



## What price virtualisation?

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Virtualisation will be the highest-impact trend in infrastructure and operations market through 2012, according to a recent Gartner Special Report. SNS Europe asked the data centre industry for its reactions to this prediction.

According to Gartner, virtualisation will transform how IT is managed, what is bought, how it is deployed, how companies plan and how they are charged. As a result, virtualisation is creating a new wave of competition among infrastructure vendors that will result in considerable market disruption and consolidation over the next few years.

"Virtualisation is hardly a new concept; storage has already been virtualised — albeit primarily within the scope of individual vendor architectures — and networking is also virtualised," said Philip Dawson, vice president and distinguished analyst at Gartner. "However, as both server and PC virtualisation become more pervasive, traditional IT infrastructure orthodoxy is being challenged and is changing the way business works with IT."

According to Gartner, the leading edge of this change is server virtualisation, which promises to unlock much of the underutilised capacity of existing server architectures. Server virtualisation is already having an impact on the server market; Gartner believes that virtualisation reduced the x86 server market by 4 per cent in 2006. As hypervisor prices drop sharply and management costs decrease because of increased competition, virtualisation will have a significantly larger impact, and Gartner analysts predict that more than 4 million virtual machines will be installed on x86 servers by 2009.

The use of PC virtualisation is also set to increase rapidly. The number of virtualised PCs is expected to grow from less than five million in 2007 to 660 million by 2011. On the PC, the decoupling technology that breaks the close ties and dependencies between hardware and software occurs at two levels: between hardware and the operating system (machine virtualisation) and between the operating system and applications (application virtualisation).

Although application virtualisation is gaining considerable interest, Gartner maintains that it is machine virtualisation that will have a more-long-term impact, making personal computing more manageable, flexible and secure by allowing multiple individual footprints to be defined on the same device.

"Essentially, virtualisation creates a fork in the road for operating systems," said Thomas Bittman, vice president and distinguished analyst at Gartner. "Traditionally the operating system has been the centre of gravity for client and server computing, but new technologies, new modes of computing, and infrastructure virtualisation and automation are changing the architecture and role of the operating system. The days of the monolithic, general-purpose operating system will soon be over."

Infrastructure vendors that have always vied for the largest share of budgets on a best-of breed basis must alter their approach. In the future, the virtualisation and automation of infrastructure will be managed by policies at a business-service level, requiring all parts of the infrastructure to work in harmony. This concerns some vendors, which believe a smooth-running and standardised infrastructure threatens to commoditise their component parts and are keen to establish a critical "linchpin" status in the market.

"This competition will play itself out in the market and in users' infrastructure, and it will be messy," said Mr. Dawson. "Eventually a few dominant infrastructure control architectures will emerge, and in those architectures, vendors will solidify a span on control in a hierarchy of governance."

As a result of the uncertainty that will prevail over the market in the short-to-medium term, Mr. Bittman advised against following a specific vendor's vision and instead advised users to determine their own vision of architecture control and build toward it with a constantly updated strategic plan. "In the medium term, align your virtualisation strategy with the business, avoid vendor hype and beware of software pricing and licensing," he said. "Be prepared to experiment, but make sure that you are the scientist, not the subject."

What is the potential for virtualisation in 2008? asks VMware's Martin Niemer.

Virtualisation technology is in an interesting position - for small businesses, server consolidation is becoming more important and there is a growing awareness of the potential that virtualisation can deliver. In the enterprise market, where virtualisation has already been implemented for server consolidation, virtualisation is now a strategic platform for delivering IT services. Expanding how companies are using virtualisation in their data centres and supporting them in their IT strategies requires more management tools - VMware is meeting this need through products such as Lifecycle Manager, where virtual machines can be tracked from initial creation, through patching and updates, to decommissioning or replacement.

Another important tool will be chargeback - as organisations move over to a virtual infrastructure, ensuring that resources are allocated according to business requirements will be required, so that the business gets the most out of its investment. Departments can be charged according to the number of virtual machines they have set up and the amount of resources they are allocated. This can provide the IT department with a valuable way to control the process for creating virtual machines, as well as ensuring that best practises are followed.

