opinion piece

dimension data

Virtualisation and its Impact on Operational Risk

Operations management: virtualisation

The potential increase in operational risk is the primary challenge in adopting virtualisation

In a 2008 special report on virtualisation, Gartner* predicted that virtualisation would be the greatest game-changing technology for organisations until approximately 2012.

This has put virtualisation and its associated benefits top of mind for organisations seeking to secure their place among the operationally efficient business leaders of the future.

With such a widespread and far reaching impact on enterprise, virtualisation is not without its challenges. A lack of understanding of the nature of virtualisation and its associated risks can result in organisations falling short of the full potential this cutting-edge technology field has to offer.

In this opinion piece, we bring you up to speed with the three main operational challenges brought about by virtualisation. We will also provide actionable advice on resolving these challenges for a rapid and optimised adoption of virtual technology.

The introduction of **unmanaged** virtual technology is bound to **increase** operational risk

Introduction

Virtualisation is without doubt one of the most impactful and groundbreaking business enablers on offer at the moment, promising a wide range of capital and operational benefits.

However, it also increases levels of abstraction and accelerates the rate of change within an organisation.

These unavoidable by-products of virtualisation, if not managed correctly, are drivers of operational risk and can put a damper on the adoption process.

According to Rob Picton, Dimension Data's Product Manager for Operations Management virtualisation solution, this potential increase in operational risk is currently the primary challenge that enterprises embarking on virtualisation projects are facing.

It is also the greatest hurdle to the rapid adoption of virtualisation, preventing companies from achieving the cost savings promised.

By giving proper consideration to the additional technical or operational risks that are inherent in any virtualisation strategy, organisations can go a long way towards limiting the impact these have on their business.

> "At Dimension Data, we have found that proactively identifying and addressing these operational pain points is the best means of facilitating the rapid adoption of virtual technology in enterprises, and ensuring that the benefits of virtualisation are maximised,"

says Picton.

Key characteristics of virtualisation and their underlying effects

The initial phase of virtual technology adoption involves the actual migration of physical infrastructure to virtual infrastructure. This brings immediate optimisation of physical IT resources while slashing overheads commonly associated with an expansive server infrastructure. Because these benefits have a tangible impact on the bottom line, organisations are eager to embark on further virtualisation exercises, quickly progressing from limited 'test' environment deployments to large-scale production utilisation.

Organisations can become so intent on maximising the benefits that they lose sight of the key characteristics of virtual technology and their underlying effects:

- Firstly, by its very definition virtualisation means the virtual apportioning of resources to allow applications that were once bound to physical infrastructure, to run on a virtually provisioned infrastructure. This new infrastructure is abstracted, meaning it can no longer be physically seen or touched. This makes it more difficult to track.
- Secondly, organisations are accustomed to applications running on physical infrastructures, which are managed from a fault and performance perspective in clearly defined ways. With virtual technology, these same applications can span across physical and virtual infrastructures. An inability to manage any part of this complex infrastructure (typically the new virtual portion) creates risks to the performance of applications, as well as to service delivery.
- Finally, many companies fail to consider that most of their existing management tools and processes are not yet geared to optimally handle the characteristics of virtual infrastructure. Those that do are typically the element managers[1] for the virtual infrastructure which are not able to provide a unified view of the physical and virtual infrastructure on which application service delivery depends.

Clearly, the introduction of unmanaged virtual technology is bound to increase operational risk. This risk escalates as applications of greater significance become candidates for virtualisation, until it eventually becomes an obstacle to the overall process.

*Gartner Special Report on virtualisation, March 2008

[1] Element managers are systems for managing specific vendor technology elements and systems. The element manager typically provides functionality such as Fault, Configuration, Accounting, Performance and Security (FCAPS).

Operational challenges brought about by virtualisation

Organisations eager to adopt virtualisation need to understand that successful deployment will depend largely on the ability to identify and mitigate the associated operational risks.

In this opinion piece, we offer insight into the three main operational challenges commonly introduced by the adoption of virtualisation. We will also provide advice on how these can be handled to enable organizations to proceed more confidently with their virtualisation strategy.

