



HYPERVERSOR COMPARISON

Version 3.1

A feature comparison of the three main competitors in the hypervisor space, Citrix, Microsoft and VMware. Updated to the latest two versions, Citrix XenServer 5.6 & 6.0, Microsoft Hyper-V 2008 R2 & SP1 and VMware vSphere 4.1 Update 1 & 5.0.

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At manufacturer's websites and in the blogosphere there are many hypervisor comparisons which only compare hypervisors based on a single driver (performance, features or cost). I think it's a bit more complicated than that. After Citrix announced that their XenServer product is available for free I spend a fair deal of my time explaining to colleagues and clients that this is a hoax and that cost is not the only reason to base their decision on. Especially in the case of XenServer the choice and the long term effects make it a little bit more complicated.

When I read Chris Wolfe's article on '[Production-class Hypervisor Evaluation criteria](#)' and attended his [VMworld Europe 2009 presentation](#) I found someone who read my mind. Chris knows what he is talking about and uses the right criteria to select the right hypervisor for the job. Now you probably think '*These VMGuru.nl guys are VMware fans so here we go again*' but the opposite is true. Like Chris I think every situation has its own ideal solution and you should select the hypervisor based on well-considered selection criteria and because my employer, Imtech ICT, focuses on clients with 500+ workstations/employees these criteria are Enterprise-class hypervisor selection criteria.

Because of this we published multiple '*Enterprise Hypervisor comparisons*' during the last two years and we got very positive comments and feedback on it. During the last few weeks I received many update requests so I decided to update the old hypervisor.

In this version I added 15 new criteria. Many of these criteria should, in my opinion, be available in hypervisors suitable for enterprise environments.

Keep in mind:

- The versions used are the platinum/ultimate/fully-featured versions of the hypervisors. Product features can be limited by lower license versions;
- No free versions have been used in this comparison.

I spend hours collecting information on Citrix XenServer 5.6 & 6.0, Microsoft Hyper-V 2008 R2 & R2 SP1 and VMware vSphere 4.1 Update 1 & 5.0.

Not all information is easy to find and some of it is even contradicting but I checked, double checked and the VMGuru-crew did a full review so I'm pretty sure the information is 99,9999% accurate.

I hope you find the new Enterprise Hypervisor comparison useful and feel free to contact us when you have feedback for us to improve the list.

Good luck finding the ideal hypervisor for your situation.



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	VMware vSphere 4	VMware vSphere 5	Microsoft Hyper-V Server 2008 R2	Microsoft Hyper-V Server 2008 R2 SP1	Citrix XenServer 5.6	Citrix XenServer 6
Version	4.1 Update 1	5.0	R2	R2 SP1	5.6 FP1	6.0
Host						
Bare metal deployment	✓	✓	✓	✓	✓	✓
Intel-VT or AMD-V required	✓	✓	✓	✓	✓	✓
Hardware compatibility	Comprehensive HCL	Comprehensive HCL	Windows Ecosystem	Windows Ecosystem	Limited HCL	Limited HCL
Max logical processors	160	160	64	64	64	64
Max cores per processor	12 cores	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Max Memory support	1 TB	2 TB	1 TB	1 TB	512 GB	1 TB
Memory overcommitment	✓	✓	✗	✓*1	✓	✓
Business continuity						
High Availability	✓	✓	✓	✓	✓	✓
Restart prioritization	✓	✓	✗	✗	✓	✓
Fault tolerance (zero downtime HA)	✓*2	✓	✗	✗	✓	✓
Disaster/site recovery	✓*3 (SRM)	✓*3 (SRM)	✗	✓ (MSCS)	✓	✓
Live migration	✓	✓	✓	✓	✓	✓
Long distance live migration	✗	✓	✗	✗	✗	✗
# hosts per cluster	32	32	16	16	16	16
# VM's per host	320	512	384	384	100	75
# VM's per cluster	3000	3000	1000	1000	[unknown]	800
Storage						
Local storage	✓	✓	✓	✓	✓	✓
Shared storage - FC, iSCSI	✓	✓	✓	✓	✓	✓
Shared storage - NFS	✓	✓	✗	✗	✓	✓
Live storage migration (no downtime)	✓	✓	✗	✗	✗	✗
Thin provisioning	✓	✓	✓*4	✓*4	✓*6	✓*6
Linked images	✓*3 (View, vCD)	✓*3 (View, vCD)	✓*4	✓*4	✓	✓
Storage I/O control	✓	✓	✗	✗	✗	✓*7
Networking						
VLAN support (802.1q)	✓	✓	✓	✓	✓	✓
Link aggregation (803.2ad)	✓	✓	✓*5	✓*5	✗	✓
Distributed switch	✓	✓	✗	✗	✗	✓
Third party distributed switch	✓	✓	✗	✗	✗	✗
Network I/O control	✓	✓	✗	✗	✗	✓



