

# StorageWorks Overview and Futures



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# CIO's top 10 issues



1. Cutting/stabilizing costs
2. Aligning IT investments with business directions
3. Building strong IT service delivery
4. Sourcing
5. Resource management
6. Security in all its aspects
7. Enterprise architecture
8. Integration
9. Building credibility for the value of IT services
10. Planning: Prioritizing IT investments





## The big shifts

- All processes and content will be transformed from physical and static to digital, mobile and virtual.
- The demand for simplicity, manageability and adaptability will change how customers work and organize, buy and use technology.
- It's a horizontal, heterogeneous, networked world. Standards are about connection and common language.

# Today's industry Reality . . . chaos



Edge  
Directors  
Core  
switches



V<sup>3</sup> SAN initiative



SAN

Fibre Channel



SANITI

STOREDGE

AutoIS

Too many choices  
Changing vendor strategies  
Piece-parts solutions  
Vendor lock-in



Seascope

Mammoth

DAFS

HSM

NAS

DAS

CIFS



NFS

Storage ONE

FibreAlliance

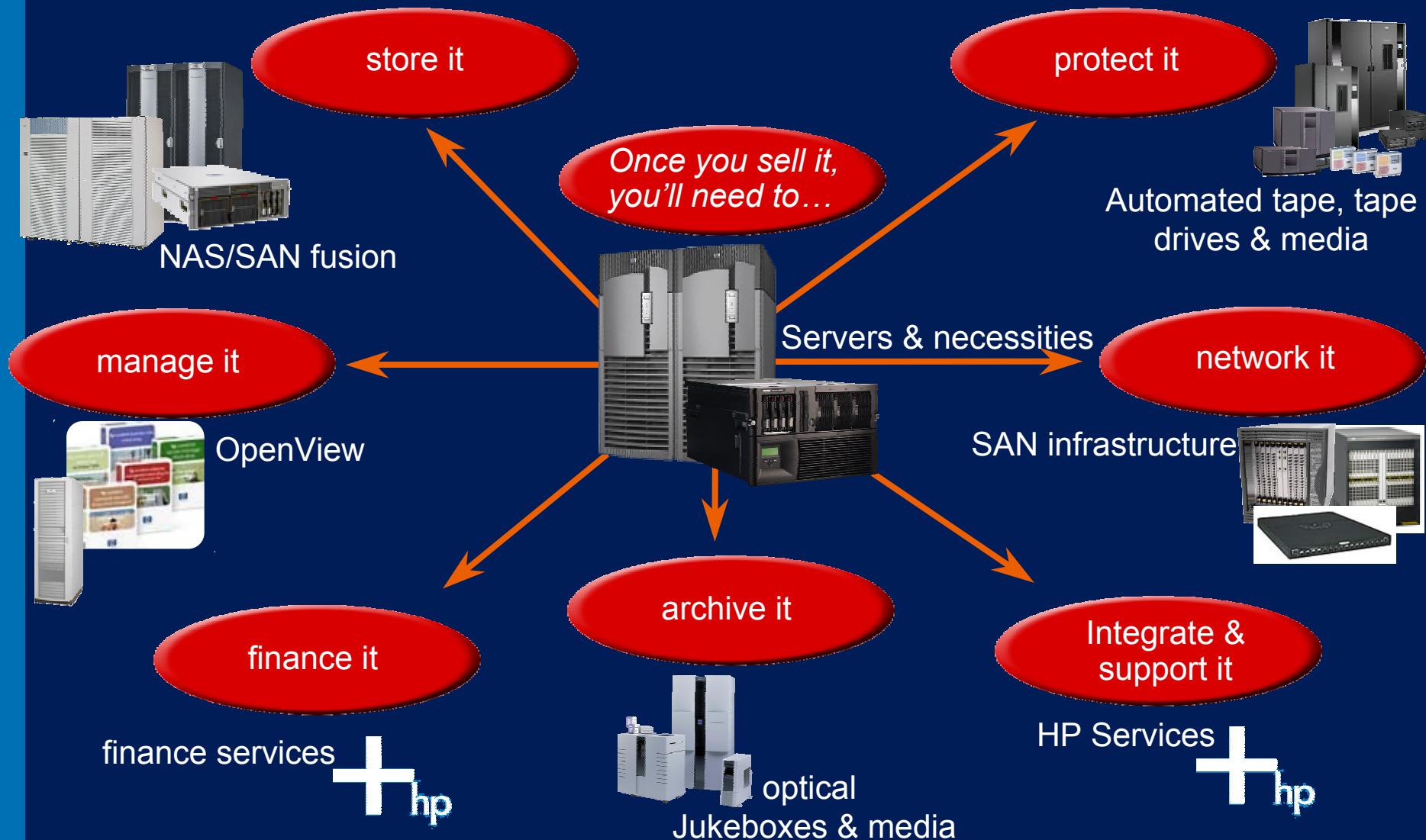
Near field recording



OpenReady

# HP storage & servers

## Selling the big picture

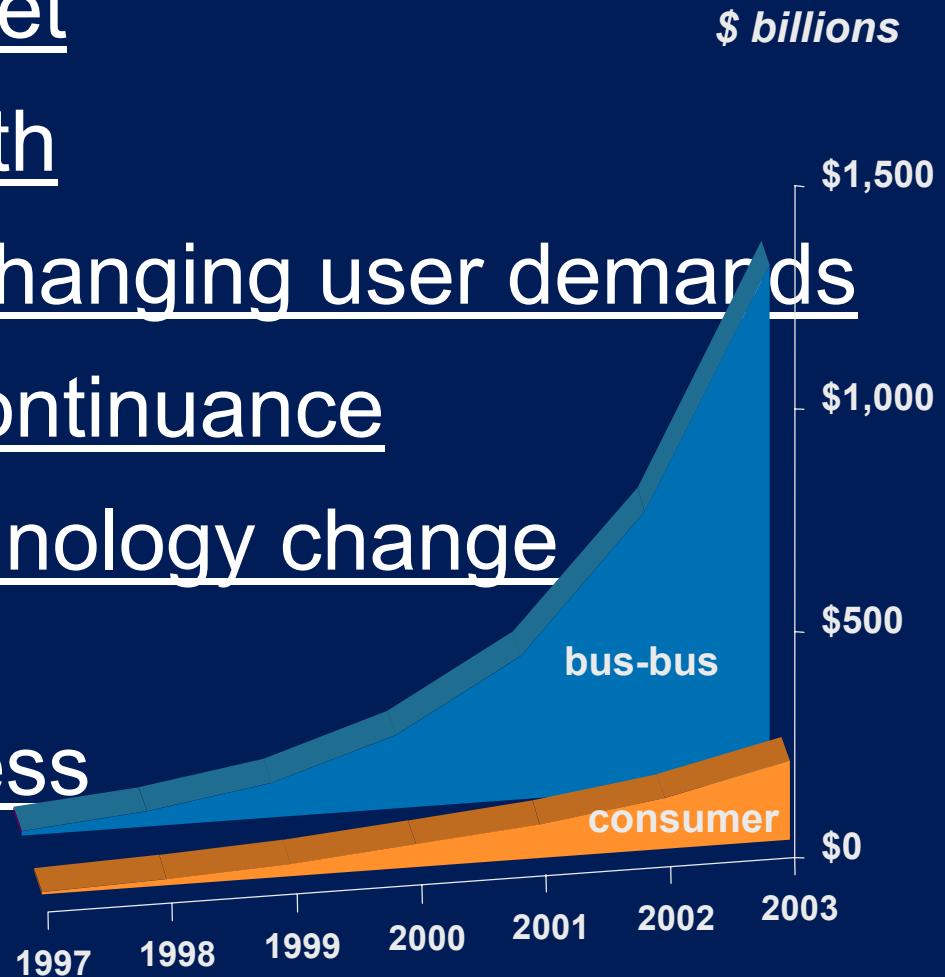


# universal business CHALLENGES



storage is at the heart  
of most business challenges

- embracing the Internet
- managing data growth
- responding to ever-changing user demands
- ensuring business continuance
- leveraging rapid technology change
- balancing security  
and information access



# operational challenges

- Multiple storage vendors
