

Windows Server 2008 Virtualisierung

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Software & Systems

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- Microsoft und Virtualisierung
- Viridian und Hyper-V
- Hyper-V
- Technologie
- Virtual Server 2005 versus Hyper-V
- System Center Virtual Machine Manager
- Praxis

Microsoft und Virtualisierung

- 2001 – Virtual PC 4.0 von Connectix
- Februar 2003 – Microsoft Virtual Server 2003
- Juli 2006 – Microsoft Virtual PC 2004
- Februar 2007 – Virtual PC 2007
- (Spätestens) 180 Tage nach der Einführung von Windows Server 2008 – Microsoft Hyper-V (Codename Viridian)

Virtualisierungsloesungen am Markt

- Xen – Universitaet Cambridge – GPL
- Virtual Box – Firma Innotek
- Parallels Workstation – Firma Parallels Inc.
- Microsoft Virtual PC - Microsoft
- Microsoft Virtual Server - Microsoft
- VMware Workstation – VMware Inc.
- VMware Server – VMware Inc.
- VMware ESX Server (VMware Infrastructure 3)

Viridian und Hyper-V

- Viridian ist der ehemalige Codename des Nachfolgers von Microsoft Virtual Server 2005 R2
- Ausschliesslich auf der Windows Server 2008 Plattform (x64) verfuegbar
- Im Laufe der Entwicklungsphase wurde aus dem Codenamen Viridian der Name Hyper-V gepraeagt
- Verfuegbar spaetestens 180 Tage nach Windows Server 2008 RTM

Hyper-V

- Ehemaliger Codename Viridian
- Auch bekannt als Windows Server Virtualization
- Aktueller Name Hyper-V
- Stand Alone Serverrolle – ideale Basis Windows Server 2008 Core
- Betriebssystem Isolierung durch den Einsatz von Partitionen
- Verwendet einen Hypervisor
- Virtualization Stack hat direkten Zugriff auf die Hardware
- Snapshot Unterstuetzung
- Hyper-V Rolle ist clusterfaehig
- Migrationen von VM in einem spaeteren Release

Hyper-V

- Quick migration
- High Availability
- Server Core role
- Integrated into Server Manager
- Live Backups with VSS
- VM Manageability
- Linux integration components
- Improved performance
- Improved access control with AzMan
- Remote Management
- Increased Virtual SCSI support
- Increased Memory Support
- Quick Reset

Hypervisor

- Hypervisor ist ein VMM (Virtual Machine Monitor)
- Klassifizierung in Typ-1 und Typ2
- Typ1 – Hypervisor laeuft direkt auf der Hardware, Gast-Systeme laufen oberhalb des Hypervisor-Layer
- Typ2 – Hypervisor laeuft als Gast abgeschottet auf einem Wirtsystem. Gast-Systeme werden auf einem dritten Layer ausgefuehrt

Hardware Unterstützung

- Intel VT (Codename Vanderpool)
 - Pentium 4 6x1 und 6x2 Modelle, Pentium D 9x0, Xeon 3xxx/5xxx/7xxx, Core Duo (Ausnahmen) und Core 2 Duo Prozessoren (Ausnahmen), E4x00 und E2xx0 Modelle
- AMD Virtualization oder AMD-V (Codename Pacifica)
 - Ab AMD K8 Prozessoren mit Stepping F und neuer

Integrations-Komponenten

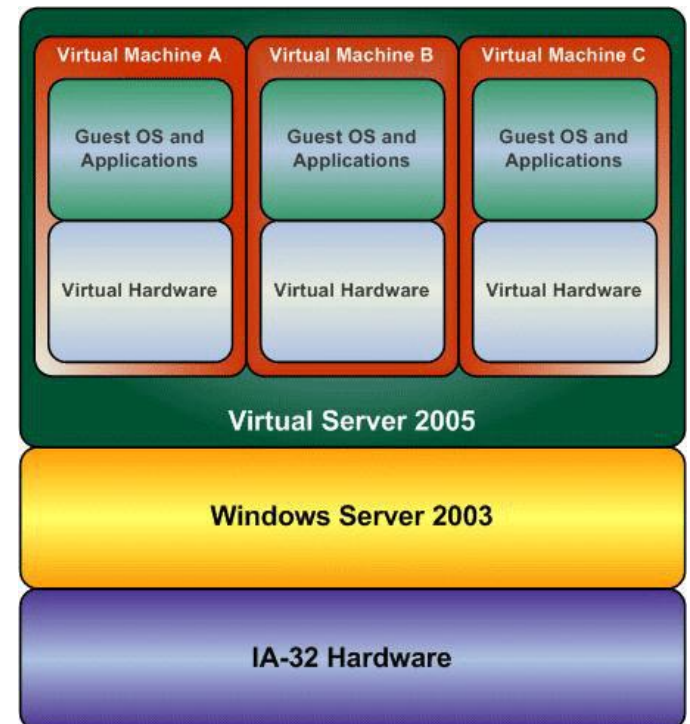
- Nachfolger der Virtual Machine Additions
- Bestandteil von Windows Server 2008
- Minimum Windows Server 2003 SP2 zur Installation der Integrations-Komponenten
- Installiert Erweiterungen fuer ...
 - Betriebssystem Shutdown
 - Zeitsynchronisation
 - Datenaustausch
 - Heartbeat
 - Backup (Volume Snapshot)

