SIMPLIFYING VIRTUALIZATION

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THE IMPACT OF VIRTUALIZATION

Through 2012, virtualization will be the highest-impact trend in infrastructure and operation.

- Thomas Bittman, Gartner Data Center Conference: "Server Virtualization: Trends, Best Practices, and the Future", November 2007

CONSOLIDATION WITH VIRTUALIZATION DELIVERS TANGIBLE BENEFITS

IN THE DATA CENTER

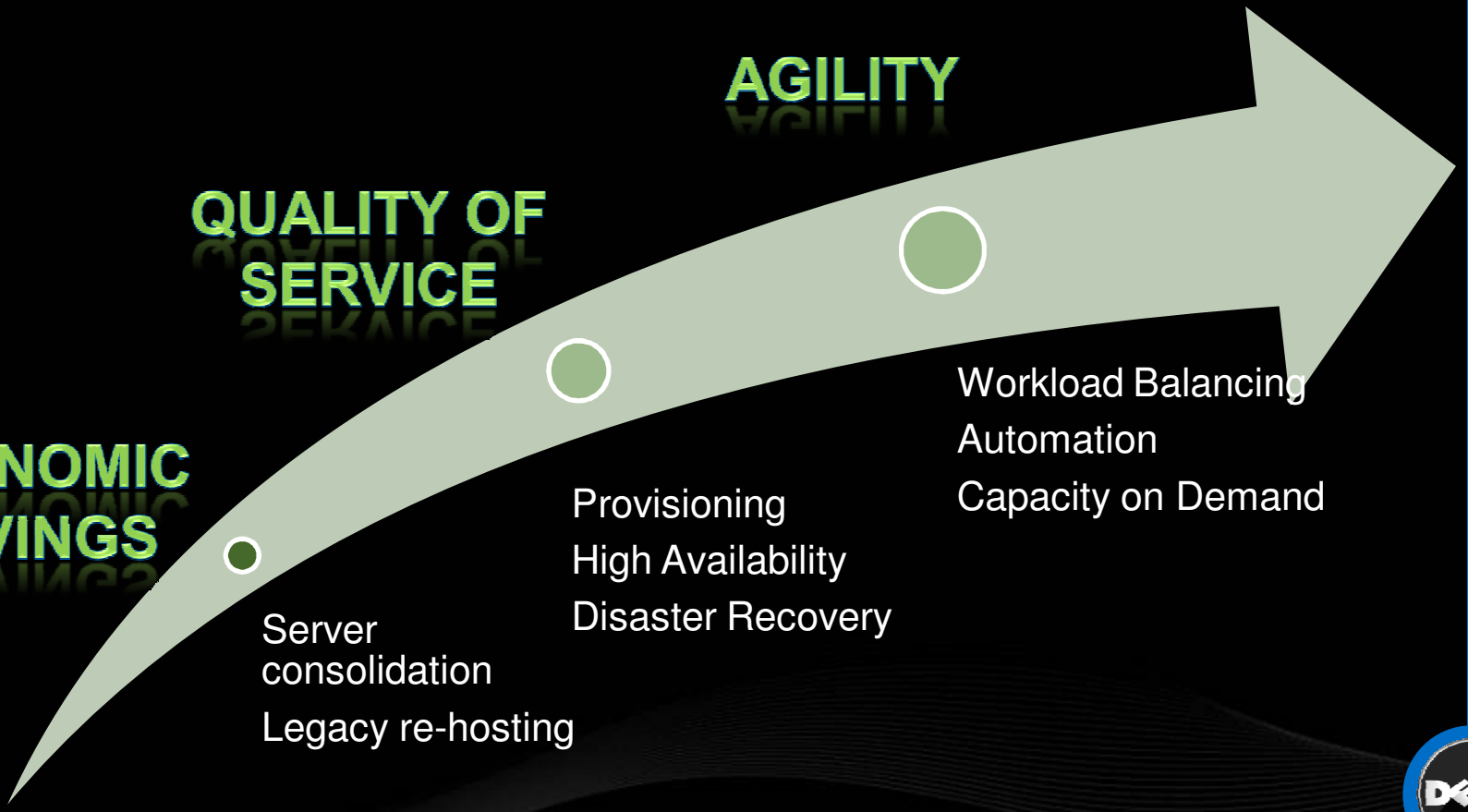
- 50 cents spent on power & cooling for every $1 on servers[1]
- Real estate costs $1,000 per square foot; $40,000 per rack[1]
- Average server utilization <10%[1]

