VMware vSphere™ 4.0

The best platform for building cloud infrastructures

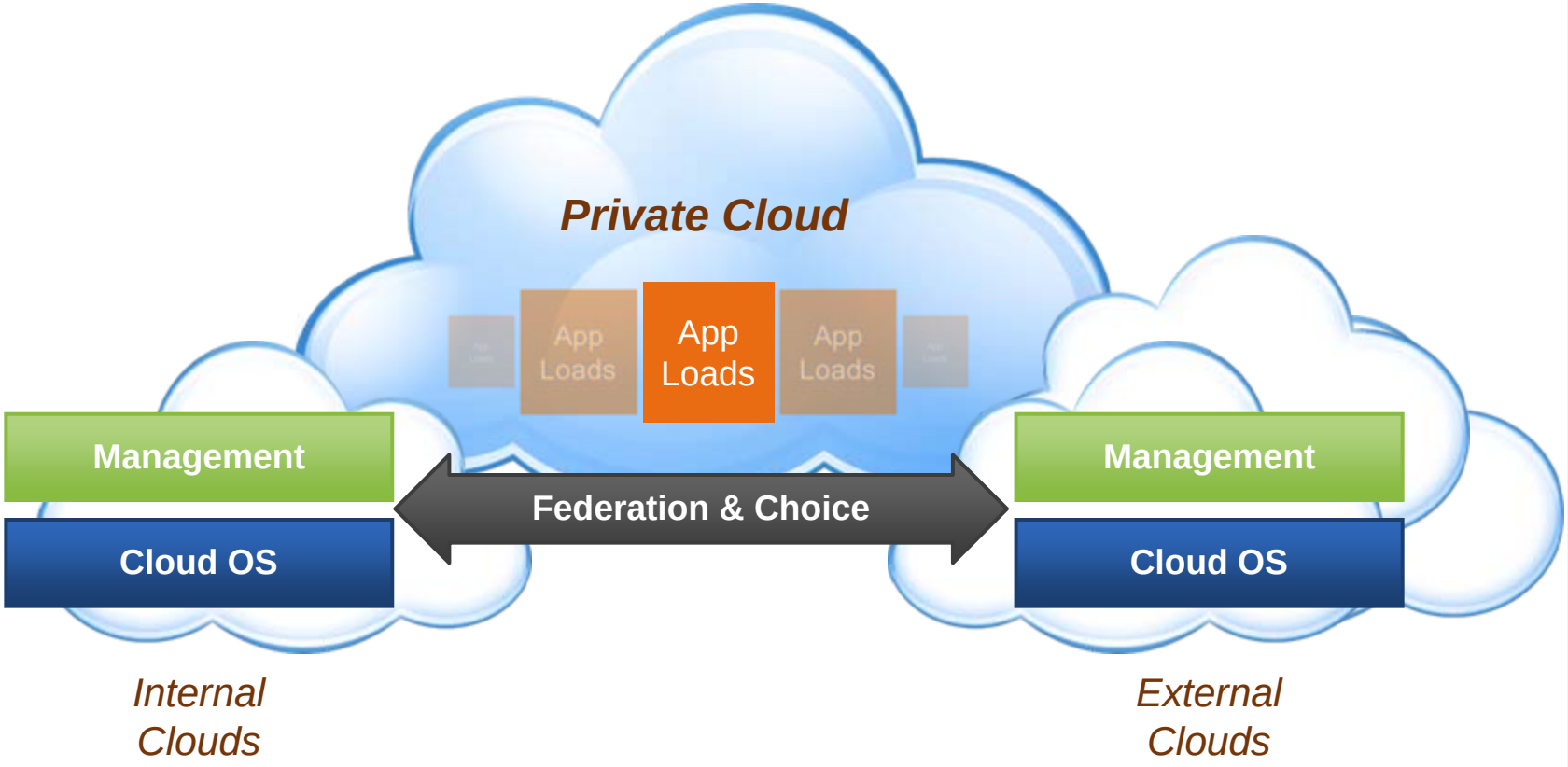
The Goal

IT as a Service

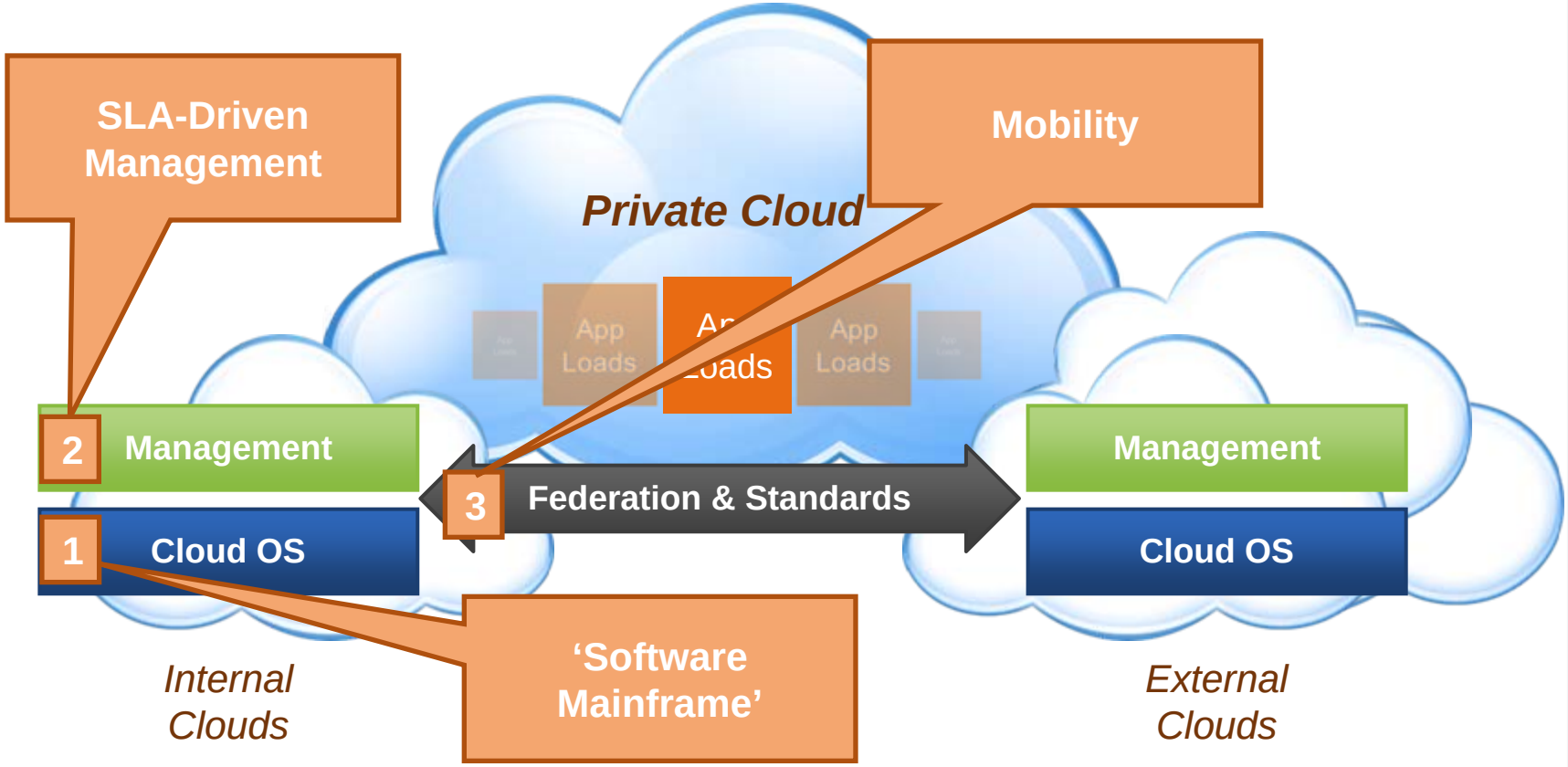
Just like…..

- Inexpensive, pay as you go, pay for what you use
- Ubiquitously available
- Reliable
- Choice of providers

The Vision: IT as a Service Delivered Through Private Cloud



There are Three Building Blocks for the Private Cloud



Introducing…

VMware vSphere™ 4.0

The best platform for building cloud infrastructures

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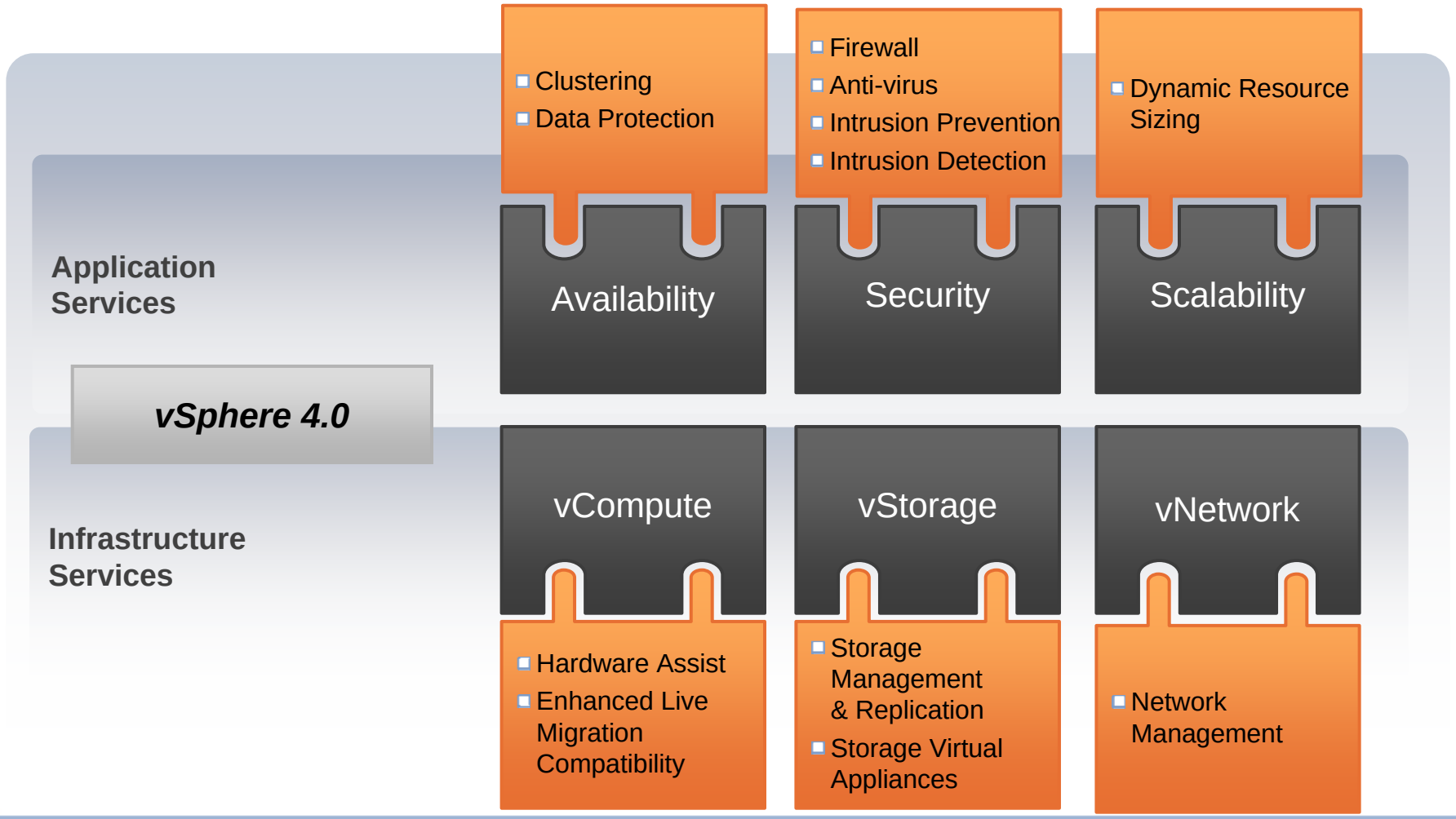
VMware vSphere™ – The Industry's First Cloud Operating System



