



MSA500 G2 Setup and Configuration



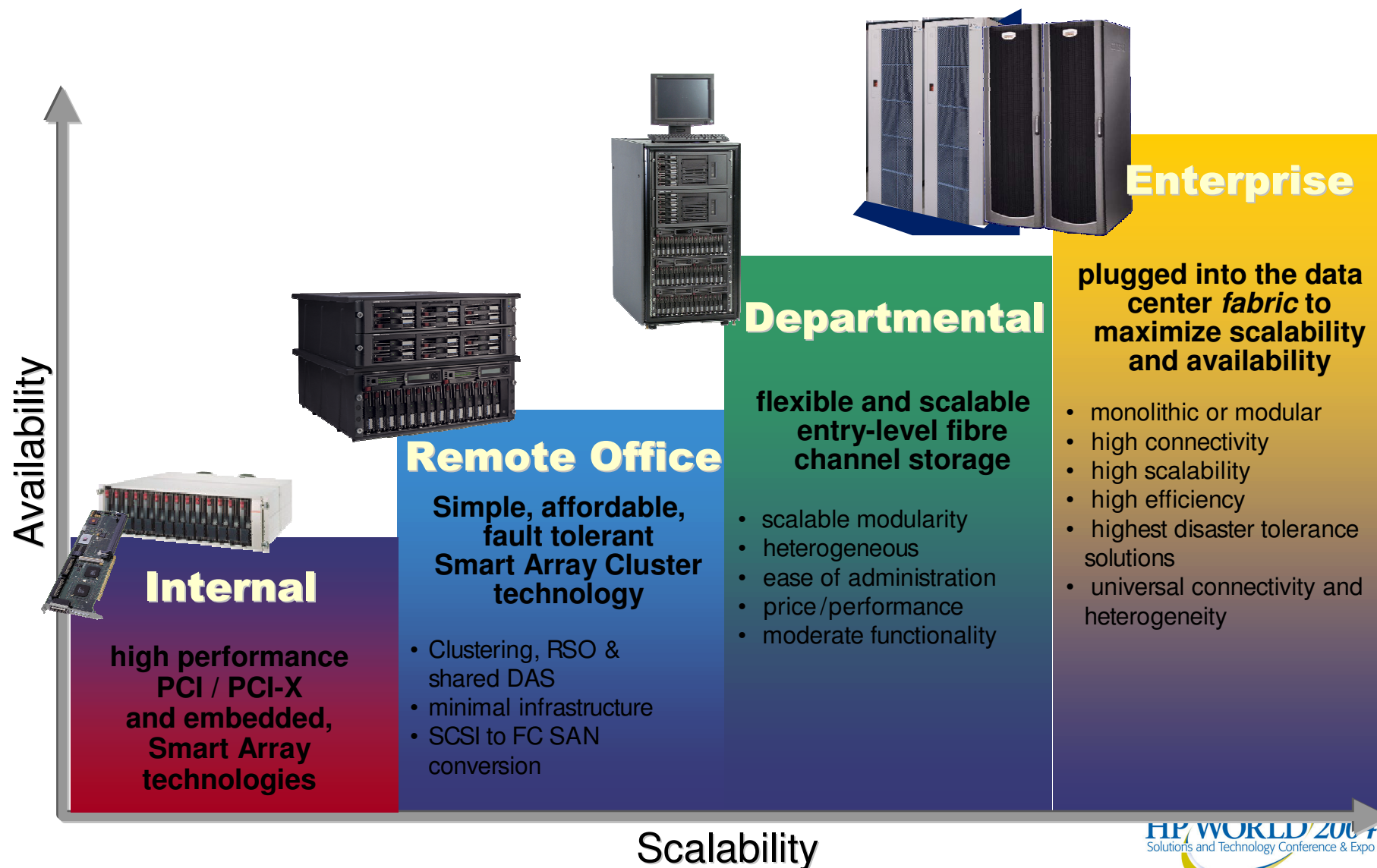
Segun Iffie
Joe Whalen



© 2004 Hewlett-Packard Development Company, L.P.
The information contained herein is subject to change without notice



ProLiant Storage – full range offerings

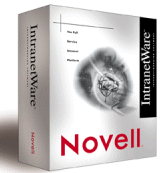


DL380 Packaged Cluster



- simple – 1 SKU, fully integrated, one price, 1 box
- integrated & shipped in a configuration fixture – re-deploy into rack
- cable management with color code identification
- high availability – redundant features throughout the cluster
- RSO capability – hot standby server
- future “Build to Order” 14U rack solution