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Performance						
Max network I/O	30Gb/s	36Gb/s +	[unknown]	[unknown]	[unknown]	[unknown]
Max storage I/O	300.000 +	1.000.000 +	[unknown]	[unknown]	[unknown]	[unknown]
Guests						
Max virtual CPU's	8 vCPU's	32 vCPU's	4 vCPU's	4 vCPU's	8 vCPU's	16 vCPU's
Max virtual memory	255 GB	1 TB	64 GB	64 GB	32 GB	128 GB
Max virtual disk size	2 TB – 512 bytes	2 TB – 512 bytes	2 TB	2 TB	2 TB	2 TB
Hot add support	CPU, memory, disk, NIC	CPU, memory, disk, NIC	disk	disk	disk, NIC	disk, NIC
Guest operating system support (servers)						
Windows NT	✓	✓	✗	✗	✗	✗
Windows 2000	✓	✓	✗	✗	✓ (no x64)	✓ (no x64)
Windows 2003	✓	✓	✓ *8	✓ *8	✓	✓
Windows 2003 R2	✓	✓	✓ *8	✓ *8	✓ (no x64)	✓ (no x64)
Windows 2008	✓	✓	✓	✓	✓	✓
Windows 2008 R2	✓	✓	✓	✓	✓	✓
FreeBSD 7	✓	✓	✗	✗	✗	✗
FreeBSD 8	✓	✓	✗	✗	✗	✗
Mandrake Linux	✓	✓	✗	✗	✗	✗
Ubuntu Linux	✓	✓	✗	✗	✗	✓
SUSE Linux Enterprise 10	✓	✓	✓ *9	✓ *9	✓	✓
SUSE Linux Enterprise 11	✓	✓	✓ *9	✓ *9	✓	✓
Oracle Enterprise Linux 5	✓	✓	✗	✗	✓	✓
Red Hat Enterprise Linux 4	✓	✓	✗	✗	✓ (no x64)	✓ (no x64)
Red Hat Enterprise Linux 5	✓	✓	✓ *9	✓ *9	✓	✓
Red Hat Enterprise Linux 6	✓	✓	✓ *9	✓ *9	✓	✓
NetWare 5	✓	✓	✗	✗	✗	✗
NetWare 6	✓	✓	✗	✗	✗	✗
CentOS 5	✓	✓	✗	✗	✓	✓
CentOS 6	✓	✓	✓ *9	✓ *9	✗	✗
SUN Solaris 10	✓	✓	✗	✗	✗	✗



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Management						
Host power optimization	✓ (DPM)	✓ (DPM)	✗	✗	✓	✓
Role based management	✓	✓	✓	✓	✓	✓
P2V migration	✓	✓	✓	✓	✓	✓
Auto VM placement while running	✓	✓	✗ *5	✗ *5	✓	✓
Auto VM placement at startup	✓	✓	✓	✓	✓	✓
Performance Monitoring	✓	✓	✓ *3 (SCOM)	✓ *3 (SCOM)	✓	✓
Cloud						
Cloud integration	Cloud API	Cloud API	✗	✗	OpenStack API	OpenStack API
Cloud extension	vCloud Director	vCloud Director	✗	✗	Cloud Connect	Cloud Connect
Image portability	OVF	OVF	✗	✗	OVF	OVF

*1 Only for Windows Server 2008 R2, Windows Server 2008 (SP2), Windows Server 2003 R2, Windows Server 2003 (SP2), Windows 7 (Enterprise and Ultimate only), Windows Vista (Enterprise and Ultimate only)

*2 Only 1 vCPU, max 10% performance loss and physical CPUs may differ max 400MHz

*3 With add-on

*4 Not for use in production environments with server workloads.

*5 Only with 3rd party product or drivers.

*6 Only on supported storage arrays, if not supported only on local storage.

*7 QoS setting are applied to virtual disks accessing the LUN from the same host. QoS is not applied across hosts in the pool

*8 Min SP2, max 2 vCPU's

*9 Only 1 VCPU native. 4 vCPU's with the use of Linux Integration Services for Hyper-V.

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