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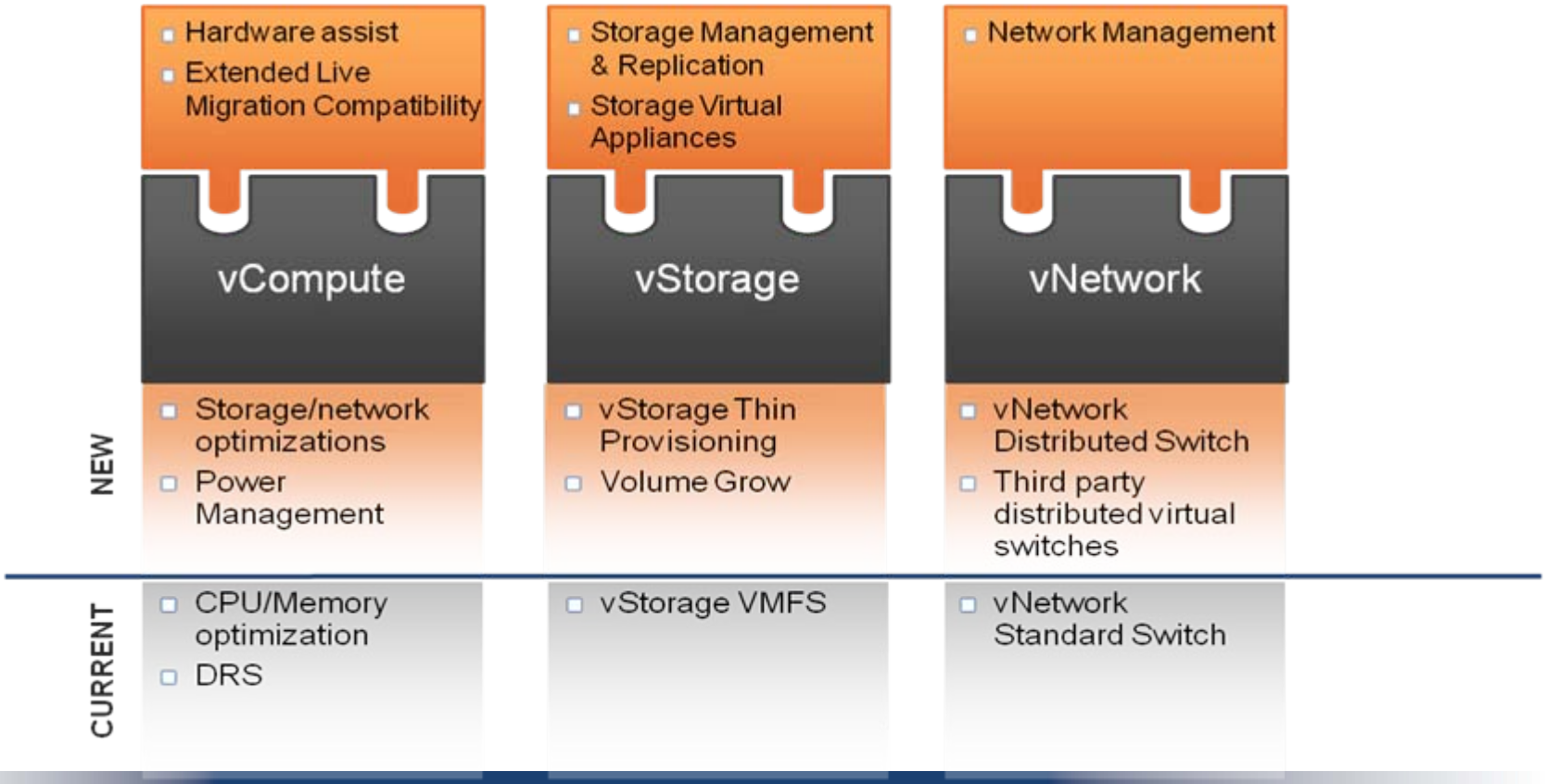
VMware vSphere™ 4.0 Delivers

VMware vSphere™ 4.0 Delivers

Infrastructure Services Deliver CapEx and OpEx Savings



Highest consolidation ratios in the industry
Most efficient use of hardware resources
Low operational overhead

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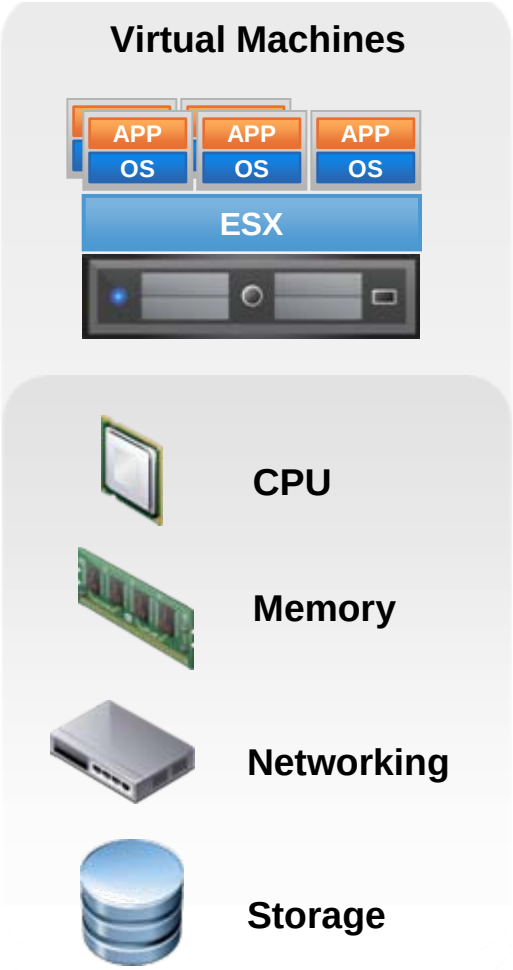
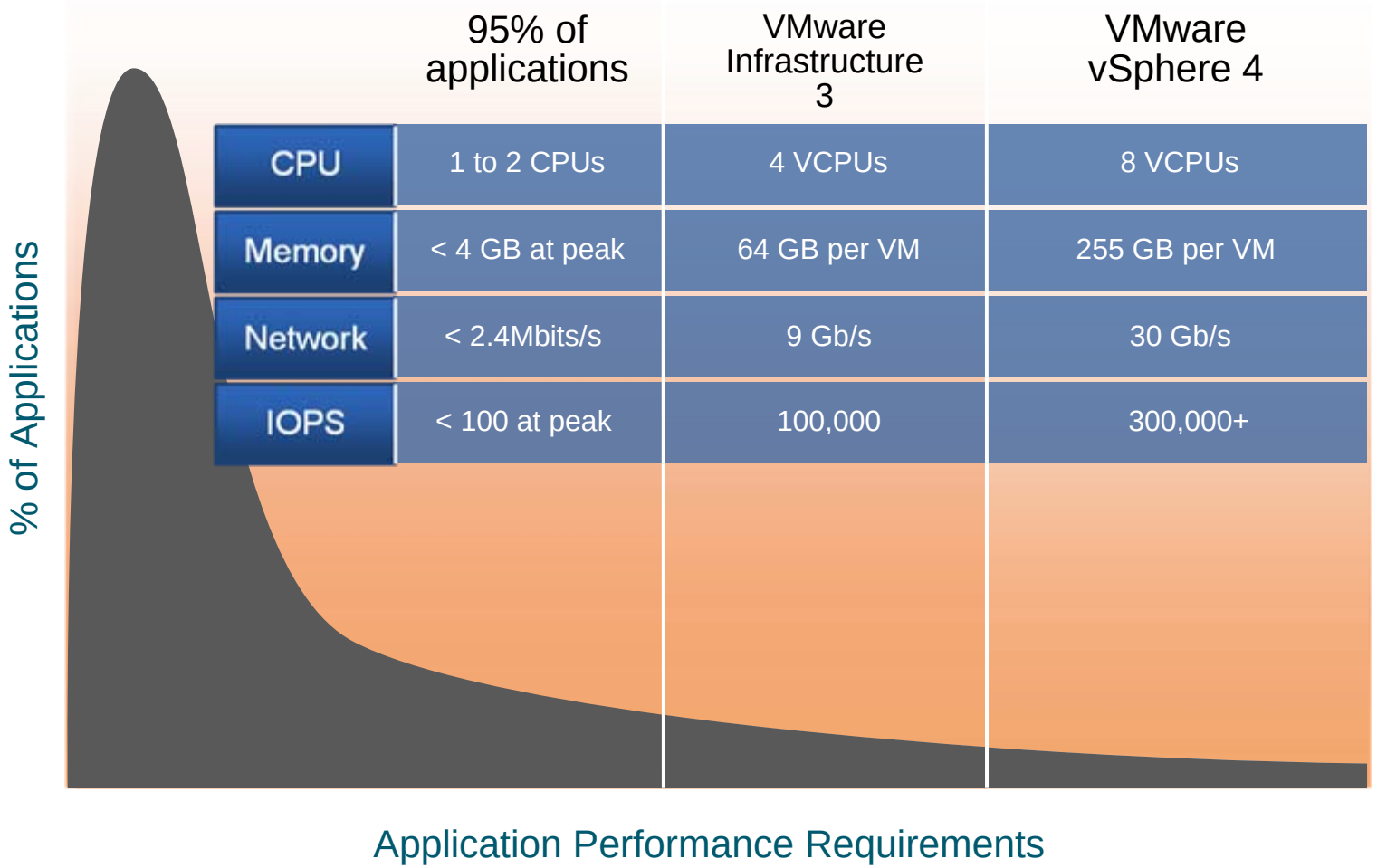
“Speeds and Feeds” Optimization for the Highest Consolidation Ratios



VM Scale Up	8-way vSMP and 255 GB of RAM per VM
Hardware Scale Up	64 cores and 1 TB physical RAM
Hardware Assist Purpose Built Scheduler	Lowest CPU overhead
Hardware Assist Page Sharing Ballooning	Maximum memory efficiency
VMXNET3 VMDirectPath I/O	Wirespeed network access
Storage stack optimization VMDirectPath I/O	Greater than 200k iops per second Lower than 200 microsecond latency

