NAS – When, Why and How?

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NAS – When, Why and How?

- Introduction to NAS
  - NAS definitions
  - NAS market and vendors
- Storage Challenges
  - Where does NAS fit?
  - Windows NAS versus the rest
  - Why can't I do this myself?
- Customer Deployments
  - File Sharing
  - Exchange Consolidation
  - Remote Office
- Futures
  - iSCSI
  - NAS / SAN Fusion
- Summary

What is NAS?

NAS = Shared storage on a network

Uses standard networking protocols (CIFS, NFS, HTTP, FTP)

Prepackaged bundles of HW, SW and Storage specific OS / Microcode

Optimized to standalone and serve specific storage needs (file sharing)

Complementary to SANs

- NAS is network-centric
- SAN is data-centric

Two distinct segments

- Standalone NAS (NAS Appliances)
- NAS Gateways (NAS Heads)

Quick, Simple and Cheap…

What is NAS?

NAS/SAN Fusion

NAS 9000s

- Highest-performance NAS Gateway to HP SAN disk pools, Windows-Powered storage, >100TB
- Enterprise datacenter consolidation: 24x7, mission critical files, high-availability active/active clusters
- Support for XP, EVA, EMA, MSA and VA storage arrays

NAS 4000s

- Entry point for NAS/SAN Fusion
- Medium business, campus or departmental consolidation, high-availability active/active clusters
- Connectivity to various HP StorageWorks arrays including MSA1000 scales to 48 TB

