

How far will you take virtual?

Microsoft Virtualization Delivers
More Capabilities, Better Value than VMware

October 31, 2012

Why Virtualize?

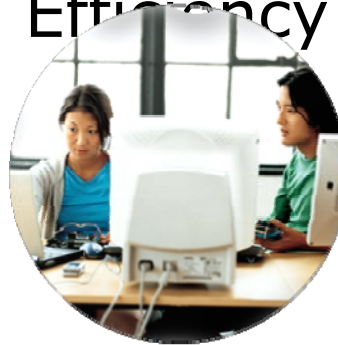


Drive Costs Down



Server Consolidation
Energy & Space Reduction
Application Compatibility

Increase IT Efficiency



Rapid Provisioning
High Availability
Business Continuity

Enable Business Agility



Dynamic Datacenters
& Desktops Accelerated
Responsiveness

"Why is virtualization such a big deal? A lot of people understand, and they think it's about saving money, it's about saving power, it's about green IT, it's about space, and that's certainly true. But in our perspective, it's much, much bigger than that, and people are just now beginning to understand that. We think that there's a major transformation taking place in IT. This major transformation that's been taking place for years is starting to accelerate, and we believe that virtualization is a major enabler and catalyst of that transition that's taking place."

- Tom Bittman, Gartner VP and Chief of Research of Infrastructure and Operations, at Microsoft's Virtualization Launch Event

Why Customers are Excited about Microsoft Virtualization



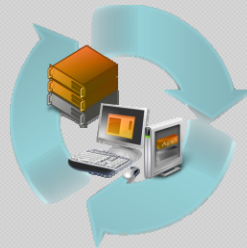
It's the
Platform
you know



Key feature
of platform

Tools
you know

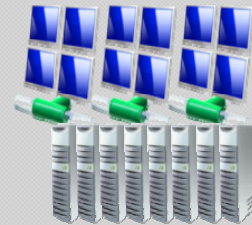
Data center
to desktop



Full range of
products & solutions

Large partner eco-
system

End-to-End
Management



Physical and Virtual
& Cross-hypervisor

Interoperability

Best
TCO/ROI



1/6th the
price upfront

Significant Savings

Lower ongoing costs

The Microsoft Advantage

Get More, Pay Less than VMware



- Built-in **virtualization**
- Extensive, unified **management**
- Covers **all** the bases
- Hard cost **savings**
- Microsoft® technology **breadth**



Built-in Virtualization



- Virtualization built into the operating system with **Windows Server® 2008 R2 Hyper-V™** virtualization technology
- Virtualization in the management platform with the **Microsoft System Center suite** of solutions
- **Three** layers versus four
- **Microsoft** (existing knowledge and skills) vs. **VMware** (more training, support, costs)



Why manage an extra layer and pay virtualization tax to get the functionality you require?

Extensive, Unified Management



- Wide-spread virtualization requires comprehensive, seamless **management**
- Only **Microsoft System Center suite** delivers
 - All integrated, all for one price
 - Physical and virtual machines (Hyper-V and VMware)
 - Host and in-guest management
 - Single pane of glass
- **No rip and replace** for existing VMware customers



Microsoft Covers All the Bases From the Datacenter to the Desktop

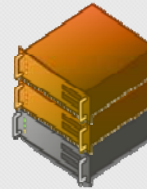


Presentation Virtualization



 **Windows Server 2008**
Terminal Services

Server Virtualization



 **Windows Server 2008**
Hyper-V

Application Virtualization



 **Application
Virtualization**

 **Microsoft®
System Center**

Desktop Virtualization



 **Virtual PC**  **Enterprise Desktop
Virtualization**

"Having one vendor for the hypervisor, operating system, and much of our application software was very appealing to us from a support and cost perspective."