For the future, virtualisation will also continue to have a significant impact on the amount of power that organisations have to use. By implementing virtualisation, businesses can potentially cut up to 80 percent of their power bills. Furthermore, any electricity that is consumed is used more efficiently. Issues of space, power and even weight will become more important to businesses over the next twelve to eighteen months, and virtualisation is one of the technologies that will assist organisations in meeting these challenges while still providing the highest levels of service.

Virtualisation is the future, but it is a high impact trend which still has a long way to go – it is a evolution, not a revolution, explains Zycko's Group Sales Director, David Galton-Fenzi.

The idea of a data centre which is wired once, left alone and managed by making changes, logically not physically, is appealing. Welcome to the world of virtualization. However, simply virtualising the data centre where the assets and resources are logical units of processing power, storage capacity or network connections is not enough – you also need to be able to provision them to the business applications.

Manual change and resource provisioning is possible, but this involves the human factor – with the potential to make mistakes. This can occur through inexperience, tiredness or any number of human frailties, only this time with the power to create major business problems quickly, as virtualised resources can be deployed and redeployed through a simple drag and drop action on a screen.

This is where the data centre needs a strategy for becoming autonomic – self provisioning and self healing in the event of a disruptive event. This capability is here in part today as policy based provisioning tools are available, but full autonomic responses remain on many industry road maps, though their day is coming.

As the move towards the virtual data centre starts to gather momentum, IT departments need to put more

The promise of better use of resources, lower costs and potential reduction to both power costs and real estate is providing a compelling reason to move towards virtualisation and service oriented architecture. However, virtualisation poses real risk as it adds greater complexity, pulling together large numbers of applications and services into one consolidated data centre.

IT departments can't lose sight of data centre management best practices as they move to virtualisation. The impact of poor change and configuration management has even greater results in the virtual world than in the physical because of the greater interdependencies. Using configuration audit and control software that works within the virtualisation engine enables real-time monitoring and assessment of the implications of configuration and change to highlight security risks and track conformance to internal and external policies.

With the right level of visibility across the data centre, businesses can truly feel confident in the potential of embracing a virtual world.

IT departments will be judged by the service they deliver not by how many servers they can consolidate in the data centre, says Nimsoft's VP EMEA, Tim Bisley.

For hard-pressed IT professionals, the challenge that virtualisation throws up is how to manage a complex, heterogeneous data centre environment without compromising the standards set out in service level agreements.

There is no question that virtualisation can bring real business benefits, whatever size your company. However, as with any new technology, the devil is in the detail. Simply virtualising your data centre will not guarantee business success. The more you virtualise the more problems you create and store up for yourself. It's why we are seeing more and more companies deploy end-to-end, service level monitoring features that allow IT departments to better manage a virtualised data centre environment and, critically, be alerted to any situations that may become a potential problem ahead of time. Effective, proactive management is the key to successful virtualisation.

Although virtualisation can help organisations significantly improve the economics of data centre infrastructure, the collision of physical and virtual worlds should not be taken lightly and will undoubtedly cause a management headache for most businesses, warns Owen McKee, UK and Ireland country manager, at Avocent.

The complexity arises from both the nature of virtual server technology itself and because virtual servers must be managed in conjunction with servers in the data centre that remain unvirtualised. Together, these two sets of challenges significantly impact the way IT organisations must evolve their data centre management in the face of hybrid physical/virtual environments.

The key to killing the complexity is for organisations to rethink the way they manage the increasingly dynamic mix of virtual and physical servers and develop a consolidated management strategy.

It is difficult to fully understand how virtualisation will impact management operations before you implement them, but businesses can be prepared to tackle the problems it both inherently and frequently introduces by looking for a solution that delivers integrated management functionality across both physical and virtual server platforms.

Virtualisation is a complex process that is not always fully understood, and while it can perform energy efficient and cost-saving magic, it can also severely impact the business overnight if IT is unable to manage it appropriately, argues Peter Armstrong, Corporate Strategist, BMC Software.

