

Virtual reality: How virtualisation is changing IT.

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When is a computer not a computer? When its 2 computers. Or more. Virtualisation has already had a profound effect on the way networks are designed and with Microsoft promoting Hyper-V in Server 2008 and support for virtual hard disks in Windows 7, virtualisation isn't going away any time soon.

From the top

Virtualisation is the process of housing 2 or more computers within the same physical machine or "host". An operating system which deals with the creation and maintenance of virtual machines is installed on the host and then virtual machines are created within this operating system. These machines also have their own operating system but are mostly oblivious to the fact they are running within a virtualized environment.

When creating a new virtual machine you can completely customize its hardware by assigning a portion of the hosts RAM, hard disk space, network throughput and processing power. The only limit to the number of machines stored on a single host machine is down to the hardware capabilities of the host.

Benefits of Virtualisation

The most obvious benefit of the virtualisation process is space and cost reduction. Having 2 servers running inside one box means one less machine to buy and extra space in your server centre but that's not the only bonus.

Most machines without virtualisation use only a fraction of their hardware capabilities, just check the CPU utilization in the task manager on your computer now and you'll see that while idle, it will usually hover under 20%, sometimes even less. A host virtualisation operating system can intelligently manage system resources between multiple virtual machines to make sure nothing is wasted and each virtual machine runs at its most efficient.

Another rather impressive benefit of virtualisation lies in the ease of recovering virtual machines if something should go wrong. If an update were installed on a non-virtualized machine which completely rendered it useless (believe me, it happens!) then the only way of recovering that machine would be to re-install the operating system, recreate all settings, recover information from backups and test that everything is running as it was before the update. This could take days of work with users unable to access the server which is no fun for anyone.

Because the virtualisation operating system exists above the virtual machines, we now have the option of taking "snapshots" of each of the virtual machines. This takes a snapshot of the machine in its current state and allows us to quickly recover to a previous snapshot should anything disastrous happen.

Drawbacks of Virtualisation

It's safe to say that the benefits of virtualisation outweigh any drawbacks but, as with any technology, there are a few things to be aware of before designing a virtualisation strategy for your company.

If you are planning on converting an existing machine into a virtualisation host with several virtual machines, you will more than likely need to purchase additional storage space, memory and possibly upgrade the CPU for the host to be able to handle the extra load. You will also need to purchase the virtualisation operating system itself.

With many virtual machines consolidated onto a single host, there is always the risk of the host machine failing and losing all virtual machines. However, with hardware redundancy this risk can be managed. There are also many replication or backup programs which are designed to work with virtualized operating systems which can easily be incorporated into your regular backup schedule.

Where virtualisation goes from here

Virtualisation is becoming more mainstream and it's not difficult to see why. With the capabilities and speed of hardware increasing, more and more machines can be simultaneously run on a single host cutting cost, electricity usage and physical size.

Since losing ground to companies like VmWare and Citrix, Microsoft have entered their own virtualisation operating system into the ring by introducing the Hyper-V role within Windows server 2008. This allows a Windows 2008 server to act as a host operating system and manage machines stored within.

In Windows 7, Microsoft is introducing "virtual XP mode" in business versions of the operating system which looks to bring virtualisation out of the server room and onto client machines. This free download contains a virtual Windows XP machine which can be run within Windows 7 and have applications which are compatible with XP but not Windows 7. The applications run completely within the virtual machine but have access to network resources, can be seen on the Windows 7 desktop and even show up in the start menu of the Windows 7 machine, silently starting virtual XP and the application when its icon is clicked.

There are many exciting developments happening in the field of virtualisation which are challenging the way we see our computers and operating systems within them. From application virtualisation, testing new software on the network, image deployment in larger corporate networks and server consolidation, virtualisation is affecting more and more aspects of IT and shows no signs of slowing down.

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