Current NEW

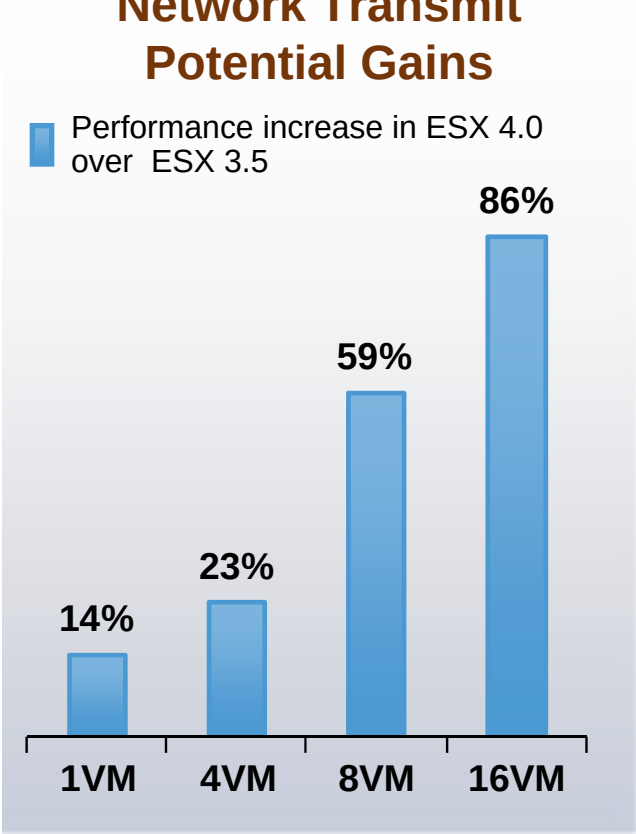
vSphere 4 Delivers Performance for Demanding Applications



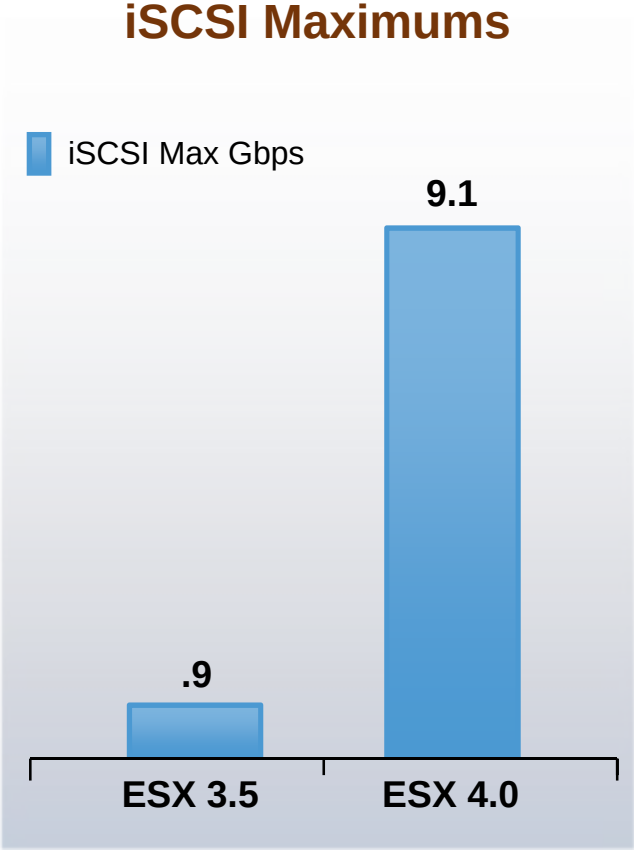
1. Source: VMware Capacity Planner assessments

I/O Throughput Optimizations for Business Critical Applications

Network Transmit Potential Gains



iSCSI Maximums



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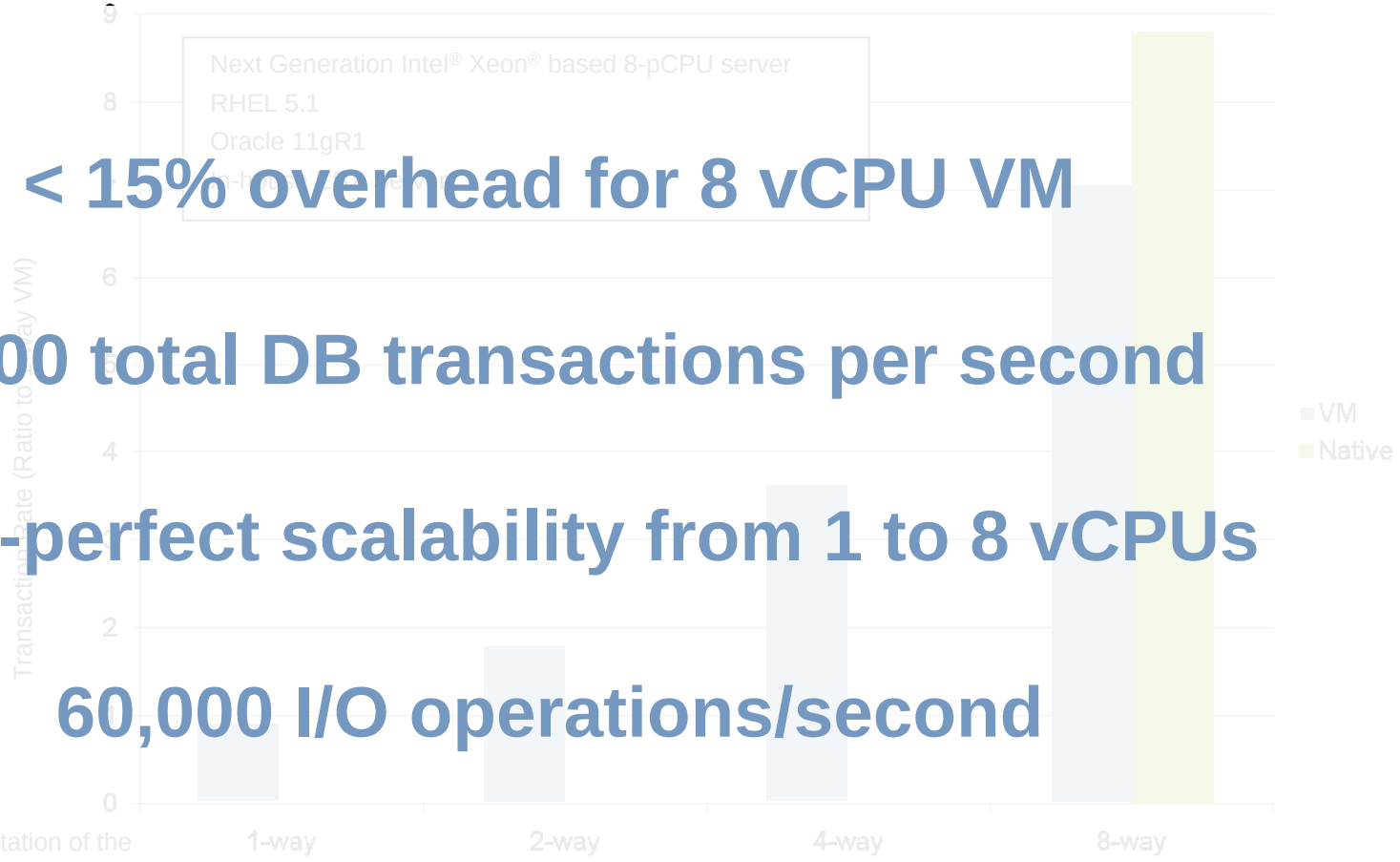
Single VM Performance: Well-Known Database OLTP Workload†



< 15% overhead for 8 vCPU VM

8,900 total DB transactions per second

Near-perfect scalability from 1 to 8 vCPUs

60,000 I/O operations/second

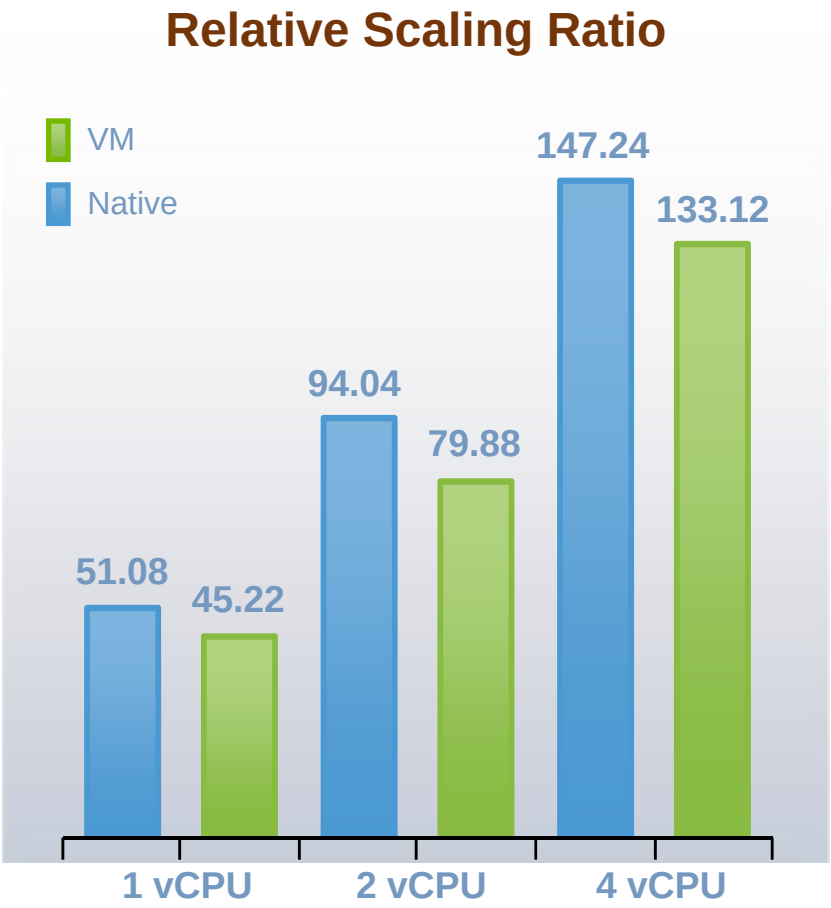
† A fair-use implementation of the TPC-C workload; results are not TPC-C compliant

Comparison to VISA

=

Sun Fire 15k (ca. 2002)

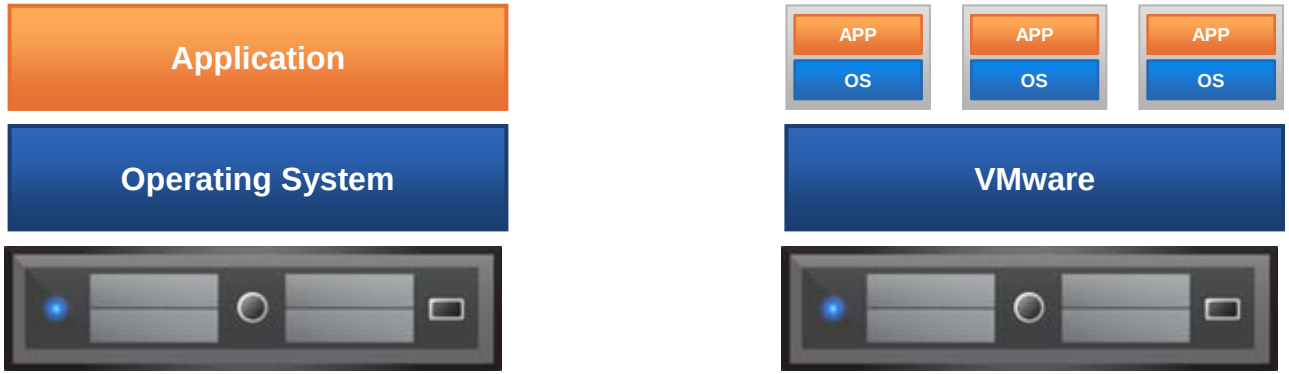
ESX 4.0 Performance with SQL Server 2008



