



Hyper-V 3.0 - Enterprise Ready!

Presented by Luther Allin



Presenter:

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Thank you for being here today

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Outline for Our Session



- Miller & Martin's Journey into Virtualization
- Our Current Setup, why Hyper-V
- New Features in Hyper-V 3.0
- Why not Hyper-V
- System Center Virtual Machine Manager (a peek)
- Hyper-V vs. VMware a feature and cost comparison

Introduction



Who am I? I am the IT Manager at Miller & Martin PLLC. I started at M&M in October of 1999 deploying and troubleshooting desktops and applications. Moved to the server/infrastructure side of the house and became the IT Manager in 2006. Since that time, we have rebuilt our entire infrastructure from the ground up.

Who is Miller & Martin? Miller & Martin PLLC is a firm of about 150 attorneys (275 total employees) spread across three cities: Chattanooga, Atlanta, and Nashville. M&M has a diverse law portfolio and branches into several areas of law. Our IT infrastructure is centralized out of Chattanooga and we connect Atlanta and Nashville to the data center via high speed redundant lines.

Our Journey into Virtualization

Why anyone would take multiple workloads and dump them all on the same server creating one single point of failure and causing all sorts of contention on the hardware is simply beyond me. It's ludicrous!

-Luther Allin, 2003 or so

- **Started out very anti-virtualization**
- **Moved in slowly with MS Virtual Server 2005, began to find the value in virtualization**
- **Put a line item in the budget for the following year**
- **Microsoft Releases Server 2008 with Hyper-V 1.0**
- **Purchased System Center Virtual Machine Manager**
- **Migrated to Server 2008 R2 (Hyper-V 2.0) and ran that way until this June**
- **Now have 37 virtual machines running on a 3 node 2012 R2 HV cluster serving 275 users**

Why Hyper-V for Miller & Martin?

- **Multiple thousands of dollars vs. Free**
- **Feature set of Hyper-V was what we needed**
- **Over time, feature set expanded into a now truly enterprise platform**

Diagram of our Environment



New and Changed Features



Server 2012 Hyper-V

Feature	New/Updated
Client Hyper-V	New
Dynamic Memory	Updated
Hyper-V Module for Powershell	New
Hyper-V Replica	New
Importing of Virtual Machines	Updated
Live Migration	Updated
SR-IOV	New
Storage Migration	New
Storage on SMB 3.0 Shares	New
Virtual Fibre Channel	New

New and Changed Features



Server 2012 R2 Hyper-V

Feature	New/Updated
Shared Virtual Hard Disk	New
Resize Virtual Hard Disk	Updated
Storage Quality of Service	New
Live Migrations	Updated
Virtual Machine Generation	New
Import/Export of Virtual Machines	Updated
Linux Support	Updated
Automatic Virtual Machine Activation	New
Cluster Aware Updating (2012) (Not Hyper-V Feature)	New

Is it Really Enterprise Ready?

- **What makes Hyper-V enterprise ready?**
- **You have to measure it against something**

Hyper-V vs. VMware Features



■ Licensing

	Microsoft Windows Server 2012 R2 + System Center 2012 R2 Datacenter Editions	VMware vSphere 5.5 Enterprise Plus + vCenter Server 5.5
# Physical CPUs per License	2	1
# of Windows Server VM Licenses per host	Unlimited	0
Enterprise Operations and Monitoring	Yes	No
Private Cloud Management Capabilities	Yes	No
Management/Provisioning Tools for VDI	Yes	No

Hyper-V vs. VMware Features



Scalability

	Microsoft Windows Server 2012 R2 + System Center 2012 R2 Datacenter Editions	VMware vSphere 5.5 Enterprise Plus + vCenter Server 5.5
Maximum Active VMs per Host	1024	512
Maximum # of physical Hosts per Cluster	64	32
Maximum # of VMs per Cluster	8000	4000
Bare metal deployment of new Hypervisor hosts and clusters	Yes	Yes*
Bare metal deployment of new Storage hosts and clusters	Yes	No

Hyper-V vs. VMware Features



VP Portability, HA, DR

	Microsoft Windows Server 2012 R2 + System Center 2012 R2 Datacenter Editions	VMware vSphere 5.5 Enterprise Plus + vCenter Server 5.5
Live Migrations of Running VMs	Yes-Unlimited	Yes-Limited
Live Migration Using Compression of VM Memory State	Yes	No
Live Migration over RDMA-enabled Adapters	Yes	No
Live Migration of VMs Clustered with MSCS	Yes	No
Maximum Nodes per VM Guest Cluster	64	5

Hyper-V vs. VMware Features



Storage

	Microsoft Windows Server 2012 R2 + System Center 2012 R2 Datacenter Editions	VMware vSphere 5.5 Enterprise Plus + vCenter Server 5.5
Native 4K Disk Support	Yes	No
Hot Shrink SCSI HD for Running VMs	Yes	No
Flash-based Write-back Cache	Yes	No
Automated Tiered Storage Between SSD and HDD	Yes	No
Storage Encryption	Yes	No
Deduplication	Yes	No

Hyper-V vs. VMware Features



Network

	Microsoft Windows Server 2012 R2 + System Center 2012 R2 Datacenter Editions	VMware vSphere 5.5 Enterprise Plus + vCenter Server 5.5
Extensible Virtual Switches	Yes	Replaceable*
ARP, DHCP Spoofing Protection	Yes	No
IPsec Offload	Yes	No
Network Virtualization	Yes	No
Integrated Network Management	Yes	No

OS

Any	Yes	Yes
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Why Not Hyper-V?