  - A business reality
- Storage infrastructures
  - Growing in complexity
- Data growth
  - Continuous, unpredictable, 24/7 access
- Management tools
  - Point solutions not scaling



# Storage trends – predictions for 2005

## Manage information is fundamentally changing

- Capacity demands will continue to double every 12 months
- A majority of backups will no longer be to tape
- 75% of system \$ will be spent on storage
- 85% of companies will be using network storage “utilities” for the bulk of their storage needs
- 75% of companies will have reorganized to support the changes in storage
- 90% of companies will be using virtualization for a majority of their storage

# How about a “storage perspective” ?

Yottabyte = 1000 Zettabyts(1,000,000,000,000,000,000,000 bytes)

Zettabyte = 1000 Exabytes

Exabyte = 1000 Petabytes

The first 12 Exabyte's of data took 300,000 years, the next 12 will take 2 years.

Petabyte = 1000 Terabytes

2 Petabytes would contain the text of every academic research library in the US

Terabyte = 1000 Gigabytes

10 Terabytes would hold the text of the entire library of Congress

Gigabyte = 1000 Megabytes

50 Gigabytes would contain the text of an entire library floor of books (average size of personal computer HDD is 20 GB)

Megabyte=1Mbytes

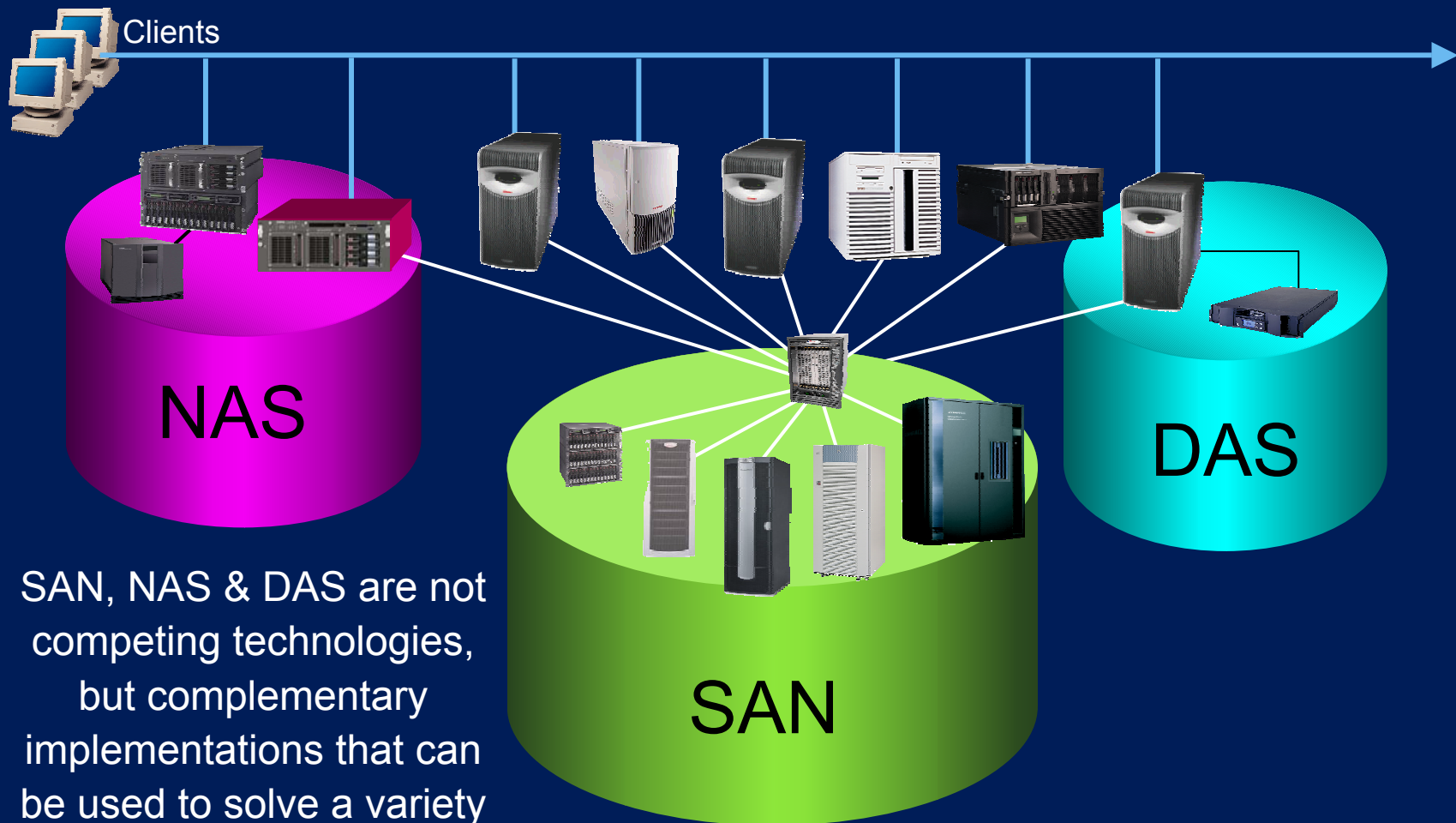
5 MB can store the text of the entire works of Shakespeare

# Time perspective

"Given good conditions(!), downloading a 1 yottabyte file over a 28.8 Kbps connection would take about 140 billion years."

# Enterprise Network Storage Architecture

customers get to choose with hp!



