Embedded to Enterprise: An Introduction to the World of Storage Area Networks (SANs)

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IT Managers Face a Challenging Year

Data Growth

– Storage consumption increasing 60 to 80% annually

Complexity

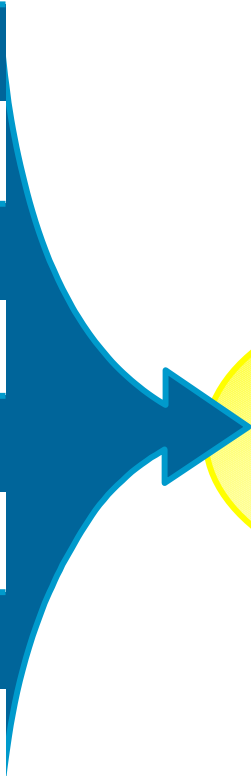– Average data center has 2 to 4 storage vendors; 3 to 5 OS

Data Availability

– 38% of end users want improved restore time

Storage Management Costs

– Low DAS utilization rate (30-35%) increases admin costs

Flat to Down Budgets

– 60 % of CIOs will reduce or maintain IT spend

– 41% percent of CIOs reduced IT headcount in 2002

Improve Operational Efficiency

Customer Requirement Drivers

Improve Operational Efficiency

Improve IT Productivity

Simplify Storage Management and Increase Control

Extend and Protect SAN Investment

Storage Area Networks deliver on business needs

- Server/Storage Consolidation   *Productivity/Utilization*

- Centralize management   *Productivity/Utilization*

- Back-up and secure data   *Performance/Utilization*

- Low-cost, high availability   *Utilization*

- Business continuity   *Business Mandate*

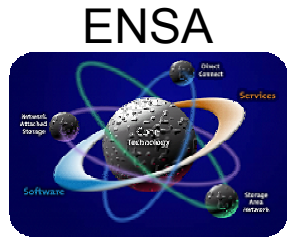- Application Performance   *Utilization*

SAP

ORACLE

EXCHANGE
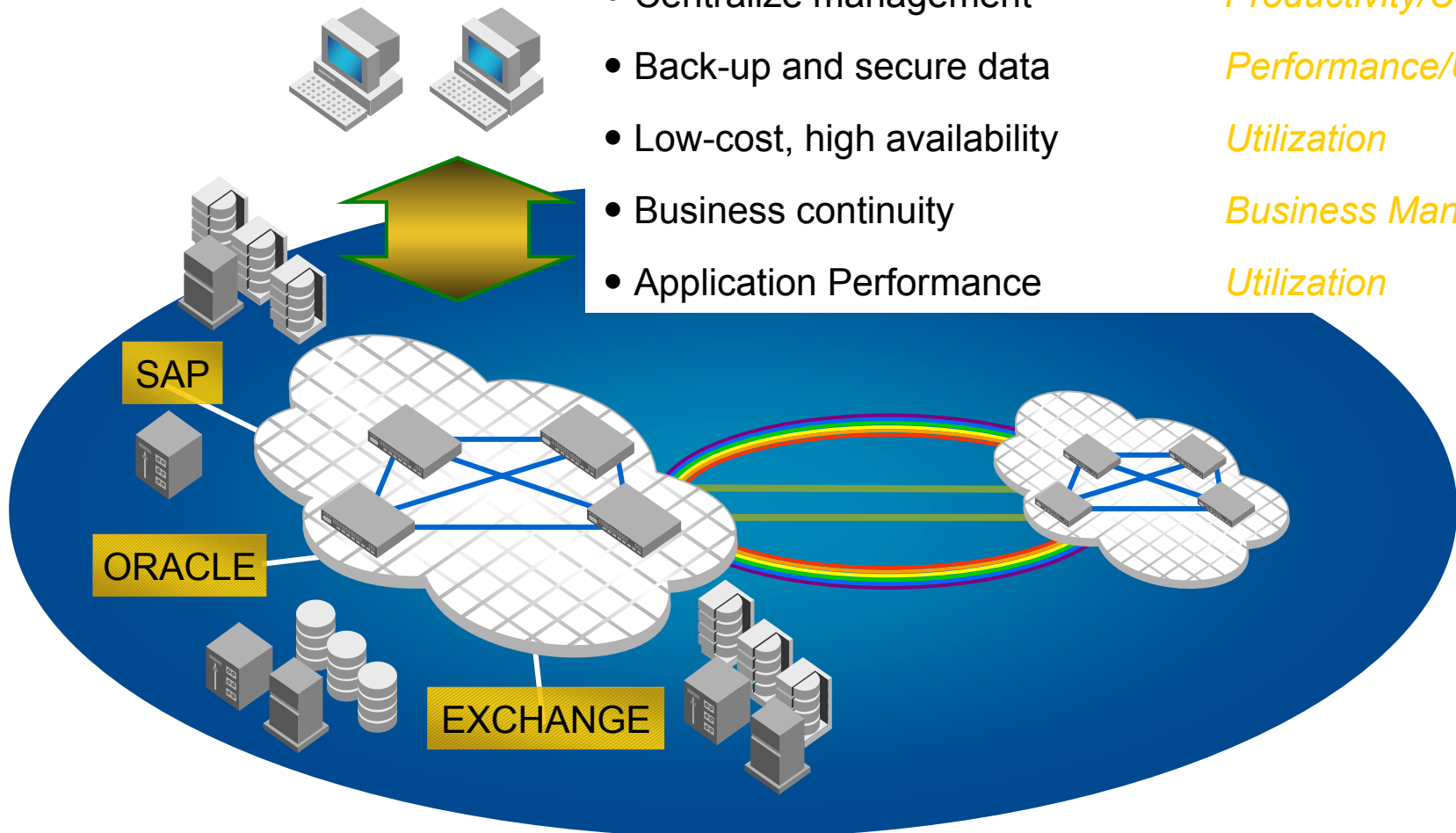
HP and Brocade: ease storage management