Bert Van Pottelberghe,
Sales Director, Hostbasket

User State Virtualization



Document redirection Offline files

 **Windows Vista®
Enterprise**

MS Virtualization: Best Choice for Server Applications



Microsoft Server Applications Built for Windows

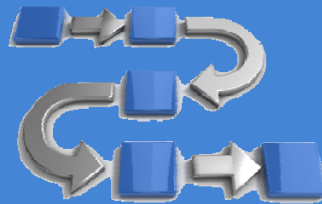


***Built-in Virtualization
with One-stop Support**

***Large Partner
Ecosystem**

**Increased
Deployment Options**

Complete Management Solution

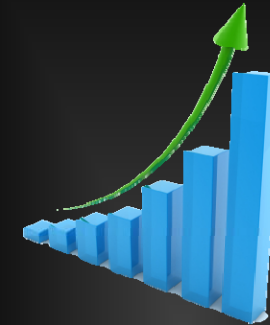


***Deep Application
Knowledge**

***Physical & Virtual
Management**

***Cross Platform and
Hypervisor Support**

Low Cost Complete Solution



***A comparable solution
can cost up to six
times more†**

***Lower Ongoing
Costs**

**Virtualization-friendly
Licensing**

***Only available with Microsoft Virtualization**

†Based on a comparison of Microsoft® System Center Server Management Suite Datacenter with VMware® vSphere Enterprise Plus with VMware vCenter Server.. Assumes a five host configuration, 2 processors on each host, 2 years support costs for both products, and no operating system costs included.. The Microsoft solution can use either the free Microsoft Hyper-V Server 2008 R2 hypervisor or an existing Windows Server 2008 R2 hypervisor. Based on Microsoft estimated retail prices and published VMware prices available at <https://www.vmware.com/vmwarestore> as of 08/04/2009 for purchases in the United States. Actual reseller prices may vary.

Microsoft Server Applications Built for Windows



Built-in Virtualization with One-stop Support



Hypervisor Feature of OS

"We liked the fact that Hyper-V™ was built into Windows Server® 2008...With Hyper-V, we don't need separate drivers for the hypervisor, and we don't pay additional licensing fees."

Bart Roels, Operations Manager, Hostbasket

Broad Range of Partner Solutions and Services

- Strong partner ecosystem and developer network
- Hundreds of virtualization partners worldwide
- Virtualization partner solution catalog with comprehensive solutions

Large Partner Ecosystem



Increased Deployment Options



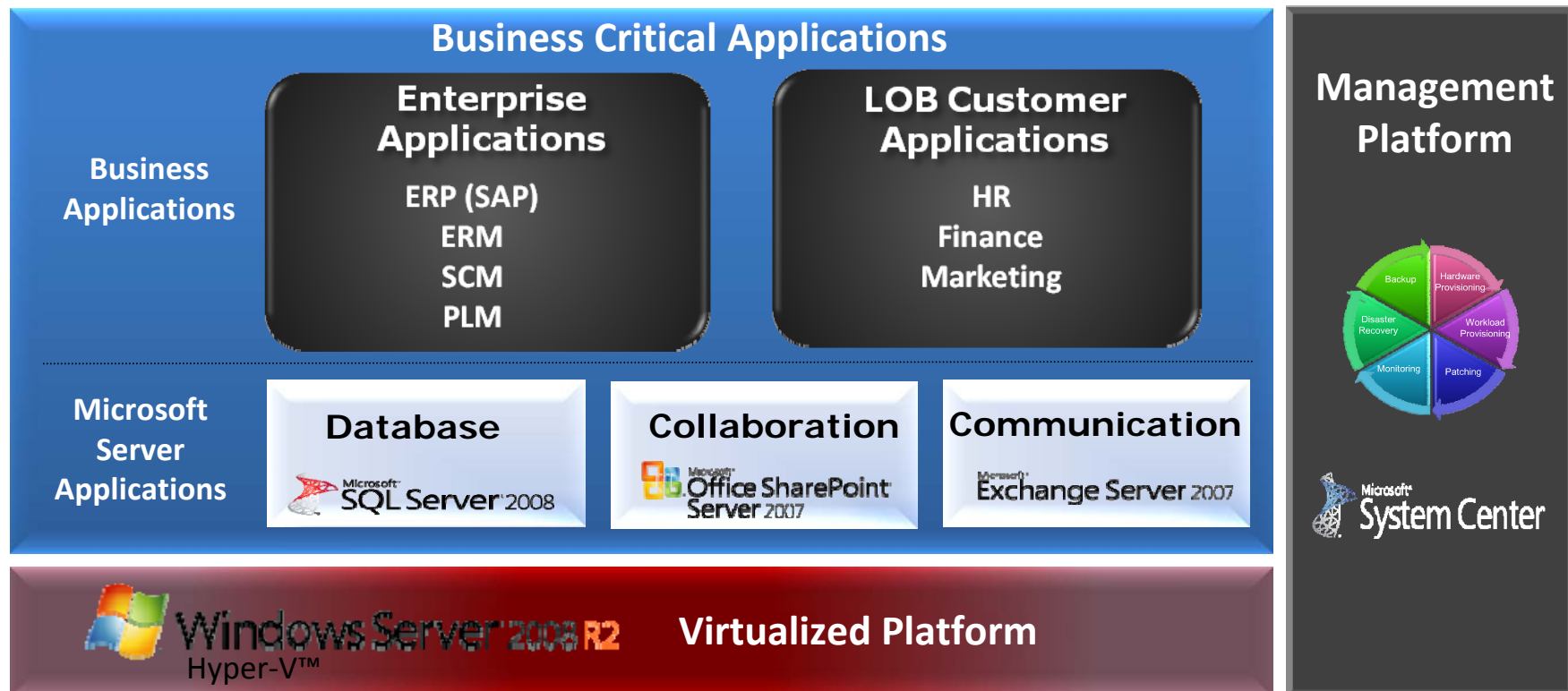
Better Together: Microsoft Applications + Microsoft Virtualization