ESX achieves 90% of native performance on 4.0 vCPU VM

Workload transaction latency unchanged between ESX 4.0 and Native

Multi-core + VMware = Record Performance



Multi-core + VMware = Record Performance

Tester Name	System Name	Cores	Results
Fujitsu Sie	PRIMERGY RX600 S5		
Hewlett-Pa			
Hewlett-Pa	HP ProLiant		
Hewlett-Pa			
Hewlett-Pa			
Sun Micros Inc.			
VMware In			
VMware Inc., USA	**HP ProLiant DL585 G5 (with VMware ESX Server 3.5)**	**16**	**44,000**

SPECweb2005 Scores

Would serve 3 billion page views per day

“On a typical day, there are 1 billion page views.”
-Pierre Omidyar, eBay Founder
techtarget.com (July 07)

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Multi-Core + VMware = Record Performance

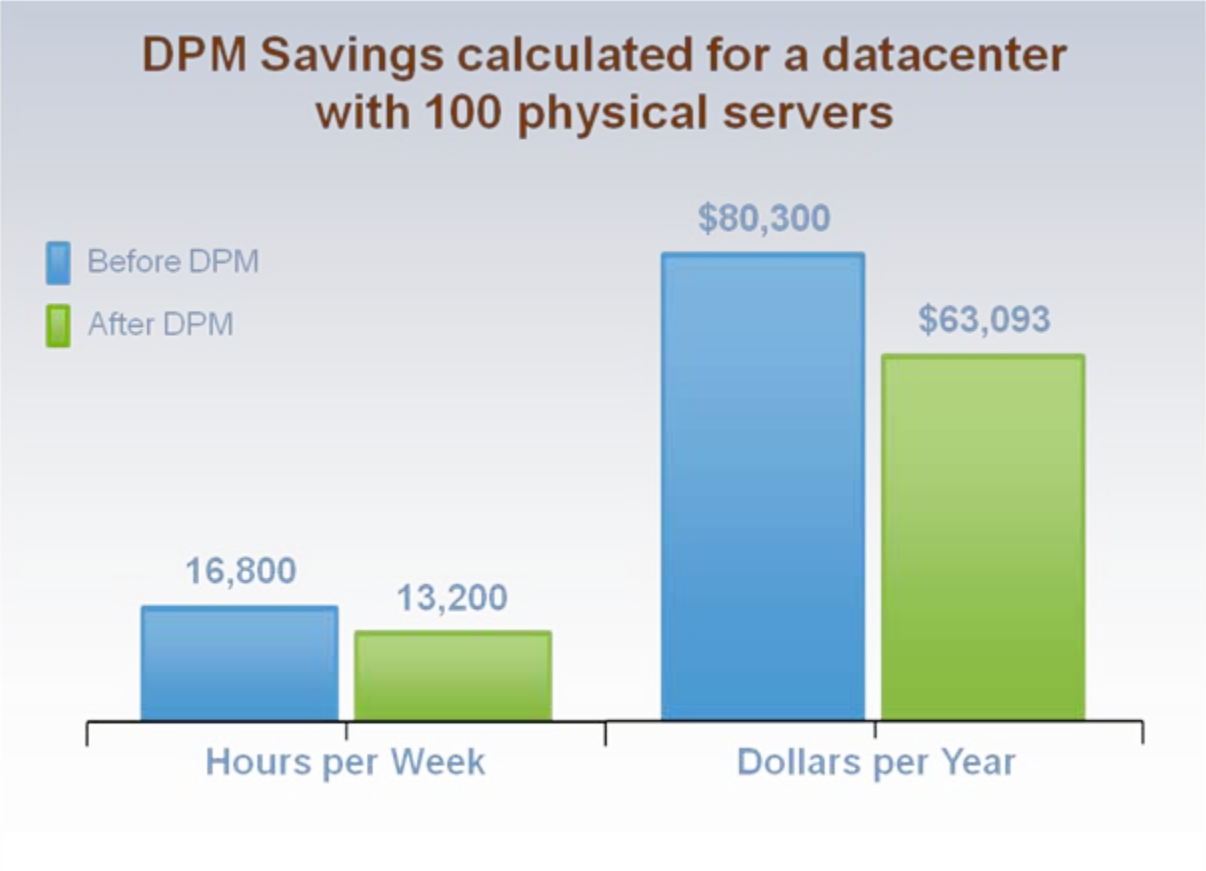
3x

eBay's daily web traffic on a single server

Green IT with VMware vSphere™ Power Optimization features

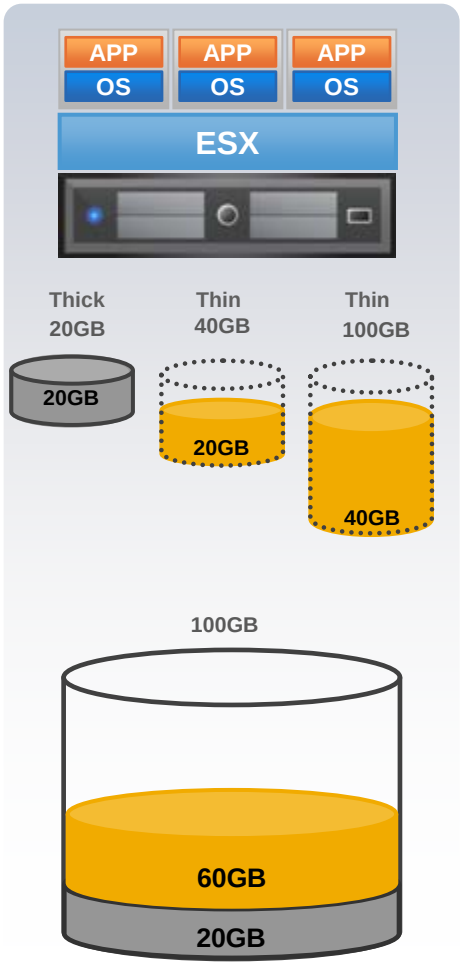
- DPM consolidates workloads onto fewer servers when the cluster needs fewer resources
  - Places unneeded servers in standby mode
  - Brings servers back online as workload needs increase
- ESX supports Intel Speed Step/AMD Power now for individual host power optimization
- Minimizes power consumption while guaranteeing service levels
- No disruption or downtime to virtual machines

Additional 20% Reduction in Power Costs with DPM…



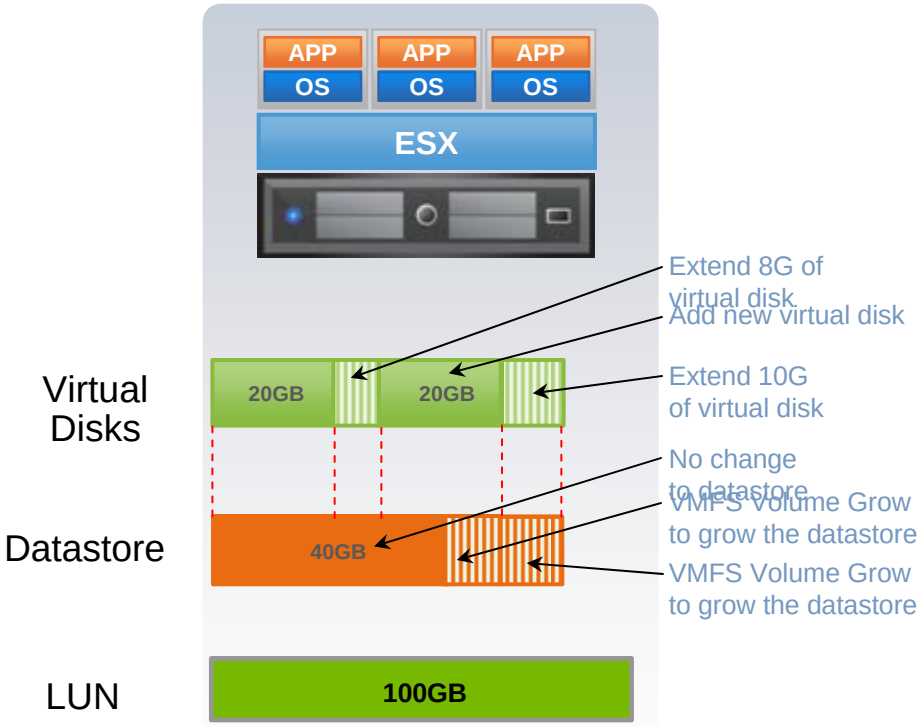
Assumptions: 50 out of 100 servers can be powered down for 8 hrs/day on weekdays and 16 hrs/day on weekends.
Total power consumption per server (operating power + cooling power) = 1130.625 watts/hr
Cost of energy = $ 0.0813 per kWH (source: Energy Information Administration)

vStorage Thin Provisioning



- Virtual machine disks consume only the amount of physical space in use
  - Virtual machine sees full logical disk size at all times
  - Full reporting and alerting on allocation and consumption
- Significantly improve storage utilization
- Eliminate need to over-provision virtual disks
- Reduce storage costs by up to 50%

Efficient Storage Abstraction with VMFS



Hot Virtual Disk Extend

- Expand virtual disks online
- Respond quickly to growing requirements without downtime