SAN, NAS & DAS are not competing technologies, but complementary implementations that can be used to solve a variety of customer problems

# hp enterprise strategy

HP will leverage its portfolio of products, services and partners to redefine the value proposition of IT, with a focus on increasing business value and reducing costs by way of:

- standards-based and modular systems that lower acquisition costs and increase flexibility
- focused innovation to improve manageability and utilization
- software and services that deliver reduced complexity and business agility



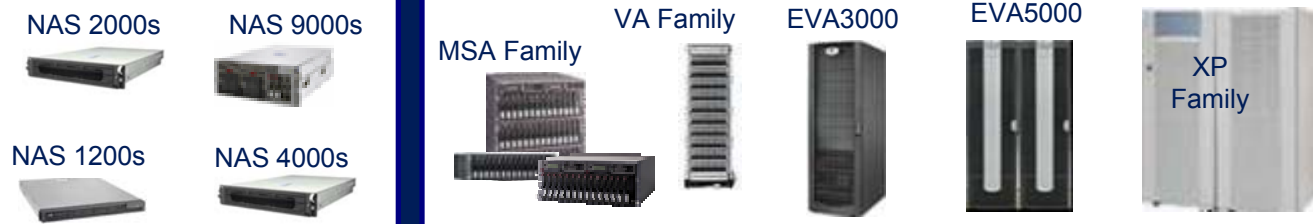
best return on  
information  
technology  
("best RoIT")

# HP StorageWorks product portfolio

## Infrastructure



## NAS & Storage Arrays



## Tape & Optical storage



## Software

### Storage resource management portfolio

- Device management
- Storage area management
- Array-based software



### Information Lifecycle Management portfolio

- Protect and recover
- Active archiving focused on retrieval
- ISV solutions across hardware portfolio



SERVICES & SOLUTIONS

# Interconnect product lines

Infrastructure alternatives that span the enterprise

markets

enterprise  
-class



core 2/64



director 2/64



director 2/140



MDS-9506



MDS-9509

Mid-range



switch 2/32



edge 2/32



MDS-9216

entry  
level



switch 2/8



switch 2/16



MSA 2/8



edge 2/24



edge 2/12



MDS-9120 and 9140

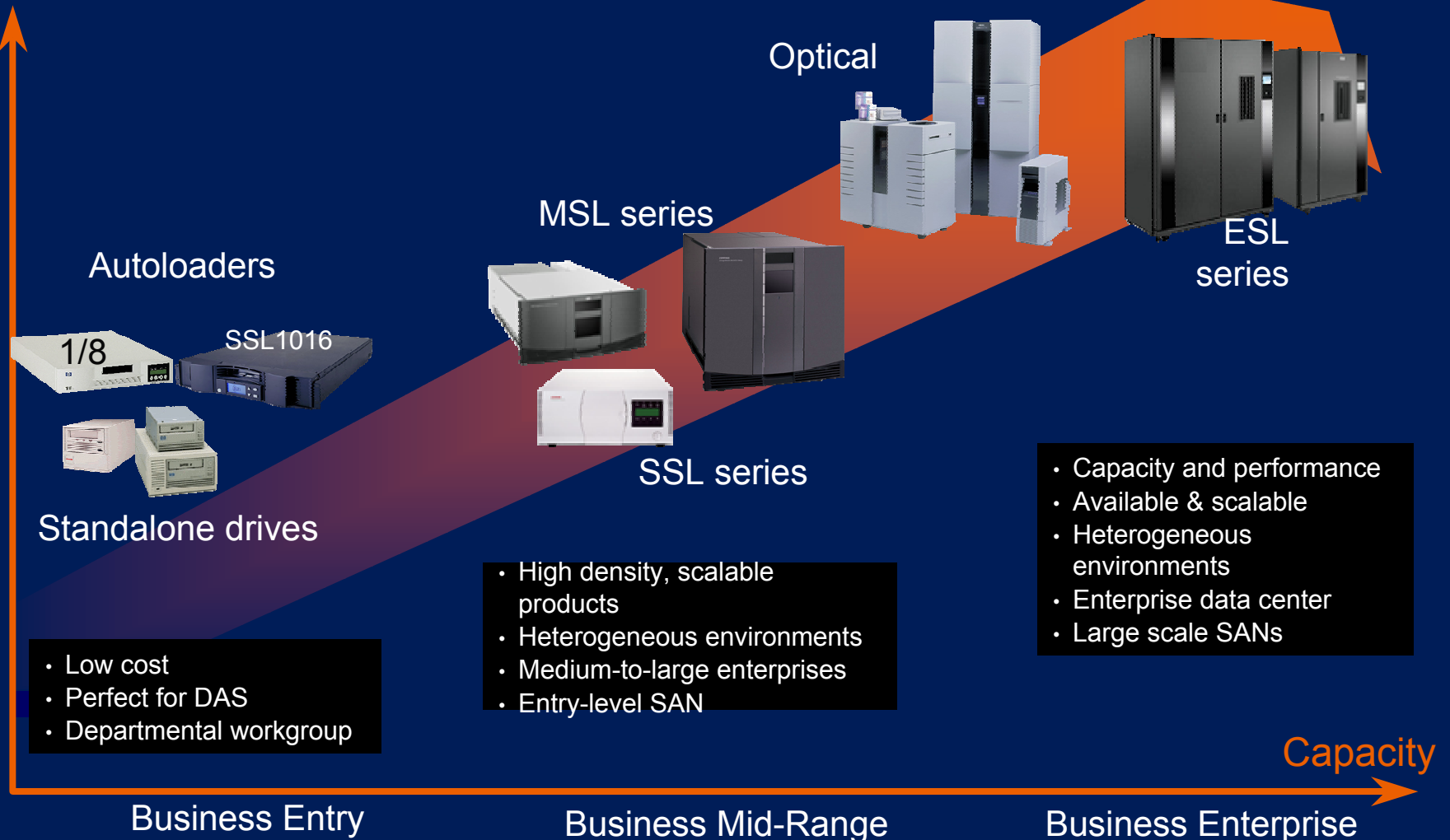
B-Series

M-Series

C-Series

# Tape & Optical storage

Performance



# Network attached storage portfolio NAS/SAN fusion today and tomorrow



- Technical solutions
- UNIX environments
  - NFS performance
  - Technical apps

- File serving consolidation solutions
- Win environments
  - CIFS performance
  - ADS integration

