

Server Virtualisation



Contents

Foreword	2
Server Sprawl	3
Virtualisation Defined	4
Benefits of Server Virtualisation	5
Virtualised Infrastructure—benefits of a layered approach	6
Your choice of hypervisor	7
Storage Considerations	9
Business Continuity	10
Case Example	11
Conclusion	12
Visit our Website	13
Tek Response’s specialisms	14

Server Virtualisation



Foreword

Virtualisation Topped 2012 Priorities

When research firm IDC asked chief information officers to name their top three IT priorities for 2012, (Information Week) nearly 40% selected virtualisation and server consolidation—more than any other area of IT.

The survey results highlighted that savings from server consolidation would be invested in new IT initiatives such as cloud computing, mobility, data analytics, and use of social media for business purposes.

As a core IT infrastructure technology, server virtualisation offers a myriad of benefits—eliminating ‘server sprawl’, making more efficient use of server resources, improving server availability, assisting disaster recovery testing and development, and centralising server administration.

In exploring ‘Server Virtualisation’, this latest edition of Technology Unscrambled looks at why you should consider implementation, the options available, and the benefits a virtualised infrastructure has to offer. See for yourself how one of Tek Response’s clients has benefited from this approach.

Server Virtualisation



Server Sprawl

Historically, organisations acquiring or creating new applications may have typically deployed each new application on its own server—separate servers for separate roles, e.g. email servers, database servers, SharePoint servers, project servers.

The purchase of a large number of inexpensive, low-end servers and the practice of dedicating servers to single applications can lead to ‘server sprawl’. This is a situation in which multiple, under-utilised servers take up more space and consume more resources than can be justified by their workload.

Downstream costs associated with this approach include:

- System maintenance for each server
- Hardware replacement policies incurring additional expenditure
- Higher electrical and cooling costs
- Increased requirements for floor space and networking
- Managing the different hardware and operating systems associated with each server – reducing IT efficiency and increasing the costs of ownership

Hardware utilisation levels vary often resulting in organisations not gaining full value from each hardware purchase.

“Businesses are increasingly turning to server consolidation as a means of cutting costs, reducing complexities and maximising ROI.”

Server consolidation provides a solution to server sprawl by combining the workloads running on multiple hardware platforms.

Various techniques exist to mitigate server sprawl, most notably **server virtualisation**.

Server Virtualisation



‘Virtualisation’ Defined

In computing, **virtualisation** is the creation of a virtual (rather than actual) version of something, such as a hardware platform, operating system (OS), storage device, or network resources.

Virtualisation offers a wealth of benefits – streamlining application deployment, providing high availability for critical applications, simplifying IT operations and allowing organisations to quickly and flexibly respond to changing business requirements.

Our **‘virtualisation’ website channel** provides further insight into the virtualisation technologies available for your IT environment.

What is ‘Server Virtualisation’?

Server virtualisation is a proven technology that enables multiple virtual machines to run on a single physical server.

Each virtual machine is completely isolated from other machines and is decoupled from the underlying host by a thin layer of software known as a hypervisor. This allows each virtual machine to run different operating systems and applications.

Because the machines have been decoupled from the underlying host, the guest can also be moved from one physical server host to another while running; this is known as live migration.

These attributes are transforming how organisations approach virtual computing.

Server Virtualisation



Benefits of Server Virtualisation

Server efficiencies—management of physical machines

With the consolidation of physical servers, hardware maintenance costs are reduced.

Space conservation

Space is conserved as several physical machines can be consolidated into one server running multiple virtual environments.

Reduced power and cooling consumption

Migrating physical servers over to virtual machines and consolidating them onto fewer physical servers results in lower power and cooling costs.

Server hardware capital expenditure

Server virtualisation cuts down on server waste by more fully utilising the physical server resources and by provisioning virtual machines with the exact amount of CPU, memory, and storage resources that it needs.

Faster server provisioning

Server virtualisation enables elastic capacity to provide more flexible system provisioning and deployment.

Minimising impact

Each virtual server can run its own operating system and can be independently rebooted. With each application within its own virtual server, you can prevent one application impacting another when upgrades or changes are made.

You can deploy multiple operating system technologies on a single hardware platform.

Increased uptime

Most server virtualisation platforms now offer a number of advanced features that offer capabilities such as live migration, storage migration, fault tolerance, high availability, and distributed resource scheduling. These technologies enable quick recovery from unplanned outages, such as the ability to quickly and easily move a virtual machine from one server to another.