VMFS Volume Grow

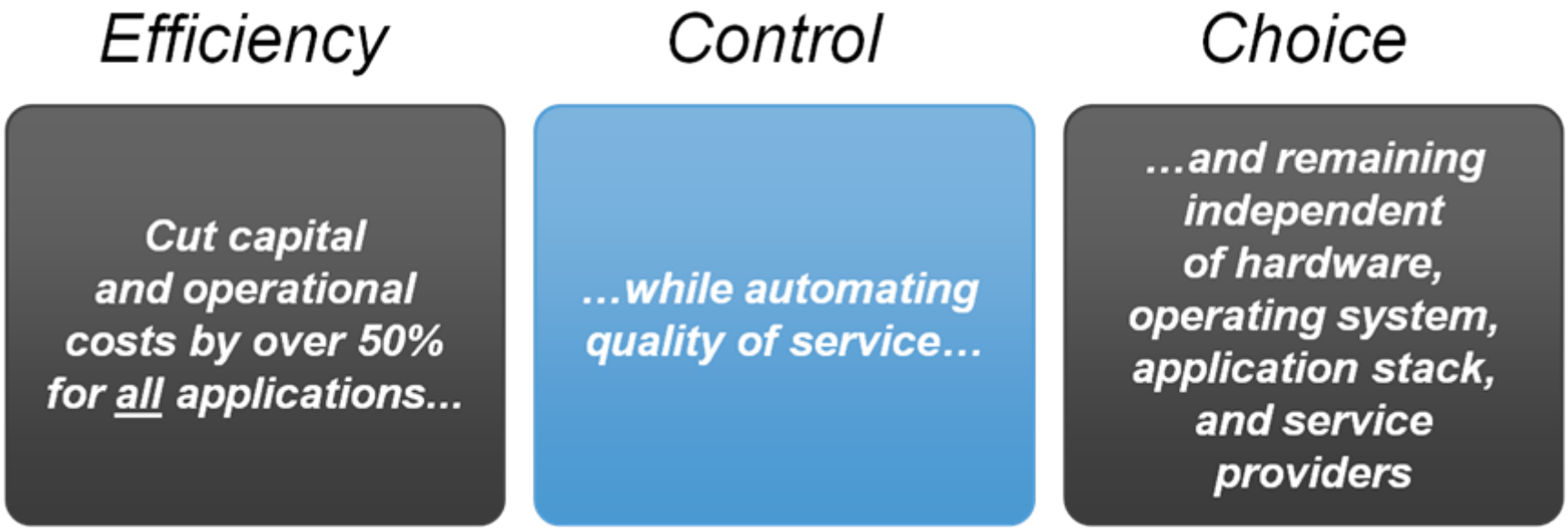
- Expand VMFS Volume on the same LUN it was created
- Facilitate adding more virtual machines to an existing volume
- Facilitate data growth for the virtual machines
- Increase flexibility to simplify capacity planning

vNetwork Distributed Switch

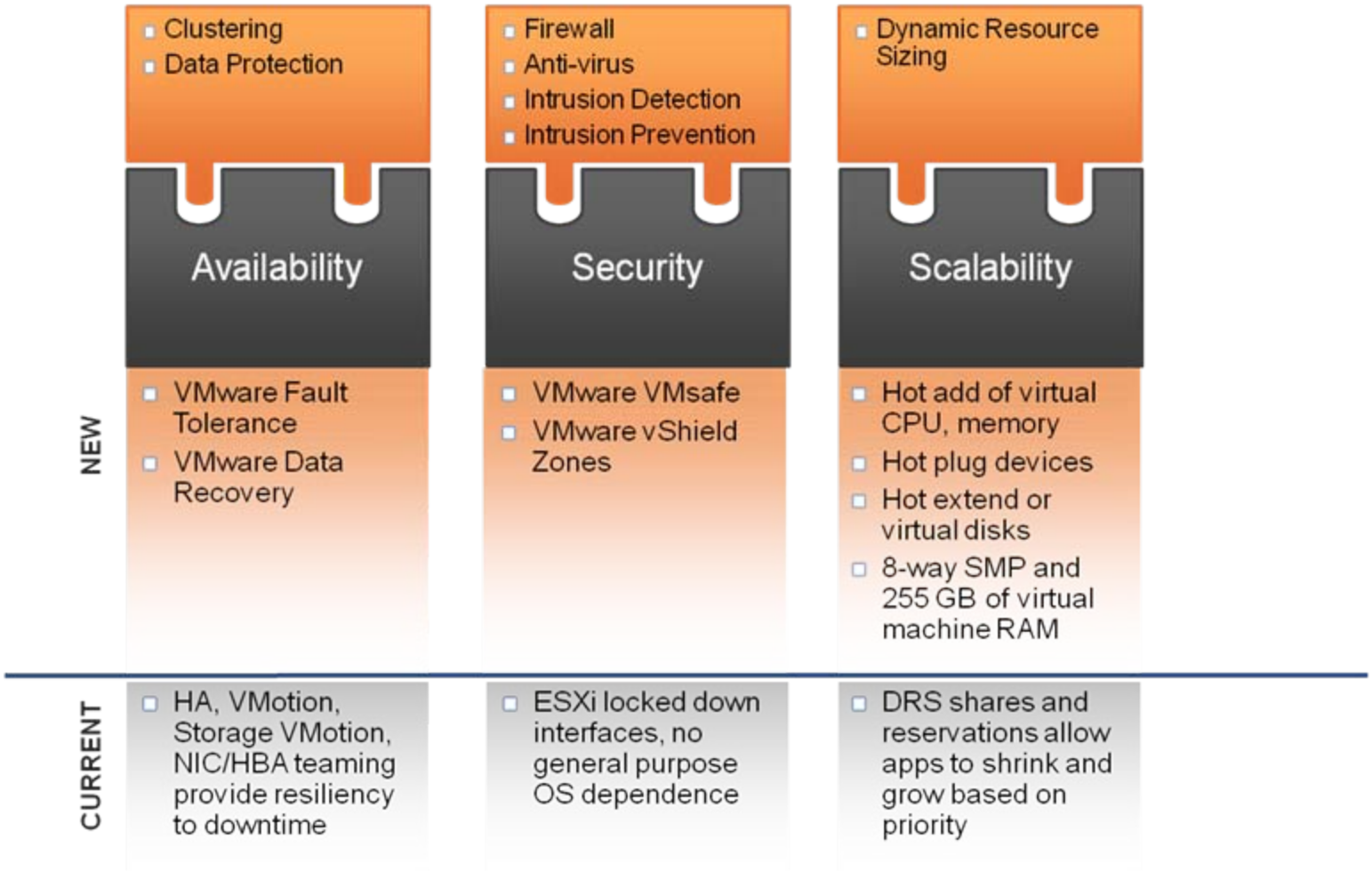
2009

- Aggregated datacenter level virtual networking
- Simplified setup and change
- Easy troubleshooting, monitoring and debugging
- Enables transparent third party management of virtual environments

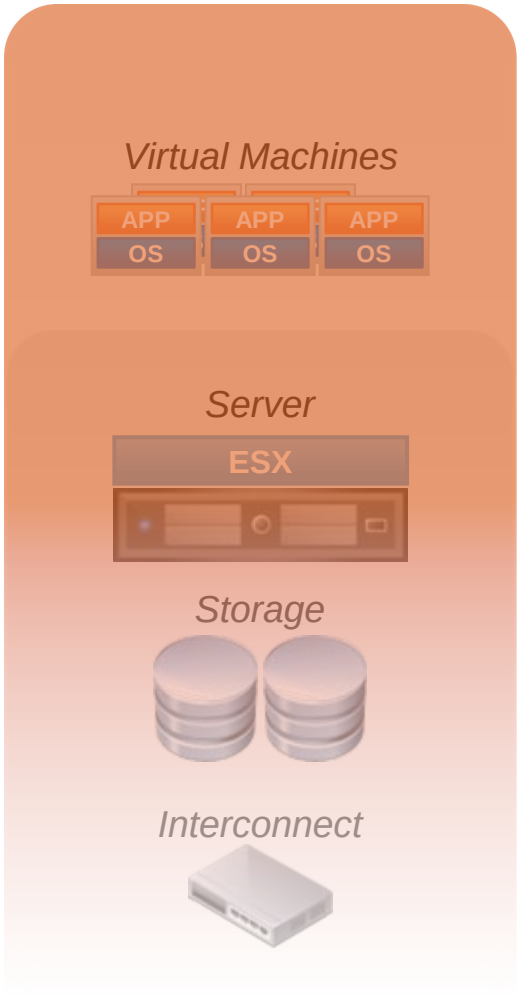
VMware vSphere™ 4.0 Delivers



Application Services Provide Built in Service Level Controls

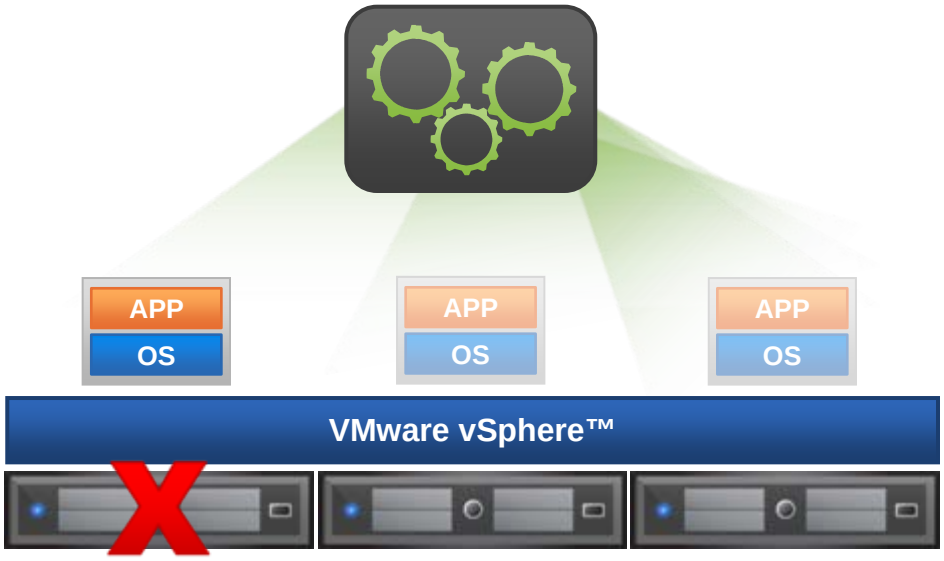


VMware Solutions Maximize Uptime



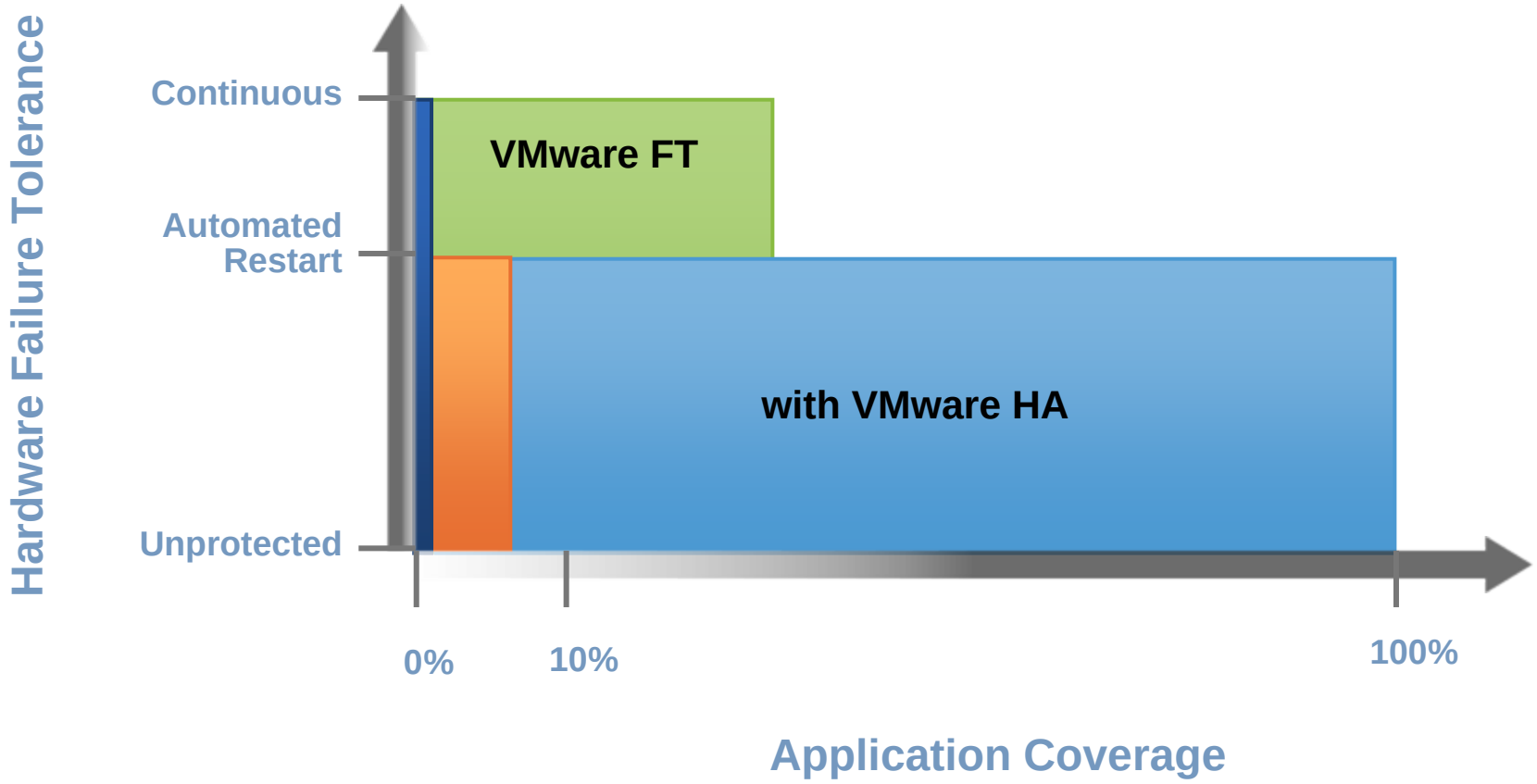
Planned Downtime	Unplanned Downtime
	VM Failure Monitoring
Site Recovery Manager	
VMotion	HA
Storage vMotion	VCB
Network Redundancy	NIC & HBA Teaming