Stand-alone NAS

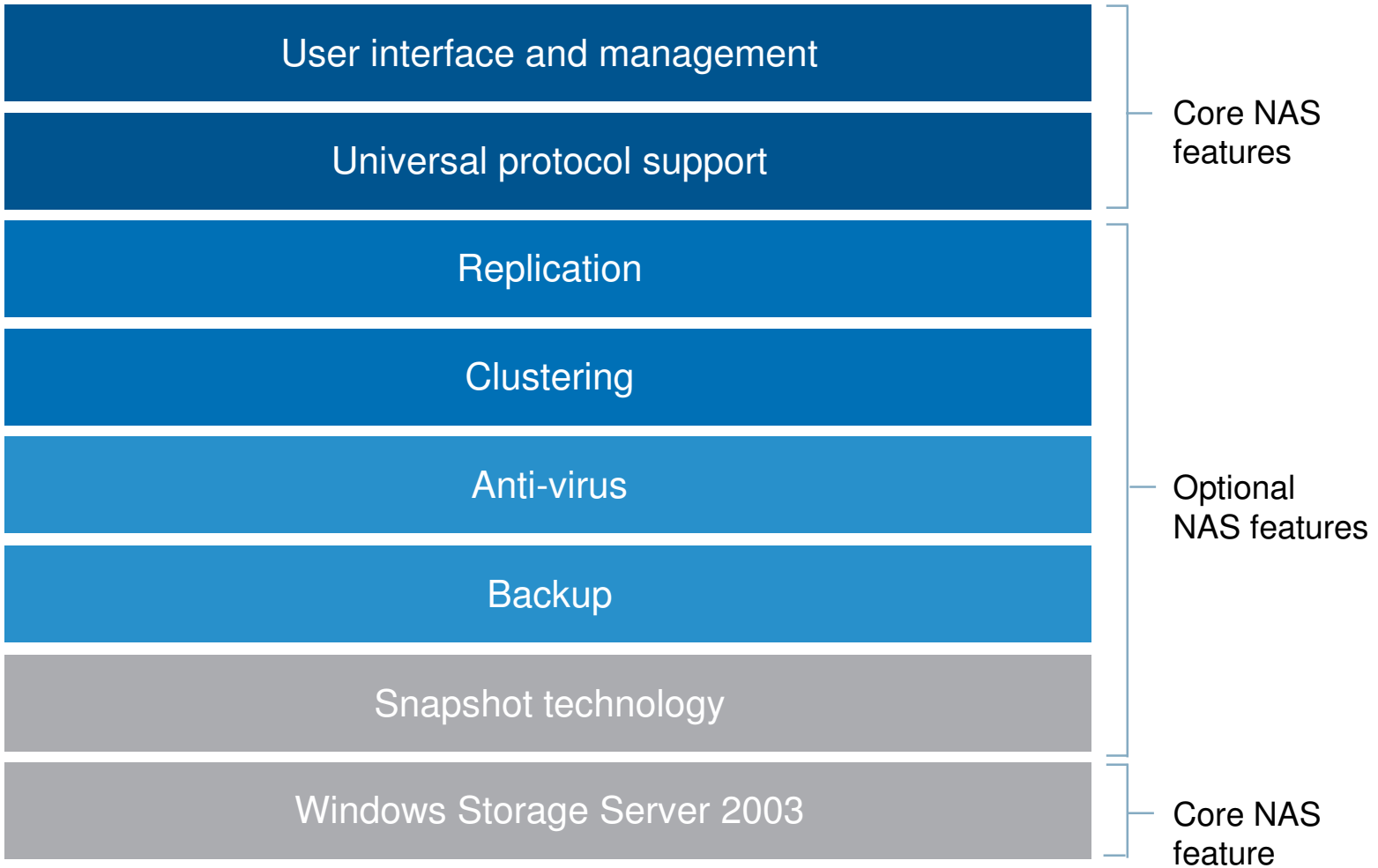
NAS 2000s

- Easy to deploy, scalable storage from 0.5 TB to 24 TB
- Replicated environments, medium business, campus or departmental consolidation environments
- Great price/performance

NAS 1200s

- Easy, quick, and simple NAS
- Replicated environments, small business, workgroup or small departmental consolidation environments
- 320 GB, 640 GB and 1 TB fixed-capacity ATA storage models in a low-cost 1U package

What's in a NAS solution?



NAS Marketplace

Low end (Sub $2000)
- Dominated by Snap, Iomega
- White box vendors abound
- Typically Small businesses, occasionally workgroups, occasionally lunatic fringe home user

Midrange ($2000 - $20,000)
- Fastest growing part of the market
- Windows versus Linux / Proprietary OS
- HP + Dell dominate Windows, NetApp + EMC round out the market
- Typically Medium – Large enterprises, departmental, remote offices

High End ($20,000+)
- Traditional NetApp / EMC territory
- NAS / SAN gateways eating into this space
- Heart of the datacenter
- Myriad of niche companies also playing in this space

Storage challenges in today's business

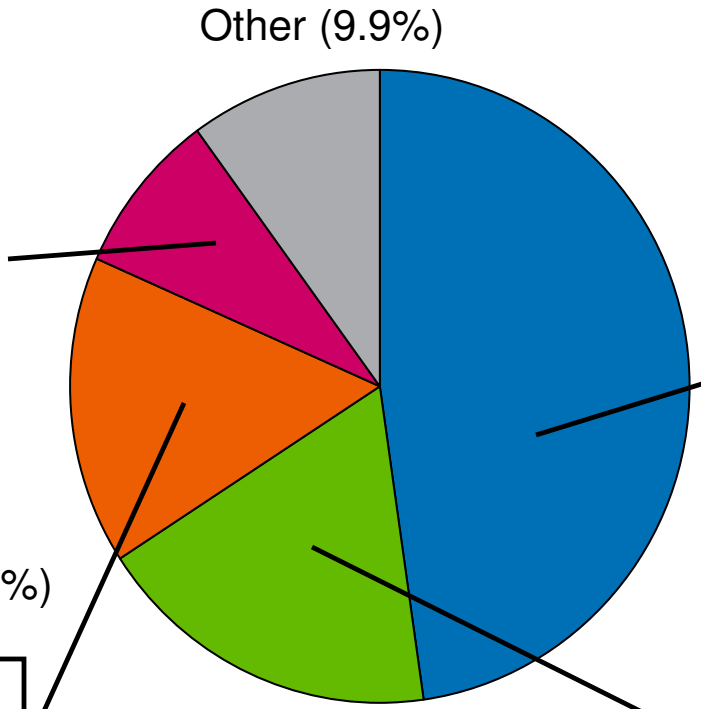
- Scalable
  - Decentralized data, underutilization, too many boxes, compatibility
- Fault Tolerant
  - Redundant disks, hardware
- Protected Data
  - Clients, servers, ever-shrinking windows
- Manageable Solutions
  - Standards, "Islands of excellence in seas of difficulties"
- Cost Constraints
  - All of the above for less please…