**NEW!**



HP StorageWorks  
NAS 1000s

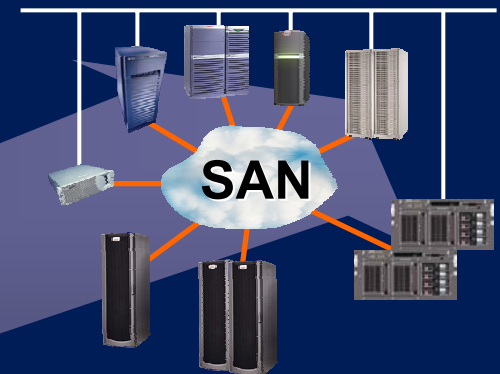
**NEW!**



HP StorageWorks  
NAS 2000s



HP StorageWorks  
NAS b4000



HP StorageWorks NAS  
executor e9000

Business entry

Business midrange

Business enterprise

# HP StorageWorks

## The industry's most complete array portfolio



MSA1000



### Low Cost SAN ≤6 T Bytes

- WEB, Exchange, SQL
- Simple DAS-to-SAN (Proliant)
- Windows, Linux, Netware + more

eva3000



### Midrange Modular ≤8 T Bytes

- Mid—sized DB/Remote office applications
- Simplification through virtualization
- Windows, HP-UX, Linux, + more

eva5000



### Enterprise Modular ≤35 T Bytes

- Storage consolidation + disaster recovery
- Simplification through virtualization
- Windows, HP-UX, Linux, + more

XP



### Enterprise Frame ≤149 T Bytes

- Data center consolidation + disaster recovery
- Large scale Oracle/SAP applications
- HP-UX, Windows, + 20 more including mainframe

# key array virtualization value opportunities



s  
p  
a  
c  
e  
-  
T  
i  
m  
e  
-  
C  
o  
s  
t

1. significantly higher utilization of capacity
2. virtually capacity – free snapshot (vsnap)
3. virtually instantaneous business copies
4. automatic, self-tuning performance
5. greatly reduced application downtime
6. simplified mgmt. = lowest cost of ownership

**much lower “effective” price/MB!**

# The right virtualization solution for you



## Server-based

- Virtualize capacity across heterogeneous arrays, scaling to the arrays' capacity
- Benefits single server/single cluster environments
- Intelligence resides on the host

## Network-based

- Virtualize capacity from any array, for any host on the network
- Benefits heterogeneous environments
- Intelligence resides in the network
- Prerequisite of the storage utility

## Array-based

- Virtualize capacity in a single array, scaling to the array's capacity
- Benefits heterogeneous hosts/single array environments
- Intelligence resides in the array controller