VMware Fault Tolerance

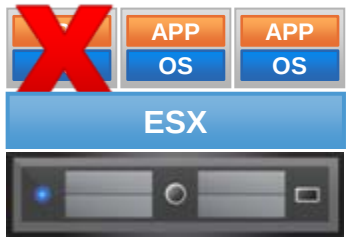


- Single identical VMs running in lockstep on separate hosts
- Zero downtime, zero data loss failover for all virtual machines in case of hardware failures
- Zero downtime, zero data loss
- No complex clustering or specialized hardware required
- Single common mechanism for all applications and OS-es

Transforming Availability Service Levels



VMware Data Recovery



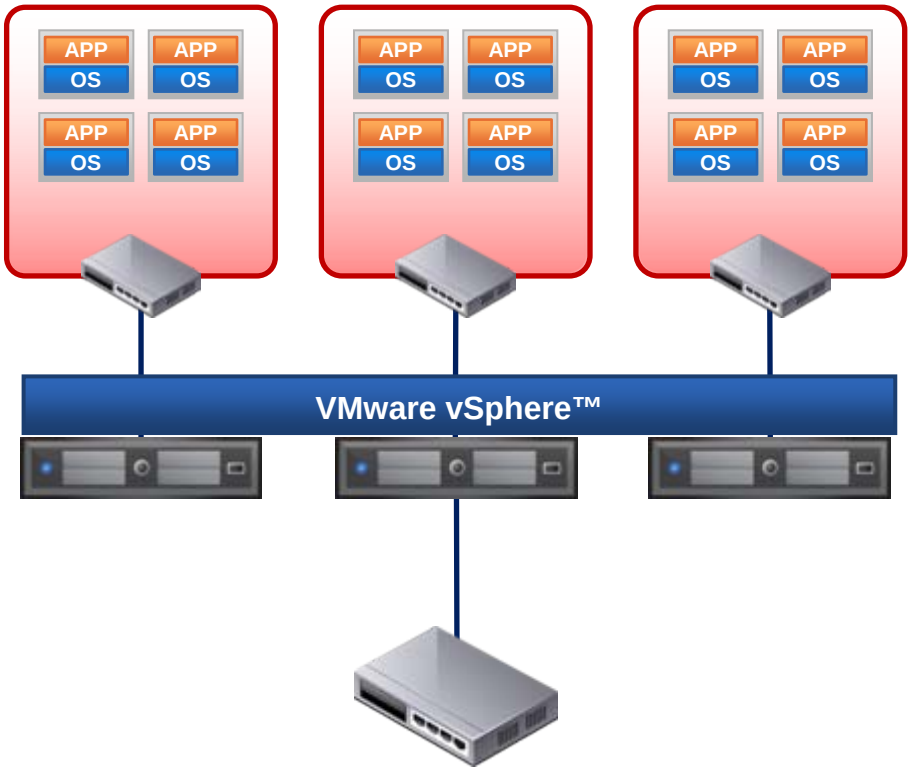
De-duplicated Storage

- Agent-less, disk-based backup and recovery of your VMs
- VM or file level restore
- Incremental backups and data de-dupe to save disk space
- Quick, simple and complete data protection for your VMs
- Centralized Management through VirtualCenter
- Cost Effective Storage Management

VMware VMsafe

- API that enables protection of VMs by inspection of virtual components in conjunction with hypervisor
- Isolation of protection engine from malware
- Broad ranging coverage of virtual machine CPU, memory, storage and network

VMware vShield Zones

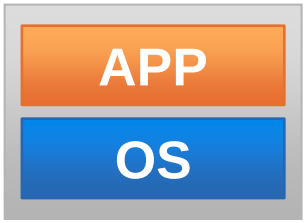


- Self-learning, self-configuring firewall Service
- VMotion and network-configuration aware trust zones
- Dynamic firewall policy using application protocol awareness
- Dynamic security capacity using infrastructure vServices
- Security policies auto-adapt to network reconfiguration or upgrades

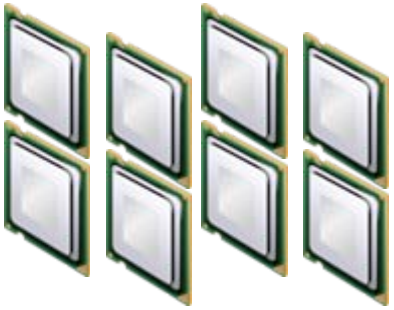
DRS Ensures Capacity on Demand

- Shrink and grow of applications based on demand and priority
- Dynamic and responsive load balancing

Scale Up Applications for Assured QoS



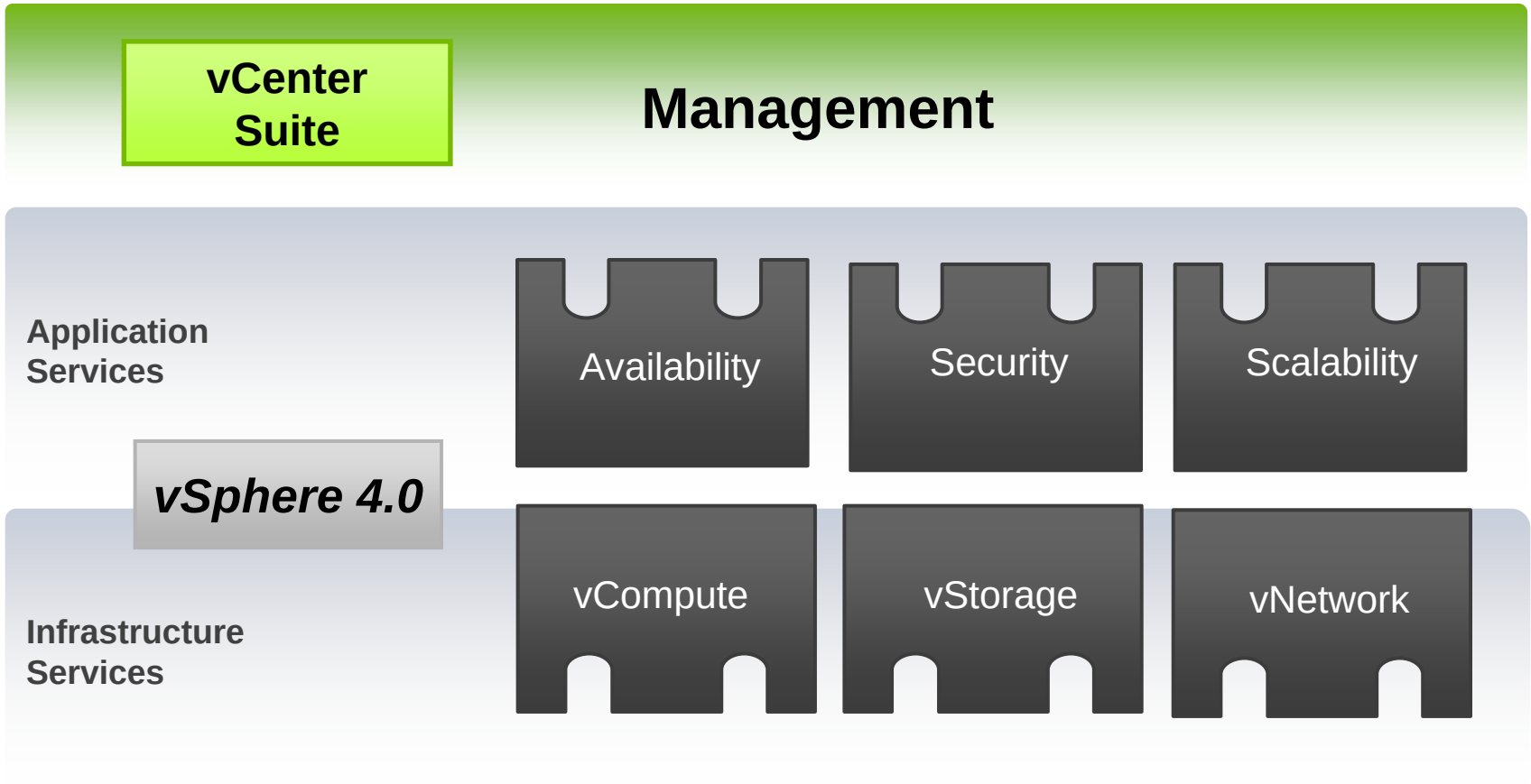
255GB



8 CPUs

- Scalable virtual machines
- Hot add of
  - CPU
  - Memory
- Hot add and remove
  - Storage devices
  - Network devices
- Hot Extend virtual disks
- Zero downtime scale out of virtual machines

Next Generation Management Enhances Control



VMware vCenter Server 4

vCenter Server

Automation

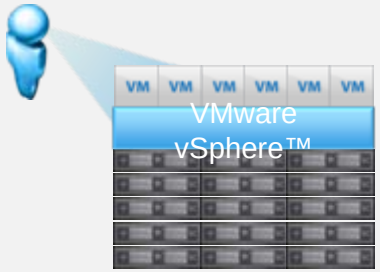
vCenter Orchestrator
•Workflow engine for orchestrating virtualization
•Automate manual, repeatable steps by drag and drop interface