Where NAS gets used today

- File sharing
- Disk to Disk backup (desktop, servers, clients)
- Quick, easy, affordable capacity relief
- Processing relief for server applications
- Unified disk storage for mixed clients
- Storage consolidation (migration)
- Remote office deployments – software distribution
- Exchange and database consolidation

NAS Marketplace

NAS Capacity Usage 1H04



Other (9.9%)

Email Store (8.3%)

Growth Enabler

Email Server Growth
2003 – 450K Units
2008 – 800K Units
Growth 10% CAGR

File Sharing (47.8%)

Growth Enabler

File Sharing (NAS) Growth thru 2008
Overall CAGR 9%
$5K - $25K Segment 22%

Database Store (15.9%)

Growth Enabler

Database Server Growth
2003 SQL – 365K Units
2003 Oracle – 210K Units
Growth 10% CAGR

Backup (18.1%)

Growth Enabler

File Server Growth
2003 – 693K Units
2008 – 980K Units
Growth 9% CAGR

Windows Storage Server 2003

- What is Windows Storage Server 2003?
  - NAS Operating System built on Window Server 2003
  - Optimized for file serving
    - Also can act as a print server
    - Supports Exchange on low-end NAS products
  - Supports NAS as a “headless” device
  - Works with standards-based hardware platforms
    - e.g. Proliant
  - Designed for quick deployment
    - 15 minutes to add and deploy new storage to users
    - Add to network without interruption
    - Minimal maintenance required after installation

Windows Storage Server 2003

- Design goals for Windows Storage Server 2003
  - Ease of deployment
  - Simple Management
  - Dependability
  - Enhanced Data Protection
  - ISV Utility Support
  - Robust Security
  - Load Balancing and Server Failover

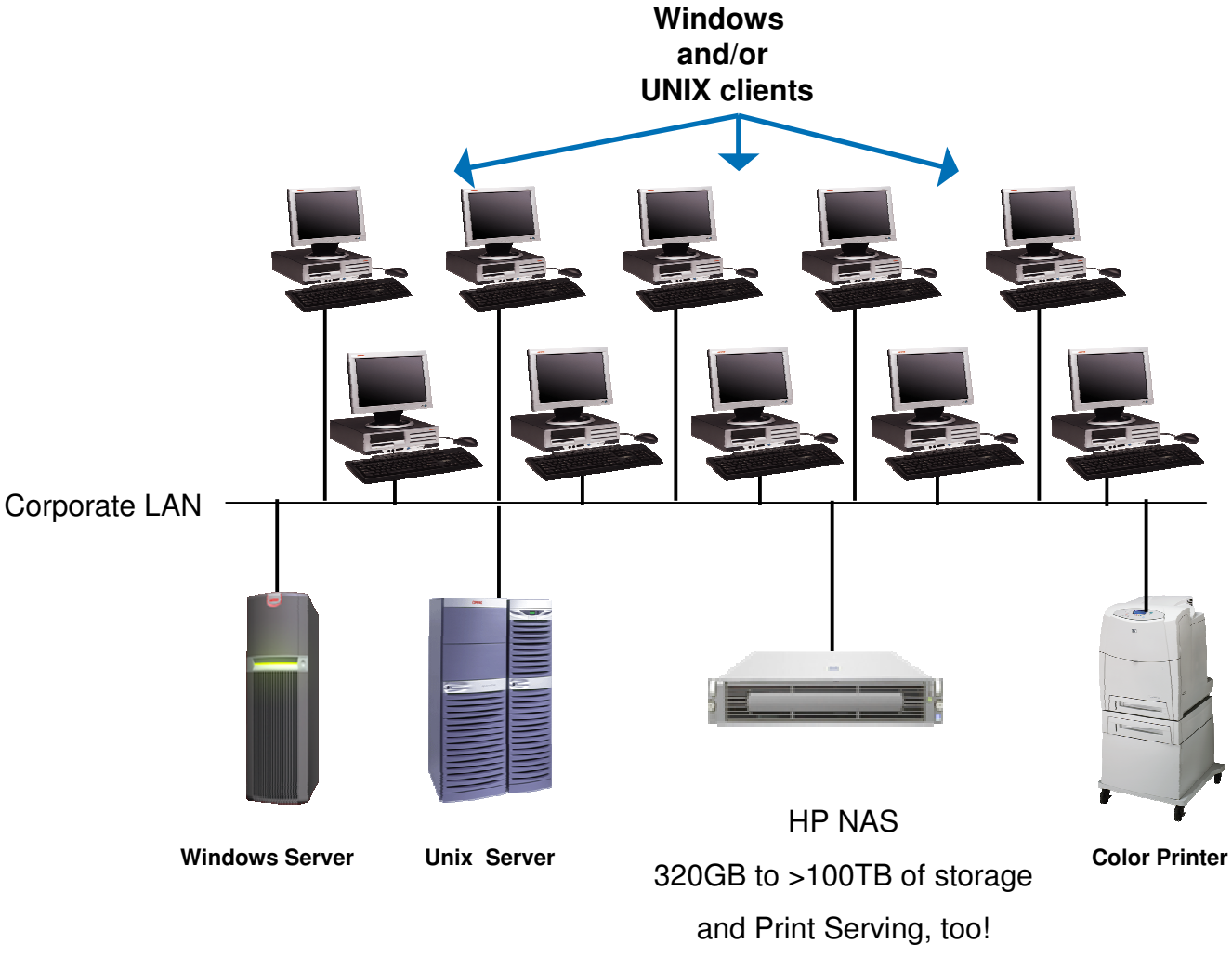
Windows based NAS versus the alternative