- Microsoft® SQL Server® – Database Mirroring, Guest Clustering
- Microsoft® Exchange – High Availability
- Microsoft® Office SharePoint® Server – SharePoint Farm with virtual and physical environment

Comprehensive Support for Business Critical Applications



- Microsoft virtualization is the best choice for Microsoft Server Applications
- Microsoft virtualization is supported by a diverse and growing list of industry leading business critical applications:
 - Enterprise Applications: including **SAP®**
 - Line of Business (LOB) Applications



Hard Cost Savings: Feature & Cost Comparison Of Virtualizing 5 Hosts



	Microsoft	VMware
Multi-Hypervisor Management		
App Management		
Physical Management		
Virtual Management		
Hypervisor		

Cost comparisons assumes a five host configuration, 2 processors on



Enterprise vSphere vs. Windows Server 2008 R2/ Server Management Suite Datacenter Comparison



5 servers, 2 processor systems, with management server cost, 2 year maintenance, no operating system cost

	vSphere Standard	vSphere Advanced	vSphere Enterprise	vSphere Enterprise Plus	Server Management Suite Datacenter	
Price	\$13,958	\$32,885	\$42,124	\$51,207	\$0	(Microsoft Hyper-V Server 2008 R2 or existing Windows Server 2008 R2)
Hypervisor + Management	<u>+\$7,318</u>	<u>+\$7,318</u>	<u>+\$7,318</u>	<u>+\$7,318</u>	<u>+\$9,698</u>	
	\$21,276	\$40,203	\$49,442	\$58,525	\$9,698	
Cost Difference	2.2x more	4.2x more	5.1x more	6xmore	↓	
vSMP Support	4-way	4-way	4-way	8-way	4-way	
Physical Memory	256GB	256GB	256GB	1TB	1TB	
VM/OS Updates	✓	✓	✓	✓	✓	
HA/Clustering		✓	✓	✓	✓	
Vmotion/Live Migration		✓	✓	✓	✓	
Backup/Recovery	✓	✓	✓	✓	✓	
Hot Add		✓	✓	✓	✓	
Fault Tolerance		✓	✓	✓	✓	
Storage VMotion			✓	✓	✓	
DRS/PRO			✓	✓	✓	
vNetwork/Host Profiles				✓	✓	
Physical Mgmt					✓	
In-guest Monitoring					✓	
Cross Hypervisor					✓	