server-based

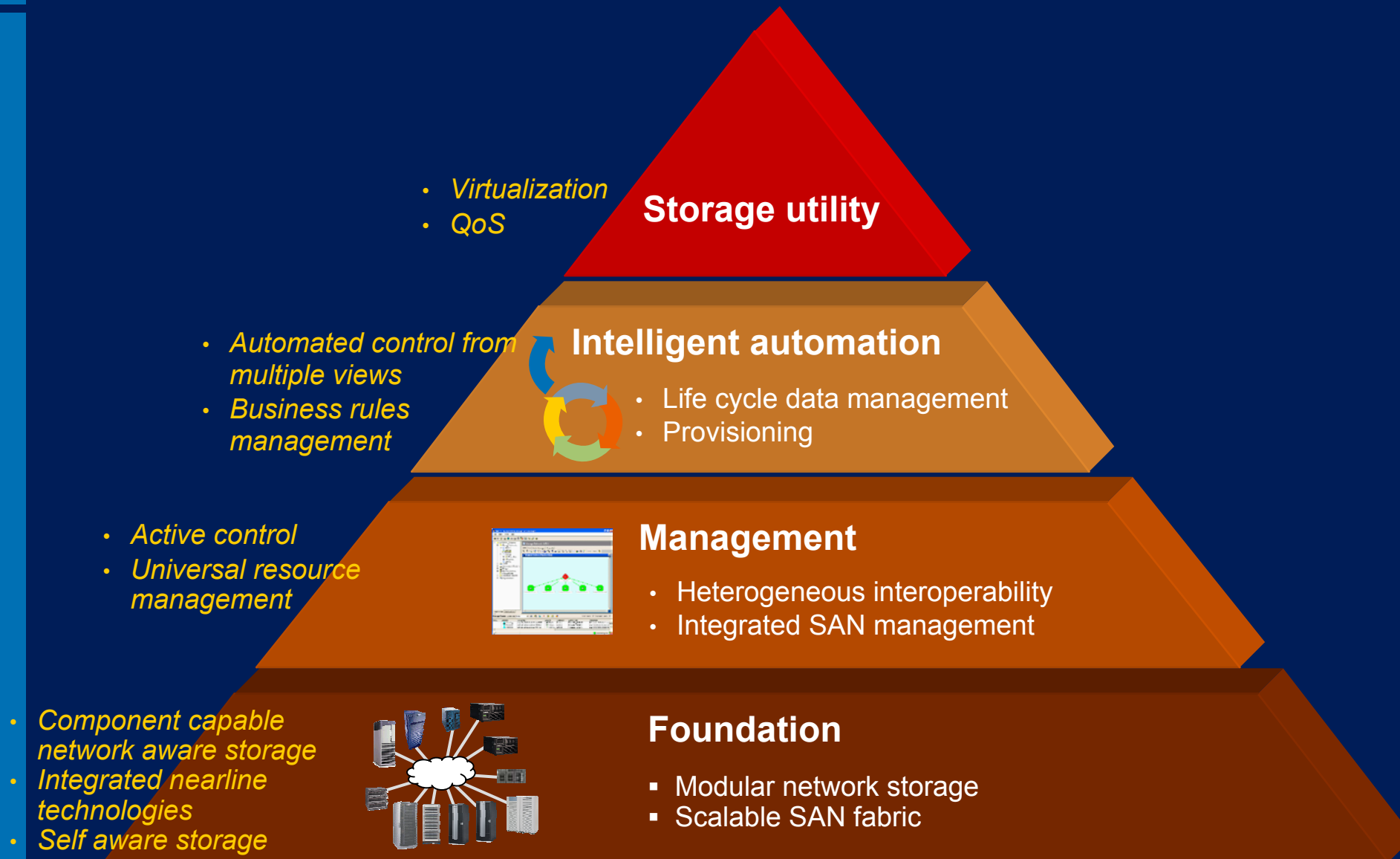
network-based

array-based



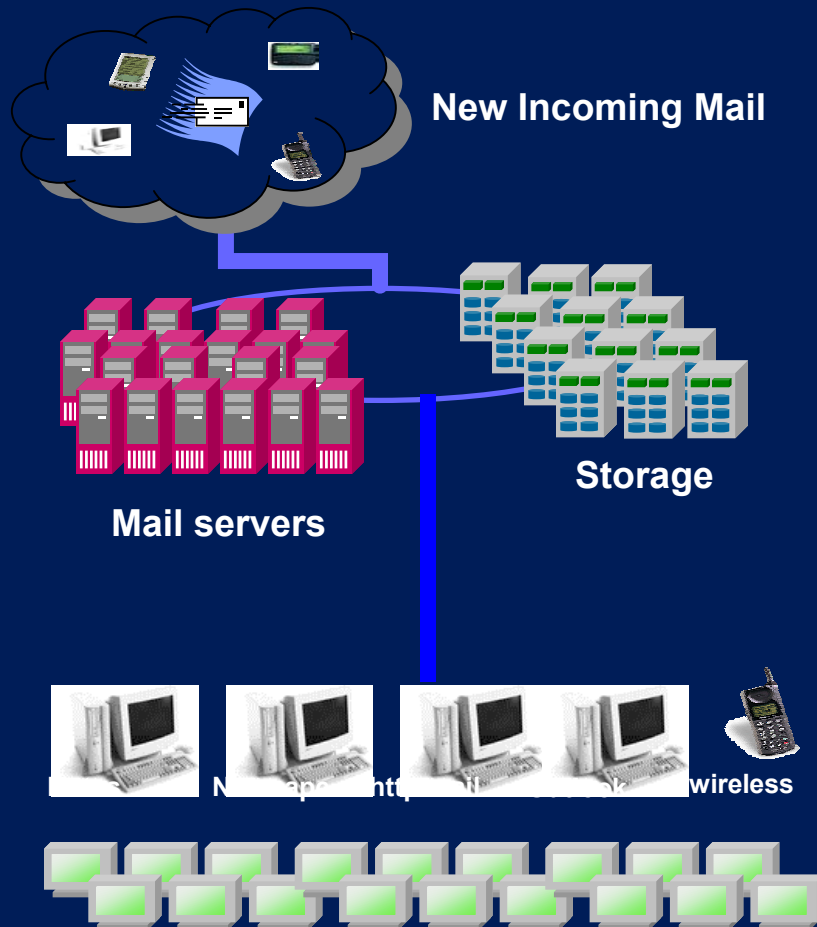
# ENSAextended

## customer needs drive hp storage strategy



# The email problem

Mail systems are not designed for volume storage



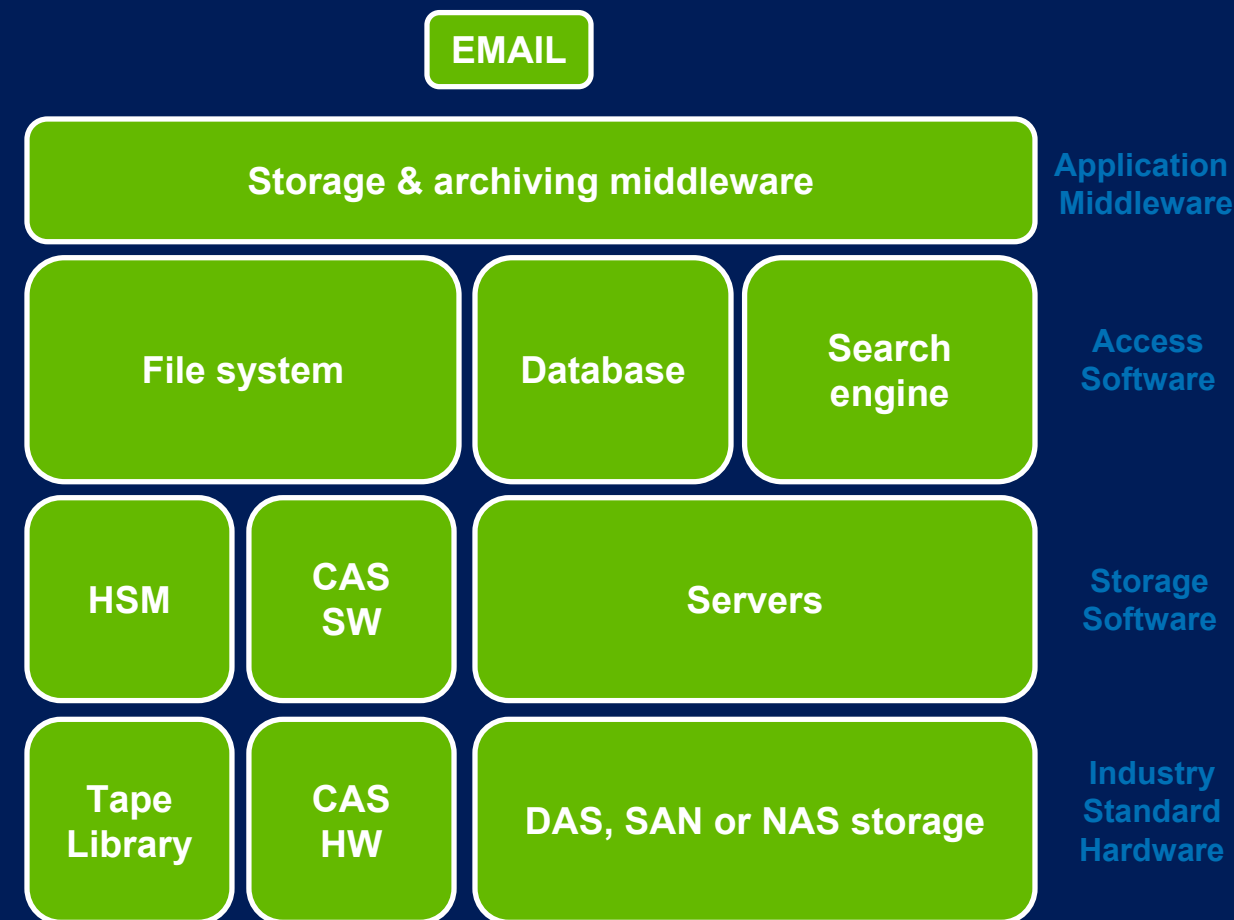
- System NOT designed as a long-term storage pool
- email data is growing exponentially
- Users have adopted the mailbox as their default filing system
- Mail-servers and storage are choked
- IT budgets cannot cope with continual expansion
- There is no central control over record retention

# Many components needed in a solution

Difficult to build & integrate



## Existing Systems



Integration ?  
Cost ?  
Reliability ?  
Tamperproof ?

Non-Integrated

# Competition Versus the RISS Solution



This.... Versus

Microsoft Exchange OR  
Lotus Notes



**RISS**

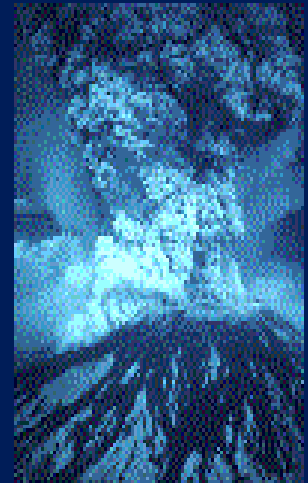
**End to end  
solution**

**Built on HP  
hardware**

**Complete HP Solution**

# Disaster – backup, archive and replication

Trivia: most unique computer archived data will be lost due to technical obsolescence.