ENSA Extended

Controllable – Resilient - Extensible

The Storage Utility

ENSA eXtended
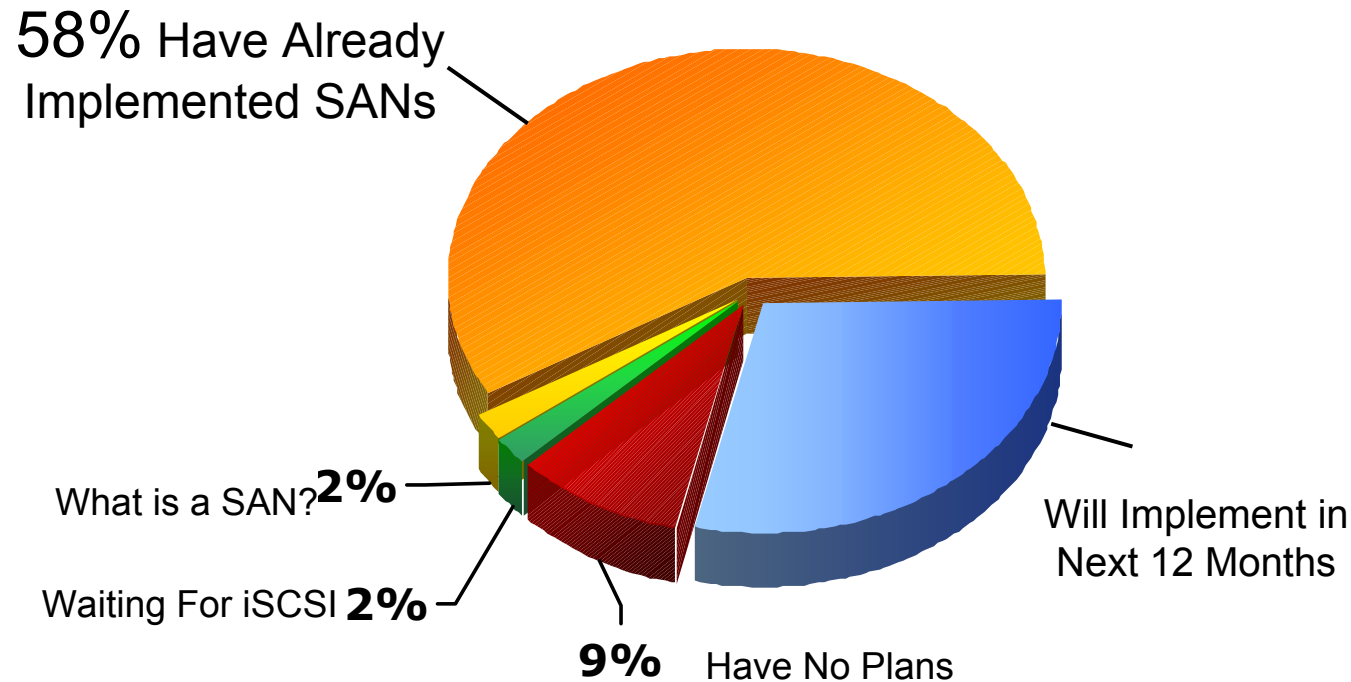
ENSA

Storage Management
CASA & Versastor

Fabric Management & Security
Power Pak & Secure Fabric OS & HP OV-SAM

Connectivity
BASE: Web Tools & Zoning

Increasing Operational Efficiency

SANs are more important than ever to IT executives

2002 Gartner Survey

58% Have Already Implemented SANs

What is a SAN? **2%**

Waiting For iSCSI **2%**

9% Have No Plans

Will Implement in Next 12 Months

- 400 IT executives surveyed
- 87% have implemented a SAN or will in the next 12 months

Source: Gartner *"Storage Consolidation and Networking Trends,"*
