Perfecting Virtualisation

Commodity or Strategy?

Clive Longbottom

Service Director

Why virtualise?

- x86 servers run at <10% utilisation
- DASD, NAS and many SANs run at <30% utilisation

- Power costs continue to be unpredictable
  - But will rise in the mid to long term
- Disparate systems are impacting business effectiveness
  - Data access is compromised
  - Business decision making is therefore haphazard
- Many organisations are approaching the "£10m server/storage unit/switch"

The aim

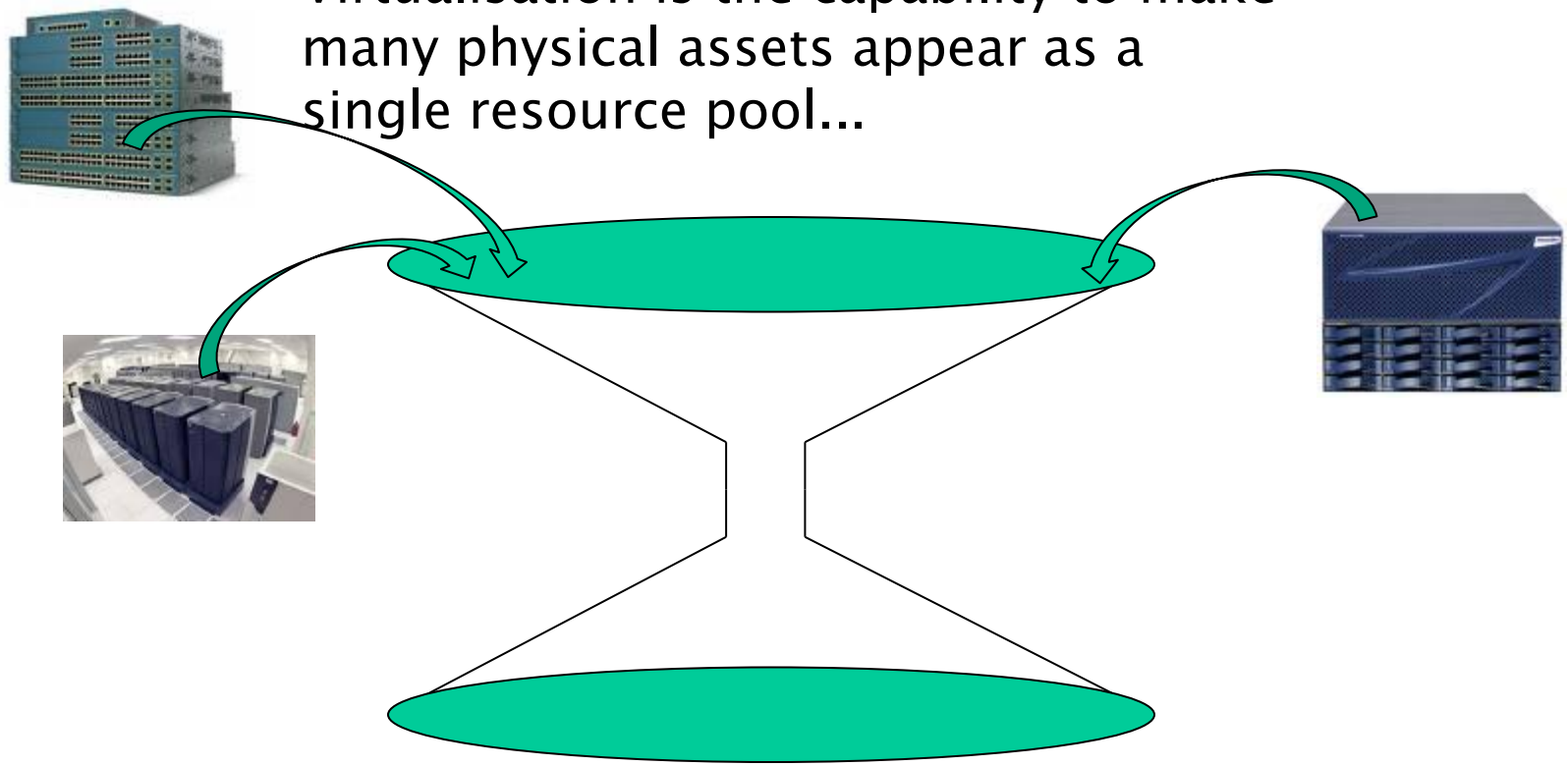
- A more flexible environment
- Better speed of response to business needs
- A more optimised platform
- Ease of management
- Greater availability
- Lower cost of operation
- A lower capital/operational cost

- More than anything, greater support to the business

The (very) basics…

quocirca
Business and IT Analysis

- Virtualisation is the capability to make many physical assets appear as a single resource pool…



- And then to carve these pools up as discrete logical items as required

What needs virtualising?

