Microsoft SVVP
Server Virtualization Validation Program.


Tim Hartman
Manager Alliance Systems Engineers
VMware Asia Pacific
Agenda

Microsoft SVVP.
  What is it.
  What is VMware’s position.
Microsoft Exchange Virtualisation.
  Why virtualise Exchange.
Key benefits.
Microsoft SVVP – What is it?


SVVP enables virtualization vendors to validate their solution so that customer can expect support from MS.

- Cisco Systems, Inc.
- Citrix Systems, Inc.
- Novell, Inc.
- Oracle, USA Inc.
- Sun Microsystems
- Unisys Corp.
- Virtual Iron Software
- VMware, Inc.
Microsoft SVVP – What is the status?

VMware joined SVVP in August 2008.
VMware passed validation on Sept 3rd 2008.

ESX 3.5 U2 is the first Hypervisor validated by SVVP.
MS SVVP – What does validation mean?

Customers will now get corporate support from MS when running Windows Server on ESX 3.5 U2.

VMware has a premier support contract with MS and can escalate issues to MS Support on a customer’s behalf.
MS VSSP – What about older versions of ESX?

Older versions of ESX are still bound by Microsoft Support Article ID:897615

“As part of the investigation, Microsoft may require the issue to be reproduced by the customer independently from the non-Microsoft hardware virtualization software.”
# MS SVVP – What about the MS Applications?

As part of SVVP, Microsoft has published a list of MS Applications that are supported. Article ID:957006

| Microsoft Application Virtualization (App-V) | Microsoft Office Project Server |
| Microsoft BizTalk Server | Microsoft Office SharePoint Server and Windows SharePoint Services |
| Microsoft Commerce Server | Microsoft Operations Manager (MOM) 2005 |
| Microsoft Dynamics AX | Microsoft Search Server |
| Microsoft Dynamics CRM | Microsoft SQL Server 2008 |
| Microsoft Dynamics NAV | Microsoft System Center Configuration Manager |
| **Microsoft Exchange Server** | Microsoft System Center Data Protection Manager |
| Microsoft Forefront Client Security | Microsoft System Center Essentials |
| Microsoft Intelligent Application Gateway (IAG) | Microsoft System Center Operations Manager |
| Microsoft Forefront Security for Exchange (FSE) | Microsoft System Center Virtual Machine Manager |
| Microsoft Forefront Security for SharePoint (FSP) | Microsoft Systems Management Server (SMS) |
| Microsoft Host Integration Server | Microsoft Visual Studio Team System |
| Microsoft Internet Security and Acceleration (ISA) Server | Microsoft Windows HPC Server 2008 |
| Microsoft Office PerformancePoint Server | Microsoft Windows Server Update Services (WSUS) |
| | Windows Web Server 2008 |
Microsoft Exchange on VMware
Background

Historically, some have feared virtualization of Exchange

- Limited application memory of 32-bit Windows
- Exchange database cache limited to 900MB
- Large amount of disk I/O

But, hardware has changed…

- Dual-core and quad-core processors
- 256GB addressable RAM

And, Exchange has changed…

- Exchange 2007 runs exclusively on 64-bit platforms
- Better memory usage - reduces disk I/O up to 50%

Exchange 2007 is an excellent candidate for virtualization

- Virtual machines benefit from 64-bit architecture
“The university has virtualized 50,000 Exchange 2007 mailboxes on VMware Infrastructure. We not only have a more manageable and flexible Exchange environment, but we have replaced Microsoft clustering with VMware’s built-in high availability solutions such as HA and VMotion. We couldn’t be happier with the uptime and performance of our Exchange implementation on VMware. VMware technology works for small companies all the way up to massive financial institutions. And clearly, it has worked for us.”

Adrian Jane
Head of Faculty Support and Strategy
University of Plymouth
Why Virtualise Exchange?

Reduce costs.
  Power, Cooling, Rack Space, Hardware, Admin.
Increased Flexibility.
  Move the VM wherever suits best.
Simplify Mailbox Server Design.
  Predictably scale up using Exchange “blocks”.
Risk mitigation.
  Use HA, DRS, VMotion and SRM as well as MS tools.
Unprecedented scalability and ROI.
  Scale well beyond 8 cores and 32Gig RAM.
  16,000 users on a single physical server proven.
Simplify Upgrades and Reduce Downtime.

Physical upgrades require a great deal of work.

  Planning, Sizing, Buying Hardware, Downtime.

Virtual upgrades are easy by comparison.

  Just add more virtual servers as client count increases.

Physical Exchange Servers are tightly bound to Storage.

VMFS allows for “on the fly” addition and removal.

VMotion allows for “on the fly” hardware changes.

ESX Multipathing on NICs and HBAs.

  Storage and network performance and redundancy.

VMware Site Recovery Manager can fail over to a 2nd site.
Why Virtualisation is now absolutely viable.

