



INFORMATION *made* POWERFUL

Building for the e-Future



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Key StorageTek Strategy



The word "SAN" is written in large, bold, white capital letters with a black drop shadow. It is centered within a red rectangular border. The background of the slide is a blue-toned image of a circuit board with various components and traces.

Buy Less – get more!

Why SANs?

Improved Performance

Openness

FLEXIBILITY

Interoperability

Manageability

Data Relocation & Replication

Storage Sharing

**SENSE OF
URGENCY**

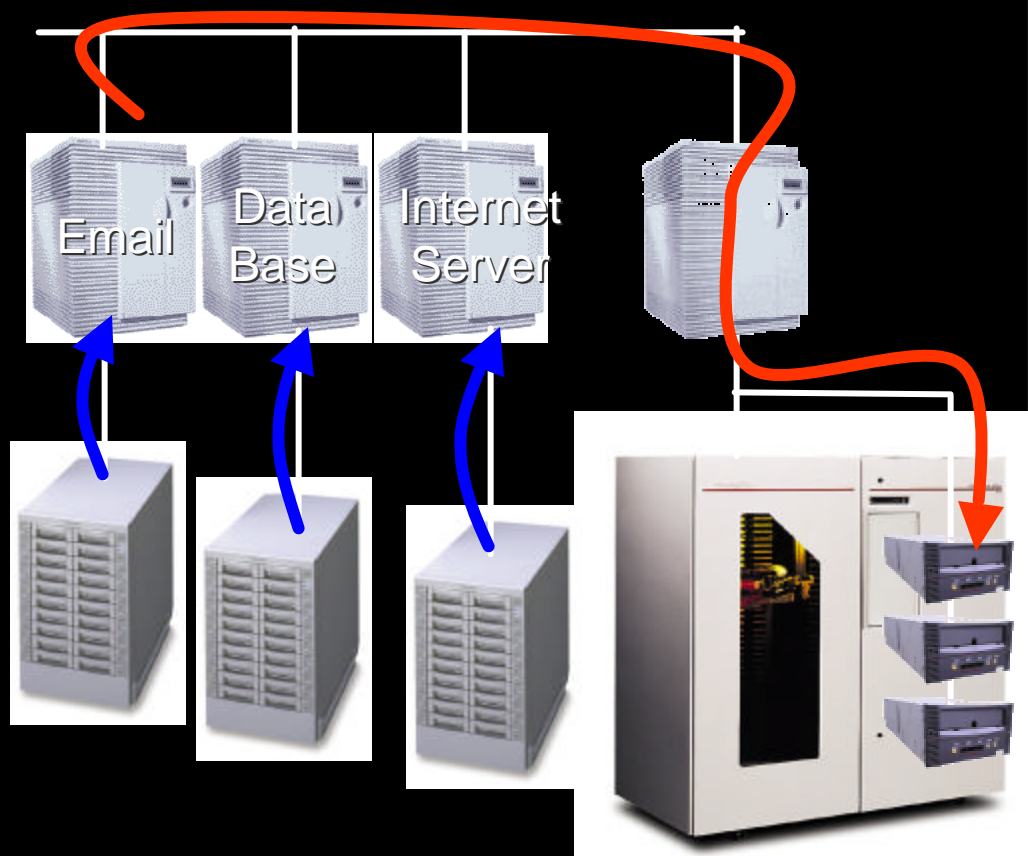
Operating Costs

Visibility of Storage

Data Protection

BACKUP

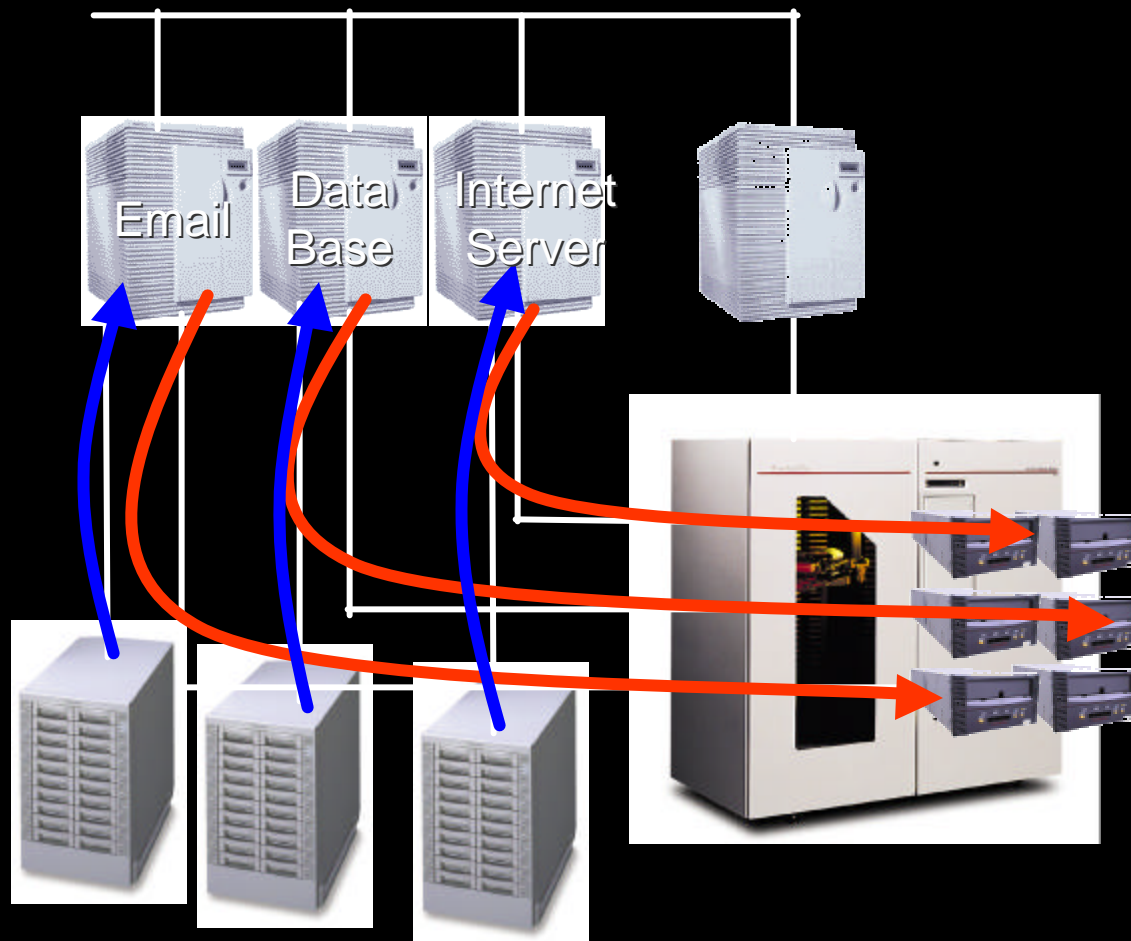
Network Backup Scheme



Characteristics