Microsoft Virtual Server

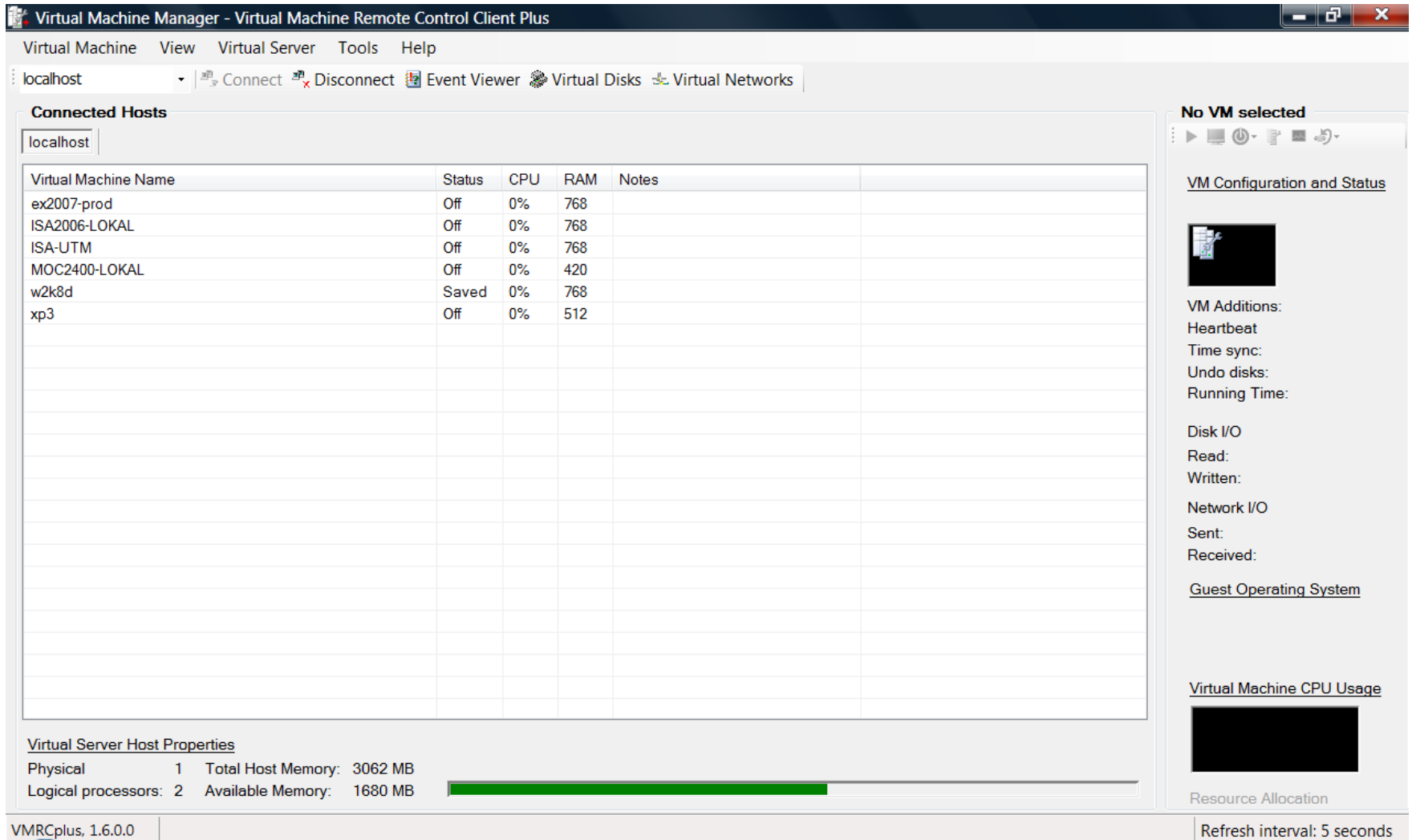
- Kostenlose Virtualisierungssoftware von Microsoft
- Emuliert einen kompletten PC/Server
- Erhaeltlich als Enterprise Version
- Scriptingfaehig
- Ressourcenbegrenzung moeglich
- Weboberflaeche oder VMRC Plus
- Das Produkt stammt ehemals von Connectix
- Kleiner Bruder ist der Mircosoft Virtual PC

Microsoft Virtual Server

"DECUS-Node1" Configuration	
General properties	"DECUS-Node1"
When Virtual Server starts:	Never automatically turn on virtual machine
When Virtual Server stops:	Save state
Virtual Machine Additions	13.552
Memory	360 MB
Hard disks	2 virtual hard disks installed; Undo disks are disabled
Virtual hard disk 1	Attached to primary channel (0) Virtual hard disk file "DECUS-node1.vhd" Maximum size is 6 GB; Currently expanded to 3.5 GB
Virtual hard disk 2	Attached to SCSI 0 ID 0 Virtual hard disk file "quorum.vhd" Maximum size is 600 MB; Currently expanded to 600 MB
CD / DVD	1 virtual CD / DVD drive installed
Virtual CD / DVD drive 1	Attached to secondary channel (0) No media captured
SCSI adapters	1 virtual SCSI adapter installed
Virtual SCSI adapter 1	SCSI adapter ID: 7 Attached to a shared SCSI bus
Network adapters	2 virtual network adapters installed
Virtual network adapter 1	Connected to "External Network (Realtek RTL8139-Familie-PCI-Fast Ethernet-NIC)" Current Ethernet (MAC) address: 00-03-FF-88-41-E6
Virtual network adapter 2	Connected to "DECUS-Heartbeat" Current Ethernet (MAC) address: 00-03-FF-B7-41-E6
Scripts	Scripts disabled
Floppy drive	No media captured
COM ports	2 COM ports installed
COM port 1	Attached to none
COM port 2	Attached to none



