Virtualisation software allows a modern computer to replace several older computers and run all of the individual programs at the same time without them interfering with each other.

BUSINESS GUIDE

Saving Money through Virtualisation

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"Virtualisation was often criticised for being risky because it puts 'all your eggs into one basket', but this is no longer the case and most companies would quote higher levels of reliability as one of the main reason for using virtualisation."

Introduction

Each copy of an operating system or computer program installed on a computer system using virtualisation thinks it has all of the computer resources to itself. In reality the virtualisation software or 'HyperVisor software' is juggling its time between lots of different tasks in much the same way that parents and teachers have to when looking after a group of young children.

Unlike young children, most computer programs do not need undivided attention, all of the time, so sharing resources is not only possible, but is also an extremely smart, efficient and cost effective way of working.

Whilst this is still often carried out on in-house servers and computers it is now increasingly common to rent virtualised machines from cloud service providers, an option that has only recently become commercially viable with the advent of Superfast Broadband.

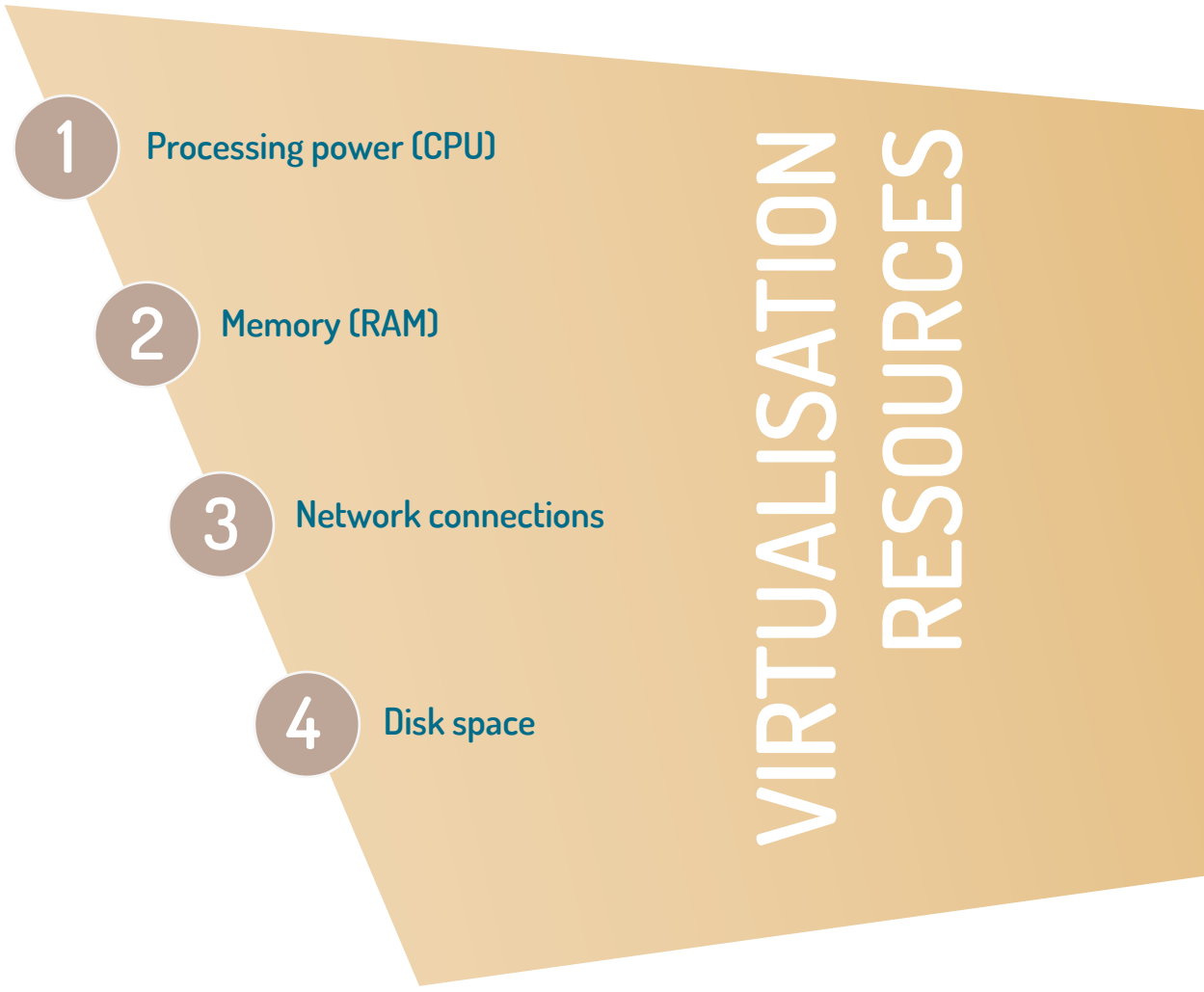
As a result, most larger companies have policies of putting all new computer systems on 'Virtual Servers' which are remotely hosted, unless a good reason can be provided for dedicating a whole computer to a single task.

What does the technology do?

Virtualisation takes a whole computer and all of its resources and carves these up into resources that can be shared between various tasks.

Virtualisation doesn't give you any more resources than you started with, it just provides a convenient, automatic way of juggling them between several systems at once, utilising them based on constantly changing demands.

Virtualisation takes the following resources and 'pools' them so that they can be distributed and used more efficiently:



What does the technology do?

1

Processing power (CPU)

The Central Processing Unit or CPU is the 'brains of the computer'. The most popular CPUs or processors found in computers today are made by Intel and AMD.