SMB vSphere vs. Hyper-V Server/VMM WGE/SCE Price Comparison



5 Servers, 2 Processors System, w/Mgmt Server Cost, 2 yr Maintenance, No OS Cost

	vSphere Essentials	vSphere Essentials Plus	VMM Workgroup Edition (WGE)	vSphere Essentials Plus	VMM WGE + System Center Essentials (SCE)
Price	\$1,098 x 2 = \$2,196	\$4,388 x 2 = \$8,776.28	\$757 + \$0 (WS08R2 or HV R2) = \$757	\$4,388 x 2 = \$8,776.28	\$757 + \$0 + \$2,411 [SCE with 10 Server/50 Desktop CALs] = \$3,168
Cost Difference	2.9x more expensive	11.59x more expensive	←	2.77x more expensive	←
vSMP Support	4-way	4-way	4-way	4-way	4-way
Physical Memory	256GB	256GB	1TB	256GB	1TB
System Updates	✓ (Host/OS only)	✓ (Host/OS only)		✓ (Host/OS only)	✓ (HW/Host/OS/MS Apps/ 3 rd Party Apps)
HA/Clustering		✓	✓	✓	✓
Live Migration			✓		✓
Backup/Recovery		✓		✓	
Cross Hypervisor			✓		✓
Server & Desktop Management					✓
In-guest Monitoring					✓
DRS/PRO					✓
HW/SW Inventory					✓
SW Deployment					✓

Free Hypervisor Feature Comparison



	VMware ESXi 3	VMware ESXi 4	Hyper-V Server 2008 R2
Price	\$0	\$0	\$0
Bare-metal Hypervisor	32-bit	64-bit	64-bit
Boot from Flash	✓	✓	✓
Host Processors	32 Logical Processors	64 Logical Processors	64 Logical Processors
vSMP Support	4-way	4-way	4-way
Host Physical Memory	256GB	1TB	1TB
Virtual Machine Memory	64GB	255GB	64GB
Free Remote Management Client	✓	✓	✓
Live Migration			✓
High Availability/Failover Clustering			✓
Host based console for configuration and troubleshooting			✓
Compatibility with Centralized Multi-host Management (vCenter/VMM)	(Only with per host upgrade to full VI3 license \$2-4K)	(Only with per host upgrade to full vSphere license \$2-4K)	(free with VMM server license, no per host cost)

Microsoft Technology Breadth



- **In-guest** management and monitoring
- **Automated** virtual machine optimization with in-guest knowledge
- Interoperability
- **End-to-end** management
- Production **scalability**
- Microsoft technical **differentials**



In-Guest Management and Monitoring



- **Integrate virtualization** into existing tools, personnel, processes
- **Focus on applications**, workloads running on virtual machines
- **Manage, monitor** virtual machines just like physical machines
- Microsoft System Center Virtual Machine Manager 2008 R2 **integrated** with System Center Operations Manager 2007 R2

Automated Virtual Machine Optimization with In-Guest Knowledge



- Only Microsoft provides **host** and **in-guest** management of all virtual machines
- Not available with VMware: focused on virtual machine not **workload**
- **Lack of in-guest** affects VMware memory overcommit

As scale virtual machines per server,
capital cost benefits with Microsoft increase,
VMware benefits decrease



Virtualized Workloads



Microsoft®
Exchange Server 2007

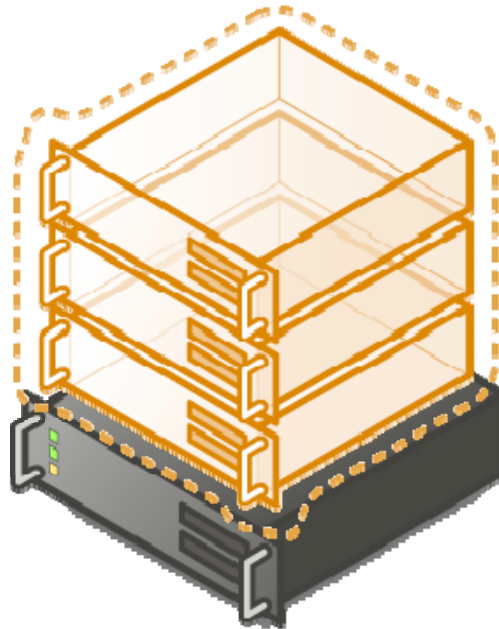
Microsoft®
SQL Server 2008

Microsoft®
Office SharePoint
Server 2007

Microsoft®
System Center

Windows Vista®
Enterprise

Windows Server 2008



Microsoft fully supports our
key server applications in
a virtualized environment