Microsoft
Windows Server 2003



+



=



2 DL380 Servers

Smart Array Shared Storage

Packaged Cluster

Smart Array Cluster Storage



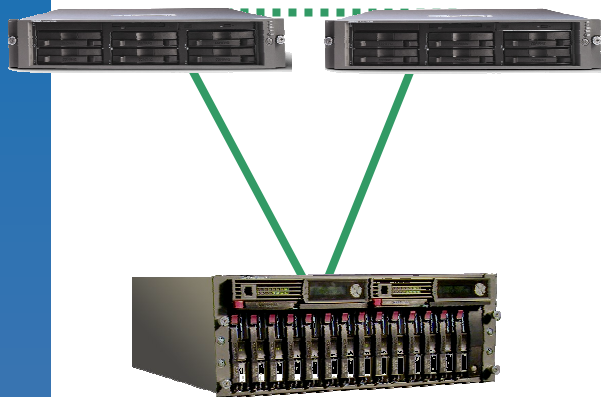
- **high performance**
 - multipath IO - static load balancing
 - Ultra160 smart array controllers
 - up to 512MB battery backed cache
- **high availability**
 - multipath IO – HBA & cable redundancy
 - redundant controllers
 - redundant power supplies & fan
 - advanced data guarding
 - Microsoft, Novell, and Linux clustering
 - RSO (recovery server) software
 - pre-failure warranty
- **zero cost connectivity**
 - attaches to embedded smart array 5i controller or 2nd channel on SA-532
 - everything included: cables, documentation
- **easy to deploy**
 - familiar direct attached setup (DAS)
 - ACU (Array Configuration Utility)
 - packaged cluster option

• **DtS conversion path to FC**



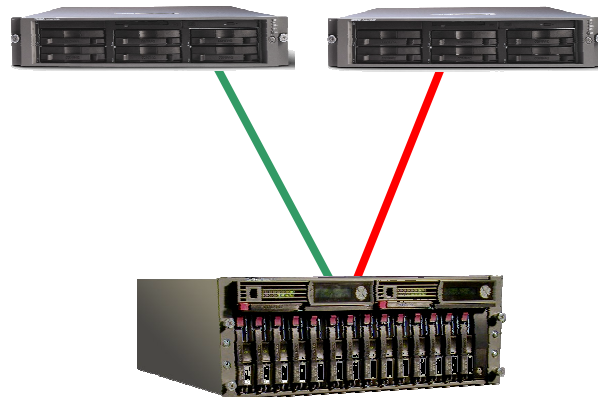
Smart Array Cluster Storage

cluster



supports Microsoft,
Novell, and
Linux clustering

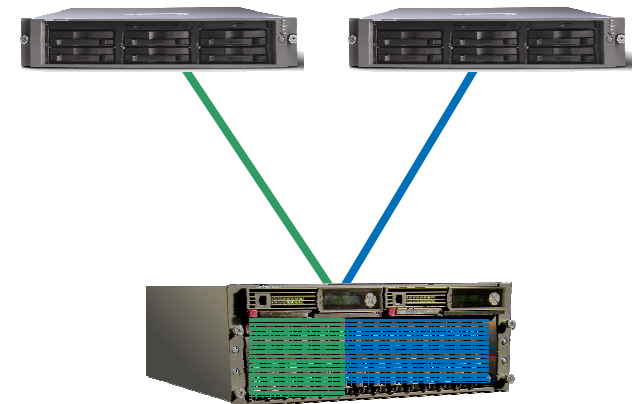
recovery server



standby recovery
server

(software sold separately,
reduced total software licensing costs)