Point of differentiation	Windows Storage Server 2003 based NAS	NAS based on other OS or microcode
Hardware Platform	Industry Standard server hardware	Generally single sourced
Software Pricing	Base price covers all integrated features	Usually base price plus incremental charges for additional features and capacity
Integration	Integrate fully with Windows Server 2003 including Active Directory Includes built-in content management Able to run 3rd party applications	Cannot take advantage of Windows policy-based management Separate content management solutions Prevent 3rd party applications from running
Example offerings	Hewlett Packard Dell EMC	Network Appliance EMC Snap

Why can't I build this myself?

Attribute	HP StorageWorks NAS	General Purpose Server
Ease of Deployment	System image pre-installed, remote discovery and install utility, configurations wizards, appropriate drivers pre-installed	All software components have to be installed by end user – configuration and tuning done by end user
NAS software stack – data management tools	NAS software pre-installed – includes all software needed for high availability file serving while still allowing addition of company standards for things like backup and anti-virus	All software pieces for file serving have to be sourced individually and managed separately on the running system
Rapid Restore	Rapid Restore CD/DVD simplifies recovering to factory settings after a catastrophic failure	In the case of a catastrophic failure, the system has to be built up piece by piece (i.e. add OS then snapshot and then replication and so on)
Pre-Configured Hardware	Processor, memory and NIC are balanced for price/performance and preconfigured in the system	Customer needs to spend time testing and determining right combination of hardware
Software Licenses	Unlimited user licenses are included with HP NAS products	Customer either has to pay for user licenses or have them count against a site license count
Single point of support	With an HP NAS product, the customer can work directly with HP for all aspects of support – hardware and software	Customer needs to go to hardware vendor and different software and option vendors for support
Pricing discount	Hardware pricing is based on a discount based on building a ProLiant server and adding options – user licenses are not included in pricing build up	Priced as individual components – add all additional hardware and software options including user licenses