Improved disaster recovery

By consolidating servers down to fewer physical machines in production, an organisation can more easily create an affordable replication site.

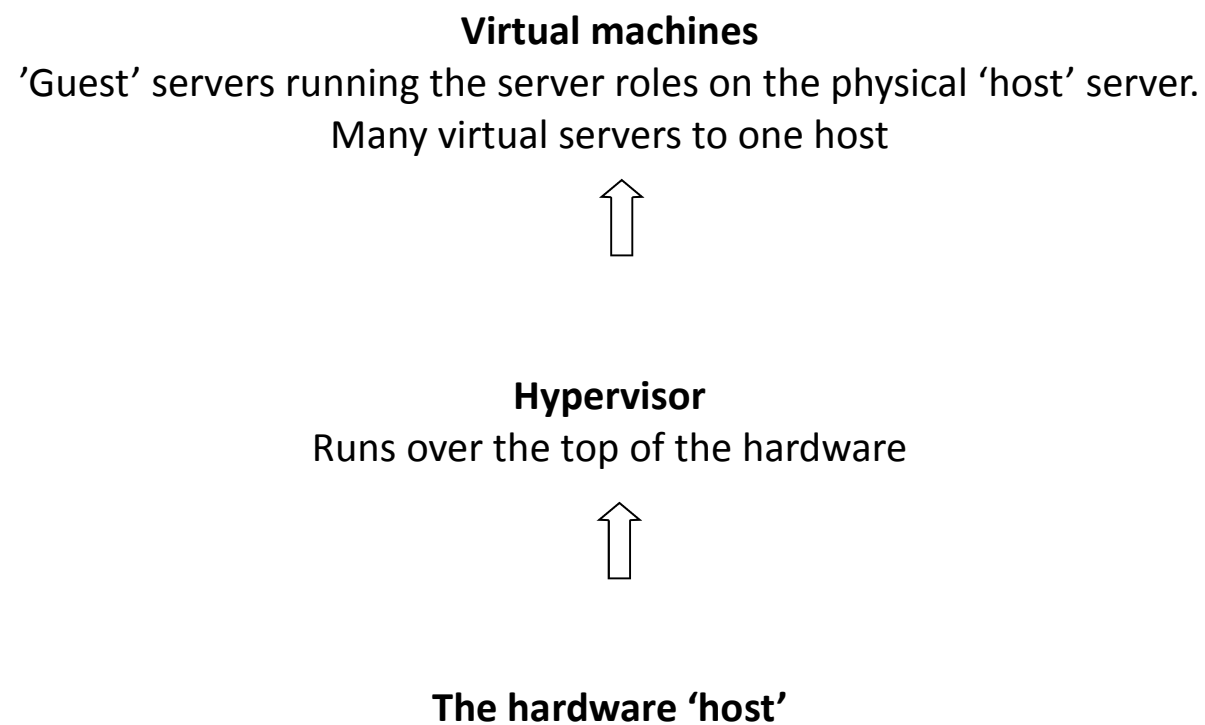
Today, software provides a way to test a disaster recovery failover.

Server Virtualisation



Your Virtualised Infrastructure

Once you introduce virtualisation into your infrastructure, you are separating it into layers:



Benefits of a layered approach

This approach means it is possible to independently replace each layer, e.g. introduce new server hardware, replace the existing hypervisor and then transfer those virtual guests onto the new hardware. This results in significant time (and therefore cost) savings.

As long as your hypervisor is capable of supporting the previous virtual machine, it can be upgraded.

At the 'guest' level, a new virtual 'guest' can be introduced, upgraded or removed. This can be achieved without issue regarding the hypervisor or the hardware beneath.

The hypervisor is responsible for talking to the hardware (the virtual machines do not talk to the hardware directly). Being in the middle, it removes the compatibility issue. Therefore, these virtual machines can run different operating systems.