direct attached
shared storage



storage sharing through
Selective Storage
Presentation (SSP)
- LUN masking

Supported servers ML330, ML350, ML370, DL360, DL380, DL560, DL580, DL740, DL760

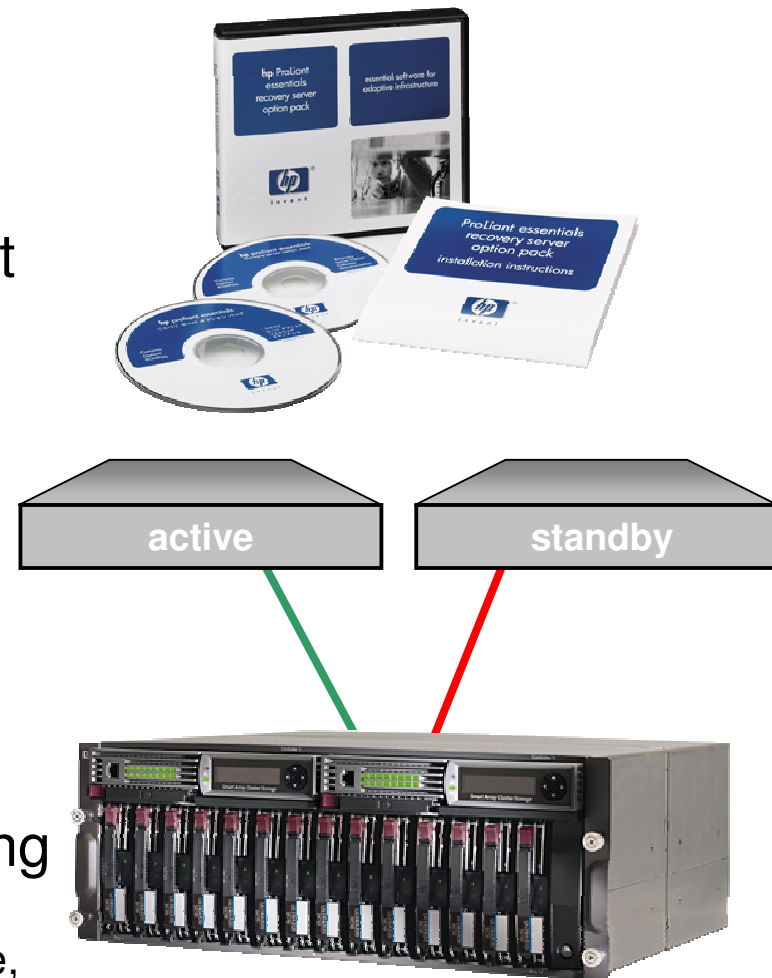
Compaq confidential



Recovery Server Option Pack



- **entry-level high availability, standby server**
- standby server takes over in the event of a server or OS failure
 - is Not Clustering
 - supports non cluster OS and applications
- easy to configure with familiar Smart Array configuration utilities
- simple to manage
 - servers must be similarly configured
 - OS, applications and data located on external storage – no quorum drive
- low total deployment cost vs. clustering
 - reduced software licensing costs*
 - runs on affordable Smart Array Cluster Storage, no additional HW required

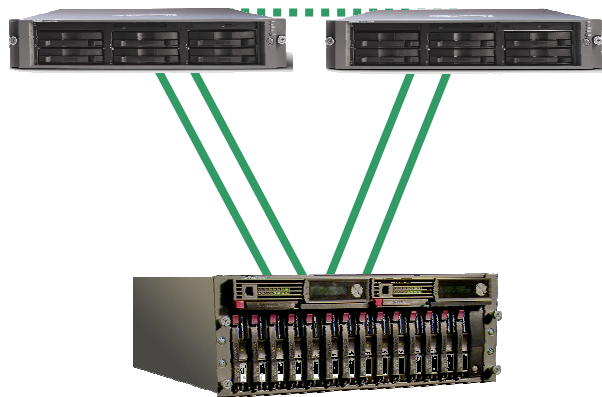


* Some Operating System licensing agreements may not allow for only one license, please consult your end user license agreement

