

DR/BC and VIRTUALIZATION



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Four Steps to Disaster Recovery

- Identify your needs and define what business continuity means to you. (Ultimate goal is to get back up and running)
 - Physical Destruction
 - Data Destruction (Most Common)
- Determine and Document your recovery objectives.
 - How long can you afford to be down?
 - How much data can you lose?
- Evaluate technologies that support your strategy.
 - Tape
 - Replication (Sync or Async)
- Implement and test the technologies.



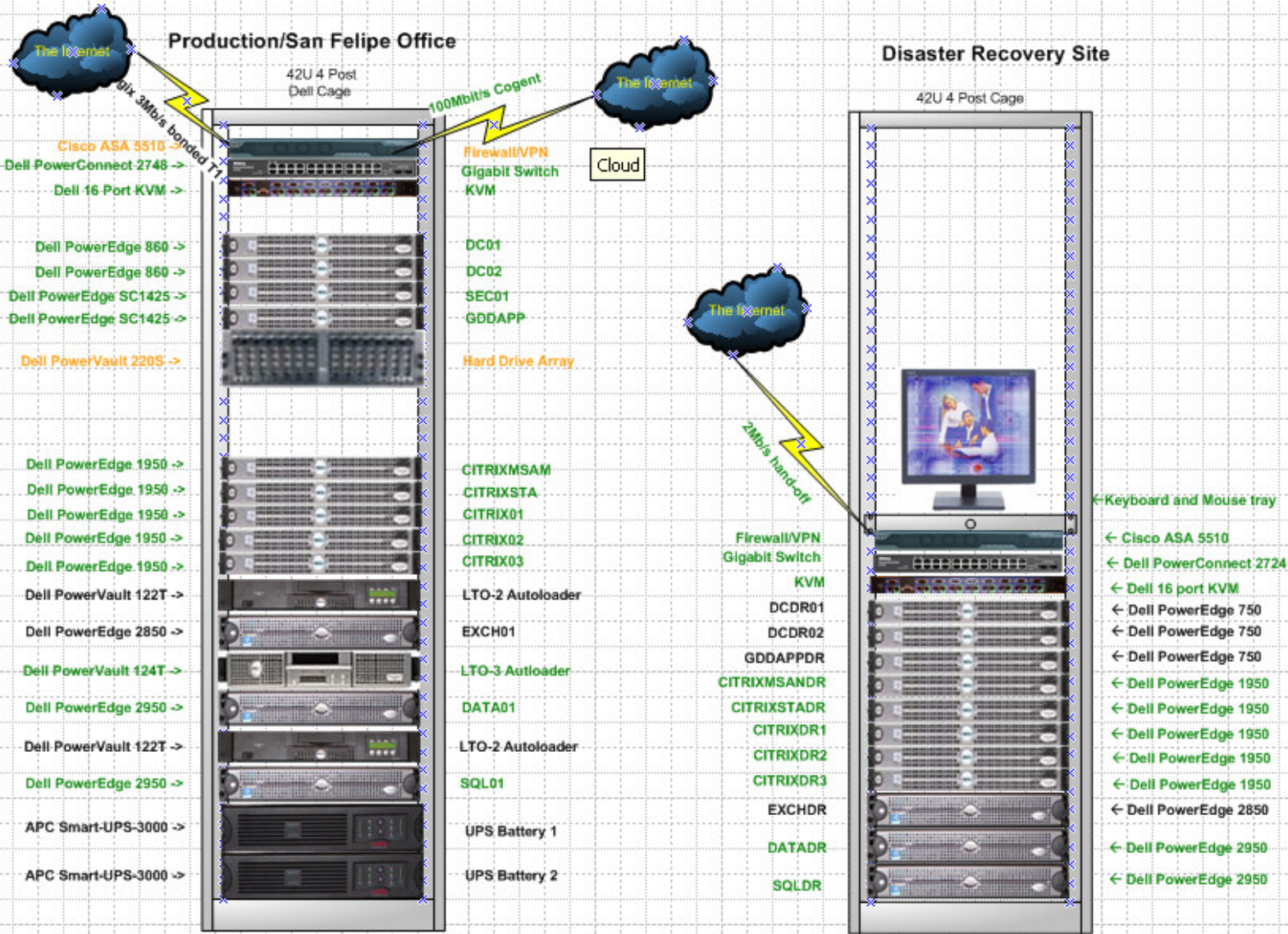
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Physical Environment





Equipment within 1st year of warranty
 Equipment within 2nd year of warranty
 Equipment within 3rd year of warranty
 Warranty unknown or out of warranty