Scalability

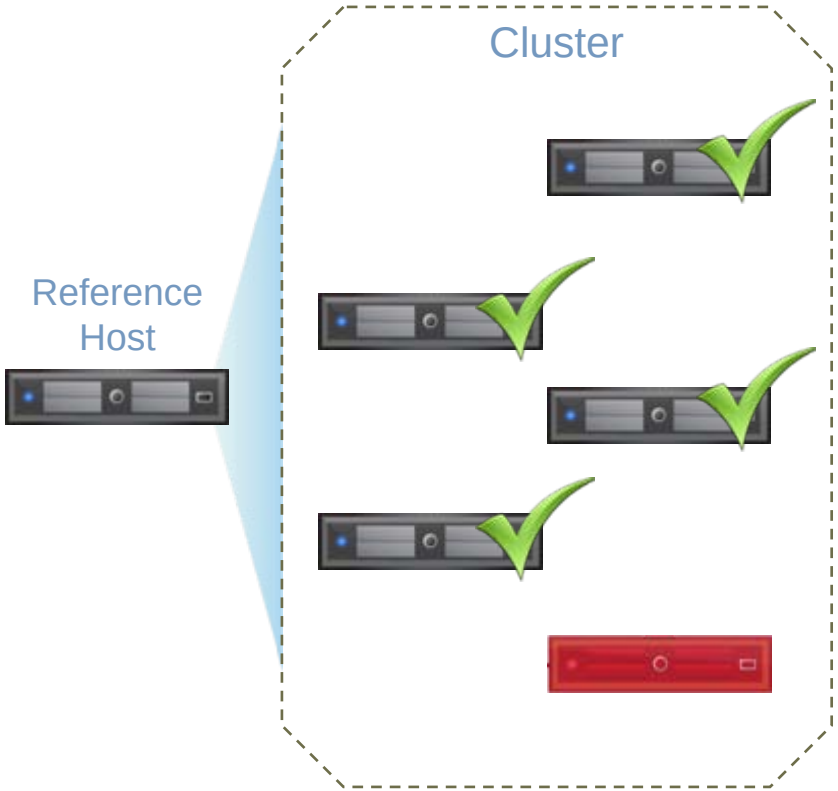
vCenter Server Linked Mode
•Standard vSphere Client can access inventory across multiple vCenters
•View and search across a group of VC Servers

Visibility

Host Profiles
•Simplified setup and change management for ESX hosts
•Easy detection and remediation of non-compliance with standard configurations



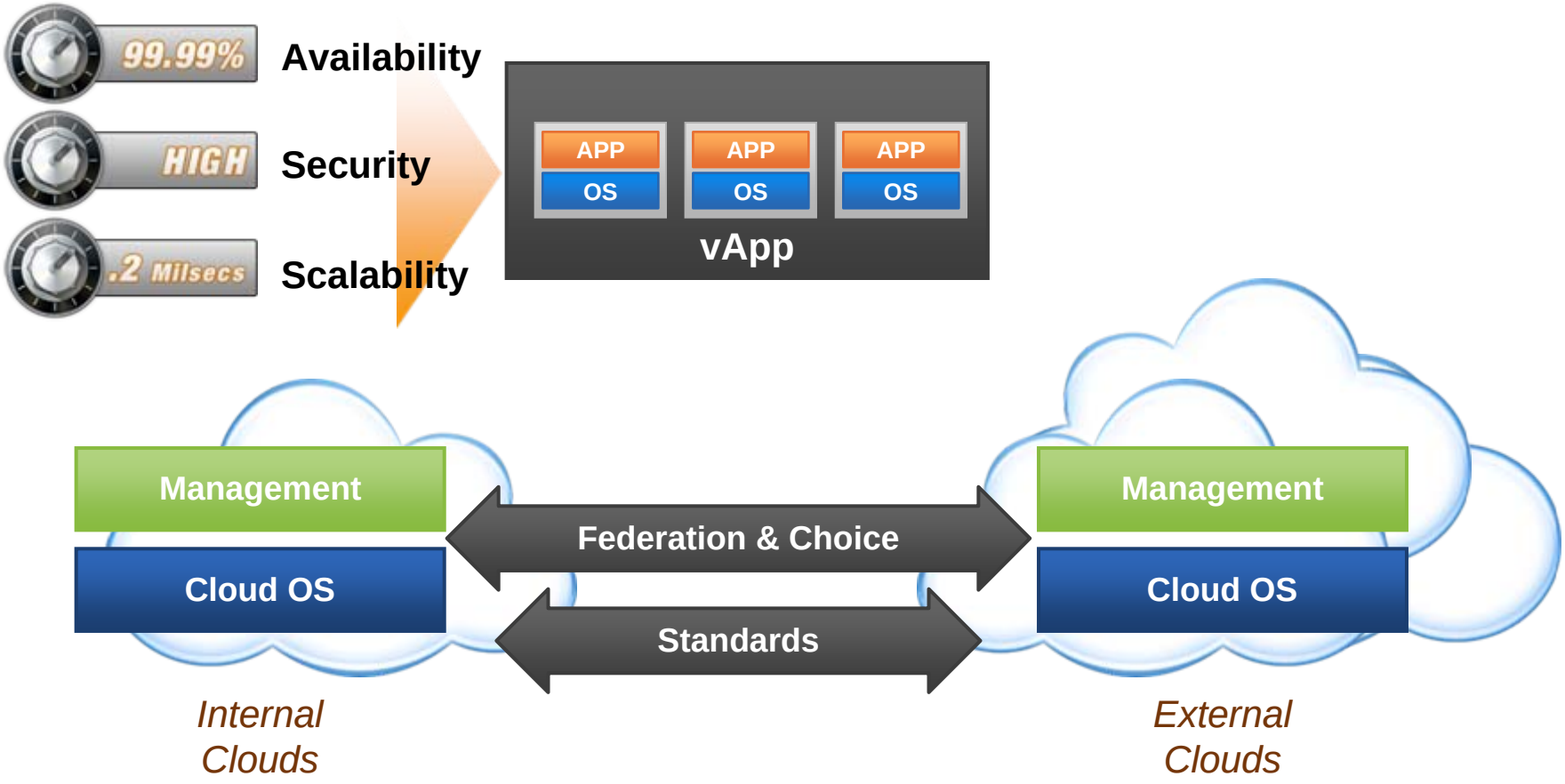
vCenter Server: Host Profiles



- Simplified setup and change management for ESX hosts
- Easy detection of non-compliance with standard configurations
- Automated remediation

VMware vSphere™ 4.0 delivers

vApp – Self Describing Applications Enable Choice



vSphere 4 Delivers Choice

Most comprehensive OS support

- Support for more guest operating systems than any other bare-metal virtualization platform

Extensive enterprise application support

- Over 300 enterprise software applications have explicit support statements for VMware vSphere today

Choice of end-to-end integrated management

- Partnerships and integrations with leading systems management vendors

Flexibility to leverage internal and external clouds

- Standardized interfaces to federate and move between internal and external clouds

