Top 10 Reasons Why VMware vSphere 4 is Years Ahead of the Competition

1. The Industry's Most Reliable Hypervisor Just Got Better – VMware ESX/ESXi 4.0

VMware ESX/ESXi 4.0, a part of vSphere 4, extends VMware's legacy of highly reliable, highly scalable virtualization by delivering even greater levels of robustness, security, and performance. Already, over 85% of ESX/ESXi deployments are in production environments – an example of how companies, both large and small, trust VMware for their business critical workloads. ESXi 4.0 is VMware's thin virtualization form factor with no dependence on a general-purpose server operating system in the virtualization layer. With a 70MB disk footprint, ESXi 4.0 dramatically shrinks the code base that needs to be maintained and secured, ultimately resulting in a more secure environment. In contrast, all versions of Microsoft Hyper-V R2 will still rely on Windows Server running inside the parent partition, the same architecture as Hyper-V R1. Therefore, the smallest version of Hyper-V R2 (Windows Server 2008 R2 with Server Core installation) still has a disk footprint of~3.6GB, representing millions more lines of code to maintain and secure. Hyper-V R2's continued dependence on Windows means it still faces performance and scalability limitations, especially when running many concurrent virtual machines on the same host. With Hyper-V, the security and stability of your datacenter will always be dependent on the security and stability of Windows.

2. Reliable, Cost-effective Solutions for Small Offices – New vSphere Essentials Editions

The robust, proven capabilities of VMware vSphere are now also available in two cost-effective packages designed for small offices, starting at just $166 per processor. vSphere Essentials Edition enables server consolidation and centralized provisioning, management, and patching for immediate savings on hardware and operational costs. It also includes integrated physical-to-virtual conversion capabilities and the VMware VMsafe security APIs for third-party security products that deliver even better security than available on physical servers. vSphere Essentials Plus Edition is an easy-to-deploy "Always on IT" package that includes everything from Essentials and adds capabilities to dramatically improve application uptime and quickly deploy data protection (with built-in data deduplication to save on storage costs). With vSphere Essentials and Essentials Plus, small offices get the industry's most proven, complete virtualization platform in an integrated package that solves a small office's most pressing needs – application uptime and data protection. The "free" Hyper-V R2 offering from Microsoft is still just a hypervisor with point capabilities, instead of a complete solution, and small businesses still need to purchase Microsoft System Center to get management capabilities that are required for controlling costs.

3. Higher Consolidation Ratios Means Lower Cost than "Free" – vSphere Performance Improvements

Better performance and utilization lead to higher virtual machine consolidation ratios, which lead to lower capital expenditure costs. vSphere significantly improves the performance of all sub-systems, over the already high standards set by VMware Infrastructure 3, from CPU to memory to storage to networking to cluster-level utilization, to achieve the highest consolidation ratios in the industry. (Refer to the vSphere Key Features document for details on all of vSphere's performance improvements.) This VMware advantage results in a lower total cost compared to virtualizing with other vendors' so-called "free" offerings. Microsoft Hyper-V R2 continues to trail considerably in consolidation ratios as it lacks fundamental capabilities like a high performance 'gang' scheduler, memory oversubscription, direct driver model, and logical resource pools with dynamic load balancing. As a result, Microsoft's "free" Hyper-V offering is often more expensive than VMware's robust, proven vSphere solution.

4. Zero Downtime, Zero Data Loss for Applications – New VMware Fault Tolerance (FT)

VMware FT ensures that protected applications are always available, even in the event of hardware failure – your applications may never have to go down again. FT creates a shadow copy of a protected virtual machine and automatically triggers a seamless stateful failover should the virtual machine stop responding due to hardware failure. After the failover, FT automatically creates a new shadow copy on another host to ensure continuous protection. FT works with all types of shared storage (Fibre Channel, NAS or iSCSI) and with all operating systems supported by VMware ESX. No complex set-up is required, and applications do not have to be cluster-aware. Microsoft has no equivalent functionality. Microsoft, in January 2009, did make a pre-announcement with Marathon Technologies on an FT-like capability for Hyper-V R2. But at the time of Hyper-V R2 GA, there was still no update on when Marathon would deliver the capability. Microsoft will claim that active-active clustering can address the same need, but active-active clustering is complex to set-up and only works with a small set of cluster-aware applications.

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5. Virtual Networking for Private Clouds – New VMware vNetwork Distributed Switch

With VMware vNetwork Distributed Switch, IT can manage one virtual switch that spans an entire cluster instead of managing a separate virtual switch for each host – a new, time-saving way to manage virtual networks. It creates a single distributed switch that spans a cluster of ESX/ESXi hosts and retains network runtime state when virtual machines move between hosts. This new capability is a critical enabler for building private clouds as it allows cluster-level network settings to be managed and policies enforced centrally. Networking vendors have built third-party virtual switches, like the Cisco Nexus 1000V, based on the vNetwork Distributed Switch to make it easier to integrate virtualized environments and manage physical and virtual networks with a common set of tools. Microsoft Hyper-V R2 has nothing comparable to vNetwork Distributed Switch. Those who deploy Hyper-V R2 have to manually manage virtual networks on a host-by-host basis. Each time a Hyper-V virtual machine migrates from one host to another, the admin may need to manually reconfigure network settings for the virtual machine.