Challenge 1: Existing management tools may not be compatible with the virtualisation element manager

Virtualisation introduces a new technology domain, and with this comes a new element manager for the virtual infrastructure. Organisations' existing end-to-end service management tools will very likely be able to discover the virtual machines, but will be unable to collect detailed information from the new element manager.

As a result, it is incapable of linking the virtual infrastructure to the underlying physical infrastructure, resulting in an inability to connect the dependencies between the two. This will disrupt the unified view that the service management tools normally provide for existing service-bearing infrastructure and create isolated, silo-based management for the virtual portions (see Figure 1).

Figure 1

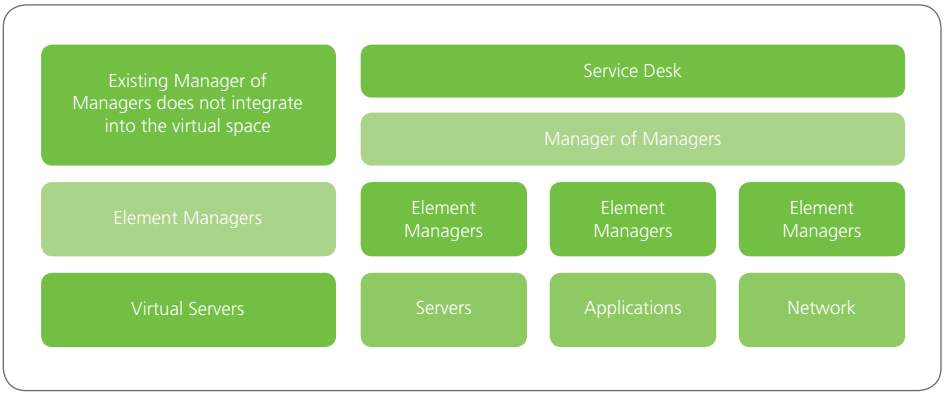
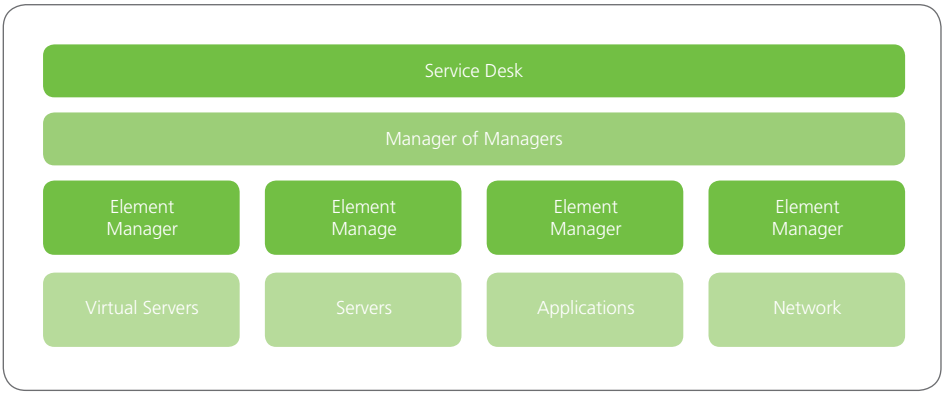


Figure 2



Without a **fully integrated** end-to-end service view, root cause analysis is incapacitated and it's **impossible** to manage application availability

How this affects your business

Without a fully-integrated end-to-end service view, there is no way to link a fault with its underlying infrastructure, or to link the underlying infrastructure to the affected virtual machines. Root cause analysis is incapacitated and it becomes impossible to manage your end-to-end application availability.

Also affected is the ability to manage end-toend application performance or determine capacity requirements. This represents a considerable business risk as without this critical information you are no longer in a position to guarantee the Service Level Agreements (SLAs) required to your internal and external clients.

Solution

To resolve these problems you need to be able to visualise and understand the relationships that virtual machines have with the other equipment in your infrastructure (see Figure 2).

The ideal solution is to link the new virtualisation element manager(s) into your existing Manager of Managers[2] (MoM). This will allow the MoM platform to link the virtual machines to the specific physical host on which they are running. The MoM can then map the relationships between the virtual infrastructure and the underlying server and network infrastructure on which it depends.

