

Rethinking Storage For Server Virtualization

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Storage and Server Virtualization

Server Consolidation through Virtualization can offer an ROI in 12 months



All virtualization projects should drive customers to review their data storage strategy

Storage Pain Points

Performance

Management

TCO

Availability

Virtualization exposes storage pain points

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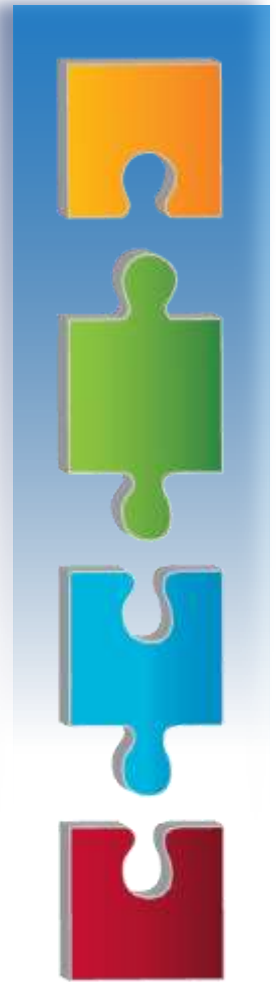
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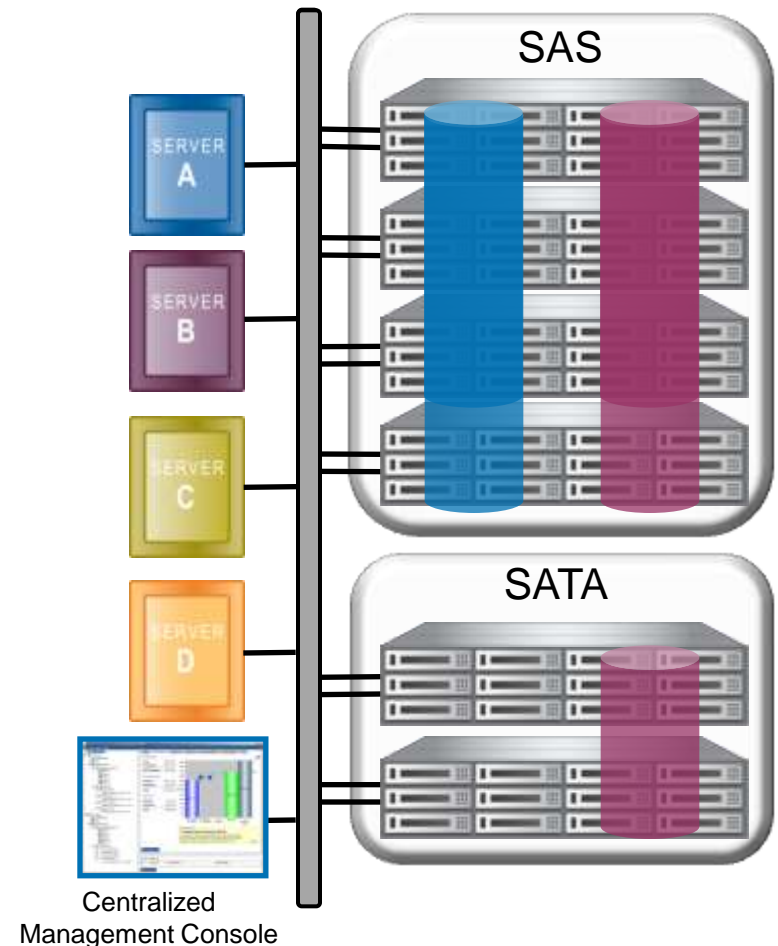
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- Traditional storage fails to take advantage of the high availability made possible with virtualization



What's so special about HP LeftHand?