Virtualization ideally exploits multi-core architectures

VMware ESX scales with server core counts

Cores per 4-socket server

Virtualization ideally exploits multi-core architectures

Most applications don’t scale beyond 4/8 way
## Exchange Architectural Changes

<table>
<thead>
<tr>
<th>Exchange 2003</th>
<th>Exchange 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>➤ 32-bit Windows</td>
<td>➤ 64-bit Windows</td>
</tr>
<tr>
<td>➤ 900MB database cache</td>
<td>➤ Multi-GB database cache</td>
</tr>
<tr>
<td>➤ 4Kb block size</td>
<td>➤ 50% reduction in disk I/O</td>
</tr>
<tr>
<td>➤ High read/write ratio</td>
<td>➤ 8Kb block size</td>
</tr>
<tr>
<td>➤ Requires high-end storage</td>
<td>➤ 1:1 read/write ratio</td>
</tr>
<tr>
<td>➤ Storage is common pain point</td>
<td>➤ Affordable storage</td>
</tr>
<tr>
<td></td>
<td>➤ Eliminates storage pain point</td>
</tr>
</tbody>
</table>
State of the Art – Server Hardware Changes

Exchange 2007 requires 64-bit hardware
256GB+ physical RAM
Multi-core (2/4/6 cores)
Hardware-assisted virtualization
Exchange 2007 workload more efficient
Virtualization to unlock full power of this hardware
State of the Art – ESX Server Changes

Increased guest OS memory (64GB).
Increased physical RAM on ESX (256GB).
Network improvements lower CPU utilization.
Hardware Virtualisation Acceleration and Assist.

AMD NUMA (non-uniform memory architecture) and AMD-v, Intel VT

Improved storage efficiency.
Full support for 64-bit clustering with boot from SAN.
And many more improvements.

ESX Server 3.5 is ready for Exchange
Exchange 2007 Performance on VI3

Performance

➤ Myth: Exchange performs poorly in a virtual machine especially in terms of disk I/O.

➤ Reality: Numerous performance studies have been conducted with our server and storage partners:

Summary of findings

➤ Negligible I/O differences running in a VM…some tests were slightly better than physical.

➤ Slightly higher processor utilization (5 – 10%) in a virtual machine.
**Lab Configuration**

**Mailbox Server - DL580 G4:**

- Four 3.2GHz Dual-Core processors (eight cores)
- 32GB memory (PC5300) installed in four memory controllers
- Dual-Port Emulex A8803A PCI-E Host Bus Adapter (HBA)
- Two 72GB 10k Small factor Serial Attached SCSI (SAS) host operating system (OS)
- Two 72GB SAS for guest VM OS
- RAID 1 disk arrays for host OS disk and guest VM OS disk
- Two integrated NC371i- 1 Gb network interfaces
- VT enabled in BIOS
- Hyperthreading enabled
<table>
<thead>
<tr>
<th>Counter</th>
<th>Phys. 500 user</th>
<th>Virt. 500 user</th>
<th>Phys. 1000 user</th>
<th>Virt. 1000 user</th>
<th>Phys. 2000 user</th>
<th>Virt. 2000 user</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOPS / user</td>
<td>0.48</td>
<td>0.42</td>
<td>0.43</td>
<td>0.36</td>
<td>0.46</td>
<td>0.34</td>
<td>Less than 1.0</td>
</tr>
<tr>
<td>Avg. Disk sec/Read</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>Less than 50 ms at all times.</td>
</tr>
<tr>
<td>Avg. Disk sec/Write</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Less than 50 ms at all times.</td>
</tr>
<tr>
<td>MSExchangeIS Mailbox\messages queued for submission</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Average less than 250 and max of 1000</td>
</tr>
<tr>
<td>MSExchangeIS counter\RPC Average Latency</td>
<td>10ms</td>
<td>9ms</td>
<td>14ms</td>
<td>14ms</td>
<td>12ms</td>
<td>15ms</td>
<td>Average less than 50 and max of 100</td>
</tr>
<tr>
<td>MSExchangeIS counter\RPC Requests</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Average less than 50 and max of 100</td>
</tr>
</tbody>
</table>
The New Model – Business-Centric Messaging

Dynamically place Exchange resources based on business demands

- Mailbox Servers
- AD Infrastructure
- CAS
- Hub Transport
- Test/Dev

**Capacity On Demand**

**Dynamic**

**High Availability**

**SHARES INFRITRUCTURE SERVICES**

- Resource Mgmt
- Availability
- Mobility
- Security

**SHARES, ALWAYS-ON INFRASTRCTURE**

VIRTUALIZATION FORUM 2008
Exchange on VMware Configuration Options

- Standalone with HA and DRS
- Local Continuous Replication (LCR)
- Cluster Continuous Replication (CCS)
- Standby Continuous Replication (SCR)
- Site Recovery Manager
Simple Standalone Server Model with HA/DRS

Characteristics

- MSCS required? – No
- MS License Requirement – Windows Standard Edition
- Recovery time – Reboot
- Transport Dumpster enabled? – No
- Protects from – hardware failure only
HA + LCR for DB protection/Transport Dumpster

**Characteristics**

- MSCS required? – No
- MS License Requirement – Windows Standard Edition
- Recovery time – Reboot (or manual failover in case of database corruption)
- Transport Dumpster enabled? – Yes
- Protects from – hardware failure and database corruption
HA + CCR for faster failover

Characteristics

- MSCS required? – Yes
- MS License Requirement – Windows Enterprise Edition
- Recovery time – Immediate
- Transport Dumpster enabled? – Yes
- Protects from – hardware failure, database corruption, and application failure
Remote Site Recovery
VMware Site Recovery Manager orchestrates the failover of entire datacenters, including Exchange deployments, and enables DR tests to be conducted frequently.
More information

➤ VMware Exchange Website:
   http://www.vmware.com/go/exchange

➤ Dell/EMC Performance Testing:

➤ Best practices: Deploying MS Exchange on VMware:
“The university has virtualized 50,000 Exchange 2007 mailboxes on VMware Infrastructure. We not only have a more manageable and flexible Exchange environment, but we have replaced Microsoft clustering with VMware’s built-in high availability solutions such as HA and VMotion. We couldn’t be happier with the uptime and performance of our Exchange implementation on VMware. VMware technology works for small companies all the way up to massive financial institutions. And clearly, it has worked for us.”

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questions