This will restore critical end-to-end visibility, enabling you to track faults, deduce root cause, manage your mean time to restore services in the event of a failure, provide performance metrics and allow you to manage the service quality of applications running over your end-to-end infrastructure.

Depending on the service assurance tool that you are currently running, you may only need to deploy an add-on module. However, if this is not supported,

[2] Manager of Managers (MoM) provides an integrated system for managing across multiple vendor technology elements and systems. It typically receives information from multiple Element Managers to provide a consolidated end-to-end view.

you could require an entirely new service management tool. An IT Service Management assessment, the likes of which will be detailed later in this article, will review your current tools and make the necessary recommendations on the right modules or tools required.

Challenge 2: Processes may be poorly defined or immature

While virtualisation is fast becoming one of the key technologies in facilitating the optimisation of IT resources, it also brings a great deal of operational change to the environment. Unlike traditional physical environments, where the addition and movements of equipment can take weeks to realise, virtual machines can be created within minutes and thus have an almost immediate impact.

How this affects your business

Here is a common example of how risk can be incurred: IT personnel encounter the need to make a change – provisioning a new virtual server for example – but because of procurement and change processes, there is a two week lag in delivery. Frustrated by the delay, IT bypasses the server procurement process and provisions the new server immediately, without a thought to the repercussions.

Giving into this temptation results in a loss of control and server sprawl. The converse of this is IT following the process, but then failing to achieve optimal benefit from the investment in virtual technology.

> "To leverage the full value of virtualisation, the numerous changes need to happen in an automated fashion,"

explains Picton.

> "However, these automated changes also need to happen in a manner that is defined, controlled and does not introduce any new business risk."

Solution

IT Service Management maturity plays a critical role in ensuring that virtualisation is everaged in a controlled fashion. Industry findings show that the ITIL® [3] processes governing virtualisation need to be at least at a Level 3 ITIL® maturity. In other words, an organisation's IT processes need to be clearly defined and repeatable.

Processes also need to be customised to satisfy the specific demands and accelerated rate of change brought about by virtualisation. These virtualisation-centric processes then need to be integrated into your broader service management processes in order to facilitate effective end-to-end visibility and management.

Challenge 3: Lack of skills can create operational risk

Organisations expect IT to provide certain levels of service, availability and performance. In turn, IT relies on management systems for the effective measurement and management of its service levels to the organisation.

These tools assist IT in meeting service requirements and in effecting the continuous improvements expected over time.

However, the increase in complexity and rate of change brought about by virtualisation generally requires upgrades to the tools in place or new tools altogether.

To maintain the levels of service that business demands, these tool changes need to be considered in terms of who is actually going to run and maintain these systems in the long term and what skills will be required to do so.

How this affects your business

Many projects are perceived as a failure, not because the system deployed was incapable of functioning as promised, but because the tools monitoring the availability and performance of the deployed system were not properly utilised and maintained.

Failure to properly manage technology undermines an organisation's ability to achieve the expected service from the systems deployed.

For IT to guarantee service levels and ensure that the business is able to enjoy full benefit from the virtualisation solutions implemented, organisations need to maintain the operational functionality of their management systems on an on-going basis.

Solution

As a new technology domain, there is a definite shortage of suitably skilled resources available. These resources are best sourced from virtualisation technology suppliers, or better yet, from IT integrators that you work with.

IT integrators are most likely be skilled in multiple virtualisation technologies and their expertise is ideal for the provision of on site or outsourced services that your own IT department may not have the skill set to cope with.

These services should include performing all the on-going operational tasks necessary to maintain the proper functioning of the management systems and for ensuring that tools are being correctly utilised for their designed purpose.

It is also critical that these tasks are aligned with the processes mentioned in Challenge 2.

To leverage the **full value** of **virtualisation**, the numerous changes need to happen in an automated fashion. However, these automated changes also need to happen in a manner that is **defined**, **controlled** and **does not introduce** any **new business risk**

[3] The ITIL®, or IT Infrastructure Library, is the most widely accepted approach to IT service management in the world. ITIL provides a cohesive set of best practice, drawn from the public and private sectors internationally.