Efficient support and control is crucial for businesses to keep data secure, maintain up-time, meet compliance requirements, and align the virtual environment with the physical infrastructure and the needs of the business.

The human resource needed to manage complex virtual environments can be very high and often requires senior IT analysts to focus on what are effectively routine operations. The solution to this problem is Business Service Management (BSM), an approach that equips the CIO with the tools and services needed to reallocate system and human resources to meet the critical business needs. In effect this brings a fresh significance to traditional management processes such as capacity management, resource planning and risk management.

The latest discipline within BSM and IT management designed to make these processes easier is service automation. By automating the data centre, IT can keep a tight control of operations and costs, and can free staff from routine tasks to focus on more critical business uptime operations. It is therefore little wonder that automation is now considered to be the next logical step in the evolution of IT management.

"As ever with relatively new technologies, there are some risks to consider, says David Elwen, director, DMW Group.

Organisations with fewer servers running more applications run greater risks of business interruption unless they mitigate them. A failed physical server affects more applications. Putting your eggs in fewer baskets means you need more robust baskets. In this context, virtualised resources such as servers need to be well designed to cater for a variety of fail-over scenarios and thoroughly tested.

There are also a variety of virtualisation solutions on the market. What is right for one type of IT estate is not right for another. And a solution isn't complete without an associated systems management design which will depend on the solution adopted. Sadly the tools available to manage virtualised resources are not yet as well developed as those for the physical world (although this area is improving fast).

Given the ease of deploying virtual servers over physical it's easy to fall into the trap of VM sprawl negating the many benefits of virtualisation, warns Simon Ashford – Technical Specialist – Attachmate NetIQ.

The ability to dynamically add, remove and reassign resources is a key benefit that can only be exploited to its full potential through continuous monitoring thereby ensuring the virtual environment is at optimum efficiency.

For this reason, full consideration must be given to the performance management aspects of the deployment. Organisations must ensure that there are comprehensive systems and security management tools in place to secure critical applications and provide administrators with full visibility across the environment.

The virtual environment should provide the same, if not greater, levels of performance, availability and security as the physical environment – otherwise potential costs savings could be put at risk. Performance management tools help to bring some 'science' to the process by providing the metrics that allow tuning and optimisation of the virtual environments.

Storage virtualisation market poised for strong growth, according to F5 Networks.

Key research findings:

28% of respondents in Europe had at least a Petabyte of storage in data centres (8% had an Exabyte or more). The median figure was 51-100 Terabytes per data centre.

Storage virtualisation in Europe is set to grow by 65% in the next two years (37% of respondents have a current solution).

The need for heterogeneous storage (80% of respondents) plus planning for file-based storage (70%) are key drivers of the decision to implement storage virtualisation in Europe.

37% of European respondents have no data centre consolidation plans even though costs and power consumption were cited as key storage-related issues.

Existing users reported high success rates when introducing storage virtualisation to their businesses; 93% of all European companies reported achieving at least one or more of the original goals set at the beginning of the project (e.g. reduce cost / staff time associated with storage).

"This study confirms what our customers and partners are experiencing on the street," said Nigel Burmeister, Director of Product Marketing at F5. "IT managers have moved beyond early exploration, and are now achieving real benefits from mainstream storage virtualisation projects."

In 2001, the Isle of Man Government adopted a new e-government strategy - called JUPITER - that changed the way services are delivered by providing a 24x7 environment that supports Internet-enabled operations. However, the Isle of Man did not have an IT infrastructure capable of efficiently fulfilling the real-time, integrated approach needed and by 2002 was suffering from server sprawl - adding about one new server a week.

After attending a Unisys seminar on consolidation and virtualisation in 2003, Allan Paterson and Brian Osborn who were in charge of IT decision making at the government, decided virtualisation could be the best way to meet the island's needs. Unisys consultants worked with the Isle of Man Government to plan, design and implement a twin data centre environment, thereby addressing its previous problems with resilience. With Unisys help, the Government has consolidated servers and storage using an storage area network (SAN) split between its two facilities. Today, the new environment supports a service-oriented architecture (SOA) and incorporates ITIL service delivery standards. In addition, IoMG now has the ability to test the effectiveness of its data backup and restore procedures.