This flexibility allows additional virtual machines to be rolled out without having to consider the capital expenditure of new hardware. From an R&D perspective, a new server based product can be introduced into the environment with minimal investment by setting up a virtual machine

Server Virtualisation



	VMware	Microsoft	Citrix
Product(s)	vSphere is the collective term for VMware's virtualisation platform	Hyper-V 2012, 2008 R2	XenServer 6
Maturity (Entered market)	2001/2002	2008	XenServer 2007
Market Position	1	2	3
Pricing (relative to each other)	High	Medium	Lower
Technical capabilities	High	Catching up fast	Lower
	The technical differences between the two are reducing and in fact both vendor's products have different strengths. In reality, the average business looking at virtualisation will not strongly benefit from one product over the other. Tek Response finds Microsoft virtualisation is used by our clients in the majority of cases—it is the cheaper of the two and prevents the need to introduce another vendor into the IT platform.		
Our overall preference, having considered the bigger picture	2	1	3

Your Choice of Hypervisor

Selecting the right hypervisor is your first step towards success in building a virtual infrastructure. It provides a tool for optimising server hardware investments by consolidating multiple server roles as separate virtual machines running on a single physical host machine.

What are my choices for a hypervisor?

- 1) Microsoft Hyper-V Server 2008 R2
- 2) Microsoft Hyper-V Server 2012
- 3) VMware vSphere
- 4) Citrix XenServer

Server Virtualisation



Microsoft

Feature Comparison

Windows Server 2008 R2 Hyper-V and
Windows Server 2012 Hyper-V

Windows Server

Choices of Hypervisor Compared

The link opposite compares selected features of Windows Server 2008 R2 Hyper-V and Windows Server 2012 Hyper-V. The tables include comments about each version's performance, as well as information about how well each feature is supported.

technology
unscrambled

technology
unscrambled



Introduction	2
Definitions	3
Primary and Secondary Storage	4
Direct Attached Storage (DAS)	5
Network Attached Storage (NAS)	6
Storage Area Network (SAN)	7
Problems with traditional storage	8
and how can a SAN address these problems	
Benefits of a SAN	9
Server Virtualisation—why use a SAN	10
Making storage highly available	11-12
In Conclusion	13
Discuss your Storage Strategy or	14
any other aspect of technology	

1

Please refer to Tek Response's **'Guide to Storage'** edition of Technology Unscrambled for further information on the merits of SAN, particularly in a server virtualisation environment.

Server Virtualisation



Resilience
High Availability

Business Continuity

Inbuilt resilience and high availability is easier to manage in a virtualised server environment

With physical servers, building in resilience and high availability involves e.g. mirroring a physical server to a second physical server. The cost of the hardware and software to achieve this, combined with the potential professional service fees to set up and maintain this can be high. The more live production servers you have, the bigger this cost is. Typically, it is more than double the cost of installing the physical infrastructure without the mirroring.

With Server Virtualisation and a SAN, rather than making an individual server role resilient, you are making the platform the infrastructure sits on resilient. This is considerably more efficient and effective.

All virtual machines reap the benefit of the investment you have built into the platform, such as mirroring and SAN to SAN replication.

Alternatives to a SAN

If you require a business continuity solution and do not want to introduce a SAN, **Double-Take Availability** offers an alternative option for clients using Direct Attached Storage.

Server Virtualisation



Paintbox consolidates with server virtualisation and SAN



Case Example

Discover how Tek Response worked with Paintbox to introduce server virtualisation as part of a solution to consolidate two of the company's sites, including the:

- Creation of a single data centre
- Implementation of server virtualisation and SAN
- Rollout of desktop virtualisation

[Learn more >>](#)

Server Virtualisation



Conclusion

This guide presents the many benefits to be gained from server virtualisation, including the eradication of 'server sprawl'.

Server Virtualisation offers one of the most effective methods to save costs, consolidate hardware, increase the availability of business applications, and improve agility within an organisation's infrastructure.

The business value gained from properly managed virtualisation — including business continuity and ROI — provides a compelling reason for its adoption.