- Storage – done through shared disk and/or SAN
  - Thriving market for heterogeneous storage virtualisation
- The network – TCP/IP pretty much does this for us
  - But virtual NICS are also needed
- Servers – increasingly being done through VMware, Hyper-V and other hypervisors
- Databases – done through federation and partitioning
- Memory – an emerging market
- Applications – the black spot of the virtual world

Management

- Only now are the physical and logical worlds coming together
- Too many vendors managed each as separate entities

- Storage management requires knowledge of the physical assets as well as the logical partitions – and how they interact with each other at the storage and business logic levels
- Storage management is a combination of many areas – provisioning, ILM, MDM, data security, operational resilience, backup/restore, filtering, classification, hardware...

- Ensure that your incumbent or proposed management vendor provides one SPoG (Single Pain of Glass)

Security

- "Physical" security is less feasible in a highly virtualised world
- Deperimeterisation will only increase
- It's the data that counts
  - Secure the data – the hardware is less of an issue

- Use encryption for data at rest – and data on the move
- Use data leak prevention for optimised deperimeterisation
- Standard approaches can work for physical security
- Watch security in offsite backups/snapshots/replicaction!

Audit and governance

- Actual process flows are harder to log
  - Just where was the data when the problem occurred?
- Event trails must be logged
- If working against legal requirements, ensure that virtual is allowable...
- It's actions against data that count – the application is (relatively) immaterial
- Try not to use point solutions – go for a "Compliance Oriented Architecture"

Sorting out data

- Filtering
  - Lose what isn't relevant
  - Use full function de-duplication
- MDM
  - Master referential data
- Classification
  - What is the data?
- ILM
  - How, where and for how long is data stored for?
- DLP
  - Making sure the data stays where it should stay
- Encryption
  - Making the data secure

Functional provisioning

- To make the most of virtualisation, a high degree of dynamic capability is required
- “Golden images” can rapidly get out of hand
- Licence management

- If image based , ensure that library management is in place
- As new techniques become available, go for dynamic images
- Thin provisioning
- Image lifecycling
- Auto deprovisioning

Disaster resilience

- Disaster Resilience has to be a higher focus than Disaster Recovery
  - But disaster recovery is still required
- Every second of downtime is a second closer to the business failing
- In-built resilience (e.g. RAID)
- Extended resilience (e.g. Mirroring)
- Near-time resilience (e.g. Snapshots)
- Disaster recovery (backup/restore)

- Virtualisation enables fractional provisioning
  - It is not an “N+M” relationship

Data centre impact

- Virtualisation changes densities and loadings in the data centre
- New physical architectures give greater densities yet

- Ensure that power provisioning is capable of supporting new densities
- Ensure that raised floors can take increased weight
- Ensure that cooling is capable of meeting point needs

Doing virtualisation right

- Virtualisation is not a universal panacea
  - But it is pretty close
  - Some workloads should still be on dedicated platforms
  - Dedicate (DASD) storage is on the way out
  - NAS certainly has its place

- The hard work is in the planning
  - What should the topology be?
  - How to deal with fault- and disaster-tolerance
  - What the impact on the data centre will be
  - How servers, storage and applications will be architected, provisioned and managed

The storage imperative

- Centralise whatever possible
- Virtualise as much of the storage asset base as possible
- Cleanse data, use MDM wherever possible
- Secure data at rest and on the move
- Log all actions on data
- Use thin provisioning
- Use dynamic image building and provisioning
- Apply fractional resilience
- Remember to allow for backup and restore

Conclusions

- The virtualised world is not the same as the physical world
- Any plans have to be for the long term
  - Dynamic architectures
  - Easily embrace new hardware and software
- The devil is in the detail
  - Planning is the key
- At the storage level, the data is king
  - Full management, bridging virtual and physical, has to be done
  - A virtual storage domain has distinct needs not seen in the physical world