The Isle of Man Government's cost-effective, real-time infrastructure features four clustered ES7000/one servers. "The ES7000/one servers provide the scalability required to implement operating system patches and run multiple applications," explains Osborn. And when IoMG's Information Systems Division needed to quickly establish development environments to support multiple, concurrent projects, Unisys leveraged its relationship with Microsoft to virtualise the development environment. To date, the government has 50 virtual servers. "Rather than making a quantum change - which is high risk - virtualising has allowed us to upgrade on a continuous basis and reduce server sprawl. Now, we can cost-effectively run many instances of Microsoft Windows on a single piece of hardware," explains Osborn.

1&1 has broad experience in the virtualisation of web servers. For example, in a shared hosting environment, one server is serving several thousand customers. Every customer gets rights to run certain software within the hosting environment. At first glance, this looks like a root environment, but it isn't. Nevertheless, even for a professional it is sometimes hard to de-mask virtualisation. Years ago, when a leading computer magazine was testing hosting products, they claimed they were able to run code in the server's root environment. Actually, they could not - they simply ran a code within their own test account, which was a virtualisation of a server. This shows that even experts can be misled by the camouflage.

We use virtualisation both for some of our internal systems and for products (VPS Servers) and plan to extend its use in the future.

For very high performance systems (like our portals and main databases) we will continue to use dedicated hardware, and also clustering - the opposite of virtualisation.

Virtualisation with Linux designed by 1&1, specifically for hosting, has played a major part in our becoming the world's largest web hosting provider. It has enabled us to run safe systems and yet offer our customers an optimum set of functions. It enables 1&1 to deliver customers a huge set of features for the lowest possible price.

Further benefits are the consolidation of hardware and data centre space, better efficiencies and reduced power/energy costs.

Downsides include some higher risks for a total failure (if the main system breaks down all VMs will break down too) and higher demands on cooling capacity per space. The host hardware needs to work on higher average load too.

This year, our Group's turnover will be over £1 billion, and products based on virtualisation technology will contribute a substantial part of it.

#### VIRTUALIZATION CUTS APPLICATION DOWNTIME ACCORDING TO SURVEY

Vizioncore says that the ability of organizations to recover from failure is much quicker using virtualization, according to an end-user survey conducted at the VMworld Europe conference in February 2008. Of the more than 200 responses, 76 percent of those surveyed stated that they could recover a virtual machine within two hours, while 73 per cent stated that virtualization had helped them to reduce application downtime. However, just over a third of all organizations that have implemented virtualization do not have a specific disaster recovery strategy in place to protect their environments.

"The role of virtualisation within businesses has gone well beyond just server consolidation," said Chris Akerberg, President and Chief Operating Officer of Vizioncore. "The results of this survey show that improved business continuity and accelerated disaster recovery are now significant drivers for uptake of virtualisation. The fact that many organisations still lack a proper disaster recovery strategy for their virtual infrastructures highlights the significant opportunity that exists in this area and is why we feel we are increasingly well positioned to help them protect their mission-critical applications running on virtual machines. This is just part of why we see management tools playing a huge role in helping customers become even more comfortable with virtualisation and making the potential benefits of the technology a reality for organisations of all sizes."

While server consolidation remains a significant reason for implementing virtualization, with 93 percent of customers citing this as one of their primary drivers, other benefits are also proving to be increasingly important to organizations considering virtualization. Other key drivers included reduced hardware costs (56 percent), improved disaster recovery (54 percent) and centralised management (50 percent). Virtual desktop deployment was also listed as being a reason for virtualizing the data centre, with around 20 percent of attendees either implementing or planning to implement Virtual Desktop Infrastructure (VDI). Only three percent listed green IT as a driver for them. "We were surprised at the level of interest in VDI from the people we surveyed," said Akerberg, "and it indicates this is clearly going to be a big area for development of virtualization in future. The lack of interest in "green" is also significant – it would seem that users see this as a fringe benefit rather than being a key reason for implementation."