Microsoft has **updated server
workload** licensing to enable
virtualization mobility

**Management of the
workloads is key**, not just
the virtual machine

"Maxol runs Exchange Server 2007, SQL Server 2005, Terminal Services, and file and print servers as key workloads in its virtual environment. Going forward, nearly every business application at Maxol will be a candidate for virtualization."

- Maxol Case Study

"We've seen first-hand that we can virtualize everything from file, print, and web servers to database servers running SQL Server and Oracle, and actually have the virtual machine run *faster* than what it ran on our original physical box."

- Janssen Jones, Indiana University

Interoperability



"DHMC runs both Windows Server 2008 and Windows Server 2003 as guest operating systems under Hyper-V, as well as Linux. To date, DHMC has virtualized Web servers, sites on Microsoft Office SharePoint® Server 2007, reporting servers, medical applications, domain controllers, file and print servers, Citrix servers, and more."

Dartmouth Hitchcock Medical Center Case Study

Interoperability agreements with Novell, Citrix (Xen), and Red Hat to support Linux on Hyper-V

SVVP (Server Virtualization Validation Program) to certify non-Microsoft Hypervisors for Microsoft Support

System Center Operations Manager supports monitoring of non-Windows, including Linux

System Center Virtual Machine Manager manages VMware ESX servers

End-to-End Management



Microsoft application-level knowledge and support equals **much greater integration with virtualization**



**Comprehensive
System Center
capabilities**

Production Scalability



Hyper-V Powering Microsoft Internet Properties

TechNet: 100% Hyper-V

<http://technet.microsoft.com>

~1 million hits a DAY

Microsoft TechNet

MSDN®: 100% Hyper-V

<http://msdn.microsoft.com>

~3 million hits a DAY

msdn

Microsoft.com: ~50% Hyper-V and growing

<http://www.microsoft.com>

>1 billion hits a month

Microsoft®

Microsoft Technical Differentials



Live migration
and clustering;
no cost in standalone

Large memory
support

64-bit hypervisor



VMware
vCenter
Server
support

The VMware Reality



- **No critical insights** into applications *inside* virtual machines
- **Cannot manage** physical machines
- “Per-app” pricing scheme **does not reflect real-life usage or costs**
- Upgrading to vSphere is **complex, time-intensive, expensive**
- Typically costs **four to six times more** than Microsoft
- **VMware not needed** to virtualize
- Requires **extra virtualization layer**, unnecessary virtualization tax



Microsoft: The Better Value



- Virtualization **built into** Windows Server 2008 R2 and the System Center suite of solutions
- **Free** Hyper-V hypervisor with Microsoft Hyper-V Server 2008 R2
- Only solution for **in-guest** management
- System Center delivers **unified end-to-end management** of physical and virtual machines, including VMware
- Complete portfolio of **desktop to data center** products
- **No extra** virtualization layer
- **No virtualization tax**

Why pay more and get less with VMware, when Microsoft virtualization delivers all the capabilities you need?



Take the Next Step



Learn more about why Microsoft virtualization is a better all-around value than VMware

- Read the white paper comparing Microsoft and VMware at www.microsoft.com/virtualization/compare/vmware-comparison.mspix
- Download a trial of Windows Server 2008 R2 with Hyper-V virtualization built-in at www.microsoft.com/windowsserver2008/en/us/default.aspx
- Download the free Microsoft Hyper-V Server 2008 R2 bare metal hypervisor at www.microsoft.com/hyper-v-server/en/us/r2.aspx
- Watch the Top 10 VMware Myths video at www.microsoft.com/vmwarecompare



This material is provided for informational purposes only. Microsoft makes no warranties, express or implied. ©2009 Microsoft Corporation.