SACS Optional Enhancements



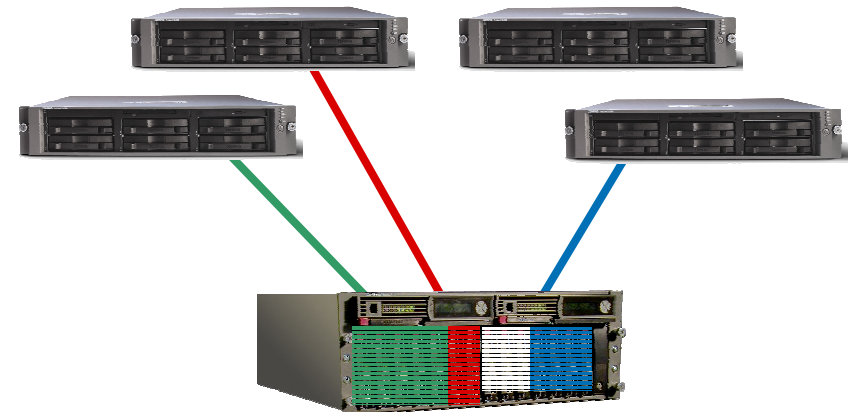
multipath clusters



improved availability and performance

Connectivity redundancy
Static load balancing

direct attached
shared storage



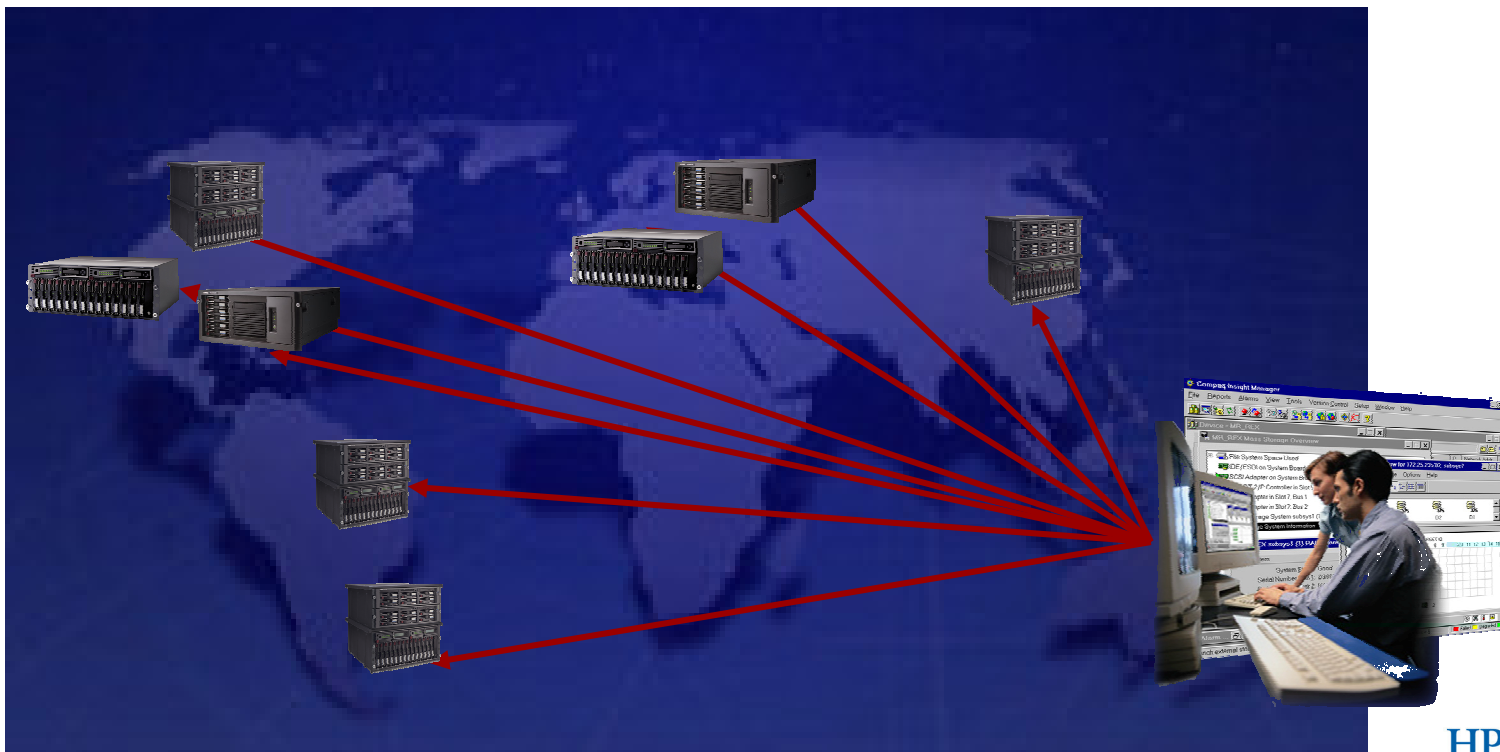
optional 4-port module

Flexible storage portioning
Maximize capacity utilization

Consistent Management with Array Configuration Utility (ACU)



- Manage all Smart Arrays from one central location
- Consistent compatibility over 12 years allows for simple 3-step data migration