# HP storage software portfolio

Integrated storage  
resource  
management



HP StorageWorks  
Command View

HP OpenView storage  
area manager

Availability  
management



HP OpenView Continuous  
Access Storage Appliance  
(CASA)

HP StorageWorks virtual  
replicator

HP StorageWorks family of local  
and remote replication software

HP StorageWorks secure path  
and auto path

Data  
management



HP OpenView storage  
data protector

HP OpenView storage  
media operations

Virtualization



HP CASA

HP StorageWorks  
virtual replicator

# OV-SAM SAN management objectives



- Simplify storage management
  - standardize on easy-to-use GUIs
  - web-enabled applications for remote SAN management
- Centralize SAN management for distributed and consolidated environments
  - SAN management from one console
  - SAN management appliance based applications
- Automate policy-based management

# hp OpenView storage management

## portfolio



System  
management

Application  
management

Network  
management

Performance &  
resource mgmt

Storage  
management

Network storage management

Data  
management

Storage Area Manager (SAM)

Storage  
Node  
Manager



Discovery,  
topology,  
events/  
alarms

Storage  
Allocator



Assignment  
and access  
control

Storage  
Optimizer



Performance  
analysis,  
thresholds &  
reporting

Storage  
Builder



Capacity  
analysis,  
control,  
planning

Storage  
Accountant



Service  
levels,  
metering,  
charge back

Continuous  
Access



Data  
replication  
for remote  
mirroring

Data  
Protector



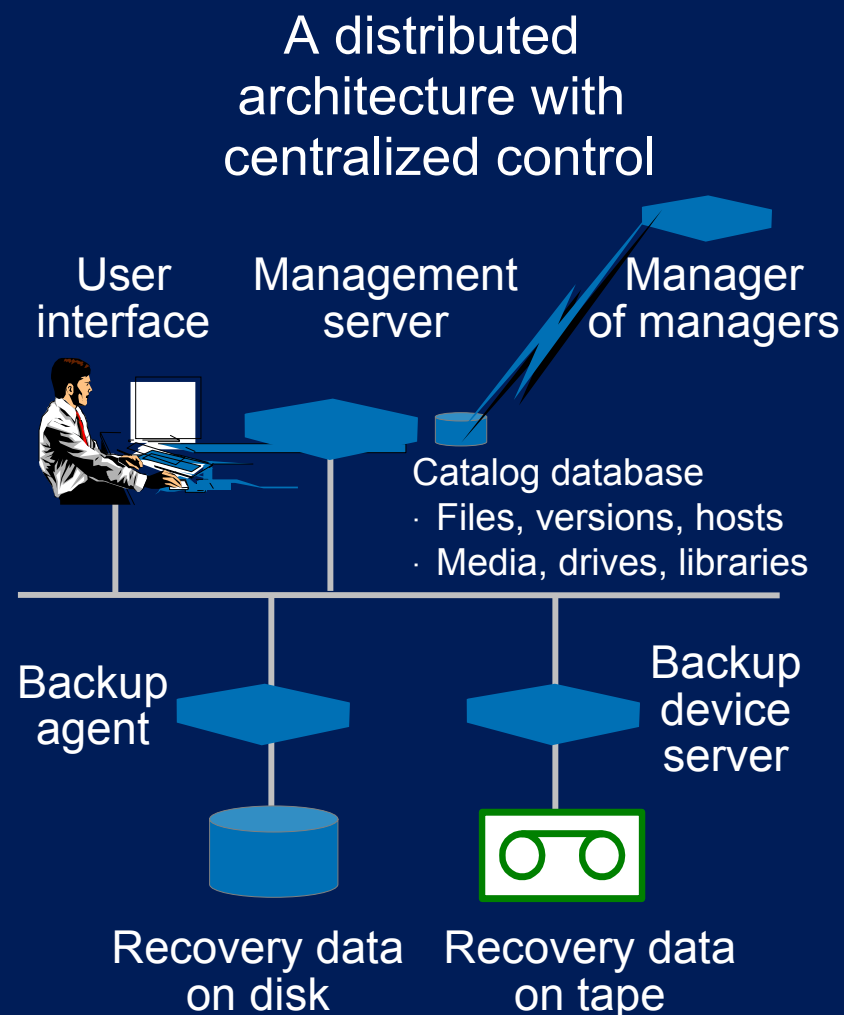
Automated  
data  
protection  
and media  
mgmt

# HP OpenView storage data protector



Enterprise wide data protection with a service-driven management approach

- Increase information availability by eliminating recovery and backup windows
- Increase scalability with single solution from small workgroups to enterprise-wide environments
- Preserve customer choice with simple, modular structure and broad compatibility
- Increase staff efficiency through automate routine tasks, and easy to deploy and use