WITH VIRTUALIZATION

- Average number of virtual workloads consolidated on a single physical server is estimated at 10 in 2007 and 2008[2]
- Reduced overall hardware 22%[1]
- Up to 23% annual cost savings[1]

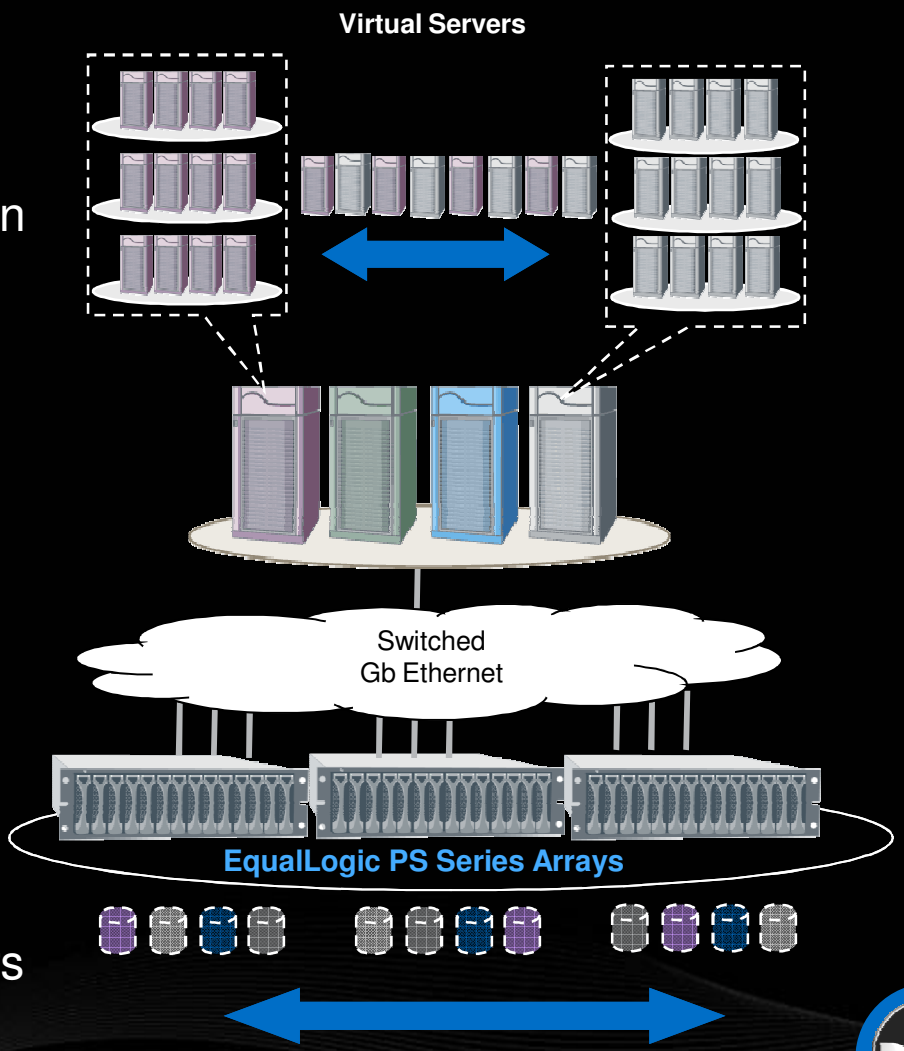
[1]IDC, "Virtualization and Multicore Innovations Disrupt the Worldwide Server Market," Doc # 206035, March 2007
[2] Gartner, Dataquest Insight: Virtualization Impacts x86 Server Shipments, August 2007