6. A Better Way to Enforce Security in a Virtual Environment – New VMware vShield Zones

A key benefit of virtualization is the ability to break down silos within the datacenter. So why create silos of physical virtualization hosts to enforce security zones? VMware vShield Zones let's you manage your security zones in software. vShield Zones controls network access to sensitive areas of the virtual datacenter (ex. DMZ, applications subject to SOX compliance) on a virtual machine by virtual machine basis. Companies can enforce security zones using this integrated vSphere capability (manage it in software) instead of creating new physical silos of virtualization hosts (manage it by separating hardware). This capability is critical to the sharing of resource computing pools, a core element of cloud computing. For customers this means that environments that were not previously virtualized, due to security reasons, DMZ or compliance requirements, can now be easily virtualized and centrally controlled.Microsoft Hyper-V R2 has nothing comparable to vShield Zones. Those who deploy Hyper-V R2 have to enforce security zones by setting up silos of physical Hyper-V hosts.

7. Easiest Way to Configure Virtualization Hosts – New VMware Host Profiles

VMware Host Profiles greatly simplify ESX host configuration management, thereby reducing operational costs since IT admins spend less time manually configuring and compliance checking each individual host. Host Profiles automatically apply a "gold" host configuration profile (includes networking, storage, and security settings) to multiple ESX hosts. It also monitors compliance to the "gold" host configuration profile and can remediate noncompliant hosts with the push of a button. Microsoft Hyper-V R2 has no automated, out-of-box host profiling capability. Host configuration and remediation requires a manual installation and not-so-easy configuration of System Center Configuration Manager.

8. Add Virtual Machine Resources with No Downtime – New Hot-add CPU/memory, Hot-Extend Disks

Even with the best pre-planning, applications sometimes require more resources than originally expected. VMware vSphere delivers hot-add virtual CPU / memory and hot-add/extend virtual disks to dynamically add virtual machine resources. The ability to hot-add and hot-extend allows IT to increase the amount of resources available to an application by provisioning additional CPU, memory, and disk to the virtual machine without disrupting the application or the end-users. Hot-add/extend of virtual disk is supported on all virtual machines. Hot-add of virtual CPU/memory is supported on any guest operating system that natively supports hot-add CPU/memory on a physical server. Microsoft had originally said hot-add of virtual CPU/memory would be in Hyper-V R1, but had to de-commit. Hyper-V R2 does not have this capability either..

9. Virtualize 100% of Your Applications – New Support for Eight Virtual CPUs and 256 GB per VM

Higher CPU and memory maximums per virtual machine allow companies to virtualize the CPU and memory intensive applications in their datacenters. VMware vSphere enables a single virtual machine to simultaneously use up to eight logical processors (8-way virtual SMP) and 255GB of RAM. With 8-way virtual SMP even the most processor-intensive applications, like databases and messaging servers, can be virtualized with no impact to performance. With 255GB per virtual machine, companies can run the most memory-intensive workloads in virtual machines. Microsoft Hyper-V R2 only supports up to 4-way virtual SMP on Windows Server 2008 VMs – all other guest operating systems are limited to 1- or 2-way virtual SMP. Regarding memory, Hyper-V R2 only supports up to 64GB of RAM per virtual machine. These limitations of Hyper-V R2 mean that companies can only virtualize a subset of their applications.

10. Enabling the Private Cloud in the Datacenter – Improved Logical Resource Pools and DRS

VMware vSphere's new cluster-level management capabilities (ex. vNetwork Distributed Switch, vShield Zones, and Distributed Power Management), its performance and utilization optimizations, and its VMware Distributed Resource Scheduler (DRS) all improve the effectiveness and flexibility of VMware Logical Resource Pools. These resource pools aggregate and

share resources across many servers – the essence of cloud computing. Companies can create a logical, shared pool of resources for a specific business group and guarantee resource availability while maintaining isolation from other pools. VMware Distributed Resource Scheduler (DRS) enables intelligent, automated load balancing so applications get the right level of resources at the right time. DRS is the heart of enabling logical resource pools that deliver on SLAs. Microsoft Hyper-V R2 has nothing comparable. Those who deploy Microsoft Hyper-V R2 have to set up dedicated hosts or clusters of hosts for each business group, a rigid, siloed infrastructure that is time-consuming and costly to maintain.