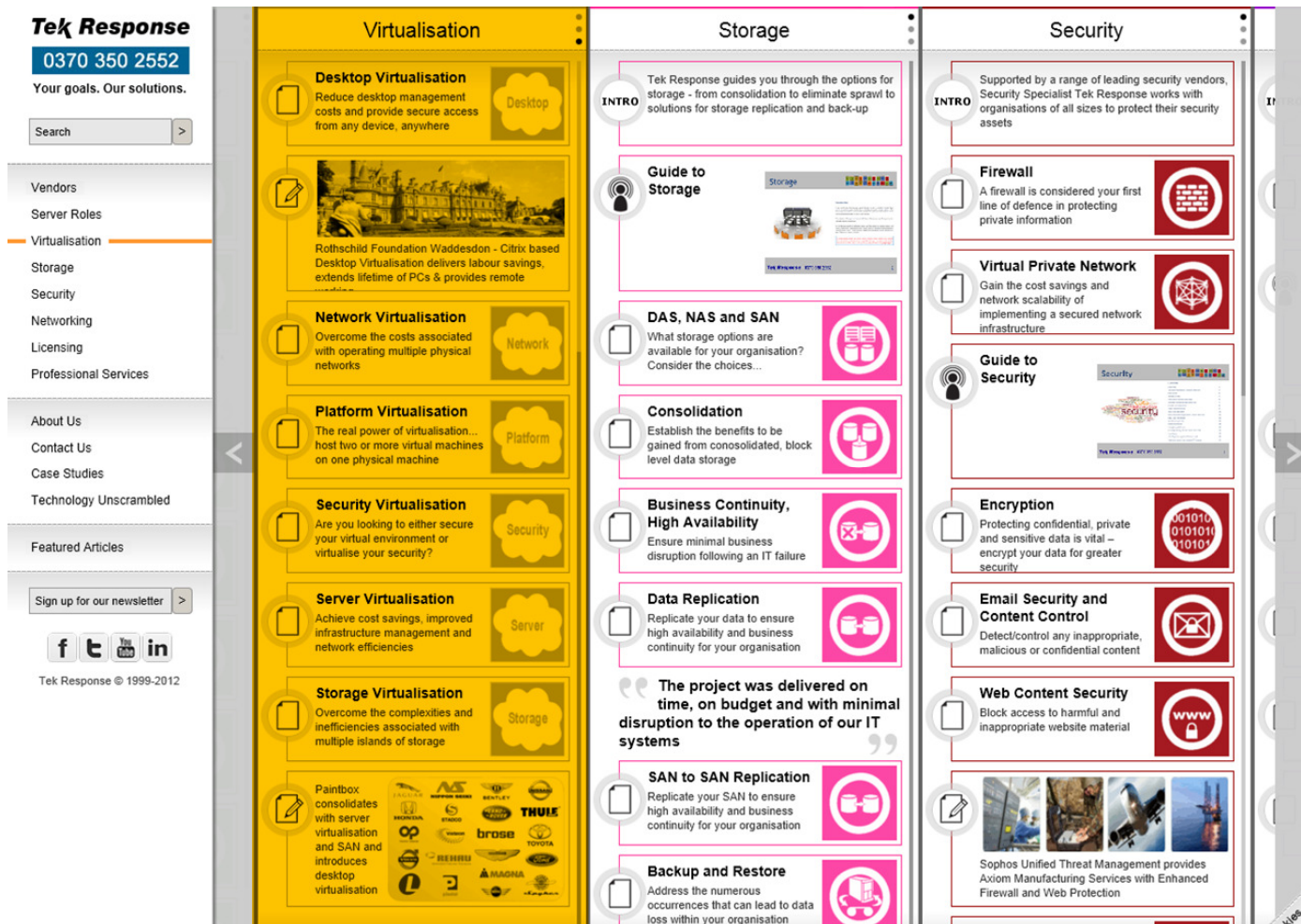
Overall, server virtualisation is a low risk, high reward project that any significant data centre should consider today. It can be performed in stages easily, whereby 'virtualising' specific data centre areas — using the progressive savings on successful virtualisation projects to pay for subsequent deployments.

Talk to us about server virtualisation...

- How can I virtualise my existing environment?
- How can I make more efficient use of my server resources?
- How can I eliminate server sprawl?
- How can I improve server availability?
- What are the appropriate number of hardware 'hosts' needed to ensure sufficient performance?
- How can server virtualisation help me save costs?

Tek Response has considerable experience implementing virtual infrastructures, tailoring solutions to clients' individual requirements. With the myriad of options now available, Tek Response is advising and implementing solutions for clients that offer flexibility, scalability and evolving capabilities.

Server Virtualisation



Visit our website 'virtualisation' channel to find out more...

www.tekresponse.co.uk/virtualisation

Server Virtualisation



Additional Tek Response specialisms:

Storage

Software

Networking

Server

Access

Mobility

Hosted and Managed

Security

Cloud

Professional Services and Support

For more information, simply telephone 0370 350 2552

or email info@tekresponse.co.uk