Costs of DR

Costs to Stand up DR Site: \$133,740

Hardware

Servers

Switches

KVMs

Software

WanSync

Operating Systems

Applications

Citrix



Virtual Environment



CONSOLIDATION WITH VIRTUALIZATION DELIVERS TANGIBLE BENEFITS

IN THE DATA CENTER



- 50 cents spent on power & cooling for every \$1 on servers¹
- Real estate costs \$1,000 per square foot; \$40,000 per rack¹
- Average server utilization <10%¹

WITH VIRTUALIZATION

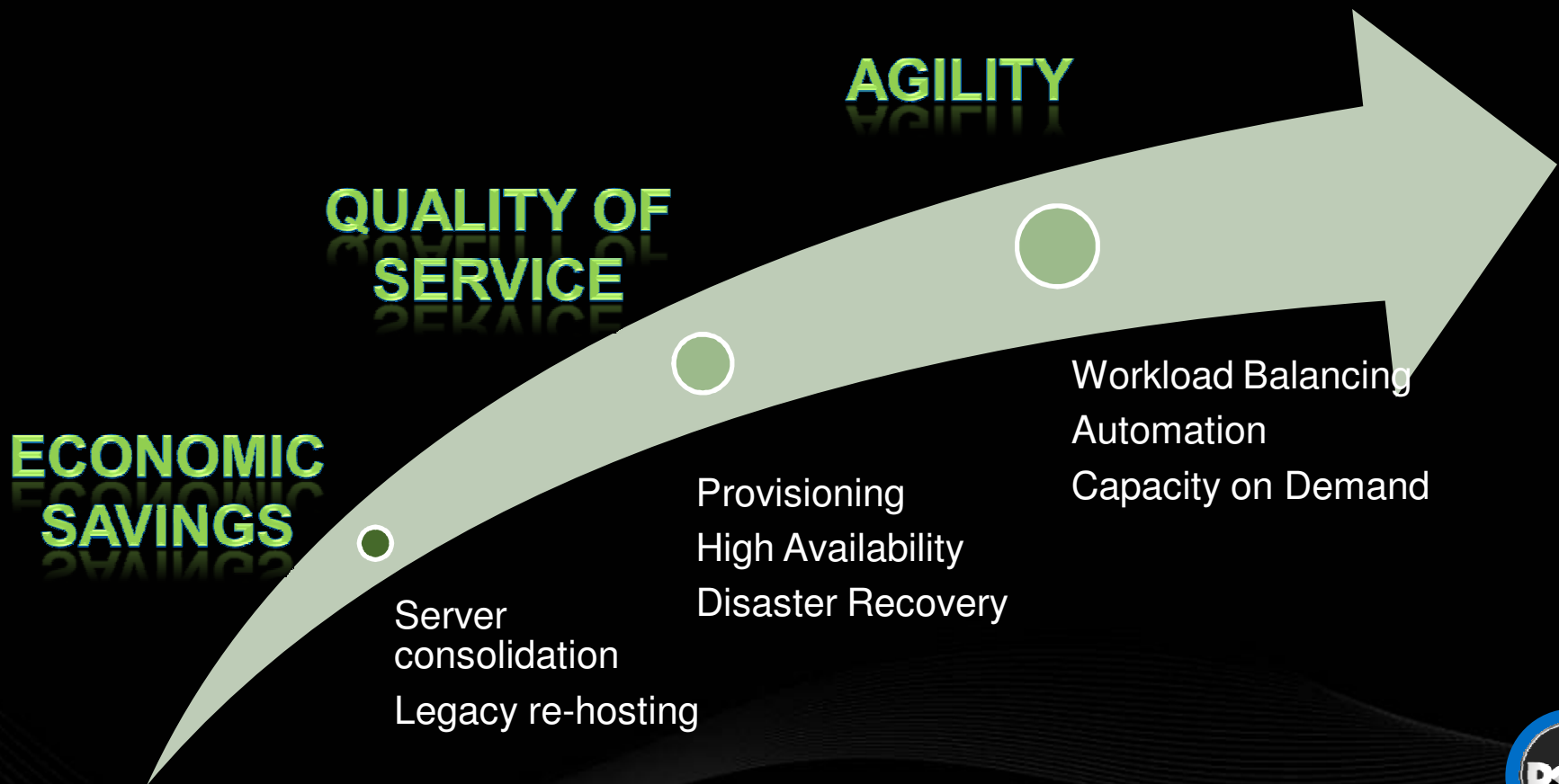
- Average number of virtual workloads consolidated on a single physical server is estimated at 10 in 2007 and 2008²
- Reduced overall hardware 22%¹
- Up to 23% annual cost savings¹