VMRC Plus



Virtual PC, Virtual Server

Värd-operativ Gäst-operativ

Provided by



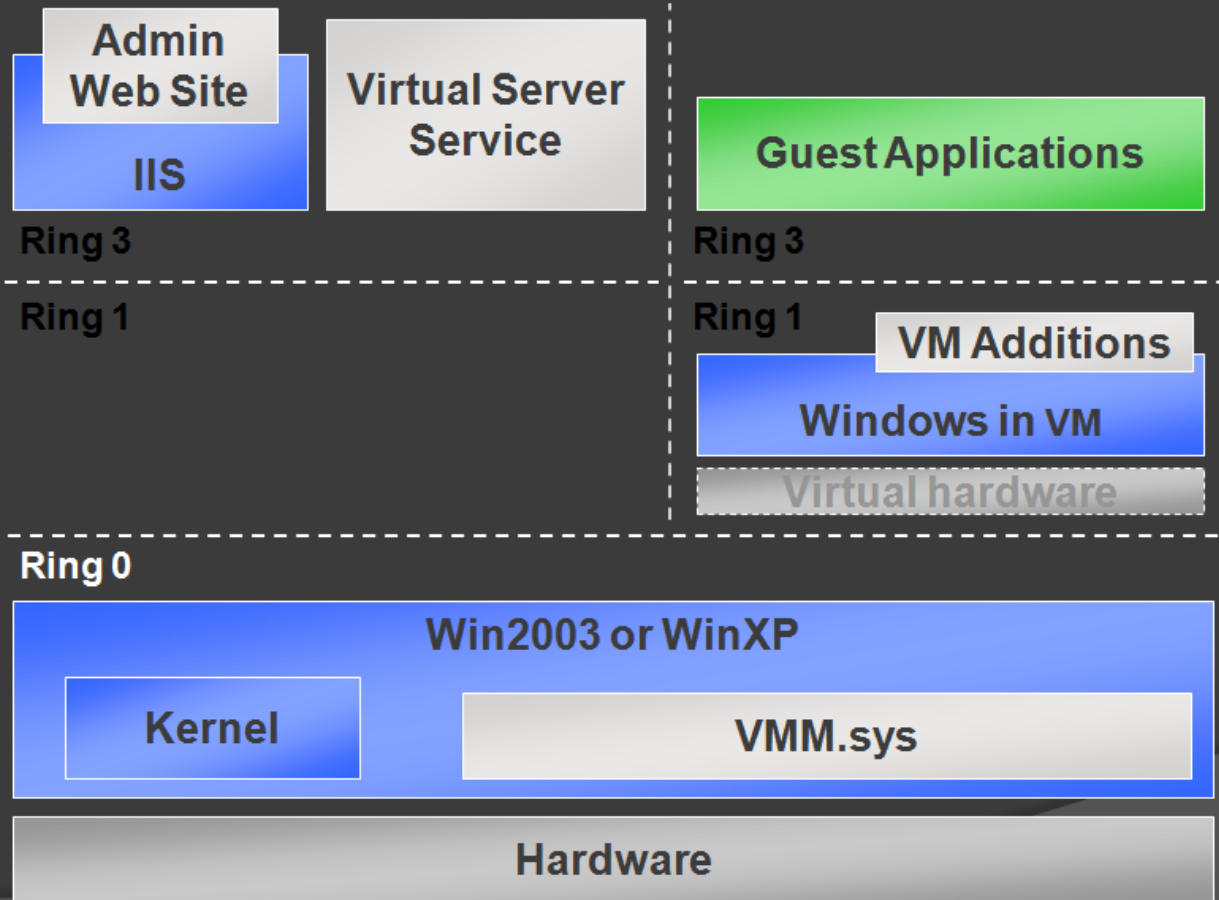
Windows



Virtual Server

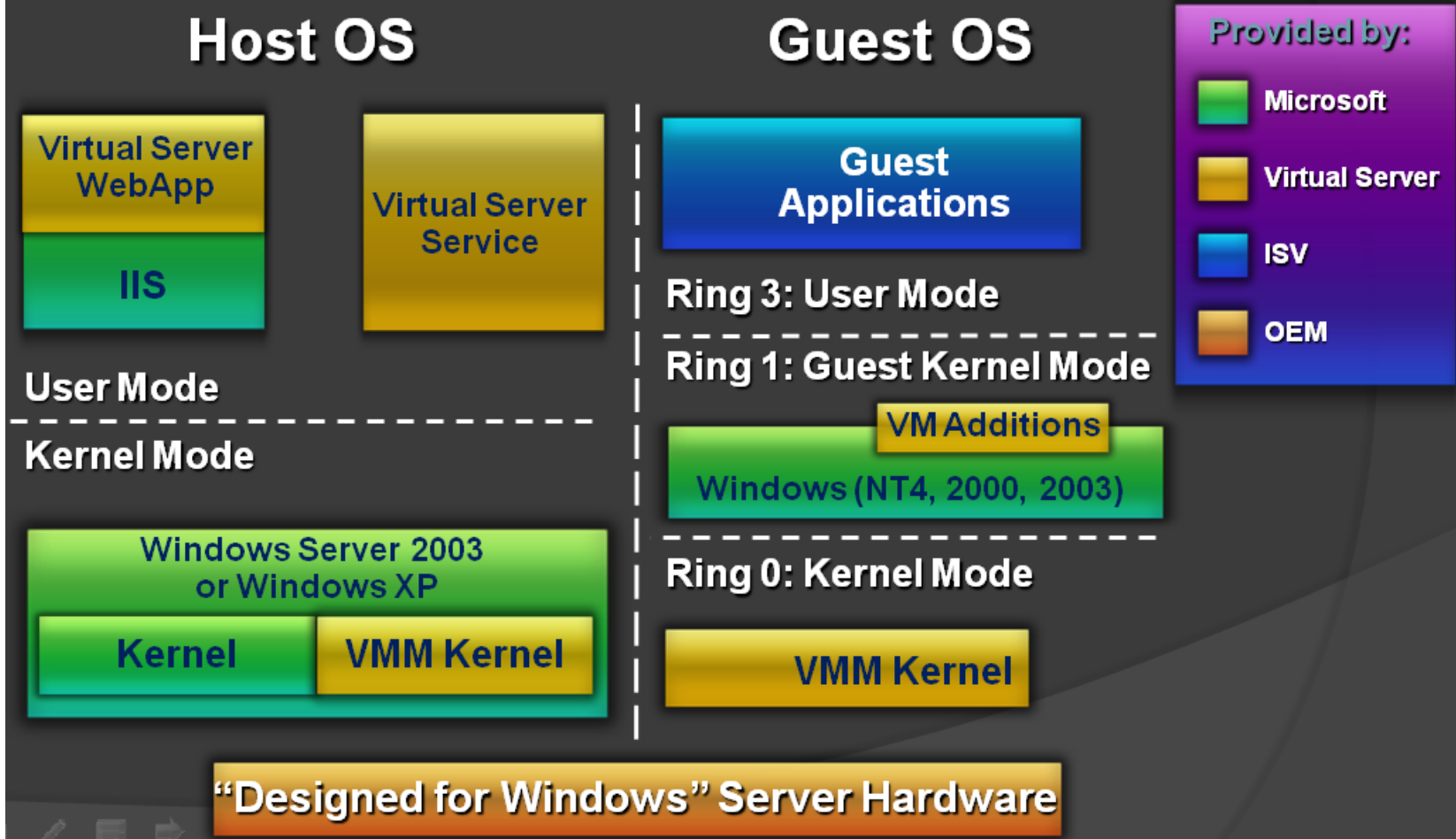


Others