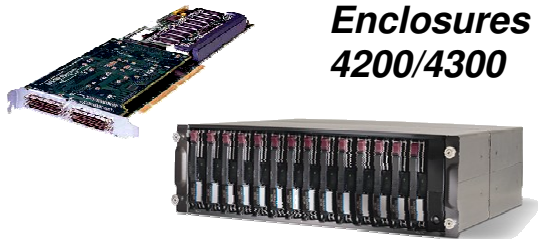


DtS seamless data migration *investment protection for ProLiant customers*



Smart Array plus

**Enclosures
4200/4300**



**Smart Array plus
internal drives**



RA 4100



**seamless
data/drive migration**



Smart Array Cluster Storage
Remote & Distributed Environments



**Conversion
to the SAN**



Modular SAN Array 1000

Departmental/Data Center



3 step to convert from DAS to SAN

- Remove Smart Array Cluster Controller(s) and replace with MSA1000 Controller(s)
- Remove blanking panel from rear of box and replace with MSA fabric switch 8
- Connect Fibre cables from switch to HBA's and power on



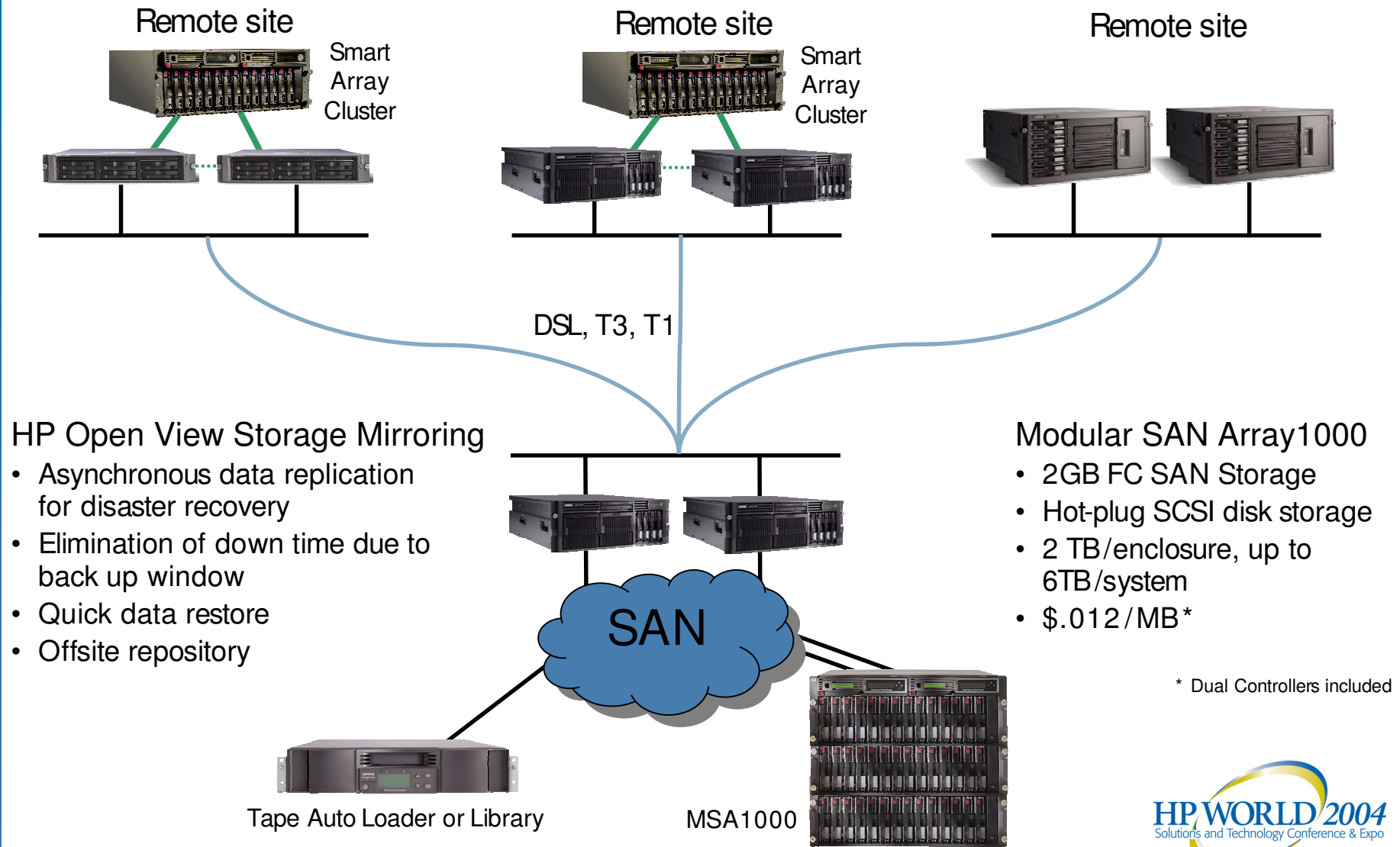
Modular SAN Array 1000

- Built upon Smart Array technology
- Storage consolidation
- High availability cluster support
- Low SAN price point
- Outstanding SAN performer