Research Note, N. Allen, February 2002

Customer considerations in a SAN deployment

- Business Needs – Today & Tomorrow
  - Can the SAN keep up with the customer's business?
    - Scalability, Security, Management, Support, Heterogeneity
  - ROI
  - Best in class SAN Management application suite
  - Business Continuance - Site Disaster Recovery
  - SAN Security
- SAN Vendor/Partner
  - Market Presence, Vision, Execution, Leadership, Best of Brand, Completeness of SAN Solution (HW,SW,Management,Services)
- Investment Protection - Legacy IT investments (i.e. Tape/Loop devices)
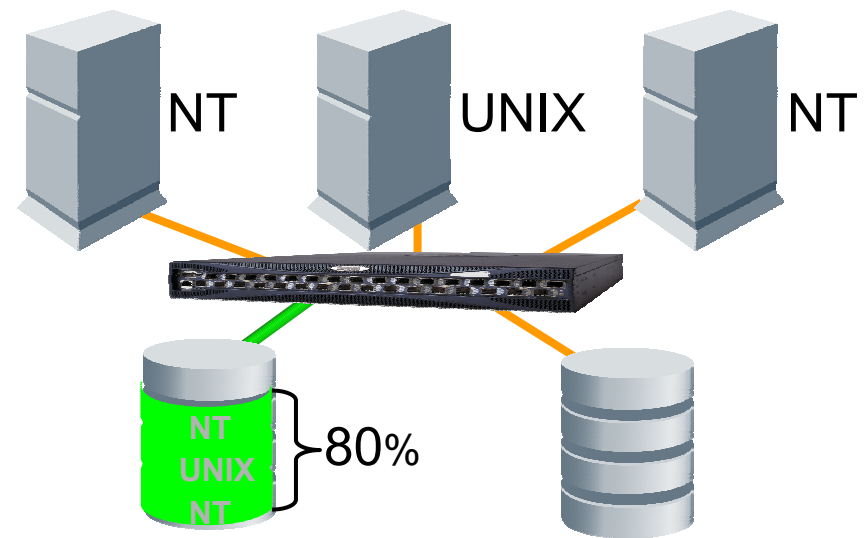- Roadmap of the SAN solution – Upgradeable, Product Life-cycle