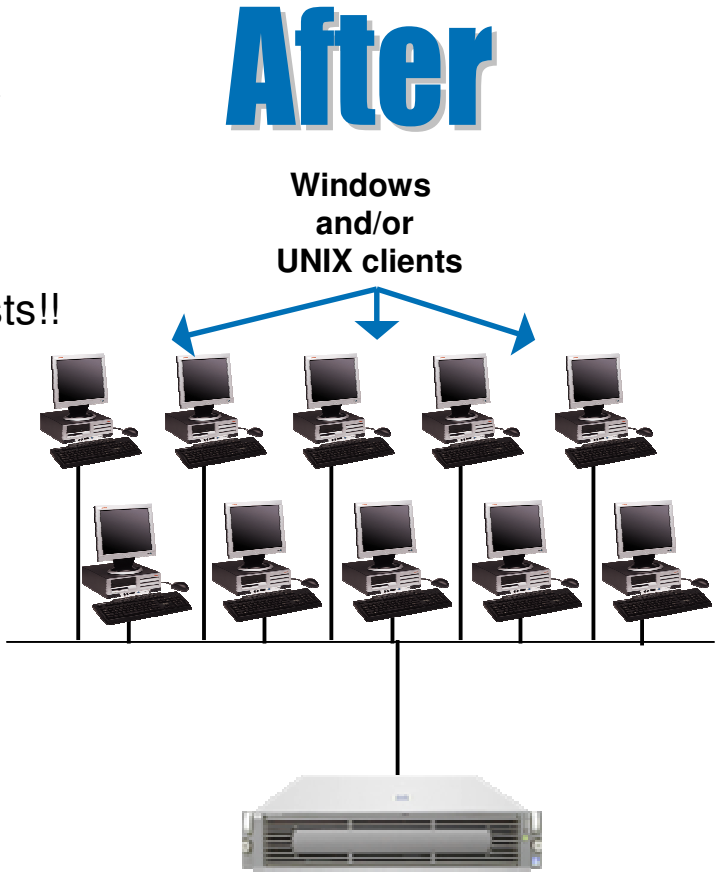
Customer Deployment - File Sharing



Simple and effective file and print sharing across heterogeneous environments including Windows, UNIX, Novell and Macintosh platforms