Future Proof IT…

Internal Cloud

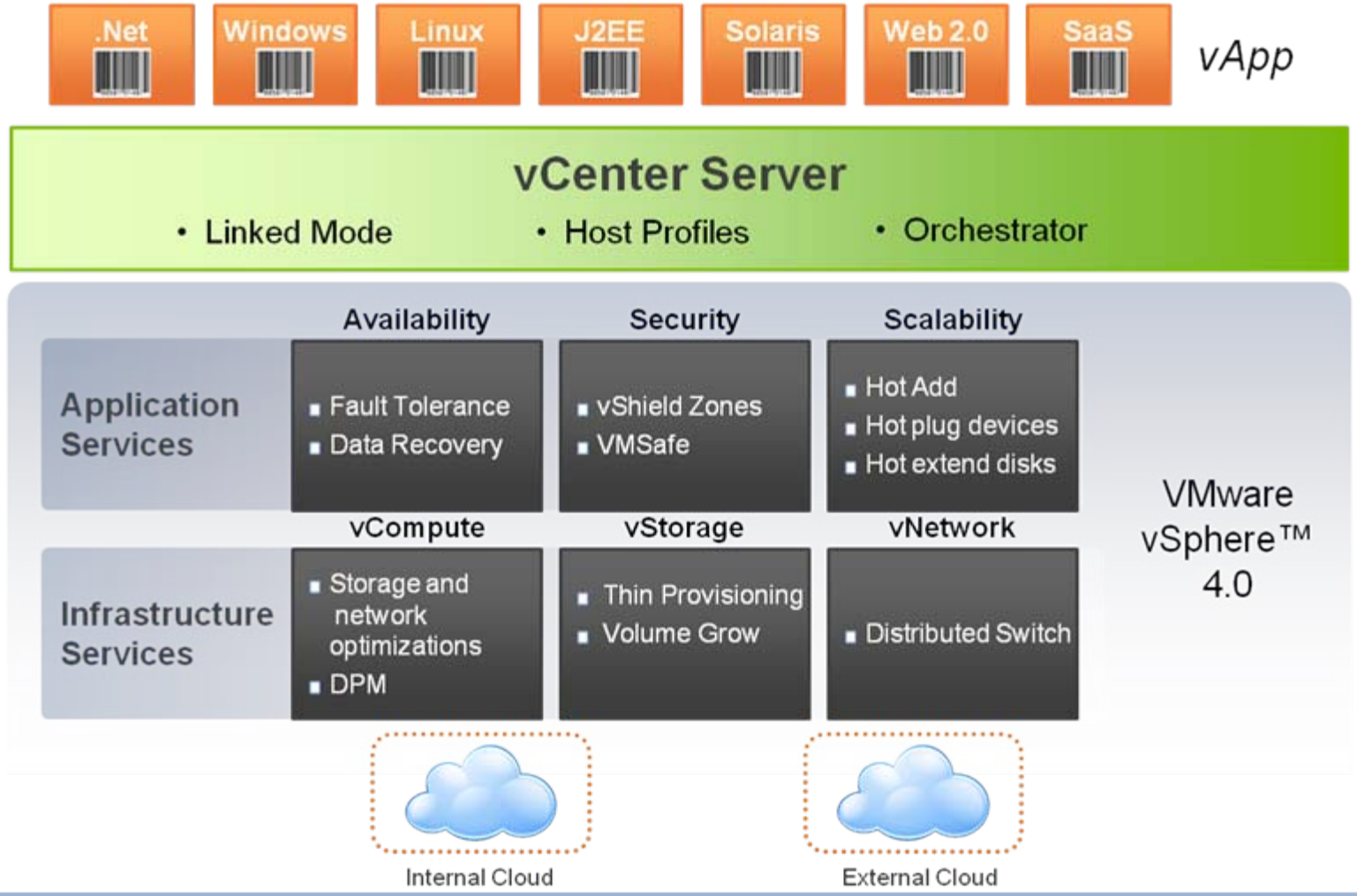
Owned and
Operated by IT

External Cloud

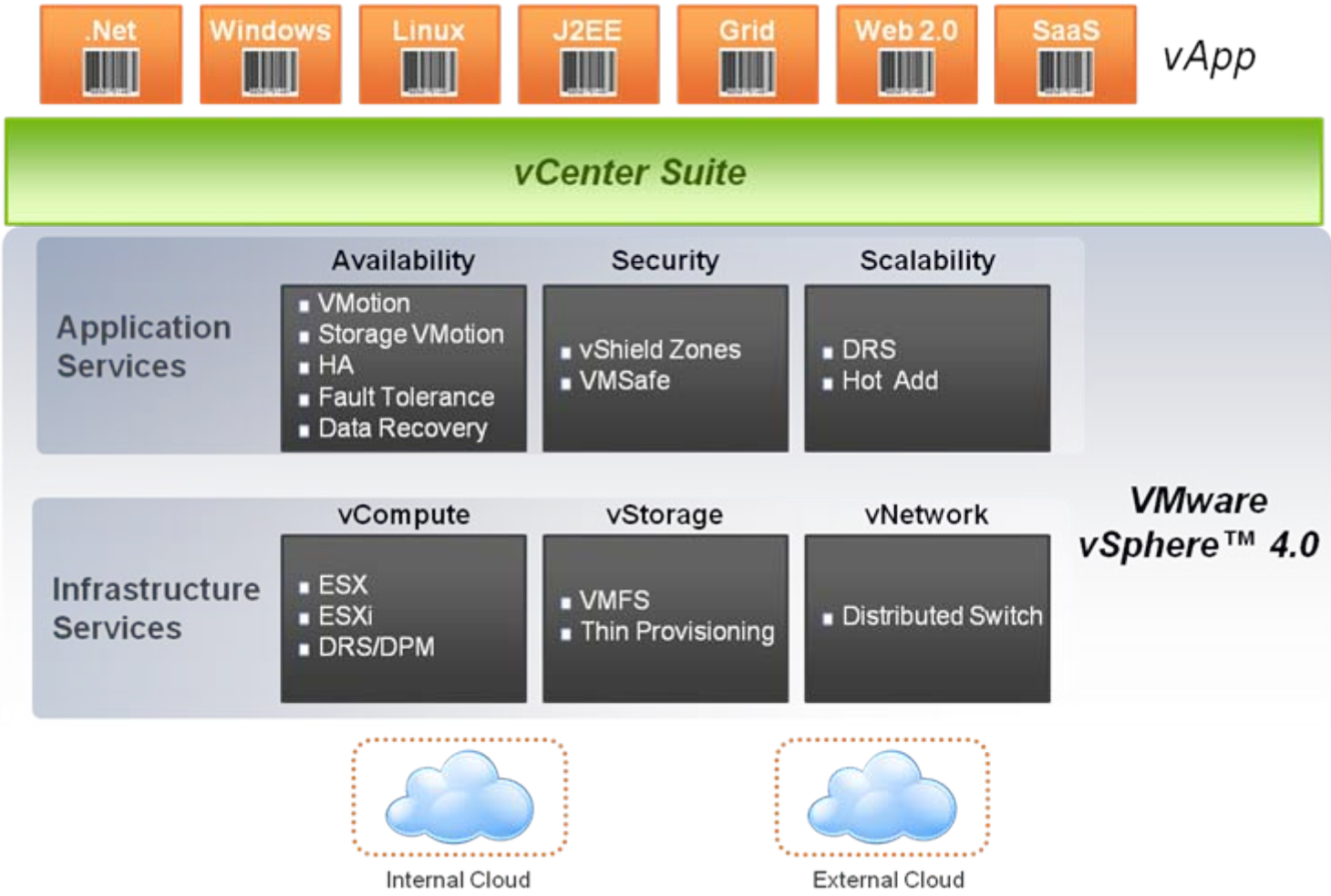
Rented by IT

Unlock new market based economies of scale, service and innovation beyond what currently exists today

Summary – What's New

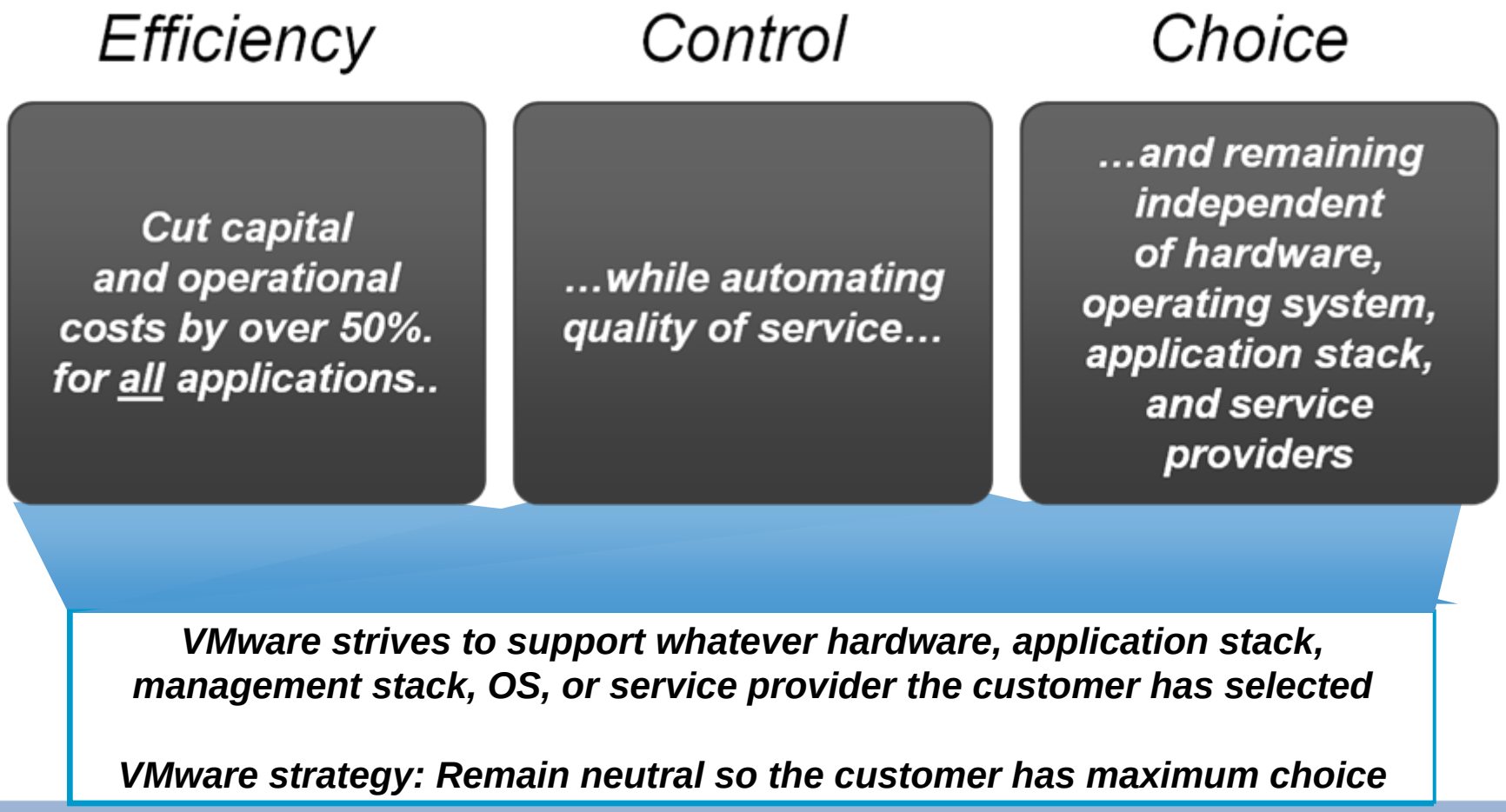


Summary of VMware vSphere™

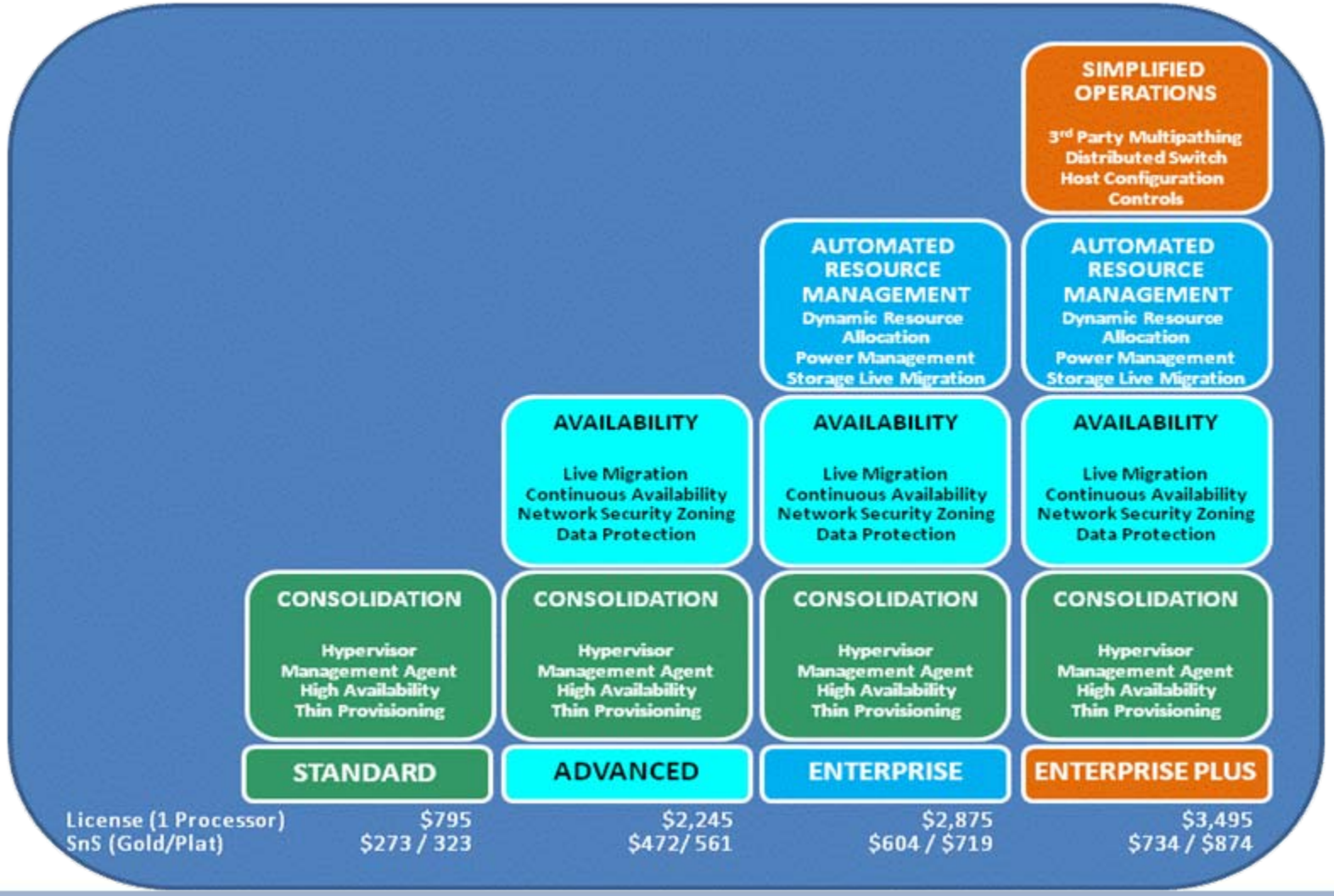


*Note vCenter Server and its components are a separate purchase

VMware vSphere™ - The best choice for your business



Overview of Editions



Resources and Next Steps :

- **VMware vSphere landing page**
  - http://www.vmware.com/go/vsphere
- **New editions overview**
  - http://www.vmware.com/go/vsphere/buy
- **Upgrade to vSphere**
  - www.vmware.com/go/vsphere-upgrade-center
- **Deep Dive Webcasts**
  - **Technical : http://www.vmware.com/a/webcasts/index/program/179622**
  - **Overview :**

    http://www.vmware.com/a/webcasts/index/program/179617