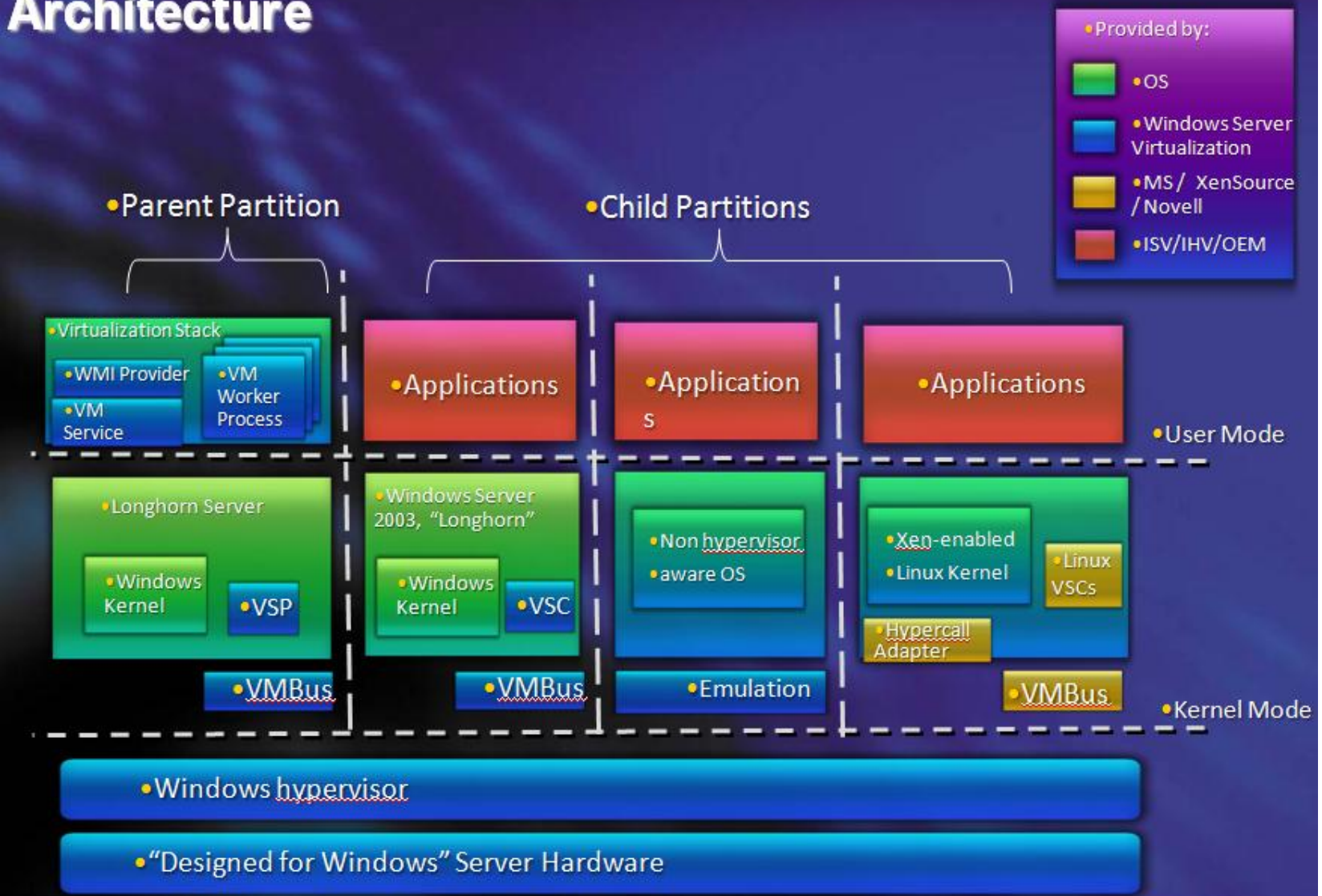


Virtual Server 2005

Arkitektur

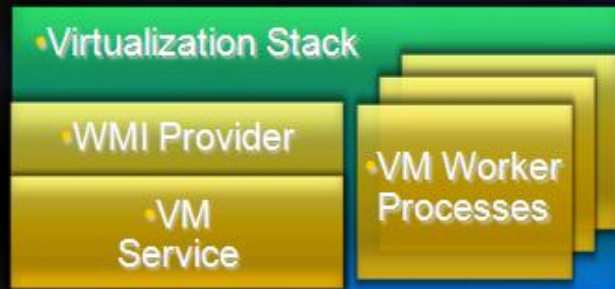


Architecture



Windows Server Virtualization: Architecture

•Parent Partition



•Child Partitions



•Provided by:



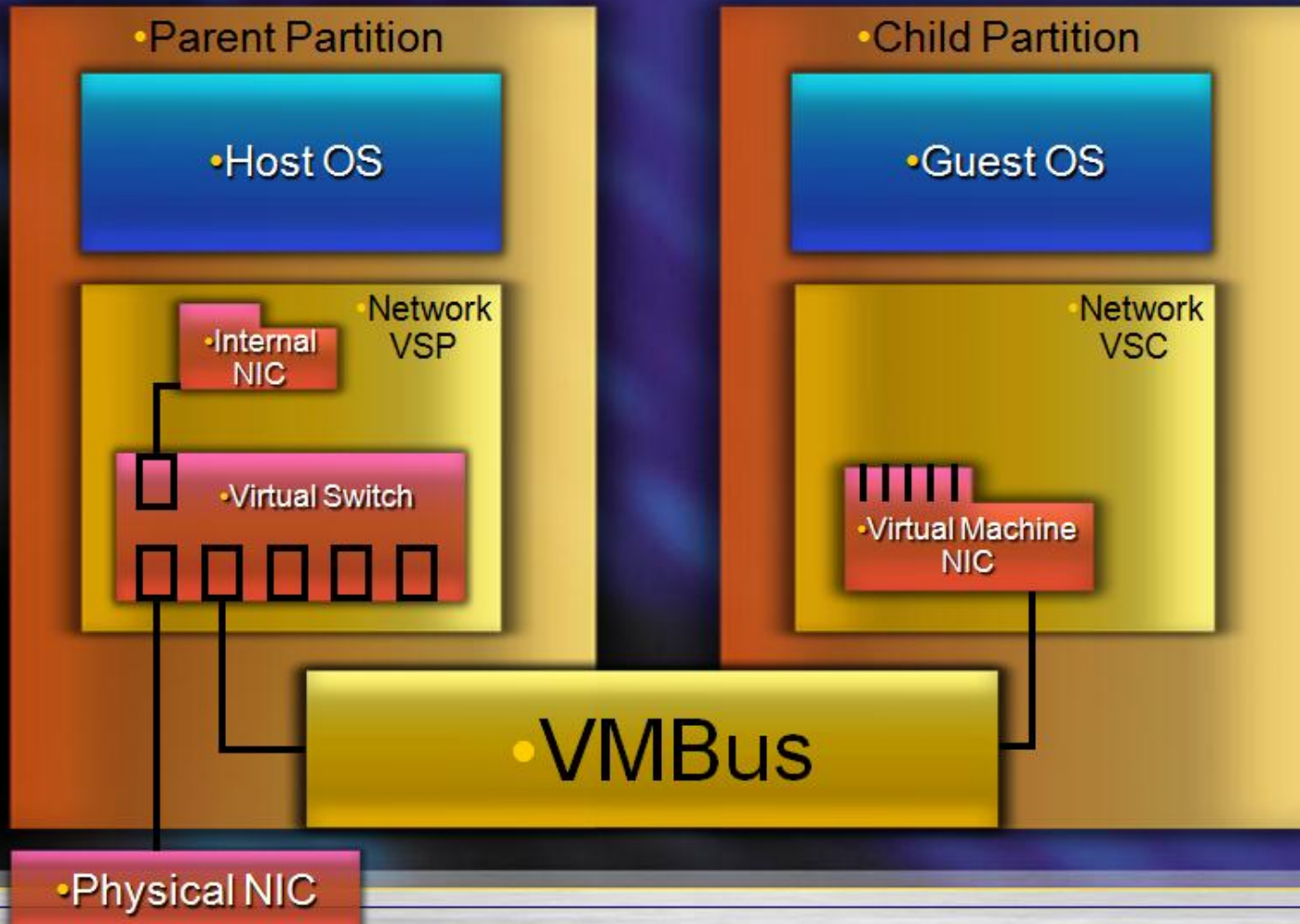
•User Mode

•Kernel Mode

•Windows hypervisor

•“Designed for Windows” Server Hardware

Network VSP/VSC

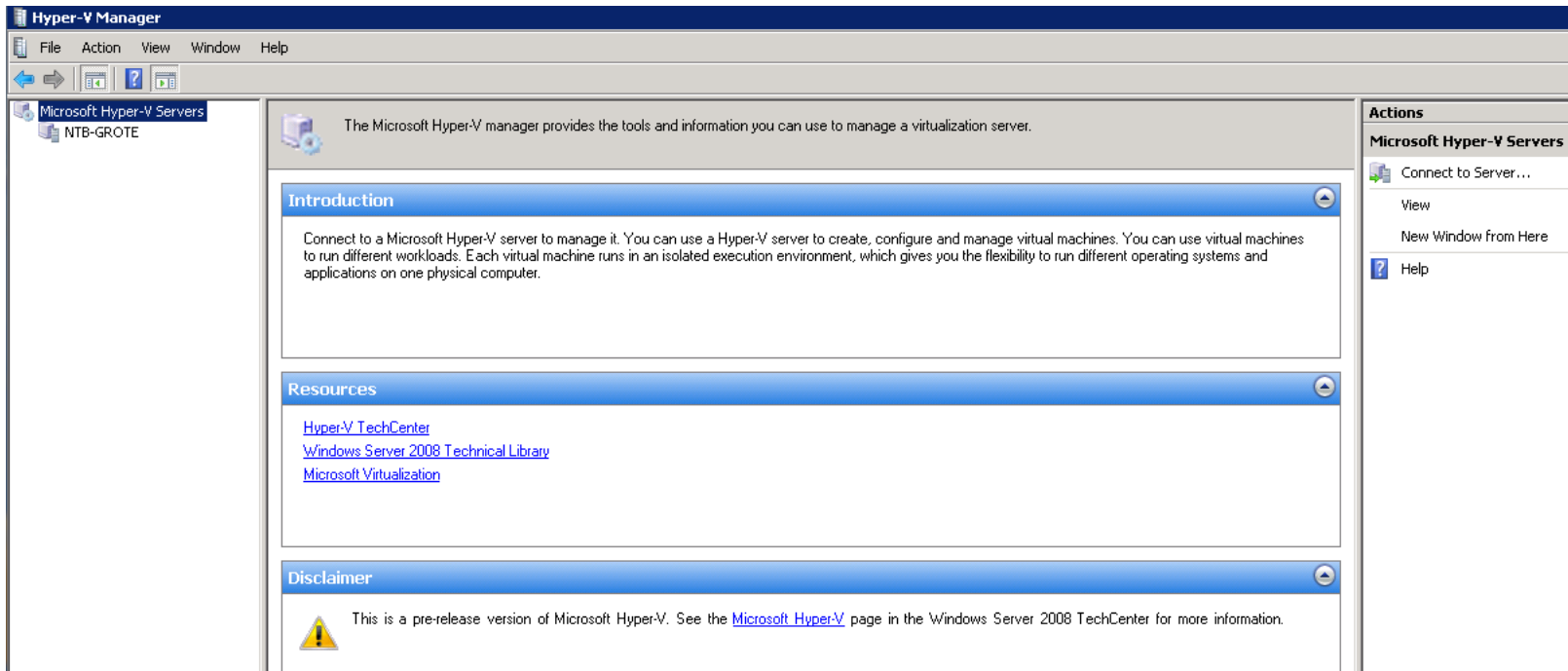


Virtual Server 2005 vs. Hyper-V

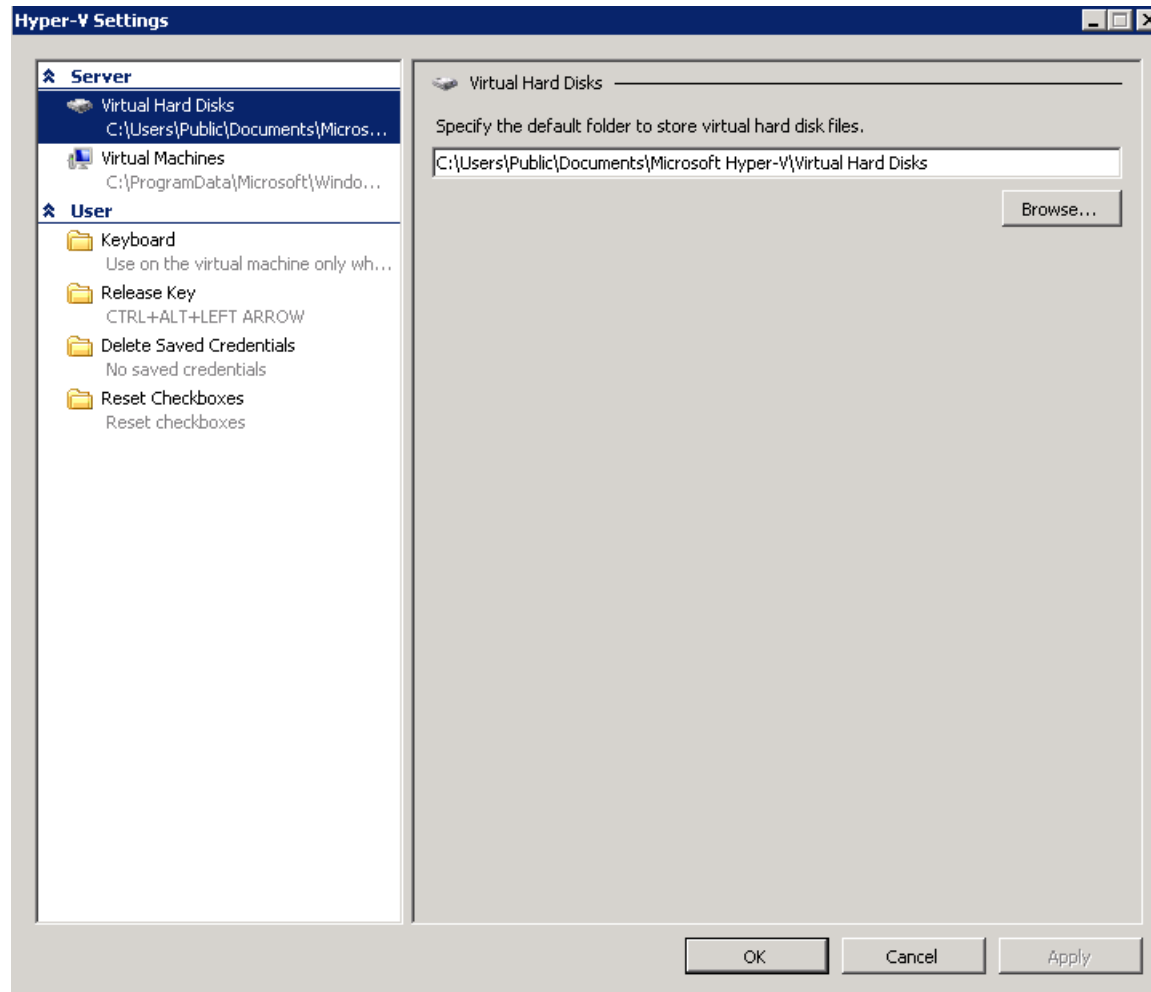
Virtualization Feature	Virtual Server 2005 R2	Windows Server virtualization
32-bit Virtual Machines	Yes	Yes
64-bit Virtual Machines	No	Yes
Multi Processor Virtual Machines	No	Yes, 4 core VMs
Virtual Machine Memory Support	3.6GB per VM	32GB per VM