¹IDC, "Virtualization and Multicore Innovations Disrupt the Worldwide Server Market," Doc # 206035, March 2007

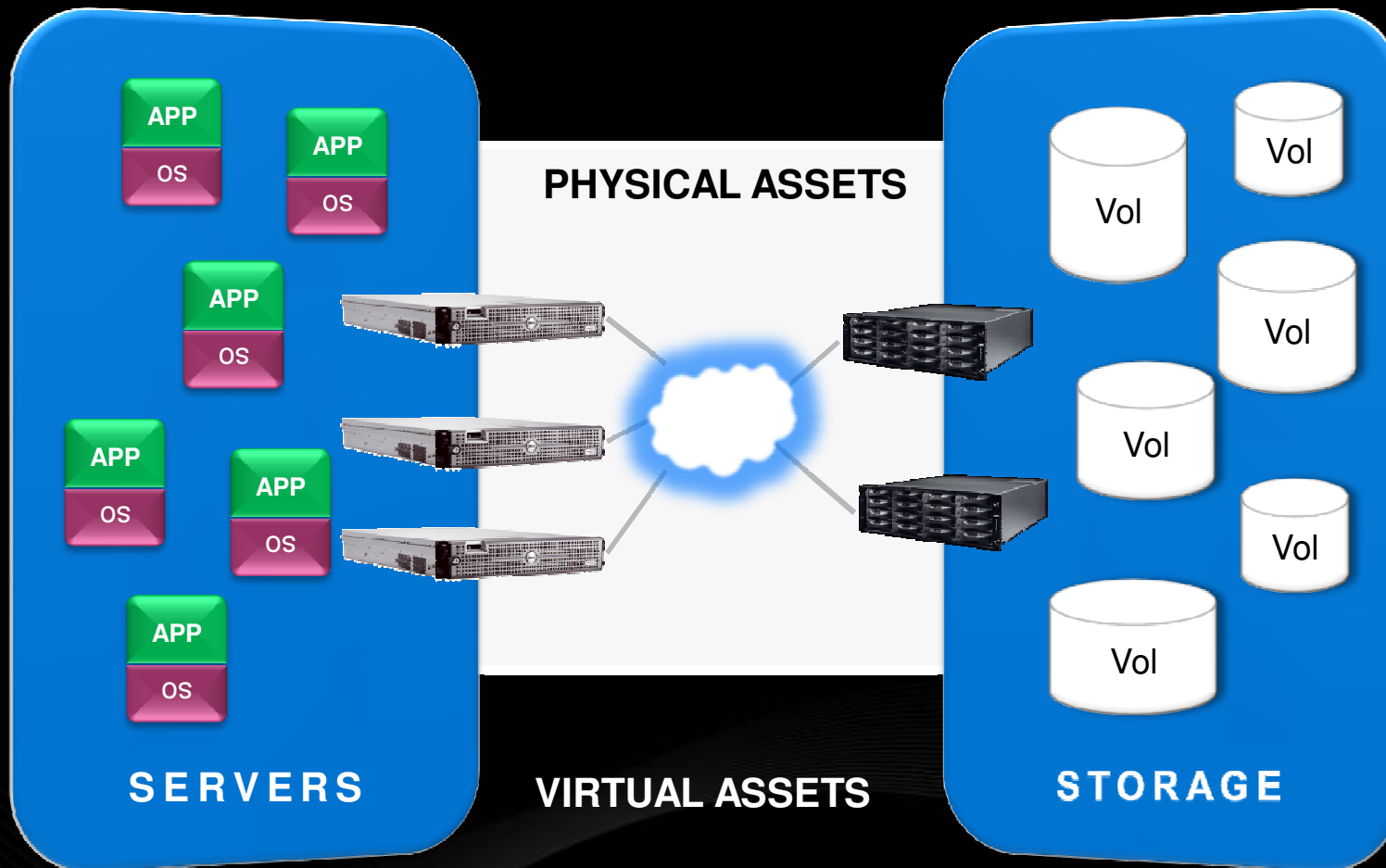
²Gartner, Dataquest Insight: Virtualization Impacts x86 Server Shipments, August 2007