A unique approach to shared storage: clustered node architecture

- SANs are comprised of multiple “storage nodes”
 - Each node has network connections, controller, cache, and drives
 - The “array” is comprised of 2 to 50+ nodes
 - iSCSI volumes are allocated across all available nodes in a “cluster”
 - **Scale Capacity AND Performance linearly**
- Grow on your terms
 - Add new nodes at any time
 - Automated re-allocation of volumes
 - Non-disruptive
- Centralized management
 - One console for all LeftHand storage across multiple sites
 - Supports multiple clusters

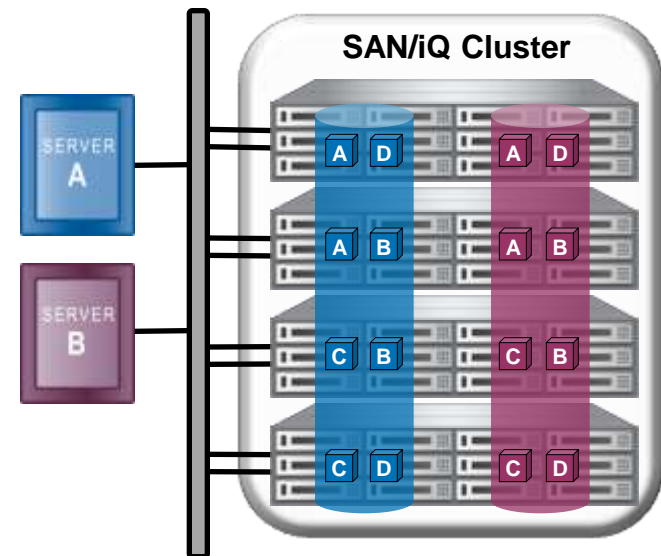


So, how else does this architecture complement server virtualization?

SAN/iQ Network RAID

Always on storage, data remains accessible during site failures

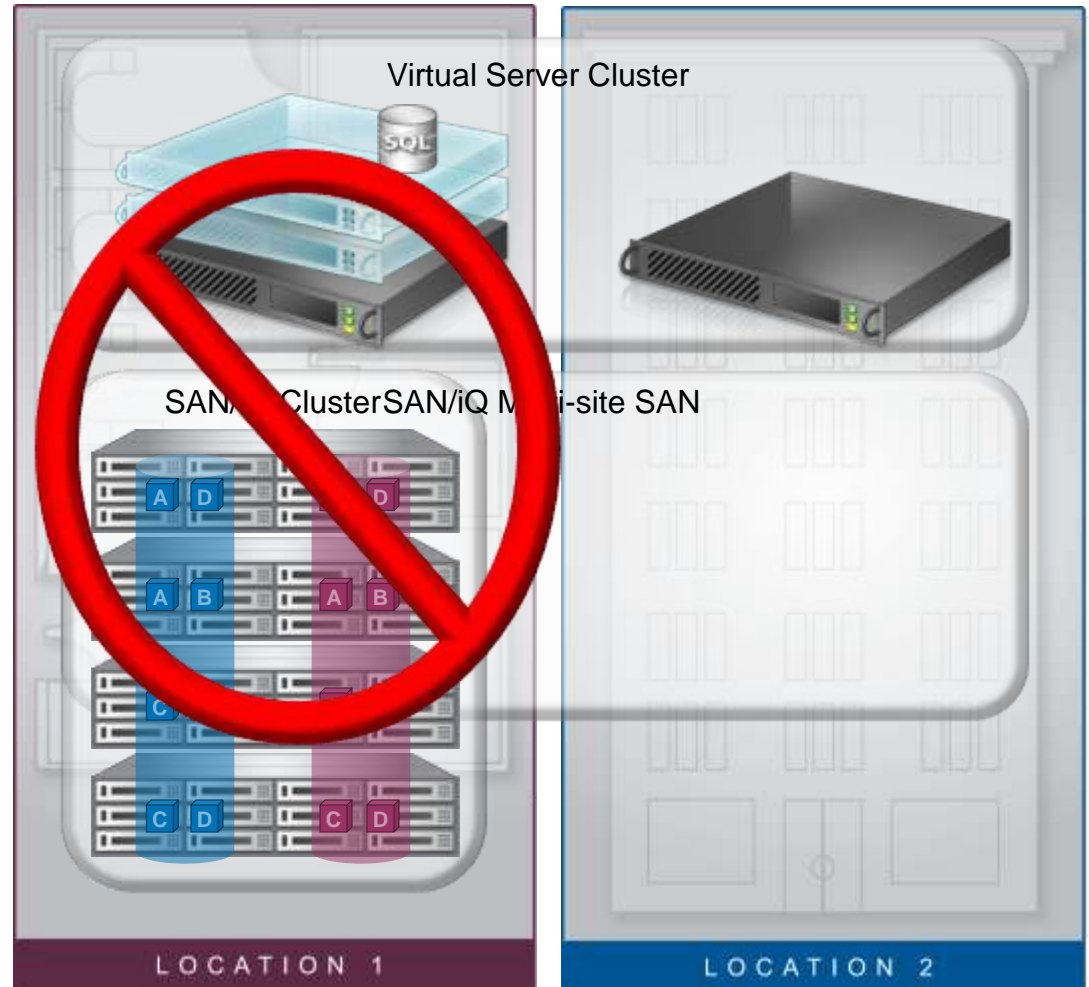
- Beyond component redundancy
 - Protects data from array failure
 - Synchronous replication
 - Configure on-the-fly, no down time
- High availability
 - Multiple disks, controllers, or arrays
 - Zero disruption of data access
 - Ensures “high availability” for data
- Select-ability
 - Configure on a per-volume basis
 - Choice of level 0, 2, 3, or 4