Managed by System Center Virtual Machine Manager	Yes	Yes
Support for Microsoft Clustering Services	Yes	Yes
Host side backup support (VSS)	Yes	Yes
Scriptable / Extensible	Yes, COM	Yes, WMI
User Interface	Web Interface	MMC 3.0 Interface

Demo

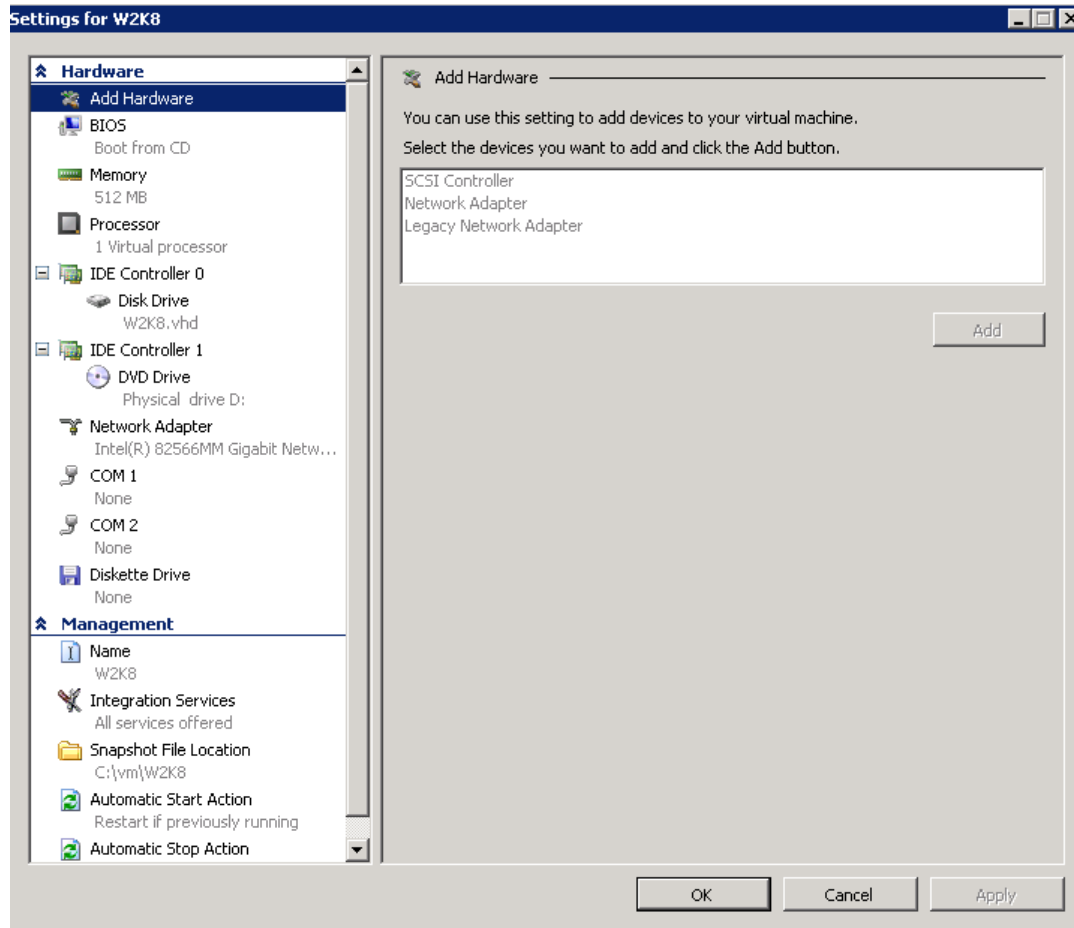
Demo



Demo



Demo



Demo

Virtual Machines

Name ▲	State	CPU Usage	Uptime	Operations
 W2K8	Running	0%	1.07:44:10	

Snapshots

  W2K8 - (1/19/2008 - 5:41:58 PM)

-   W2K8 - (1/19/2008 - 5:42:16 PM)
 -  W2K8 - (1/19/2008 - 5:42:49 PM)