Drives	1-14 standard, up to 42
Capacity	2TB (14 x 146GB drives), up to 6TB
Dimensions	4U
Drive type	Ultra160 SCSI,
Host Connections	Redundant 2GB fibre channel
RAID support	0,1,5,10 & ADG
Redundant features	Controllers, IO & Switches, Power supplies and cooling fans

Data Protection – Remote Replication



Station Configuration

Each Station is equipped with:

- 2 servers running Windows 2003 Advanced Server (both are configured as Domain Controllers)

- 2 monitors

- 1 Smart Array Cluster Storage box with 6 drives

- Software-Including Smart Start, Smart Array Multipath Software and MSA 1000 Support Cd's

- KVM switches or Keyboard and Video Extender cables



Lab Procedures

Lab is divided into 4 sections

Self Paced

2-3 persons per station

Section 1

- Driver and Application Installation
 - Use Smart Start to install all array drivers and ACU utility
 - Use Smart Array Multipath CD to update array drivers and install Multipath utility
 - Configures internal 5i and 532 controllers to offer redundant paths to the storage box on each server

Section 2

- HP Smart Array Cluster Array Configuration
 - This section will:
 - prepare all arrays for Section 3 (Clustering)
 - Allow the user to become familiar with the Multipath software and configure static load balancing

Section 3

- Microsoft Cluster Installation
 - This section will provide a brief introduction to MS Clustering and allow for the tuning of a generic application to fail over in the Cluster
 - It will also show how the redundant features of the storage box and the cluster complement each other

Section 4

- DAS to SAN Conversion
- This section will cover the process of converting a SA Cluster Storage to an MSA 1000
 - Install I/O Module and MSA 1000 Controller in Storage Box
 - Install HBA in Server
 - Connect cabling
 - Install Drivers

Reset

- These servers will be reset after each classroom so feel free to play with any features of the OS or Storage you like.
- Please make sure to reset the hardware to its original state including:
 - Removing Fibre Channel HBA from the server
 - Replace MSA Cluster Controller with the SA Cluster Controllers
 - Delete all arrays created on the storage box.
- Thanks and Have Fun!

departmental clustering demands

- challenge
 - branch offices with no onsite IT support
 - critical to be up when business is open
 - cost a primary issue
- solution
 - packaged cluster
 - price competitive
 - integrated solution



Example: Wells Fargo

Division of Wells Fargo responsible for automotive financing has offices across the U.S. that have to be able to provide customer service 24 hours a day.

"Wells Fargo's Auto Finance and Sales business unit depends on Compaq to help our customers make auto ownership fast and easy through convenient online financing, sales and insurance options. The ProLiant DL380 G2 Packaged Cluster is an essential tool in making sure our critical on-line applications are constantly available so customers can submit loans and leases 24 hours a day."

Advanced Data Guarding RAID

improves deployment cost, fault tolerance, density

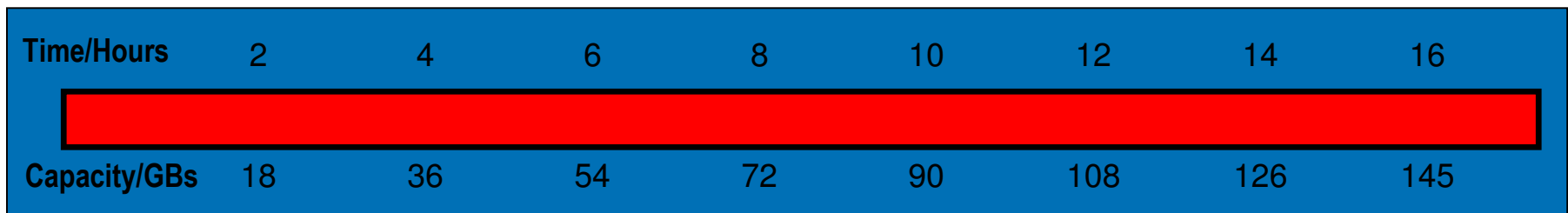


- greater fault tolerance than RAID 1, 10, 5, 50
- lower implementation cost than RAID 1, 10, 50
- ideal for:
 - large capacity drives
 - business critical data
 - large RAID volumes
 - remote server installations
 - dense storage deployments



