HYPERVISOR COMPARISON

Version 2.0

A feature comparison of the three main competitors in the hypervisor space, Citrix, Microsoft and VMware. Updated to the latest two versions, Citrix XenServer 5.0 & 5.6, Microsoft Hyper-V 1.0 & R2 and VMware VI 3.5 & vSphere 4.1.

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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, Centric, focuses on clients with 500+ workstations/employees these criteria are Enterprise-class hypervisor selection criteria.

Because of this we published an Enterprise Hypervisor comparison last year 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 comparison but this time I changed the setup a bit.

Changes:

- No beta or pre-release versions are used. In the last document we also compared Hyper-V R2 beta which wasn't officially released.
  This time all software is available and no features are subject to change due to beta-test, etc.;
- 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 5.0 & 5.6, Microsoft Hyper-V 1.0 & R2 and VMware VI 3.5 & vSphere 4.1.

Not all information is easy to find and some of it is even contradicting but I checked, double checked and Anne Jan 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.

v2.0 - 01-08-2010	VMware ESX(i) 3.5 Enterprise	VMware vSphere 4 Enterprise Plus	Microsoft Server 2008 Microsoft Hyper-V	Microsoft Server 2008 Microsoft Hyper-V R2	Citrix XenServer 5.0 Platinum	Citrix XenServer 5.6 Platinum
Version	3.5 Update 5	4.1	1.0	R2	5.0 Update 3	5.6
Host						
Bare metal deployment	✓	✓	✓	✓	✓	✓
Intel-VT or AMD-V required	✗	✓	✓	✓	✓	✓
Max logical CPU's (= sockets x cores x threads)	32	128	24	64	32	64
Max cores per processor	Unlimited	12 cores	Unlimited	Unlimited	Unlimited	Unlimited
Max Memory support	256 GB	Unlimited	32 GB	1 TB	128 GB	256 GB
Physical memory overcommitment	✓ (TPS)	✓ (TPS)	✗	✗	✗	✓ (DMC)
Business continuity	✓ (TPS)					
High Availability	✓	✓	✓ (MSCS)	✓ (MSCS)	✓ *1 (EvRun)	✓
Fault tolerance (zero downtime HA)	✗	✓ *2	✗	✗	✓ *1 (EvRun)	✓
Disaster/site recovery	✓ *1 (SRM)	✓ *1 (SRM)	✗	✗	✓	✓
Storage replication support for disaster recovery	✓	✓	✓	✓	✓	✓
Live migration / vMotion	✓	✓	✗	✓	✓	✓
# hosts per cluster	32	32	16	16	16	16
# VM's per host	170	320	64	384	75	100
# VM's per cluster	2000	3000	960	1000	1200 *3	1600 *3
Storage						
Local storage	✓	✓	✓	✓	✓	✓
Shared storage (FC, iSCSI, NFS)	✓	✓	✓	✓ (FC, iSCSI) ✗ (NFS)	✓	✓
Live storage migration (no downtime)	✓	✓	✗	✗	✗	✗
Thin provisioning	✓	✓	✗	✓	✗	✓
Back-up						
Support for back-up and recovery	✓	✓	✓	✓	✓	✓
Back-up proxy	✓ (VCB)	✓ (VCB)	✗	✓ (VSS)	✗	✗
Networking						
VLAN support (802.1q)	✓	✓	✓	✓	✓	✓
Link aggregation (803.2ad)	✓	✓	✓ *4	✓ *4	✓	✓
VM configuration maximums						
Max virtual CPU	4 vCPU's	8 vCPU's	4 vCPU's	4 vCPU's	8 vCPU's	8 vCPU's
Max virtual memory	64 GB	255 GB	32 GB	64 GB	32 GB	32 GB
Max virtual disk size	2 TB	2 TB	2 TB	2 TB	2 TB	2 TB

v2.0 - 01-08-2010	VMware ESX(i) 3.5 (with vCenter Server)	VMware vSphere 4 (with vCenter)	Microsoft Server 2008 Microsoft Hyper-V	Microsoft Server 2008 Microsoft Hyper-V R2	Citrix XenServer 5.0 (with essentials pack)	Citrix XenServer 5.6 (with essentials pack)
Performance						
Max network I/O	9Gb/s	40Gb/s	[unknown]	[unknown]	[unknown]	[unknown]
Max storage I/O	100.000	300.000+	[unknown]	[unknown]	[unknown]	[unknown]
Operating system support (servers)						
Windows NT	✓	✓	✗	✗	✗	✗
Windows 2000	✓	✓	✗ (ended July 13th)	✗ (ended July 13th)	✓ (SP4, no x64)	✓ (SP4, no x64)
Windows 2003	✓	✓	✓ Min SP2, max 2 vCPU's	✓ Min SP2, max 2 vCPU's	✓	✓
Windows 2003 R2	✓	✓	✓ Min SP2, max 2 vCPU's	✓ Min SP2, max 2 vCPU's	✓ (no x64)	✓ (no x64)
Windows 2008	✓	✓	✓	✓	✓	✓
Windows 2008 R2	✓	✓	✓	✓	✗	✓
Mandrake Linux	✓	✓	✗	✗	✗	✗
Ubuntu Linux	✓	✓	✗	✗	✗	✗
SUSE Linux Enterprise 10	✓	✓	✓ Min SP1, max 1 vCPU	✓ Min SP1, max 1 vCPU	✓	✓
SUSE Linux Enterprise 11	✓	✓	✓ Max 1 vCPU	✓ Max 1 vCPU	✗	✓
Oracle Enterprise Linux 5	✓	✓	✗	✗	✗	✓
Red Hat Enterprise Linux 4	✓	✓	✗	✗	✓	✓ (no x64)
Red Hat Enterprise Linux 5	✓	✓	✓ Max 1 vCPU	✓ Max 1 vCPU	✓	✓
NetWare 5	✓	✓	✗	✗	✗	✗
NetWare 6	✓	✓	✗	✗	✗	✗
CentOS 5	✓	✓	✗	✗	✗	✓
SUN Solaris 10	✓	✓	✗	✗	✗	✗
Management						
Power consumption optimization	✓ (DPM)	✓ (DPM)	✗	✓ (core park.)	✗	✓ (WLB)
Role based management	✓	✓	✓	✓	✓	✓
P2V migration	✓	✓	✓	✓	✓	✓
Zero downtime host maintenance	✓	✓	✗	✓	✓	✓
Auto VM placement while running	✓ (DRS)	✓ (DRS)	✗	✓ *1 (PRO)	✓	✓
Auto VM placement at startup	✓ (DRS)	✓ (DRS)	✗	✓	✓	✓
Performance Monitoring	✓	✓	✓ *1 (SCOM)	✓ *1 (SCOM)	✓	✓

*1   With add-on
*2   Only 1 vCPU, max 10% performance loss and physical CPUs may differ max 400MHz
*3   Only with 3rd party drivers
*4   Calculated using the values above. No reference found in official Citrix documentation.