VIRTUALIZATION SIMPLIFIES IT BEYOND CONSOLIDATION



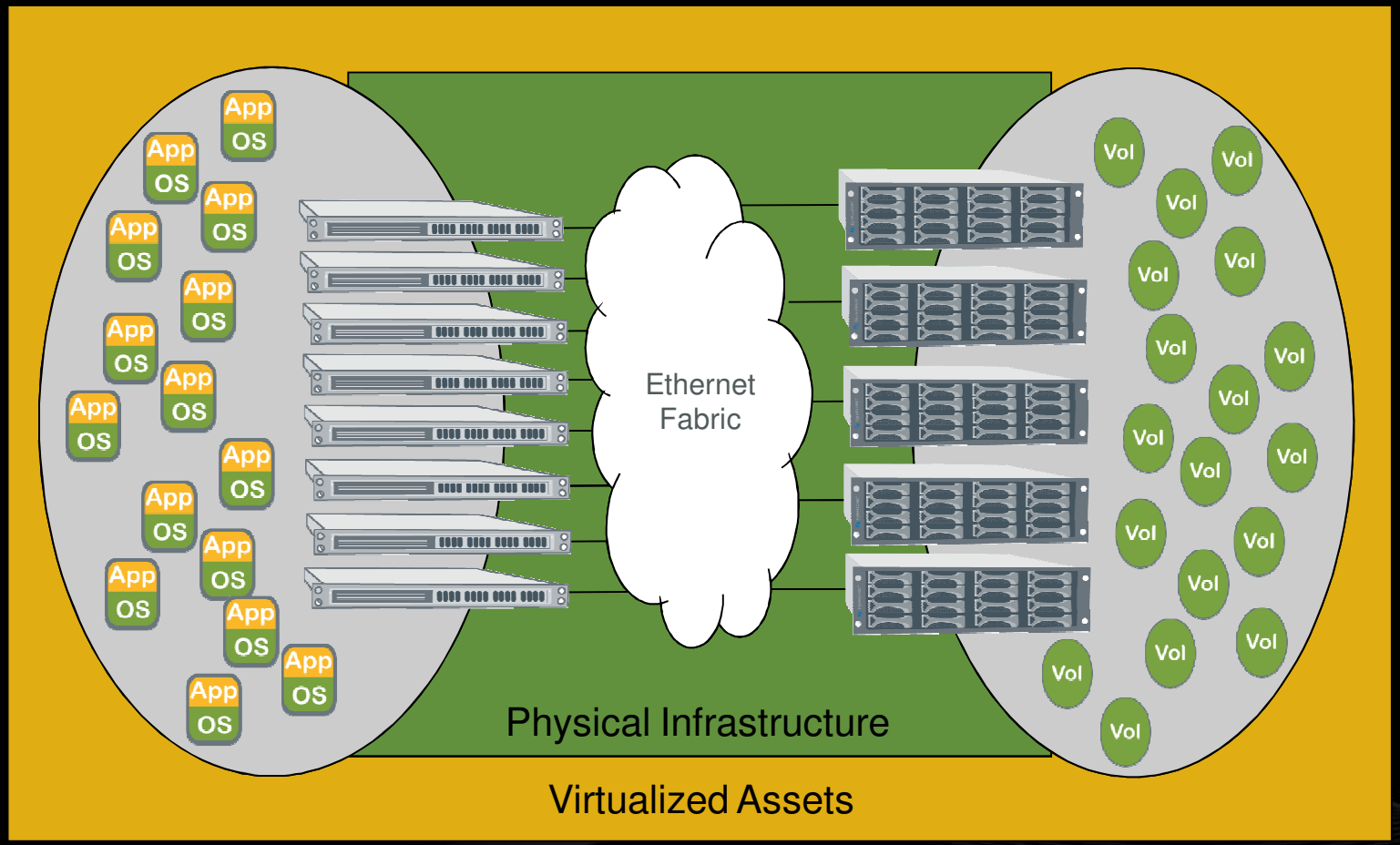
SERVER VIRTUALIZATION
KEY FEATURES ARE ENABLED BY NETWORK STORAGE (SAN)

- **Movement of Workloads**
  - Migration of running virtual desktop without interruption
- **Balancing Workloads**
  - Optimized resource usage given current workloads
- **High Availability**
  - Re-hosting and restart of virtual desktop in case of server failure
- **Server-less backup**
  - Independent of production servers