VIRTUALIZATION SIMPLIFIES IT BEYOND CONSOLIDATION



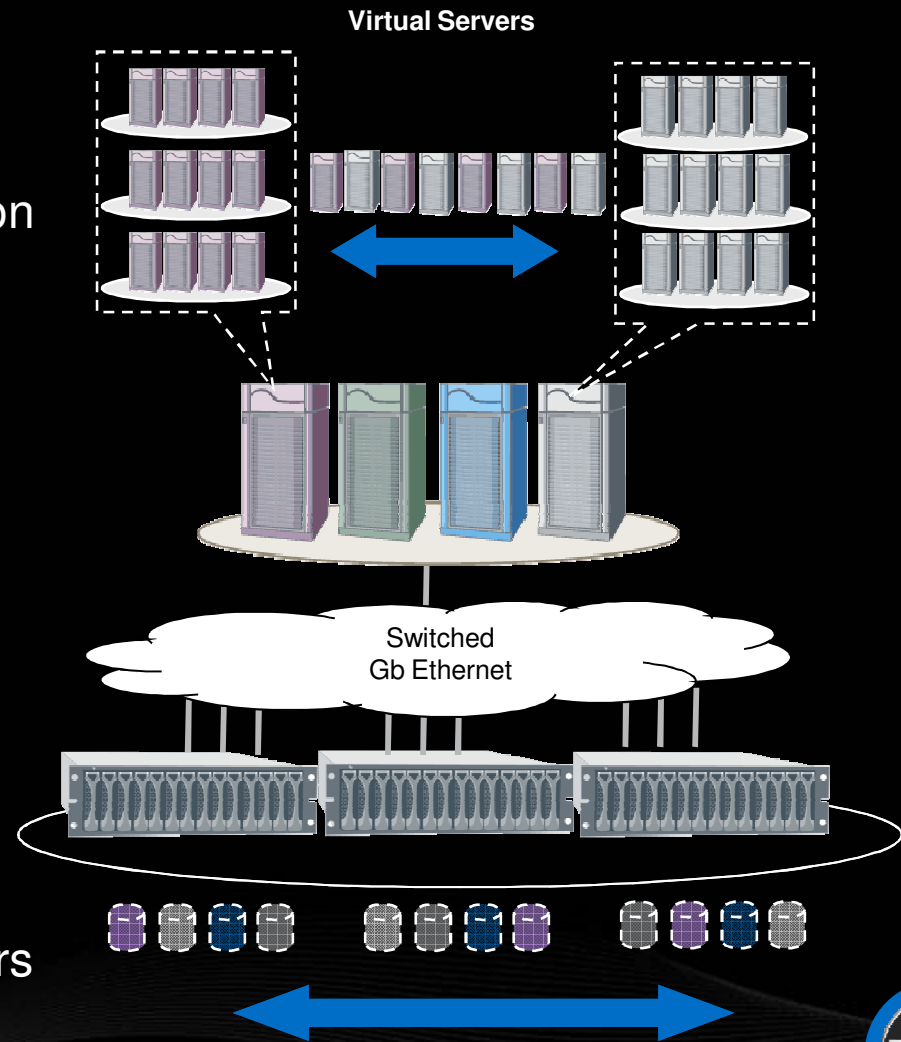
THE FUTURE IS VIRTUAL



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



Virtual Environment





Production/San Felipe Office

42U 4 Post
Dell Cage

- Cisco ASA 5510
- Dell PowerConnect 2748 ->
- Dell 16 Port KVM ->



- 100Mbit/s Cogent
- Firewall/VPN
- Gigabit Switch
- KVM



2Mbit/s hand-off

Disaster Recovery Site

42U 4 Post Cage

- Dell PowerEdge SC1425 ->
- Dell PowerEdge 860 ->
- Dell PowerEdge 860 ->
- Dell PowerEdge R805 ->
- Dell PowerConnect 6224 ->
- Equallogic PS100 ->
- Dell PowerConnect 6224 ->
- Dell PowerEdge R805 ->
- Dell PowerVault 124T ->
- APC Smart-UPS-3000 ->
- APC Smart-UPS-3000 ->



- GDD-BACKUP
- GDD-DC01
- GDD-DC02
- VMHOST1
- ISCSI Switch 1
- ISCSI SAN
- ISCSI Switch 1
- VMHOST2
- LTO-3 Autoloader
- UPS Battery 1
- UPS Battery 2

- Firewall/VPN
- Gigabit Switch
- Dell PowerEdge SC1425 ->
- VMHost
- VMHost



- ← Keyboard and Mouse tray
- ← Cisco ASA 5510
- ← Dell PowerConnect 2724
- GDD-DCDR
- ← Dell PowerEdge 2950
- ← Dell PowerEdge 2950

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Costs of Virtual Environment

Costs to Stand up DR Site: \$131,004

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Software

VMWare

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