

I D C E X E C U T I V E B R I E F

Transforming the Datacentre Through Virtualisation: Pathways to a Lower Cost and More Flexible Infrastructure

May 2009

Chris Ingle, Associate Vice President, Consulting and Research

Executive Summary

This Executive Brief, sponsored by Computacenter, looks at three common scenarios for companies that are virtualising their datacenter, and provides recommendations on how to move the virtualisation strategy along in order to gain the maximum benefit from your investments.

The first scenario is for those that have done little or no virtualisation. If you are in this position we provide a checklist of considerations to ensure that you get the most from virtualisation.

The second scenario is becoming more common. This involves companies that have virtualised some or most of their infrastructure but are then finding that they are not getting the returns they expected. We discuss some of the approaches to refreshing the virtualisation strategy so that it gets back on course and continues to deliver benefits.

Finally, we look at some options for those organisations that have a largely virtual infrastructure and are looking at where to go with the technology.

Our research shows that CIOs are using virtualisation to accomplish a wider range of tasks and that, despite the explosive growth in virtualisation over the past few years, virtualisation will be used more intensively in future. Whatever your current position you need to plan your virtualisation strategy to ensure that you can manage the wide range of technologies and workloads that are the future of virtualisation.

Introduction

Facing a challenging business environment as well as pressure on their ICT budget, many organisations have already looked to control cost through short-term measures, such as extending asset life.

While these measures have brought some benefits there is a need to rethink ICT strategy so that lower operational cost is embedded in the infrastructure along with the ability to scale the infrastructure to meet unpredictable business needs.

IDC's research shows that virtualisation on x86 servers has been a critical part of that rethinking of the ICT strategy over the past few years. However, many organisations have failed to realise full benefits from their virtualisation strategy.

This paper draws on IDC's research into virtualisation to look at three typical scenarios for virtualisation adoption and how to get the full benefits promised by virtualisation in the datacentre.

The paper then looks at some hot topics related to virtualisation, such as datacentre management, business continuity and desktop virtualisation.

Methodology

IDC has been researching the datacentre for over 40 years. Data in this paper is taken from a number of studies as well as ongoing research into datacentre technologies and management. Specific sources cited in this paper are:

- Virtualisation 2009. Server and Storage Virtualisation, April 2009. Survey of 240 organisations in the UK, France and Germany. This study looked at the state of virtualisation on servers and storage and the links between the two.

More information on these studies is available from Chris Ingle (cingle@idc.com).

Where Are You With Virtualisation and Why Should You Consider This Subject Now? Three Scenarios

Virtualisation on x86 servers has grown quickly in adoption over the past few years and most CIOs are familiar with the technology. IDC believes that there are three reasons why we will continue to see rapid change in the virtualisation market:

1. Firstly, more options at the virtualisation and management layer, with Microsoft, Citrix and others competing to take share from VMware.
2. Secondly, compared to the previous generations of systems, current systems are more optimised for running virtual machines. A wider range of systems optimised for virtualisation is available; for example, Sun Microsystems is making more use of virtualisation-optimised processors in its product range.
3. Thirdly, the opportunity to radically change the economics of the datacentre through virtualising and automating datacentre processes.

Our work on datacentre virtualisation shows that most organisations fall into one of three groups:

- **Starting out:** Organisations in this group are either not using virtualisation, are testing virtualisation in a non-production environment, or are using it for test and development purposes.
- **Consolidating, then stalled:** Organisations in this group have used virtualisation, often extensively, to consolidate their servers. However, they have reached a wall and their progress appears to have stalled.
- **Virtualising and continuing to benefit:** Organisations in this group are exploring new uses for virtualisation that help to further lower their operating costs and increase their flexibility.

Each of these groups can continue to gain benefits from virtualisation through tweaking their approach. We provide guidance to organisations that find themselves in each of these scenarios.

Starting Out: Where Should You Go?

Critical to starting out with virtualisation is understanding whether you can benefit. Table 1 gives some questions that you should ask before starting a virtualisation project:

Table 1

Starting Out with Virtualisation: Questions to Ask

Question	What to Look For	Why is This Important?
How many servers?	There are reasons to virtualise a single application on a single server. However, for most organisations, a minimum of five operating system instances is a point at which virtualisation can bring savings.	Virtualisation adds an additional software layer. It makes sense to add this complexity when this helps reduce overall cost.
How old are the applications and the operating system and server infrastructure?	Older applications are often running on infrastructure that is not supported. Virtualisation can be used to keep those applications running while migrating them to modern hardware with lower failure rates and better price/performance.	Virtualisation can be used to migrate older applications to newer platforms, gaining the benefit of technology change and improved price performance.
Are my applications supported?	Given the length of time virtualisation has been available, most applications will run on common virtualisation platforms. However, some applications and older applications might not be certified or supported.	Companies that require applications to be certified or supported will need to check with their application vendor. Alternatively, the application can be tested on the platform.
Do I face performance constraints with my applications?	Migrating applications can be a complex business, particularly when the application has unpredictable performance characteristics.	Migration processes need to be carefully planned with thought given to the sequencing of applications, sizing the virtual and physical infrastructure correctly for the application load and whether storage and network resources need to be upgraded.
Do I need to use my administration resources more effectively?	Administration is one of the largest expenses for IT operations. Virtualisation can help reduce administration expenses through increasing the number of servers an administrator can manage.	If a large proportion of your ICT resources is spent on administration, it is sensible to consider virtualisation as a way of reducing administration cost and redeploying resources to areas such as application development.
Can I deploy new applications at reasonable cost and in a short period of time?	How long does it take to deploy a new application? What benefit could be gained from faster testing, QA and deployment?	Virtualisation is a key enabler for faster deployment of applications.