**Can tolerate 2
simultaneous drive failures**
No down time , No data loss

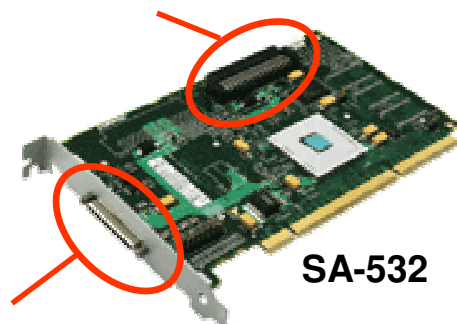
Drive Rebuild Time (Medium prioritization with background activity, up to 3X longer with high IO background activity)



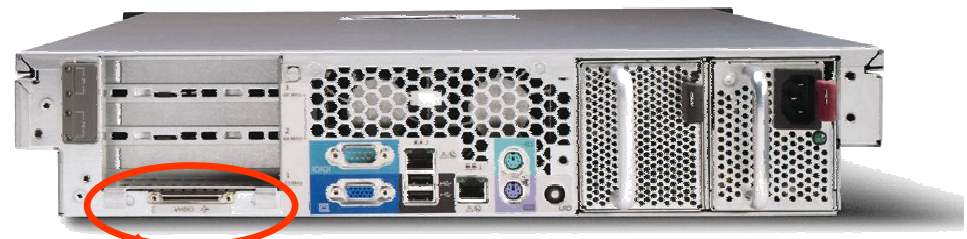
why Smart Array 5i / 532 as the HBA?



- zero cost connectivity – no extra HBA cost
- no host utility for SA-Cluster Controller failover
 - failover utility embedded in the 5i/532
 - reduced server CPU burden
 - improved controller failover performance



SA-532

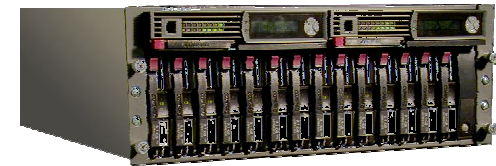


Integrated Smart Array 5i

Windows 2003 Ready Cluster Storage



- **Simple, affordable, fault tolerant Smart Array Cluster technology**
- Ideal for remote office & distributed computing
- Clustering & shared DAS
- Remote management & configuration (ACU, IM7, iLO/RiLOE)
- Minimal/low cost infrastructure
- SCSI to FC SAN conversion
- Windows Server 2003 integration:
 - 2-node Clustering
 - Load balancing Multi-path I/O using Windows native Multi-path support



Smart Array Cluster Storage –
Up to 2TB of high availability storage.