- **Feature for feature it's better than VMware**
- **But, it's just a hypervisor**
- **So what else are we talking about here?**

What if We Wanted to Build a Private Cloud?



- Enterprise Grade Virtualization
- Pooled Resources
- Self-service and Delegation
- Application Workload Monitoring and Reporting
- Automation
- Charge-back / Show-back

Private Cloud

Guest Operating System Support



Need to support unlimited Windows hosts and Oracle Linux as well as other Linux based products.

Product	VMware Private Cloud	Microsoft Private Cloud
Windows Server 2012 Datacenter Edition – Windows Server OS licenses for unlimited VMs on 20 dual-processor hypervisor hosts.	\$ 96,180	\$ 96,180

Private Cloud

Bare Metal Enterprise-grade Hypervisor



Windows Server 2012 includes the bare-metal hypervisor

Product	VMware Private Cloud	Microsoft Private Cloud
VMware vSphere 5.x Standard Edition hypervisor for 20 dual-processor hosts.	\$ 50,720	\$ 0 Windows Server 2012 includes Hyper-V bare-metal hypervisor

Private Cloud

Multi Server VM Management Tools



Windows Server 2012 already includes multi server hypervisor and VM management tools.

Product	VMware Private Cloud	Microsoft Private Cloud
VMware vCenter Server 5.x Standard Edition (1-license)	\$ 6,044	\$ 0 Windows Server 2012 includes Multi-Server Management Tools



Private Cloud

Dynamic VM Workload Balancing and Power Management

For Windows, you need System Center 2012 SP1 or R2, VMware needs to be upgraded to Enterprise.

Product	VMware Private Cloud	Microsoft Private Cloud
Step-up to VMware vSphere 5.x Enterprise Edition for 20 dual-processor hosts	\$ 88,440 in incremental cost over Standard Edition	-
Microsoft System Center 2012 Datacenter Edition for 20 dual-processor hosts	-	\$ 72,140



Private Cloud

Profile-driven Storage, Distributed Switches, Bare-metal host deployment

System Center 2012 SP1 or R2 handles this.

Product	VMware Private Cloud	Microsoft Private Cloud
Step-up to VMware vSphere 5.x Enterprise Plus Edition for 20 dual-processor hosts	\$ 30,000 in incremental cost over Enterprise Edition	\$ 0 System Center 2012 SP1 includes profile-driven storage, distributed logical switches and bare-metal host deployment



Private Cloud

Pooled Resources, delegation, Self-service, Application Insight, Automation, Charge-back

All of this is handled by System Center 2012 SP1 or R2

Product	VMware Private Cloud	Microsoft Private Cloud
Step-up to VMware vCloud Suite 5.x Enterprise Edition for 20 dual-processor hosts	\$ 554,108 in incremental cost over vSphere 5.x Enterprise Plus Edition	\$ 0 System Center 2012 SP1 includes Private Cloud resource pooling, delegation, self-service, deep application insight, automation and charge-back/show-back

Private Cloud Bottom Line



- Enterprise Grade Virtualization
- Pooled Resources
- Self-service and Delegation
- Application Workload Monitoring and Reporting
- Automation
- Charge-back / Show-back

	VMware	Hyper-V
Total Retail Cost	\$825,492	\$168,320

So What Now?

- **My Goal was to show you that Hyper-V is a contender, if not a leader, in the hypervisor world.**
- **Remember, a hypervisor without management is and engine without a car.**

References

Hyper-V 2012 Features: <http://technet.microsoft.com/en-us/library/hh831410.aspx>

Hyper-V 2012 R2 Features: <http://technet.microsoft.com/en-us/library/dn282278.aspx>

Hyper-V vs. VMware Feature Comparison:

<http://blogs.technet.com/b/keithmayer/archive/2013/09/24/vmware-or-microsoft-comparing-vsphere-5-5-and-windows-server-2012-r2-at-a-glance.aspx>

Hyper-V vs. VMware Cost Comparison:

<http://blogs.technet.com/b/keithmayer/archive/2013/09/09/vmware-or-microsoft-shopping-for-private-clouds.aspx>

Questions

We'll now open it up for questions

Thank You

