VMware V.S. XEN

Hypervisor Comparison Report

Ricardo Estrada
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Executive summary

This comparison report addresses the similarities and differences between the hypervisors VMware and XEN. These hypervisors allow for the virtualization of a server and allow it to host multiple operating systems; in turn they reduce the cost of an infrastructure by reducing the amount of hardware, power consumption, cooling requirements and management over head costs by reducing the hardware footprint in the datacenter. We will take a brief look into the capabilities of each hypervisor, review the hardware requirements, the cost involved in purchasing a hypervisor and address any issues that may influence our decision to select either of these products. Finally, a recommendation will be made based on my opinion and what was learned from the comparison of these two products.
**VMware**

VMware ESXi is a very popular commercial product that offers hypervisor for virtualization. This product has won multiple industry awards and has transformed the way technical professionals develop, test, demo, and deploy new operating systems, applications and patches in an isolated environment. It is one of the Most Advanced Virtualization Platform that can run 32-bit and 64-bit operating systems with up to eight virtual CPUs with 32GB of RAM and up to 2TB virtual disks drives dedicated to each virtual machine. You have the ability to manage multiple, network-connected virtual machines or multi-tier enterprise applications on a single PC with just a click of the mouse. It is capable of 256-bit AES encryption and smart card authentication, cloning, automation of tasks, snapshots, SSL encryption, and provides high availability. VMware allows you to ensure that critical virtual machines receive priority access to network bandwidth by utilizing network traffic shaping and allows you to enforce security for virtual machines at the Ethernet layer.

Free tools are available such as VMware vCenter Converter to import virtual machines that were created using VMware Server, Microsoft Virtual Server, or Microsoft Virtual PC version 7 or higher. VMware Supports Internal SATA drives, Direct Attached Storage (DAS), Network Attached Storage (NAS) and both fibre channel SAN and iSCSI SAN. VMware ESXi is a very efficient hypervisor with many features that enable its versatility to adjust to any infrastructure.
XEN

XEN is also a very popular open source hypervisor that also offers virtualization capabilities. The XEN server Host is a 64-bit x86 server-class machine devoted to hosting multiple VMs. It supports one or more 64-bit x86 CPU(s), with 1.5 GHz being the minimum and 2 GHz or faster multicore CPU. The host requires a minimum of 1GB of RAM with the maximum being 1 TB of ram per host. We will need 16 GB (minimum) of disk space and at minimum a 100 Mbits or faster NIC. Supports snapshots of live virtual disks, capable of cloning for easier deployment of virtual machines, and offers policy based automation of tasks. This product is free and comes with support in the form of documentation and also has forums where you can seek advice from people with experience in implementing this product. The XEN hypervisor runs directly on the hardware and becomes the interface for all hardware requests such as CPU, I/O, and disk for the guest operating systems. By separating the guests from the hardware, the XEN hypervisor is able to run multiple operating systems including Windows, Linux, Solaris and various version of the BSD operating systems, it can run these guest O.S’s securely and independently from one another. It offers a powerful, efficient, and secure feature set for virtualization of x86, x86_64, IA64, ARM, and other CPU architectures.

The Xen.org community develops and maintains the XEN hypervisor as a free solution licensed under the GNU General Public License. XEN offers two types of virtualization for its guests OS: One form is para-virtualization, which is a term used to describe a virtualization technique that allows the operating system to be aware that it is running on a hypervisor instead of base hardware. With para-virtualization, XEN can achieve high performance even on its host architecture (x86) which has a reputation for non-cooperation with traditional virtualization techniques. The operating system must be modified to accommodate the unique situation of running on a hypervisor instead of basic hardware [1]. The other form of virtualization is called a Hardware Virtual Machine (HVM), which is a term used to
describe an operating system that is running in a virtualized environment unchanged and unaware that it is not running directly on the hardware, Special hardware is required to allow this [1].

After conducting research into this product we find that this product may not be able to run some Microsoft operating systems, however, it does run Windows XP. The uncertainty of not being able to run various Windows O.S’s may be a crucial point in the deciding factor for choosing a hypervisor that will be able to meet our specified requirements. Having the ability to use virtual Windows operating systems is a must, since we may need to use these operating systems in our infrastructure. There was also a mentioning on the need for Special hardware to allow for the other type of virtualization known as hardware virtual machine; however, after looking into this, I find no other mention on what type of special hardware is required.
**Recommendation**

Both products are very similar in terms of the virtualization services they offer. They both allow you to virtualize various operating systems and have them hosted on a single server, which reduce the amount of physical machines you would need to run your infrastructure; However, there are a few differences in these products with the key difference being the cost of the product. VMware ESXi is a freely downloadable hypervisor along with vSphere client, which allows you to manage the ESXi server, but the cost comes from purchasing an upgrade to use the other available features. The other is a free open source product with no costs and a few limited capabilities such as support for some Windows operating systems. Since both are great products and they offer very similar solutions to virtualization, I would recommend using a VMware hypervisor. Even though VMware costs money to implement, it has been around for a while and there has been a lot of funding and research into perfecting this product. There is a lot more industry support for this product such as getting certification, training and consultants. The other factor that comes into recommending VMware is the fact that I am a lot more knowledgeable in using VMware. The XEN product is still evolving and it would be a product that we could experiment down the line, but for now, VMware gets the job done.