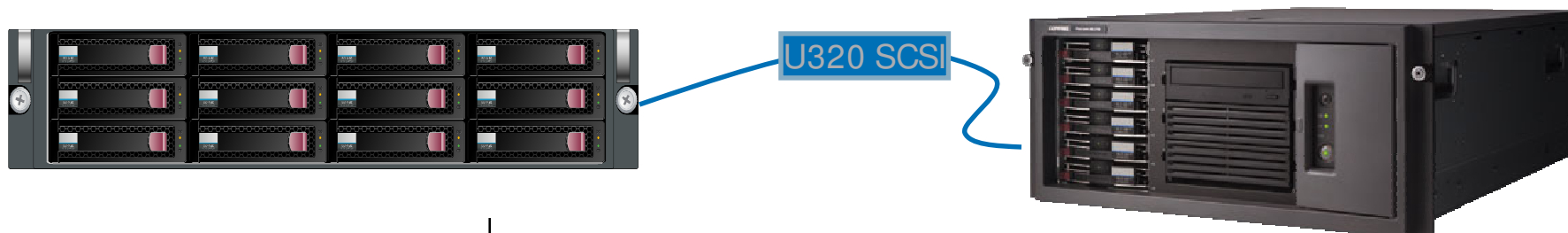


DL380 Packaged Cluster –
Pre-packaged server and storage
clustering solutions

Serial-ATA Reference Storage – 2H'04



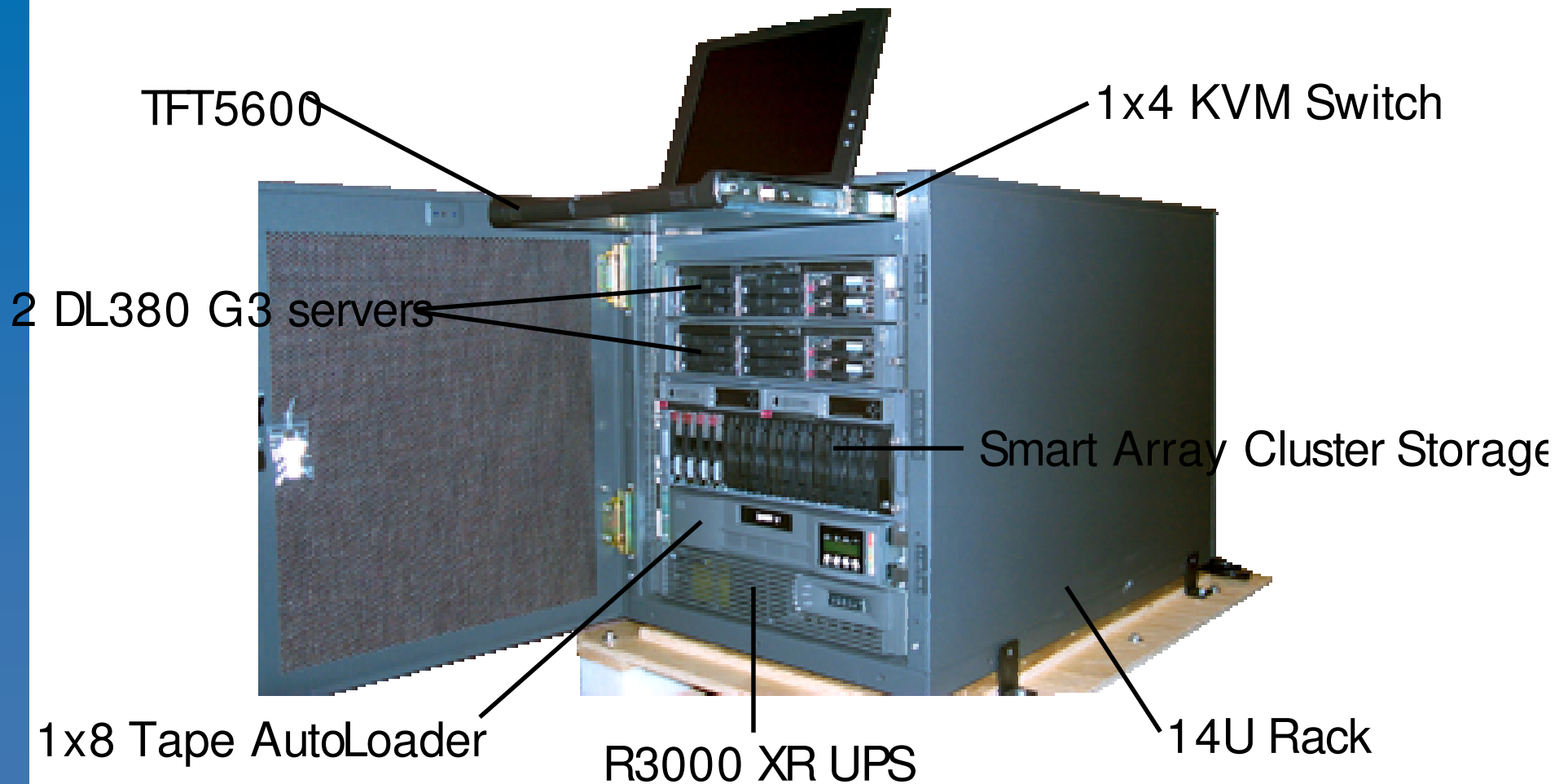
Low-cost, high capacity, external storage ideal for bulk reference data, archival, and disk-to-disk backup



Drives	1-12
Capacity	3TB (Twelve 250GB drives)
Dimensions	2U
Drive type	Serial-ATA
Host Connections	1 - U320 SCSI
RAID support	0,1,5,10 & ADG
Redundant features	Power supplies and cooling fans (both hot pluggable)



Complete Remote Office/Small Office High Availability Solution



*Preconfigured Solution - Local & Remote
Management*





i n v e n t