servers | 2788 |
| Total Raw Storage | 6.5 PB |
| Virtual Center Servers | 5 |
| ESX Servers | 295 |
| VM's | 3171 (53.2%) |
| Current Ratio | 10.7:1 |

Virtualized Applications: * = Mission Critical

- Powerlink*
- eServices
- eRoom
- EMC.com*
- PlanIT
- Business Edge
- WebMethods
- Exchange OWA
- LCS
- Citrix*
- ECC
- Active Directory*
- Speed
- WindChill
- ClearQuest
- ELMS*
- SCBS (EDGE)
- Heat
- ReqPro
- DMS
- SYR*
- TASC
- CCA
- OCS

- **50% of OS images are virtual**
- **Consolidation ratio is 10:1**
- **Physical server count shrinking quarter over quarter**

Server Forecast



Why EMC Proven Solutions?

- Reduce the total cost of ownership by increasing the return on investment of existing assets in the infrastructure
- Combine EMC's best-of-breed products and services with key third-party offerings
- Provide tested, documented, and demonstrable solutions with Reference Architectures and best practices
- Utilize subject matter experts who work closely with you and who fully support each EMC Proven Solution
- Leverage EMC's deep, strategic relationship with VMware



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