Source: IDC, 2009

Virtualisation can offer a lot of benefits but needs to be considered carefully. In particular, we have seen organisations quickly deploy virtualisation, and get some benefit from this, but then stall and stop getting value from the investment. This scenario is discussed in the next chapter.

Consolidating, Then Stalled: How Do You Refresh Your Virtualisation Programme?

Organisations that have invested in virtualisation frequently quickly deploy virtualisation to consolidate servers then find it harder to continue to reduce costs, or find that costs are starting to increase. There are a number of reasons why this happens:

- **Diminishing returns.** Consolidation is a fairly easy process for organisations with a server estate with a significant number of underused systems. As these systems are consolidated, it becomes more difficult to continue to reduce costs.
- **Concern over virtualisation performance.** Having virtualised it is easy to run into performance bottlenecks where the physical infrastructure (including servers, storage and networking bandwidth) limits performance and discourages further virtualisation. If application performance is appreciably worse under virtualisation than running natively, then users are unlikely to support a virtualisation strategy.
- **Narrow choice of metrics.** It is important to measure server use, administrators per server and other such metrics. However, wider use of virtualisation can improve application deployment time, stability of applications, ability to accurately measure and charge back resource use and other factors. You should consider whether these metrics make sense for your organisation.
- **Unmanaged virtualisation brings complexity.** As mentioned earlier in the paper, virtualisation adds a layer of complexity to infrastructure. This additional complexity is justified when it reduces overall cost, but many of the positive aspects of virtualisation become negative when not managed well. A good example is the ability to launch new servers quickly and cheaply. Clearly this is a benefit, but if it is poorly managed, it can result in too many unmanaged virtual machines increasing administration overheads.

For all these reasons a virtualisation programme can stall. What steps can you take to revive a stalled virtualisation programme? IDC believes that you should look at the following:

- **Review your capacity planning strategy.** At the heart of many of the problems mentioned in this paper is a failure to plan physical and virtual server capacity. This causes bottlenecks in performance as well as difficulties in virtualising larger systems. You should consider how you manage capacity planning and the tools and techniques that are available to implement an effective capacity planning strategy.
- **Ensure that you have an integrated approach to physical and virtual management.** It might not immediately be important to integrate your physical and virtual management; however, as more infrastructure is virtualised, it makes sense to use the same tools (as far as is possible) for both. This helps in gaining clarity on what is running and where problems are occurring as well as reducing the training needed for administrators.

- **Review your metrics for IT success.** Many IT organisations are managed on cost and service availability SLAs. While these factors are important, it is worth looking at other metrics that are of benefit to your business: time to launch new applications, environment savings and other metrics are becoming important.

You can get more from your virtualisation investments by building an effective management and capacity planning strategy, as well as considering the wider benefits of virtualisation outside of cost reduction. Having done this, what should you do to continue towards a more flexible lower-cost infrastructure?

Continuing to Benefit: What More Can You Do?

IDC believes that you will be working with multiple virtualisation technologies. 25% of organisations surveyed in our recent server and storage virtualisation study are basing their strategy on using multiple technologies and, as technologies such as Microsoft's Hyper-V proliferate, more organisations will have multiple virtualisation technologies to manage.

In the same study, we found that 65% of organisations are using live migration technologies to move virtual machines dynamically with load balancing, followed by disaster recovery and migration — the main uses for migration technology.

As multiple types of virtualisation technology are deployed to do a wider range of tasks, you should consider how the datacentre is managed in aggregation. IDC believes that orchestration software — software that manages varied virtual resources across the datacentre and ensures that performance levels and policies are met — will be a necessary component of virtualisation management. Currently, 70% of changes to virtual machine configurations involve some manual intervention and 30% are automated. To fully gain the benefit of virtualisation more needs to be automated.

Looking beyond server consolidation we can already see a number of uses for virtualisation that organisations are implementing or considering. Some of the key ones to evaluate are:

- Extending business continuity across the datacentre. Virtualisation can offer a lower cost approach to business continuity than redundant systems and, as mentioned earlier, many companies are already looking at live migration technologies to get this benefit.
- Virtualising the desktop. Virtual desktops are of interest, particularly for addressing security and desktop migration cost concerns. IDC worked with a group of CIOs to look at how virtualisation is changing the desktop and the resulting report *How Can a Fresh Approach to the Desktop Contain Costs and Increase Security?* (IDC #IDCEB02R, March 2009) is available from Computacenter.
- Getting to the cloud. There is a lot of hype about cloud services, and the opportunity to take advantage of third-party infrastructure to run applications in a faster and more seamless way than current outsourcing arrangements. While this vision may still be some way off, it is clear that those with a well managed virtualised infrastructure are better able to take advantage of third-party services than others.

Conclusion

This Executive Brief looked at three scenarios for virtualisation in datacentres. Those starting out with virtualisation should quickly benefit from reducing their infrastructure cost and moving to a modern and better performing infrastructure.

Many companies are now using virtualisation, but are coming up against some of the challenges that widespread virtualisation can bring to an IT organisation. For those organisations, we believe that the problem is often that management practices have not kept up with the ability to deploy virtualisation. If you are in this position then you should pause and look at how you can refresh your approach to management.

Finally, for those organisations that are on the path to a fully virtualised datacentre, it is worth considering how to extend the strategy to get to a much lower cost and much more flexible infrastructure.

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