INDUSTRY TREND: VIRTUAL SERVERS MEET VIRTUAL STORAGE

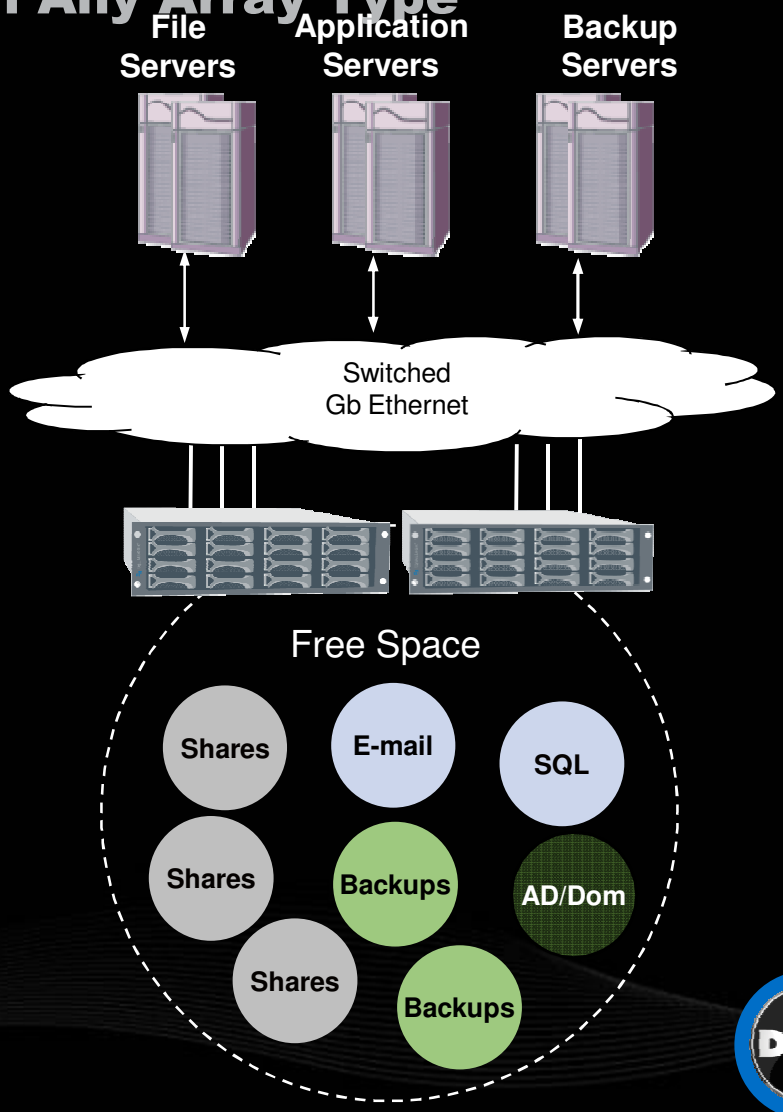
An Extendable, Scalable, and Resilient Infrastructure for Both Servers and Storage



SAN Configuration Choice

On Demand Storage Growth With Any Array Type

- Add New Array Online
- Choose Any Configuration
  - Mix SAS and SATA arrays
- Complete Modularity
  - Add disks
  - Add and/or remove arrays
- Auto Load Balancing Across Entire SAN – Data Paths, Cache, Controllers, Disks
- No Manual Tuning Required



Customer Example: Boots & Coots

Original Environment:

- 4 physical servers (all with multiple roles)
- If they updated one application, they ran the risk of breaking another application on the same server
- Due to acquisition and internal growth, needed to grow to 30-40 servers

Current Environment:

- 3 ESX Servers
- 37 VM's – includes SQL, Exchange, Citrix, ERP
- 2 EqualLogic arrays at headquarters, and 1 array at DR location
- Riverbed systems to allow worldwide consolidation
- Utilize snapshots for quick recovery, tape for long term storage
- Fully redundant infrastructure locally and off-site for true business continuity strategy

Cost Justification

Hardware savings:

- 4 servers before versus 37 servers now
    - 37 new servers x ~$3000 = $111,000 (savings)
- Reallocated original servers to DR Site (no cost)
- Microsoft Datacenter – reduced licensing cost by as much as 65%

Green savings:

- Power - $300-500 per server ~ $13K/year
- Cooling – up to $400 per server ~ $10K/year
- Space reduction – 2 full racks down to 1 half rack

Management:

- Average cost per server for IT staff labor, software license updates, warranties, and service contracts is 3 to 4X initial cost over its lifetime (ex. $3000 server = $9000 over lifetime)
- Consolidating 37 servers to 3 = $300,00 potential savings

DELL SIMPLIFIES IT

THANK YOU

www.dell.com/Virtualization

www.dell.com/PSseries