Improve storage utilization

DAS

NT   UNIX   NT

NT 50%   UNIX 50%   NT 50%
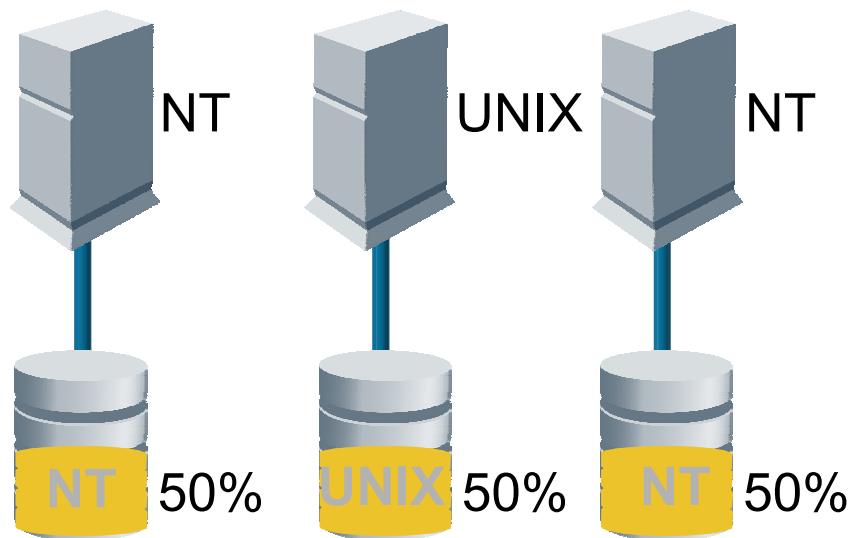
- Limited scalability and bandwidth
- >50% of storage may be unused
- Admin costs 5-6 times acquisition cost
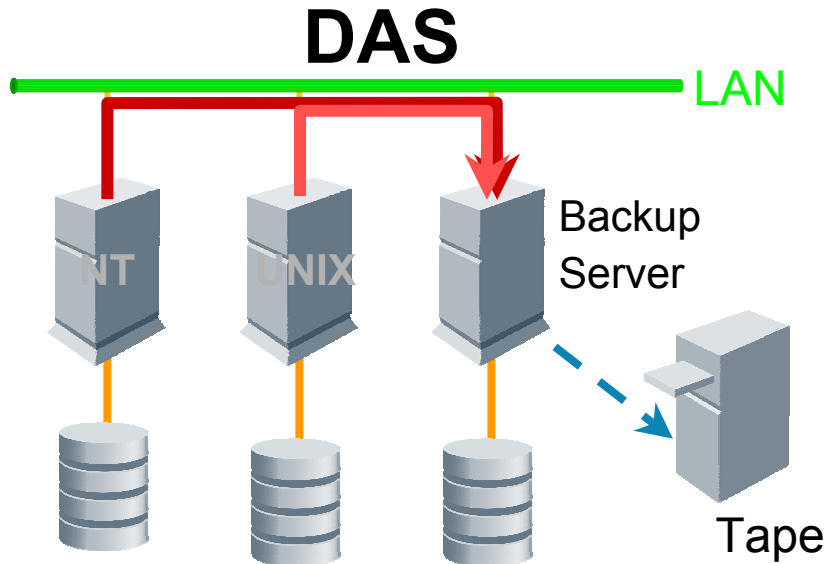
SAN

NT   UNIX   NT

NT
UNIX
NT } 80%

- Reduce storage headroom
- Enable just-in-time provisioning
- Combine UNIX and NT storage growth needs