W2K8 - (1/19/2008 - 5:42:49 PM)

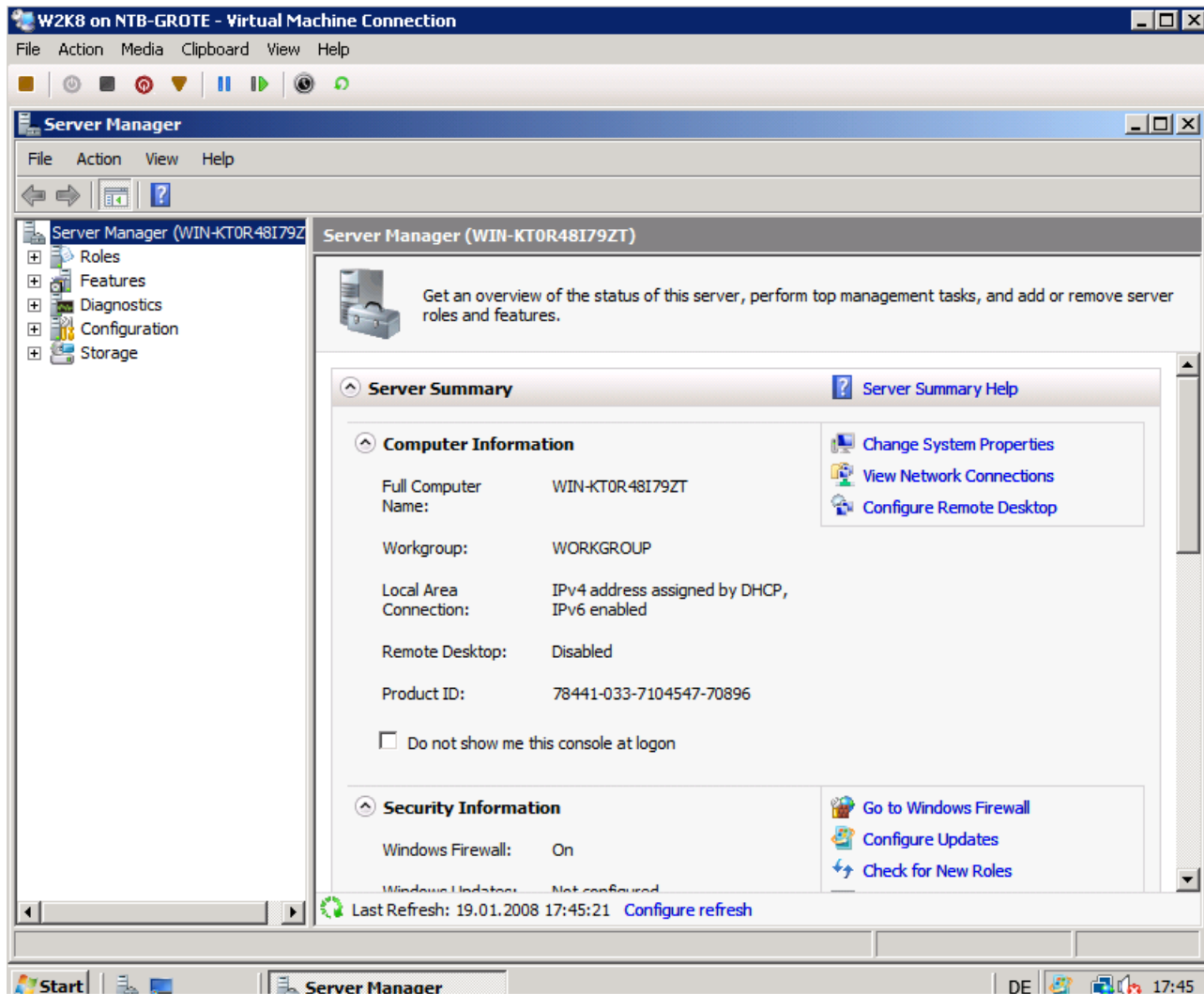


Created:

1/19/2008 5:42:57 PM

Notes:

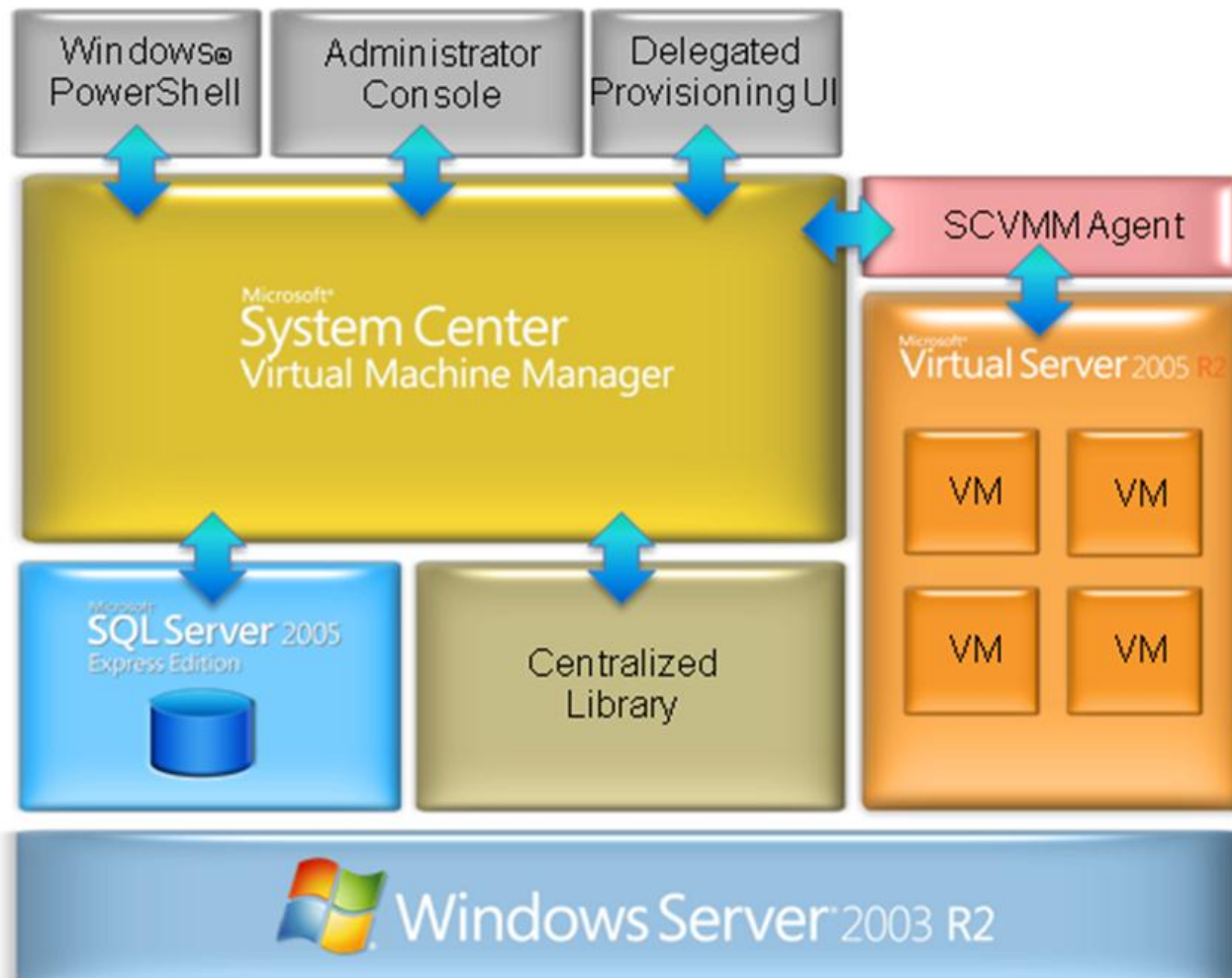
Demo



System Center Virtual Machine Manager

- P2V-Funktionen (Physical to Virtual)
- V2V-Funktionen (Virtual to Virtual), inklusive VMware
- Derzeit koennen Hyper-V Systeme nicht verwaltet werden
- Zentrale Verwaltungskonsole fuer alle Microsoft Virtual Server 2005 und deren Gastssysteme
- Self Service Portal fuer das Provisioning virtueller Maschinen durch Nicht Administratoren
- Zentrale Library fuer die Ablage virtueller Maschinen und Templates

SCVMM Architektur



SCVMM Konsole

The screenshot displays the SCVMM Konsole interface, which is divided into several panes. The left pane shows the 'Virtual Machine Manager' tree, including 'Host Groups' and 'Virtual Machine Views'. The main pane displays a table of 'All Hosts' and a 'Summary' section for a selected virtual machine. The right pane shows a list of 'Actions' for the selected virtual machine. Annotations highlight specific features:

- Host Groups:** Points to the 'Host Groups' section in the left pane.
- VM Views:** Points to the 'Virtual Machine Views' section in the left pane.
- Centralized Library:** Points to the 'Library' section in the left pane.
- Context Sensitive Actions:** Points to the 'Actions' pane on the right.
- Live Thumbnail:** Points to a small thumbnail image of a virtual machine running a web application.

Virtual Machine Manager - vmmdemo1.vmmdemo.int (Evaluation Version)

Virtual Machines

Host Groups

- Overview
- All Hosts
- DevTest
 - vmserver2
 - vmserver3
- Production
 - vmmdemo2

Virtual Machine Views

- Status
 - Running
 - Paused
 - Saved state
 - Stopped
 - Transitioning
 - Failed
- Owner
 - VMMDEMO\administr
 - VMMDEMO\DevTest
 - VMMDEMO1\Admini
- Operating system
 - Unknown
 - Windows NT® Work
 - Windows Server™ 20
 - Windows® XP Profes
- Added date
 - Today
 - Yesterday
 - Earlier this week
 - Earlier this month

All Hosts Virtual Machines (11)

Look for: Clear Group by: Status

Name	Host	Owner	CPU Utilization
Status: Running			
Account DCOM Server	vmmdemo2	VMMDEMO\administrator	0 %
Accounting Backup	vmmdemo2	VMMDEMO\administrator	0 %
DevTest IIS Test 2	vmmdemo2	VMMDEMO\administrator	0 %
Marketing Internal IIS 1	vmmdemo2	VMMDEMO\administrator	0 %
Production XP Remote Client 1	vmmdemo2	VMMDEMO\administrator	0 %
Status: Saved state			
DevTest 2K3 #1	vmserver2	VMMDEMO\administrator	0 %
DevTest NT Compatibility 1	vmserver2	VMMDEMO\administrator	0 %
DevTest SG 1	vmserver2	VMMDEMO\administrator	0 %
US XP Packager 1	vmserver3	VMMDEMO\DevTest	0 %
Status: Stopped			
DevTest IIS Test 1	vmserver3	VMMDEMO\administrator	0 %
ISCI-VM1	vmserver3	VMMDEMO1\Administrator	0 %

Summary Latest Job

DevTest IIS Test 2

Description

Allocated memory 256.00 MB

Disk usage 2.15 GB / 9.77 GB

Disk I/O 223.26 MB read, 585.21 MB written

Network I/O 0 KB received, 0 KB sent

Actions

Virtual Machine Manager

- New virtual machine
- Convert physical server
- Add library server
- Add hosts
- New self-service policy
- Help

All Hosts

- New host group
- Edit self-service policies
- Host group properties

Virtual Machine

- Start
- Stop
- Pause
- Save state
- Discard saved state
- Shut down
- Connect to virtual machine
- Migrate virtual machine
- New checkpoint
- Manage checkpoints
- Disable undo disks
- Repair virtual machine
- Virtual machine properties
- Clone virtual machine
- Store in library
- Remove virtual machine

Live Thumbnail

Manage Your Server

Managing Your Server Rules

Look for: Clear

My Rules

- My Rules
- My Rules
- My Rules

My Rules

- My Rules
- My Rules
- My Rules

My Rules

- My Rules
- My Rules
- My Rules

Demo

Links

- Hyper-V FAQ
<http://www.microsoft.com/windowsserver2008/virtualization/faq.mspx>
- Hyper-V Description
<http://www.microsoft.com/windowsserver2008/virtualization/default.mspx>
- Hyper-V Editions
<http://www.microsoft.com/windowsserver2008/editions/windowshyperv.mspx>
- Hyper-V Functional Specification
<http://www.microsoft.com/downloads/details.aspx?FamilyId=91E2E518-C62C-4FF2-8E50-3A37EA4100F5&displaylang=en>



Vielen Dank fuer Ihre Aufmerksamkeit

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Fragen?

A large, stylized blue question mark graphic is positioned to the right of the word 'Fragen?'. The question mark is composed of two overlapping shapes: a lighter blue one in front and a darker blue one behind it, creating a 3D effect. It has a thick, blocky design with a small square at the base of the stem.