- The goal for SAN availability is "no nines," or 100% availability. (Gartner,2007)
- Human error and firmware bugs are the weakest links, even in properly deployed SANs. (Gartner, 2007)

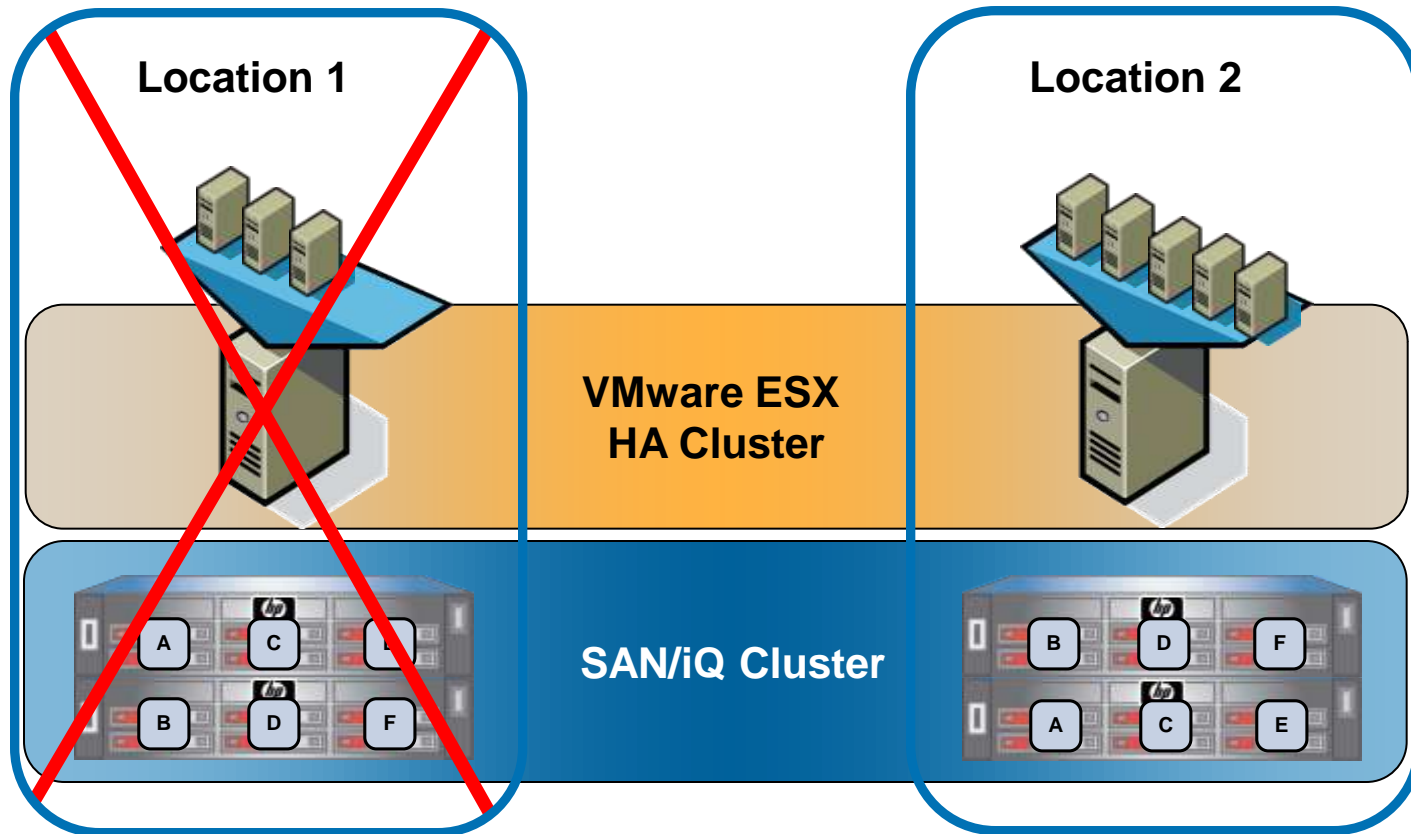
SAN/iQ Multi-site SAN

- Protect storage by isolating:
 - Racks
 - Room
 - Floor
 - Building
 - Site
- Keep data online during:
 - Facility disruption
 - Natural disaster
 - Site maintenance
- No manual steps for VM re-connect
 - Storage volumes do NOT go away
 - No re-configuration of storage required



SAN/iQ Campus SAN and VMware® ESX Cluster

When the failed site comes back online ESX rebalances virtual machines (DRS)