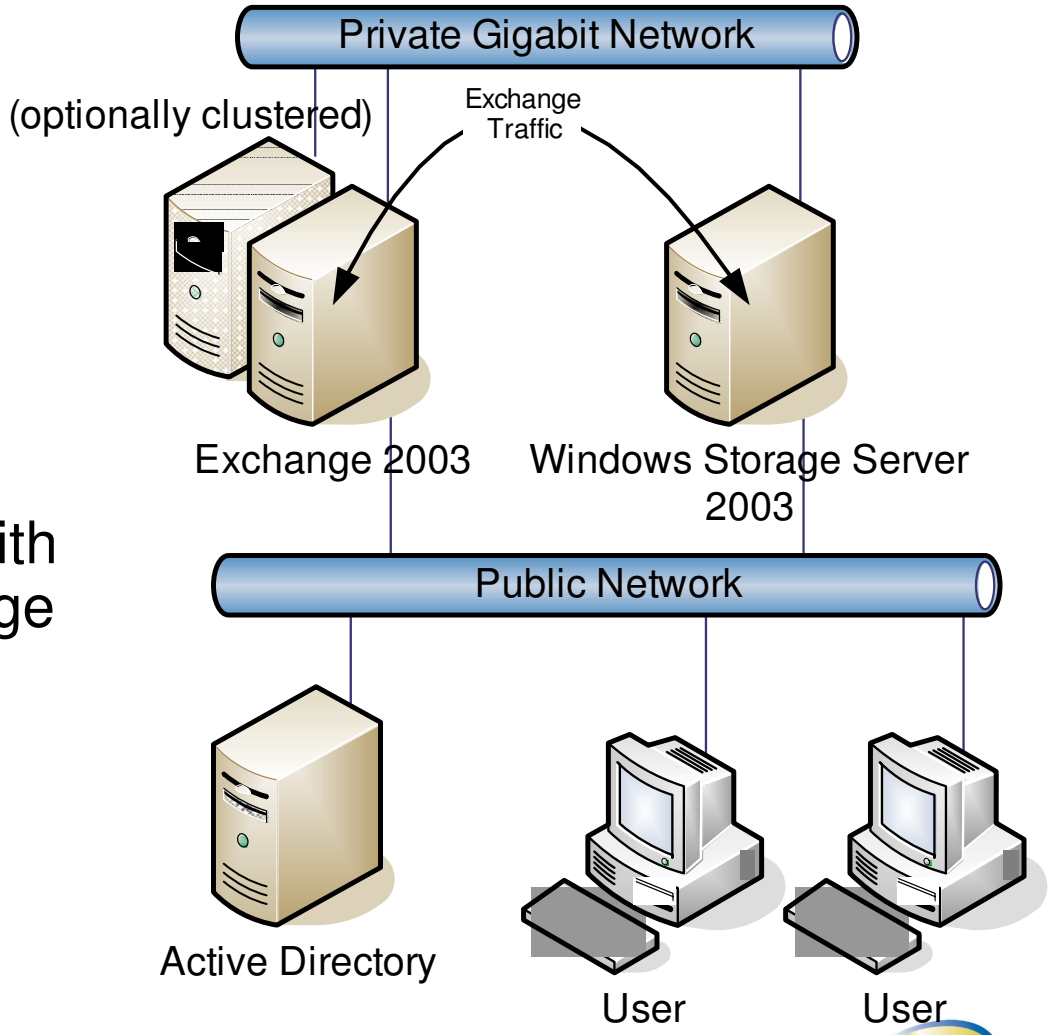
Customer Deployment - Consolidation

Lower TCO by reducing management, licensing and equipment costs!!