Reduce your total cost of ownership for storage

Improve access of enterprise information

DAS

LAN

NT UNIX Backup Server

Tape

SAN

LAN

NT UNIX Backup Server

Tape

- Backup traffic clogs corporate LAN
- Backup/Restore time is lengthy
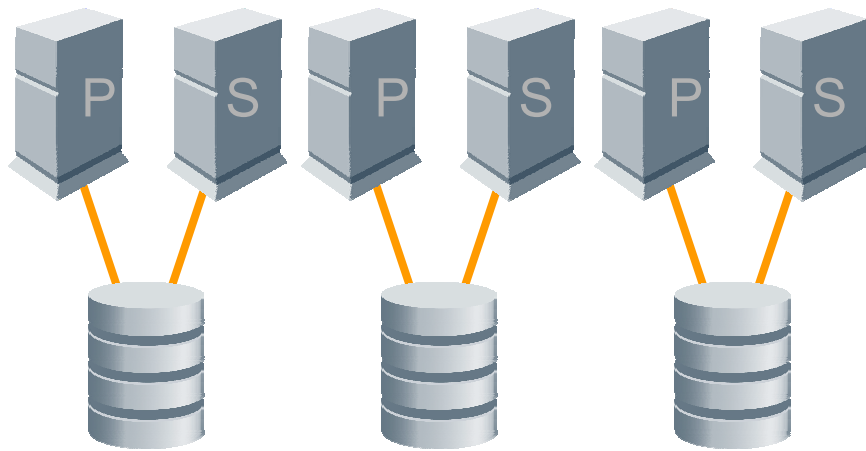- Application and information not available during backup/restore
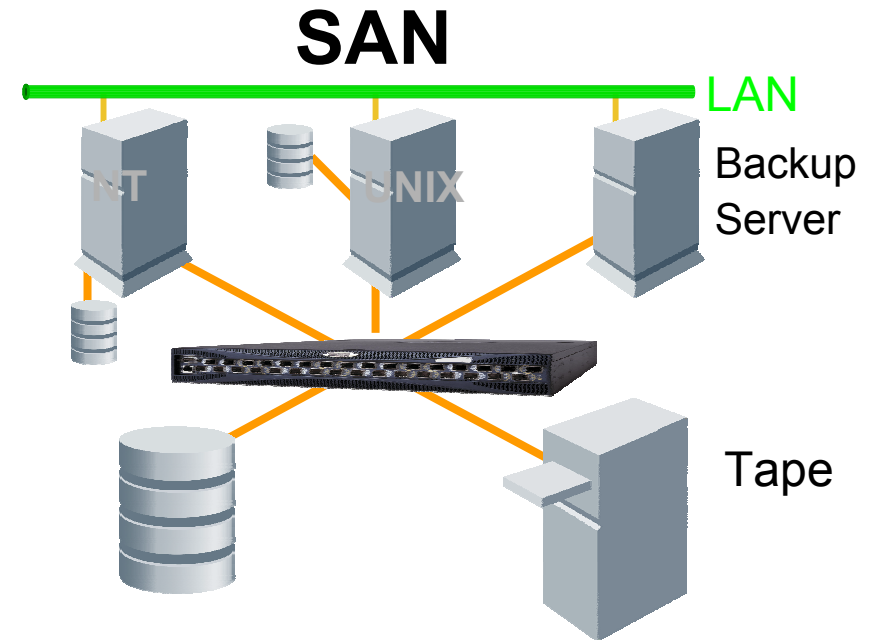
- Backups more efficient than LAN or DAS
- Less downtime for applications
- Reduced unscheduled downtime