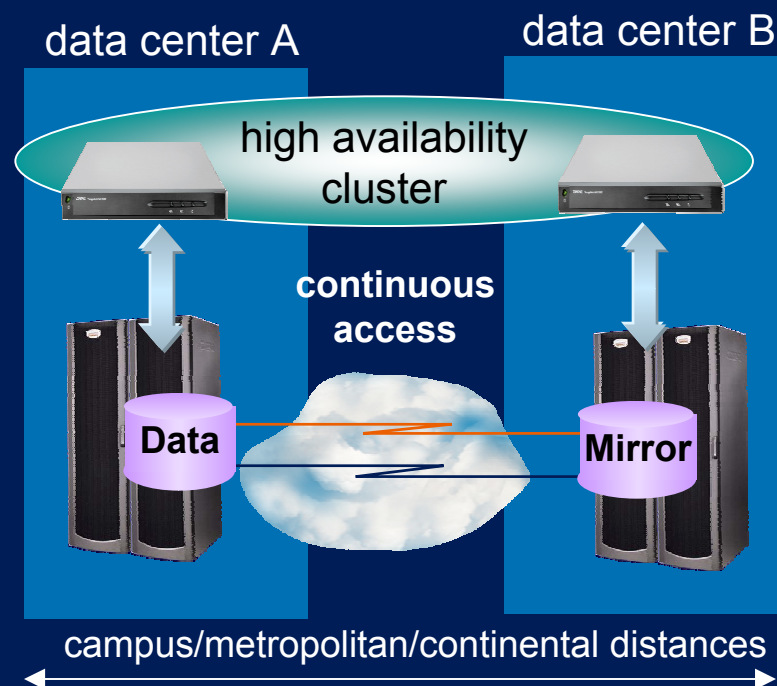


# HP StorageWorks Continuous Access EVA



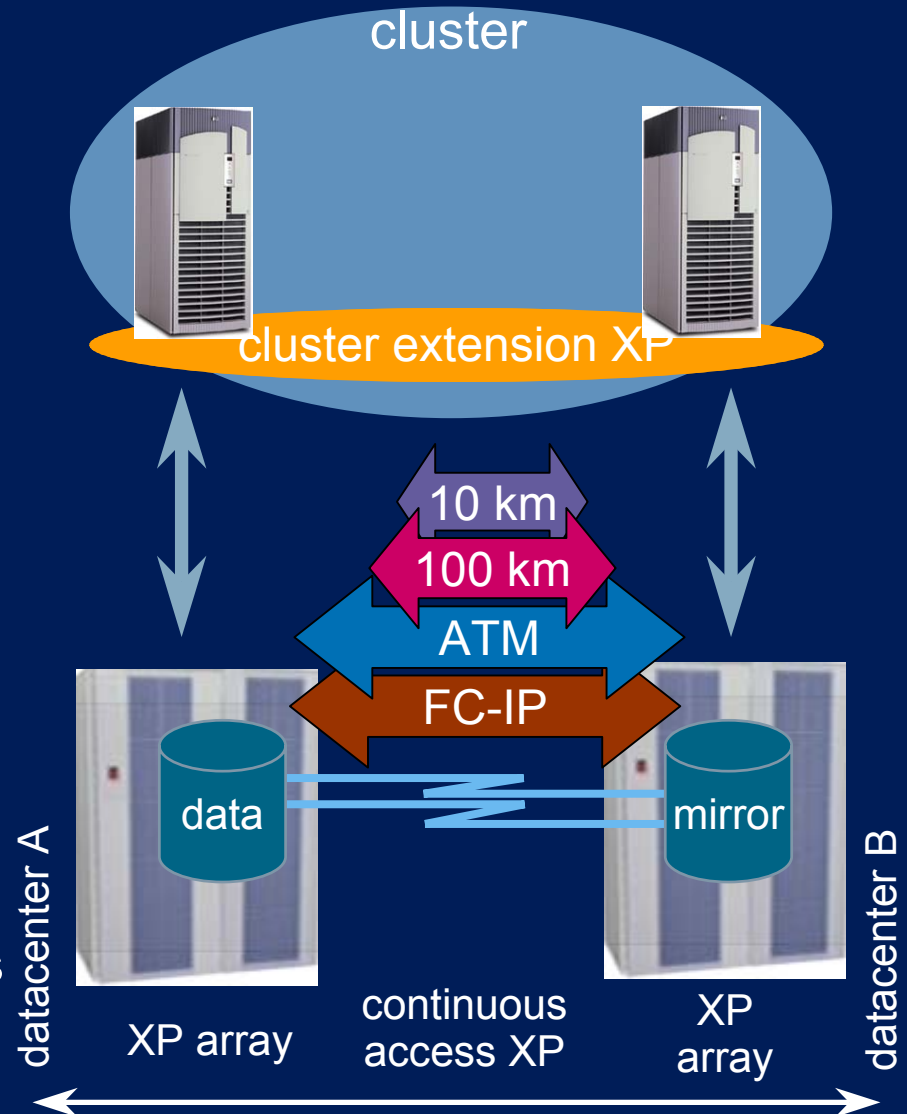
Storage-based data replication guarantees business existence after an unforeseen event

- Performs remote mirroring and disaster recovery
- Enterprise-class availability solution
- Up to the last I/O data integrity
- Fast consistent application recovery



# Extended clustering with xp disk arrays

- Maintains duplicate copy of data between two XP arrays
- Works with cluster extension, metro cluster & continental clusters for long-distance solution
- Ensures data integrity between two XP arrays
- Highest data concurrency with synchronous copy
- Highest performance and distance using asynchronous copy
- Eliminates storage and data center cost of “multi-hop” solutions
- Cross-town, or all the way across the globe



# Industry Futures:

- New technologies can be essential to solving business problems
- There is an overwhelming amount of information and terminology - only some of it is useful
- Good technology investment decisions require an understanding of the “what”, the “why” and the “when”
- Where HP invests in future technologies is the best indicator of whether we will deliver on our strategy
- Disruptive technologies are only disruptive to the unprepared...

# EVA Futures

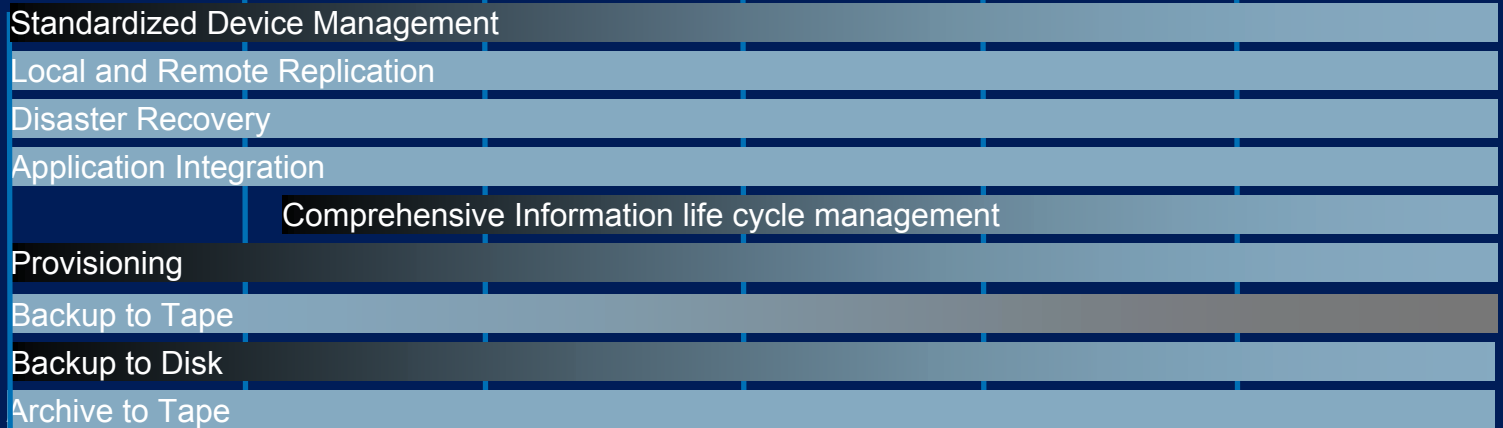
- Release Strategy
  - Platform releases every ~3 years
  - Firmware functionality releases every ~6-9 months
  - Firmware minor releases ~3 months
- Focus areas
  - Robustness (ongoing focus on serviceability, reliability, availability – e.g. back-end diagnostics)
  - Simplicity (SMI, host based management,...)
  - Cost (Commodity drives, bigger drives, rack options, host based management)
  - Capability (Async, active / active ports, active / active sites, faster clone / snapshot, true clone, cross group replication)
  - Connectivity (luns, DR groups, OS's)
  - Next generation (XL – natural evolution, bigger / faster)
  - Solutions (backup integration, exchange, oracle)

# Online Storage Technology Roadmap

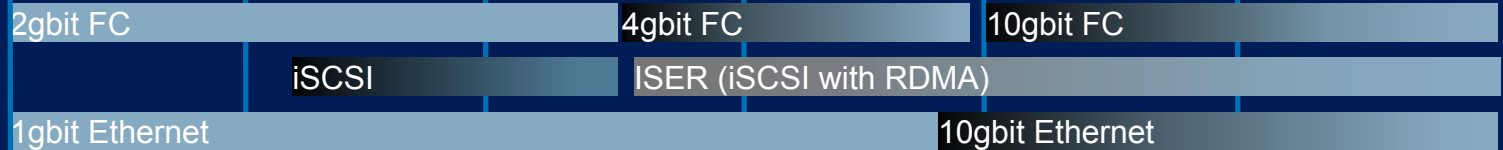
Fade to blue is adoption rate, fade to black is erosion by alternate technology, solid blue is continued evolution