Five More Reasons Why VMware vSphere is the Best Choice…

11. Lower OpEx Costs during Planned Maintenance – Improved VMware VMotion, Storage VMotion

The need to perform planned maintenance during non-peak hours is a significant contributor to higher operational costs. Overtime pay for nights and weekends is compounded with time spent coordinating with business owners to schedule a maintenance window. vSphere improves on the market-proven VMware VMotion and Storage VMotion capabilities that allow IT admins to perform planned maintenance during normal business hours without a maintenance window. Enhanced VMotion Compatibility (EVC) automatically configures servers whose CPUs feature Intel FlexMigration and AMD-V Extended Migration technologies to be VMotion-compatible with servers that use older CPUs. Storage VMotion now works across different types of storage (FC, iSCSI, NFS, DAS) and has a new graphical administrator interface in vCenter Server. Microsoft Hyper-V R2 has a CPU compatibility mode but it downgrades the entire Hyper-V cluster to look like Pentium 4 CPUs to the VMs (Intel CPU generation from 2005). For storage migration, Hyper-V R2 has an inferior capability called "Quick Storage Migration" which causes application downtime.

12. Save on Storage Costs – New VMware vStorage Thin Provisioning with Comprehensive Alerts

VMware vStorage Thin Provisioning is a cost-saving technology that defers and avoids excess storage costs. The technology lowers capital and operating expenditures by reducing disk purchase and cutting the power and cooling cost of the excess disk. Thin provisioning works by enabling IT admins to create virtual machines without having to provision all the storage upfront. When a virtual machine is created, the thin-provisioned disk only consumes what's needed. Then, the virtual disk grows over time when more storage space is required. vStorage Thin

Provisioning comes with comprehensive consumption-based monitoring and alerting. IT admins can set alerts to trigger when they need to procure more storage or rebalance virtual machines across the available storage with Storage VMotion. These monitoring and alerting capabilities prevent accidentally running out of storage space. Microsoft Hyper-V R2 has thin provisioning of disks, but lacks the built-in monitoring and alerting capabilities that make it safe to use.

13. Save Even More Energy –VMware Distributed Power Management is now Fully Supported

VMware Distributed Power Management (DPM) reduces datacenter energy consumption during non-peak hours by consolidating workloads within a cluster and turning off unneeded servers – think of it as cluster-wide power management. While other offerings only focus on power savings for individual servers, DPM provides a holistic, cluster wide approach to power savings. To conserve energy during periods of low utilization (ex. evenings, weekends), DPM consolidates workloads and powers off unused host servers. When utilization is expected to increase (ex. before a work day begins), DPM brings servers back online to ensure service levels are met. Microsoft Hyper-V R2 has nothing comparable. Microsoft talks about PRO Tips, but has not demonstrated a PRO Tips based solution that can intelligently consolidate, power-off, and power-on a cluster of Hyper-V hosts based on application resource requirements. Microsoft also touts Core Parking, but that only conserves energy at the core-level.

14. Use the Operating System that's Right for You – Broadest Guest Operating System Support

VMware has always supported the broadest set of guest operating systems in the industry, including Windows, Linux, Solaris and Novell NetWare, so companies can virtualize their existing applications and maintain flexibility for future applications. vSphere adds new support for several additional operating systems such as Asianux, CentOS, Debian , FreeBSD, OS/2, and new versions of Windows Server, Solaris, SCO OpenServer, SCO Unixware, RHEL, SLES, MS-DOS, and NetWare. In all, vSphere supports over fifty different guest operating systems/versions – that's more versions of Windows than even Microsoft Hyper-V supports and more versions of Linux than Citrix XenServer supports. In contrast, Microsoft Hyper-V R1 only supported one non-Windows operating system – Novell SUSE Linux. With Hyper-V R2, Microsoft recently added support for RHEL 5, but Microsoft has not yet delivered Hyper-V Integration Tools for RHEL, which impacts the performance (no paravirtualized device drivers) and usability (poor mouse control) of the RHEL VM. This type of second-class support for non-Windows virtual machines limits a customer's ability to virtualize existing non-Windows applications and restricts choice when making future application decisions..

15. Built-in NIC Failover and Load Balancing – Improved Integrated NIC Teaming

VMware vSphere provides built-in NIC failover and load balancing to each networked virtual machine, which results in greater hardware availability and fault tolerance in case of NIC failure. It works with any NIC supported by VMware ESX. NIC teaming policies allow users to configure multiple active and standby adapters, and teaming configurations can vary per port groups on the same virtual switch and uplinks. Microsoft Hyper-V R2 still does not have integrated NIC teaming, instead relying on third-party NIC drivers to provide the functionality. The issues with the third-party approach are: 1) the drivers only work with NICs from that same third-party, 2) it requires a separate installation, and 3) it is unclear whether Microsoft or the third-party provides support should an issue arise.

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