Availability of information keeps your business running

Improved application availability

DAS

P P S P S P S

SAN
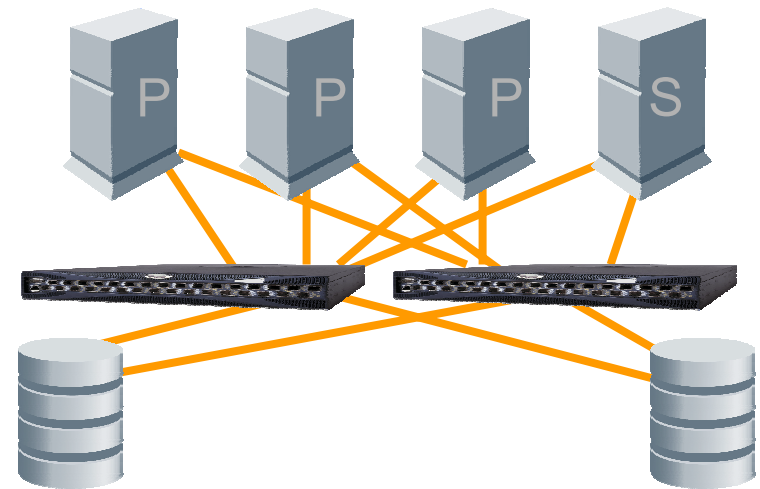
P P P S

- 3 High Availability Clusters
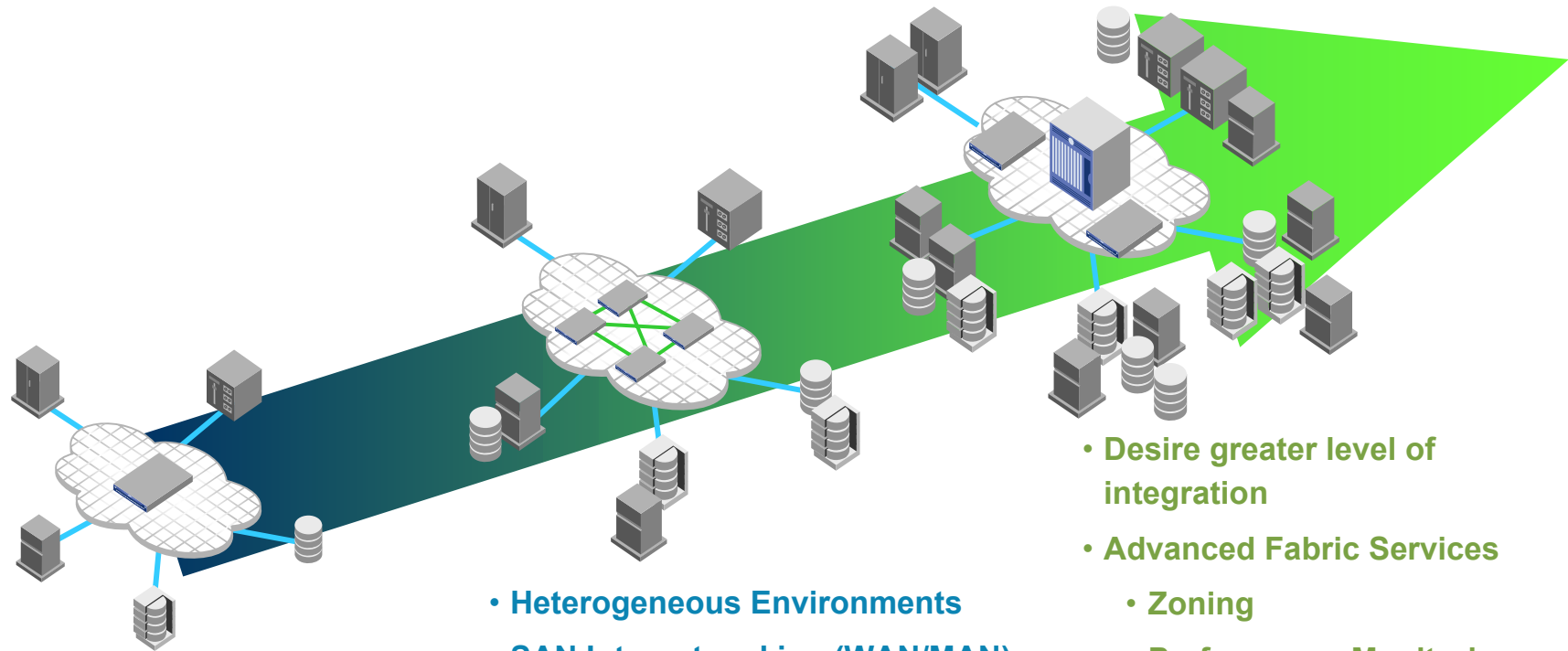- One standby server for every primary server
- Data isolated from each cluster

- Much less expensive to implement high-availability
- Storage can be consolidated
- One standby server (N+1)
- Data available to all servers

Highly available mission-critical applications at lower cost

Evolution of the intelligent infrastructure

• **Basic connectivity, shared storage**
  • **improve resource utilization**
  • **more scalable**
  • **eliminates SPF**

• **Heterogeneous Environments**

• **SAN Internetworking (WAN/MAN)**

• **Optimize storage infrastructure**
  • **LAN Free, serverless backup**
  • **Server, storage consolidation**
  • **Clustering, high availability**

• **SNMP Management**

• **Desire greater level of integration**

• **Advanced Fabric Services**
  • **Zoning**
  • **Performance Monitoring**
  • **Health Monitoring**
  • **Security**

• **Accessed through open API**

The problem: storage administration cost

Storage administration costs are t*ypically 6-10x the purchase price of storage!*

Computing ($/MIP)

Storage ($/MB)

Connectivity ($/port)

Storage Administration ($/TB)