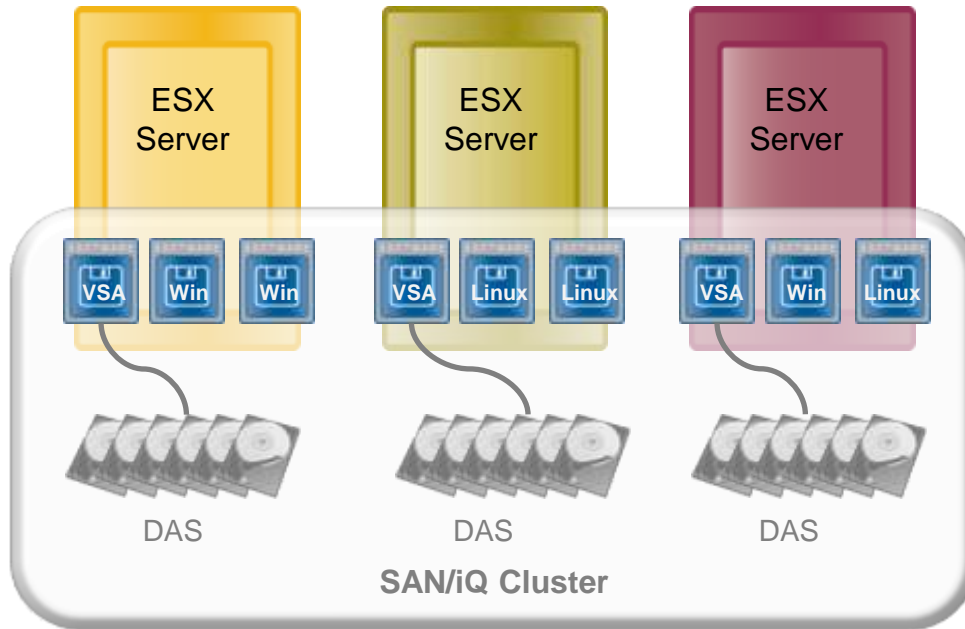


Fully Featured

- **Snapshots**
 - Unlimited
 - Thin
 - VSS app. integration
- **Remote Copy**
 - Efficient async. copy (DR)
 - SRM integrated
 - Bandwidth throttling
- **SmartClones**
 - Rapid app./desktop deployment
 - Capacity efficient
- **Thin Provisioning**
 - Eliminates trapped unwritten storage
 - No performance hit

Virtual SAN Appliance for VMware ESX

High Availability for Server & Storage For Remote/Branch Offices



• Full Featured Virtual SAN

- SAN/iQ within an ESX virtual machine
- Virtualizes ESX server's internal disk resources
- Up to 10TB per license
- Only SAN appliance on VMware SAN/Storage HCL

• SAN/iQ cluster within ESX

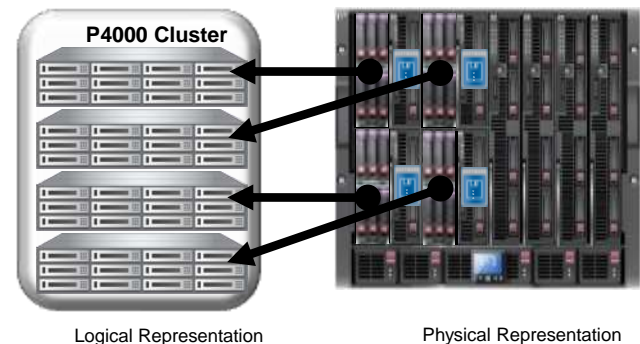
- Highly Available storage across multiple ESX systems
- Shared storage for VMs

HP LeftHand P4000 VSA

Two main use cases

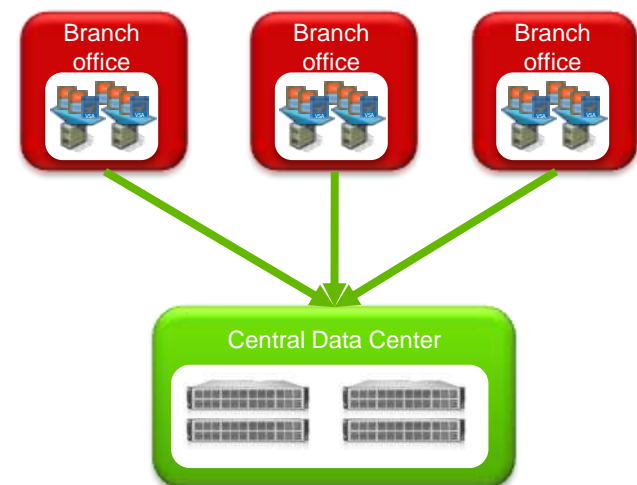
- **Internal shared storage for BladeSystem**

- Cost effective, easy and scalable shared storage for HP BladeSystem
- Turn internal and direct attached storage into a full featured P4000 SAN
- Grow within AND beyond the BladeSystem



- **Shared storage for branch offices and remote sites**

- Replicate between remote or to central site
- Central backup
- Central management
- No storage hardware, infrastructure or staff required at remote sites



Customer Examples





Healthcare The Newcastle upon Tyne Hospitals  East Lancashire Hospitals 
NHS Foundation Trust NHS Trust

Media/Retail/ other     

Manufacturing / Construction    

Education     

Financial  Irish Stock Exchange  Leek United BUILDING SOCIETY  

Government  West Yorkshire Fire & Rescue Service  Norfolk Fire and Rescue Service  



Summary

- Affordable fully featured storage
- Scalable under simple management
- Transparent TCO
- Investment protection

Technology for better business outcomes