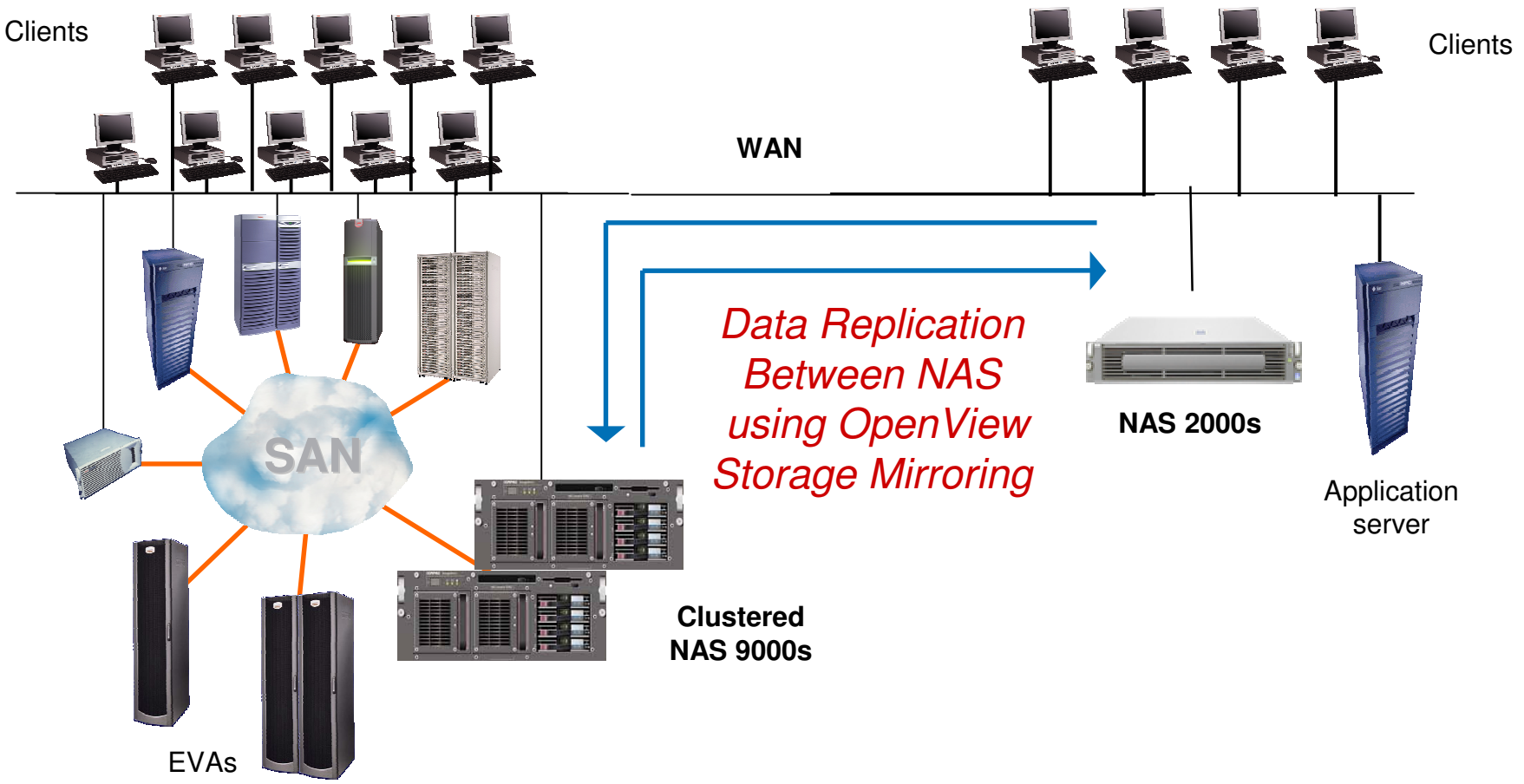


Customer Deployment – Exchange consolidation

- Feature pack release to Windows Storage Server 2003
- Take the storage off your exchange server
- Consolidate file serving with exchange database storage on NAS
- Supported on NAS 1200s and 2000s



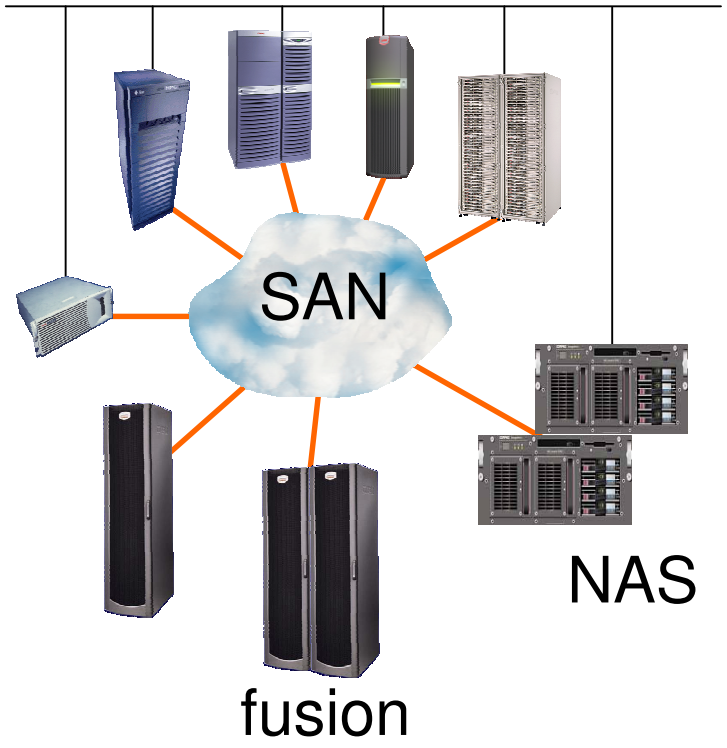
Customer Deployment – Remote office



NAS Futures - iSCSI

- Unlike the other NAS data protocols, the primary use case for iSCSI is to enable storage for applications.
- The 5 major application areas for iSCSI are:
  - Email: NAS is well suited to provide backend storage for Email servers such as Exchange.
  - Database: Most databases are still optimized for block access.
  - Remote Replication: This was one of the earliest use cases for iSCSI and a natural fit for NAS.
  - Boot Server: Diskless systems, particularly Blade Servers, can use iSCSI to provide network based boot capabilities.
  - IP SAN: iSCSI provides the means to realize the benefits of a SAN at a much lower cost. At the current time, HP recommends the use of arrays for SAN deployments.

NAS Futures – NAS / SAN Fusion



- the fusion of NAS and SAN
- combines the best of both technologies
- enhances NAS with SAN scalability and management
- enhances SAN with file-level access and virtualization
- eliminates storage islands
- reduces overall management complexity
- drives down cost
- optimized for storage environments

Summary

- NAS is evolving
- Still the logical choice for file sharing
- Disk based backup is the fastest growing usage of NAS today
- Migration, Consolidation, Business Continuity deployments
- Multiple analogies to the server market
- iSCSI opens up new avenues for NAS
- NAS / SAN fusion becoming more popular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