- Disaster Recovery Planning
- Asset Management
- Policy Management
- Deployment & Provisioning
- Capacity Planning
- Data Migration
- Backup
- Quota Management
- Fault Monitoring
- Trend Analysis
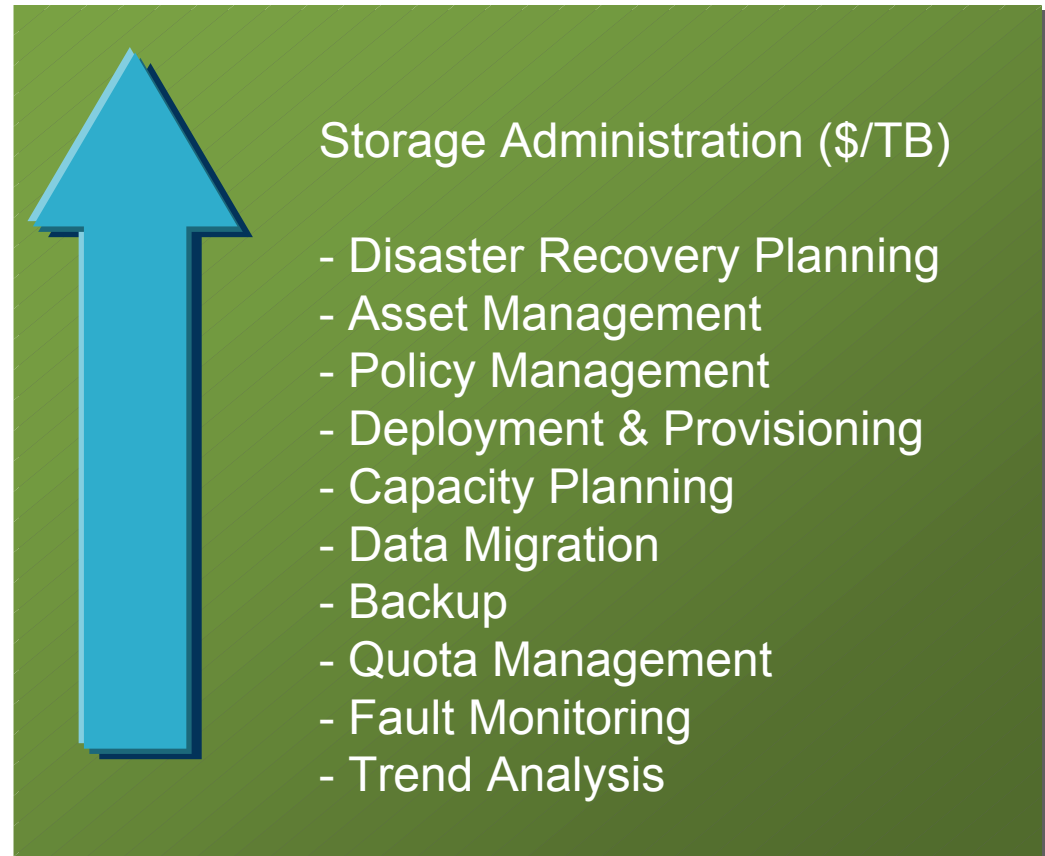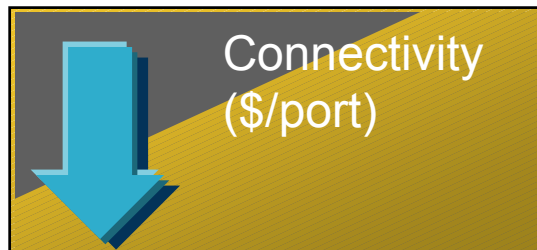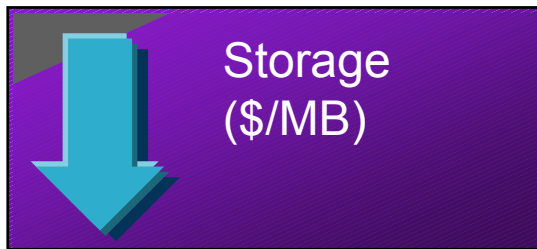
What's required: *A true fabric OS environment*

Storage Management Applications

API-Based Integration

Fabric Security

Authorization   Access Control   Encryption   Authentication

Fabric Connectivity Services	Fabric Management Services	Fabric Application Services
• Trunking • Routing • Flow Control • Zoning • Multi-protocol support	• Planning and Design • Admin. and Configuration • Performance Monitoring • Health Monitoring	• Virtualization Services • Data Replication Services • Data Management Services

Intelligent Switching Platform

HP StorageWorks intelligent fabric operating environment

Applications

Development Environment

Fabric Access API

Common, development environment spanning standards-based API & toolset

Fabric Security
Secure Fabric OS

Fabric Operating System

Fabric Connectivity Services

- ISL Trunking
- FSPF Routing
- Hardware-enforced Zoning
- FICON
- Quickloop
- Extended Fabrics