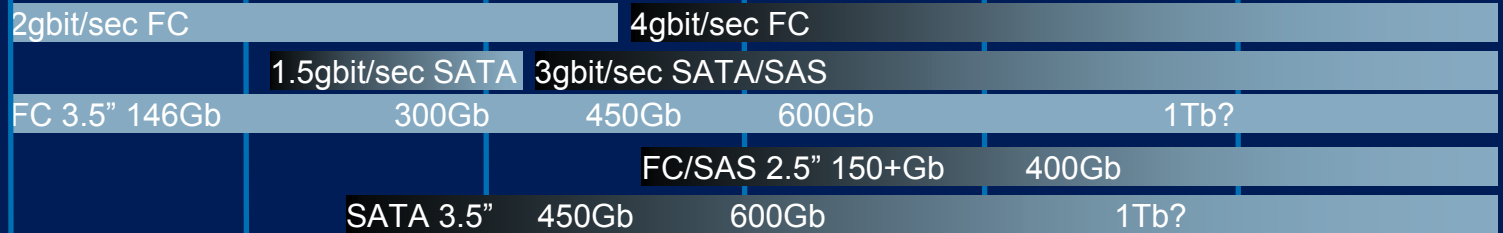
## Data Management and Software



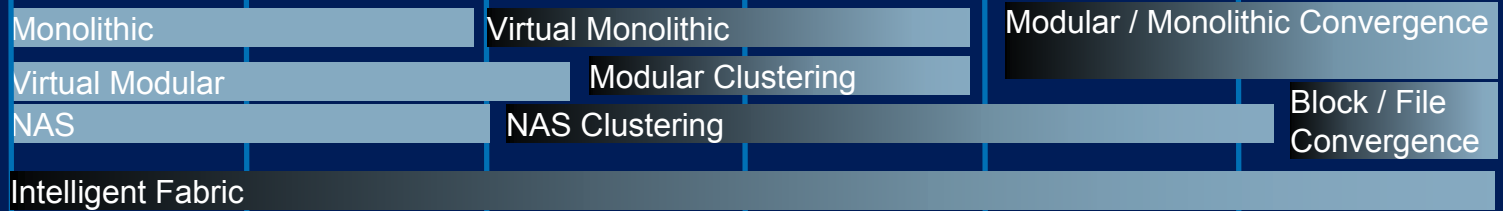
## Networking



## Storage Devices



## Storage Systems



Today

2004

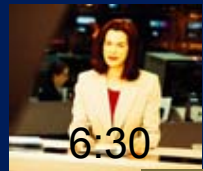
2005

2006

2007

2008+

# A-day-in-the-life: HP storage & servers



6:30

MSNBC

Wake up,  
watch news



6:45

Reebok

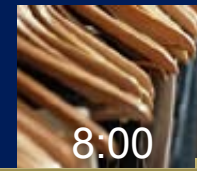
Go for a run



7:30

Nestlé,  
Kellogg's

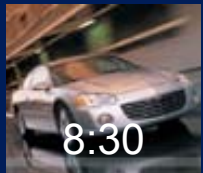
Have breakfast



8:00

Liz Claiborne  
Perry Ellis

Get dressed



8:30

Daimler  
Chrysler,  
Goodyear

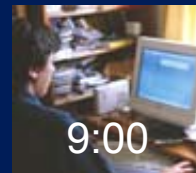
Drive to work



8:45

Valero

Stop for  
gas



9:00

Starbucks

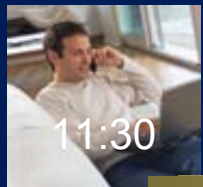
Pick up coffee and  
check e-mail



10:00

Brazil  
Telecom

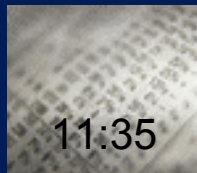
Conference call  
with S. America



11:30

Bell  
South

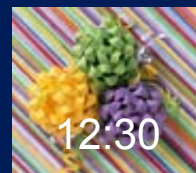
Call  
stockbroker



11:35

New York  
Stock  
Exchange

Place sell order on  
IBM stock



12:30

Amazon

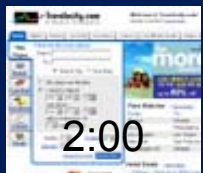
Send gift to mom  
for birthday



1:00

Wells Fargo

Go to lunch,  
pay with credit card



2:00

Sabre

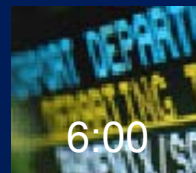
Make reservations  
for Japan trip



4:00

Astra  
Zeneca

Pick up  
prescription



6:00

Continental  
,  
Boeing

Fly to Phoenix for  
regional meeting



9:00

DreamWorks

Watch Shrek  
before bed

# HP enterprise storage and servers: Powering the adaptive enterprise



## #1 with customers

- Touching every aspect of daily life
- HP delivers more
  - Best in class storage and server products
  - Best end-to-end IT solutions
- Building unique value on industry standards



The world's best partner for your enterprise needs

# A commitment to open systems



# Americas StorageWorks Conference

September 13-15, 2004, Houston



## An invitation-only event featuring:

- Senior HP executives outlining business objectives, high-level strategies, and long-term directions
- Breakout sessions on storage topics that are most on your mind, as well as valuable business topics
- Some of the industry's top consultants discussing HP's Total Customer Experience
- A Solutions Showcase exhibiting the latest IT solutions from HP and its industry partners
- Optional tour of HP's ISO 9002 Solutions Configuration Factory and Americas Solutions Center

## Register today:

Access the event web site (<http://www.hp.com/go/asc>) and enter the RSVP code: CSTM

# Why HP

- Broad portfolio focused on solving customer problems
  - HP offers a variety of solutions **today** that utilize virtualization and is not focused on only one because of market hype
- Extensive knowledge and experience
  - HP has an extensive history of successfully using virtualization to solve customer problems (e.g., EVA, VA, RISS, SVR)
- A data center perspective
  - HP is taking a holistic approach to solving IT problems throughout the data center with virtualization technology (e.g., Grid storage, UDC, Grid computing)
- HP is an IT company, not just focused on storage
  - HP offers servers, storage, software and services
  - HP is driving vertical and horizontal simplification across the entire data center, not just the storage components

questions?





# HP WORLD 2004

Solutions and Technology Conference & Expo



RECOMMENDED TRAINING VENUE FOR THE  
**HP Certified Professional**