Before virtualisation came along companies had to buy a computer with a CPU powerful enough to cope with the busiest task the computer would have to perform, even though that power might only be needed for 5-10% of the time that the computer system was running.

Virtualisation can prevent wasted CPU resources, by making any unused capacity available to other computer systems that might need them.

2

Memory (RAM)

Most computers will slow down when they start to run out of memory (or RAM as it is also known). Having lots of Memory available is like having a big desk, it allows you to have lots of things open at once.

Running out of Memory is like running out of desk space, you either have to stop working, or start closing things or putting work away.

Before virtualisation came along you would have had to buy more RAM when you ran out of Memory, but virtualisation allows you to 'pool' RAM and effectively 'borrow' RAM from other computer systems when you need it, and give it back to the pool when you don't need it for other system to use.

What does the technology do?

3

Network connections

Adding multiple network connections to a computer can make certain tasks faster and more reliable, however this can be quite expensive if it has to be done on lots of individual computer systems.

As multiple computer systems can all share the network connections on a single virtualisation server, several Network Cards, Network Cables and Network Switches can all be combined into faster, more reliable connections without any significant increase in cost.

4

Disk space

It is very common in traditional computer systems to find a mis-match in the disk space available, and disk space used. You could have lots of free space on one computer system, but be completely out of disk space on another computer system and have no way of utilising the free space on the computer that has run out of space.

Virtualisation allows you to 'pool' all of your disk space and 'carve it up' and share it out however you want, and redistribute it when you need to jiggle things around to keep things running properly.

Getting started and key issues

Several virtualisation solutions exist, but the following three are the market leaders. Free and evaluation versions are available for all of these products:

VMware
ESX and vSphere
www.vmware.com/esx

Microsoft
Hyper-V
www.microsoft.com/hyperv

Citrix
XenServer
www.citrix.com/xenserver

Some key issues when considering a virtualisation solution:

- Free and paid for Management tools
- Free and paid for Monitoring tools
- Free and paid for Conversion tools
- Software licence costs
- Software compatibility
- Compatibility with existing backup solutions
- How virtualisation might benefit an existing remote access solution
- How virtualisation and VDI might benefit any planned desktop upgrades
- How virtualisation and VDI might be used in a future BYOD project

What business benefits can I expect?

COST SAVINGS

Virtualisation can save costs in the following areas:

- Hardware – savings on new equipment which could be sat idle 90% of the time
- Software – some software can be legally used on multiple computers with a single licence
- Networks – virtual networks often require less equipment and cabling
- Disk storage – virtual disks allow disk space to be managed more efficiently
- Management – management of systems can be centralised and simplified
- Energy – costs for power and cooling can be significantly reduced
- Flexibility – servers can be reconfigured with a few mouse clicks
- Backups – a virtual server can be copied, backed-up or moved just like a file or folder

ENHANCED MOBILITY

Virtualisation allows you to move a whole computer system or an individual program onto a new computer without having to re-install everything.

If an old computer runs out of steam and you decide to move everything over to a more powerful one, it can take less than an hour to complete the move.

Most virtualisation products have tools that allow you to copy all of the programs and settings on an old 'physical computer' and create an exact clone of that computer as a new 'virtual computer' with a few mouse clicks. You don't have to start again from scratch when you begin to use virtualisation.

What business benefits can I expect?

ENHANCED BUSINESS OPERATIONS

Virtualisation does not have to be limited to big corporate servers. Desktop computers can also be virtualised using Virtual Desktop Infrastructure (VDI). VDI can be seen as a logical progression or evolution of Microsoft Terminal Services and Citrix Presentation Server/XenApp.

VDI can be used to:

- Reduce repetitive software management tasks
- Make it easier for branch offices and home workers to use the same software and databases as everyone else at the 'main office'
- Allow staff to 'Bring Your Own Device' such as an iPad or smartphone

IMPROVED BUSINESS CONTINUITY

Most virtualisation solutions contain features that can be used to provide 'High Availability' or 'Fault Tolerance'. When these High Availability and Fault Tolerance solutions are configured properly it is possible to survive the complete failure of an individual computer, as the virtualisation software detects the failure and automatically moves all of the 'virtual machines' from the failed computer, onto another computer, so the business can continue working without suffering a significant amount of downtime or loss of data.

FOLLOW THESE

TOP TIPS

1

Speak to people who have done this before

Learn from the experiences of others, and ask them what they would do differently in future, and how they feel about virtualisation now.

2

Download the free or trial versions

Try installing the software yourself, or ask an existing partner to provide a demo or take you to see another customer.

3

Work out how much you normally spend on energy bills

In many cases the energy savings can be used to fund a virtualisation project.

4

Work out how much you normally spend on hardware upgrades

Virtualisation might be more cost effective than replacing each computer every three to five years.

5

Consider virtualisation and VDI as part of any existing projects

Remote access, remote working and BYOD are all good candidates for integrating with a virtualisation solution.

NEXT STEPS

1. Register to attend a fully-funded Business Development Workshop:
   www.business.wales.gov.uk/superfastbusinesswales/events
2. Make an appointment to see a Business Adviser who will help you create a personal action plan to grow your business:
   www.business.wales.gov.uk/contact-us

FOR FURTHER INFORMATION

See how other businesses in Wales have exploited Superfast Broadband:
www.business.wales.gov.uk/superfastbusinesswales/superfast-success-stories

Find out how much your business could save with our savings calculator:
www.business.wales.gov.uk/superfastbusinesswales/savings-calculator

Other Business Guides that may interest you include:
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