Fabric Management Services

- Fabric Manager
- WEB Tools
- Advanced Performance Monitoring
- Fabric Watch

Xpath Technology

- Virtualization Services
- Data Replication Services
- Data Management Services
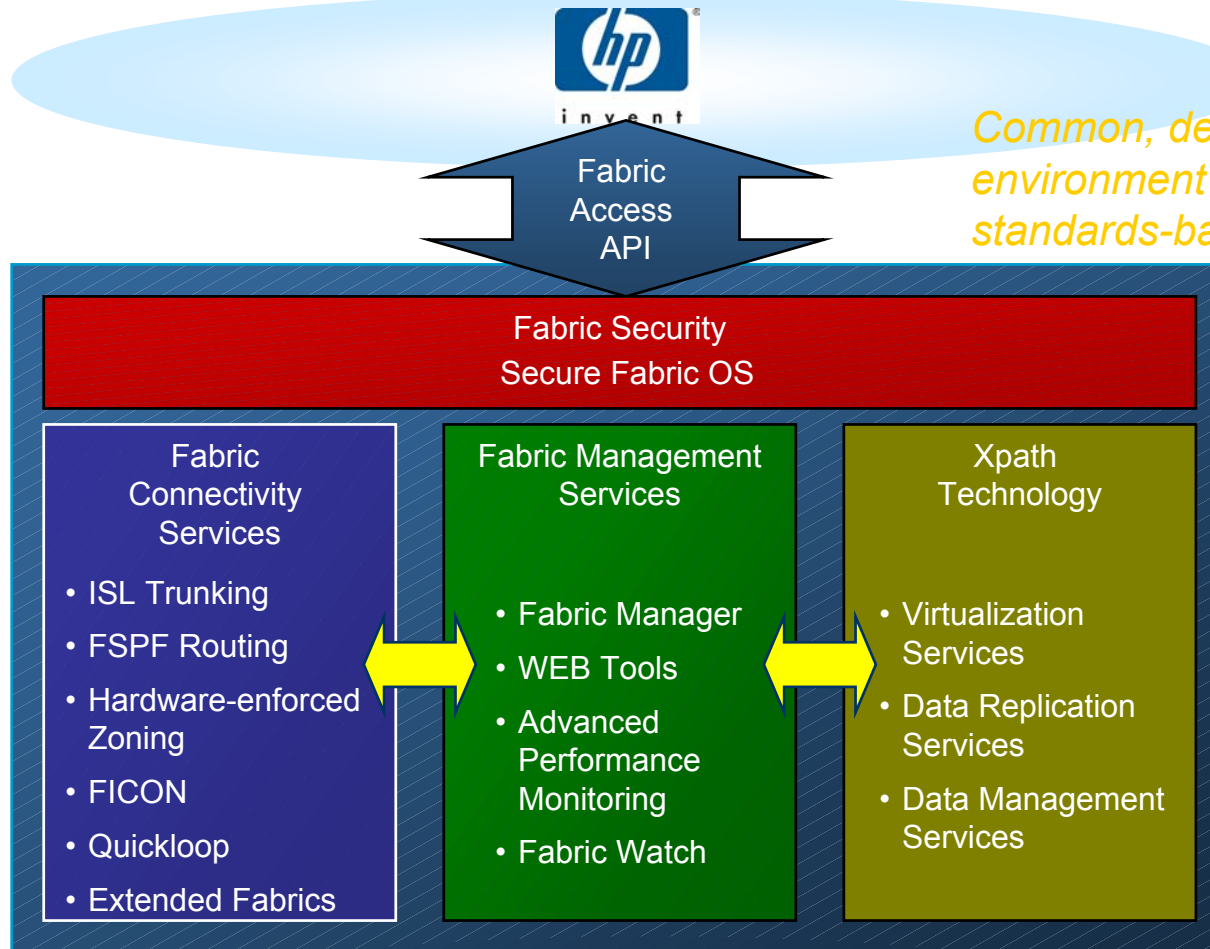
Intelligent Switching Platform

Interex, Encompass and HP bring you a powerful new HP World.