Understanding, defining and resolving the operational risk brought about by virtualisation with our clients

We have shed some light on the three key challenges presented by virtualisation.

However, the way forward lies in understanding the impact that these will have on your business and resolving them appropriately.

Organisations often lack the ability to assess their operations objectively, or they find themselves so overwhelmed by the details they don't know where to start. Either way, the result is that a much sought-after virtualisation project could become sidelined, dogged by frustration and disappointment.

Defining risk

A properly executed IT Service Management (ITSM) Assessment is ideal for defining risk. It probes into the core of your organisation's service management environment, covering technology, processes and people (skills). The maturity and capability of these three areas are then analysed in the context of the progress of the virtualisation project, and plots where they will need to be to deliver on future plans and expectations of the virtualisation project.

Dimension Data has developed an ITSM Assessment specifically for virtualisation and its distinct challenges. This structured questionnaire takes less than a day to complete and can be done at your premises with your key staff. Each answer is scored against the ITIL® Process Maturity Assessment Level, ranging from Level 0 (Absence) to Level 5 (Optimisation)

> "Through this, you can identify the management tools being used, the process maturity in place and the skills available for IT operations in your organisation's environment to actually define operational risks for each of these areas relative to your virtualisation project,"

says Picton.

Resolving risk

These three touch-points: management tools, processes and skills, need to be analysed in the context of your virtualisation project, including future plans and expectations. This is important as it allows for the identification of any gaps between the capabilities available and those required to effectively manage IT operations not just in your current but also your planned virtualized environment.

Detailed recommendations as to how these operational risks can be addressed are provided as part of the assessment, with the view that once these are applied, risk will be greatly reduced and the organisation is placed in an ideal position to deploy and utilize virtualisation far more pervasively.

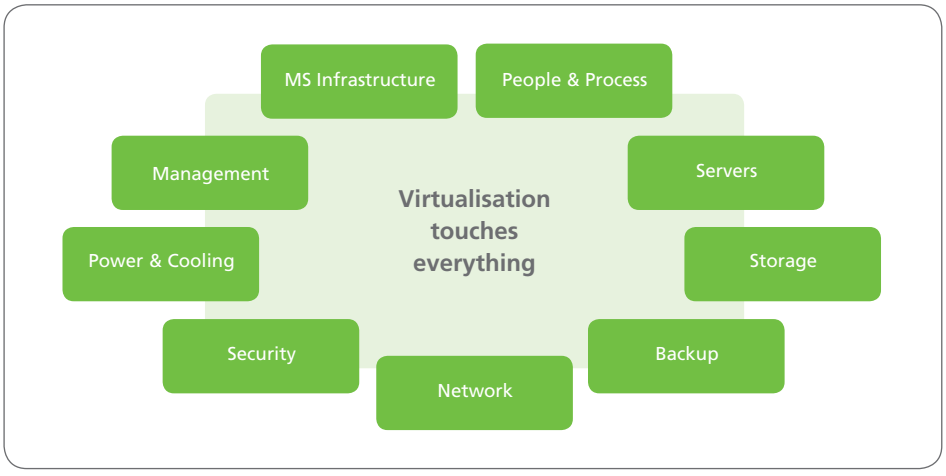
These risks won't just go away and they cannot be ignored, at least not for long. In their March 2008 'Special Report on Virtualisation', Gartner reiterate that virtualisation touches every aspect of the IT environment (see Figure 3). Ideally, each individual element will need to be considered as a part of a properly defined virtualisation strategy. This holistic approach entails a carefully scoped solution that can take several months, or even years, to roll out.

It's hardly a surprise that many organizations are turning to IT integrators for the specialist expertise and skills required for a sustained successful deployment.

Dimension Data has been at the forefront of virtualisation technologies for years. As a Master Systems Integrator, we possess a wealth of experience across multiple technology platforms, both locally and abroad.

Our expertise and insight, complemented by our ability execute complex end-to-end IT projects makes us ideally positioned to assist with the scoping, planning and deployment of virtualisation projects.

Figure 3



Virtualisation touches every aspect of the **ITB environment**

Gartner Special Report on virtualisation, March 2008

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