- **Performance**
 - Network
- **Operational Impact**
 - Client sees backup windows
 - Borrowed server bandwidth
- **Availability**
 - Pooled drives at network performance
- **Cost**
 - Lowest
- **Scale (as storage grows)**
 - Add bandwidth and drives
- **Distance**
 - Local

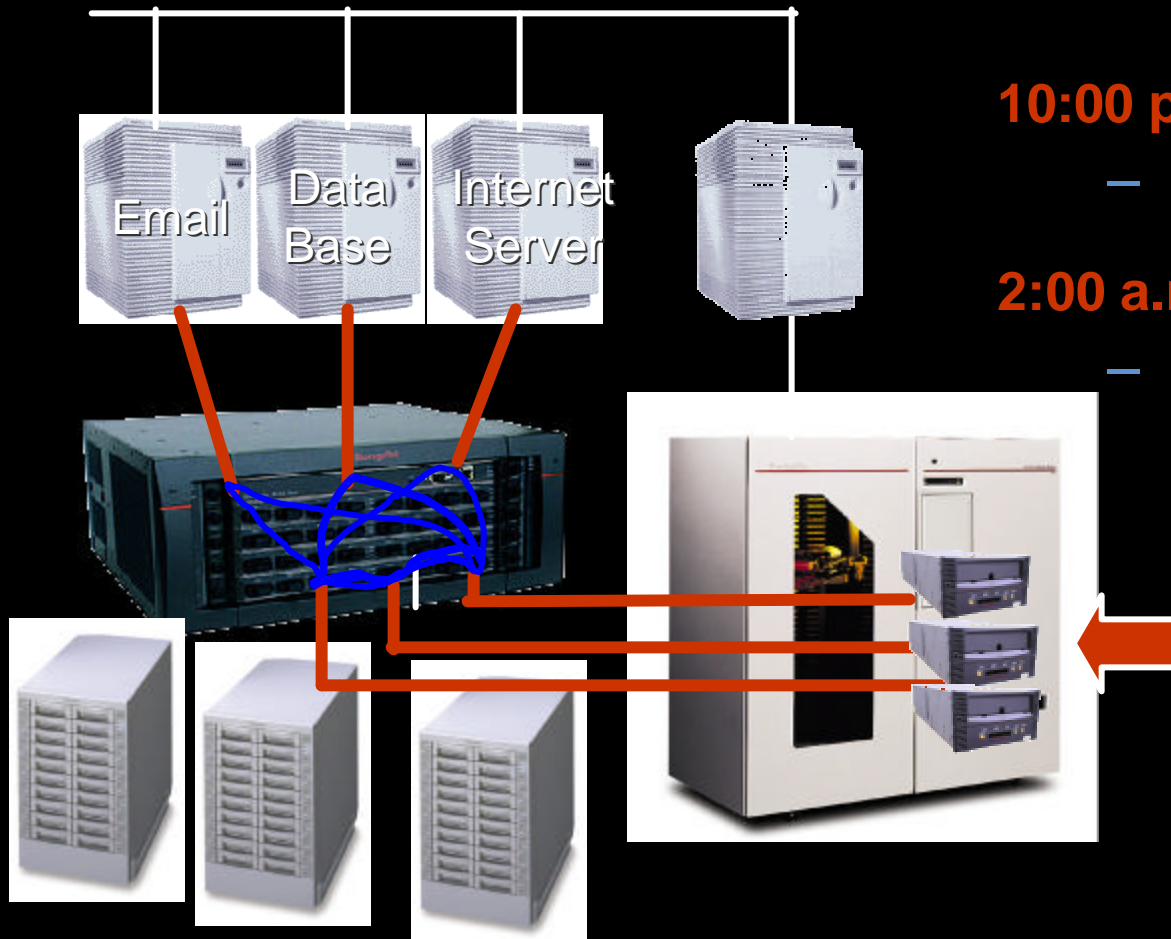
Dedicated Drive Scheme Benefits



Characteristics

- **Performance**
 - Parallel SCSI
- **Operational Impact**
 - Transparent backup windows
 - Borrowed server bandwidth
- **Availability**
 - Dedicated drives (minimum 2 per server)
- **Cost**
 - Highest
- **Scale (as storage grows)**
 - Add more drives per new or growing server
- **Distance**
 - Local

SAN: Pooled Tape



9:00 a.m.

- Backup marketing database with all tape assets

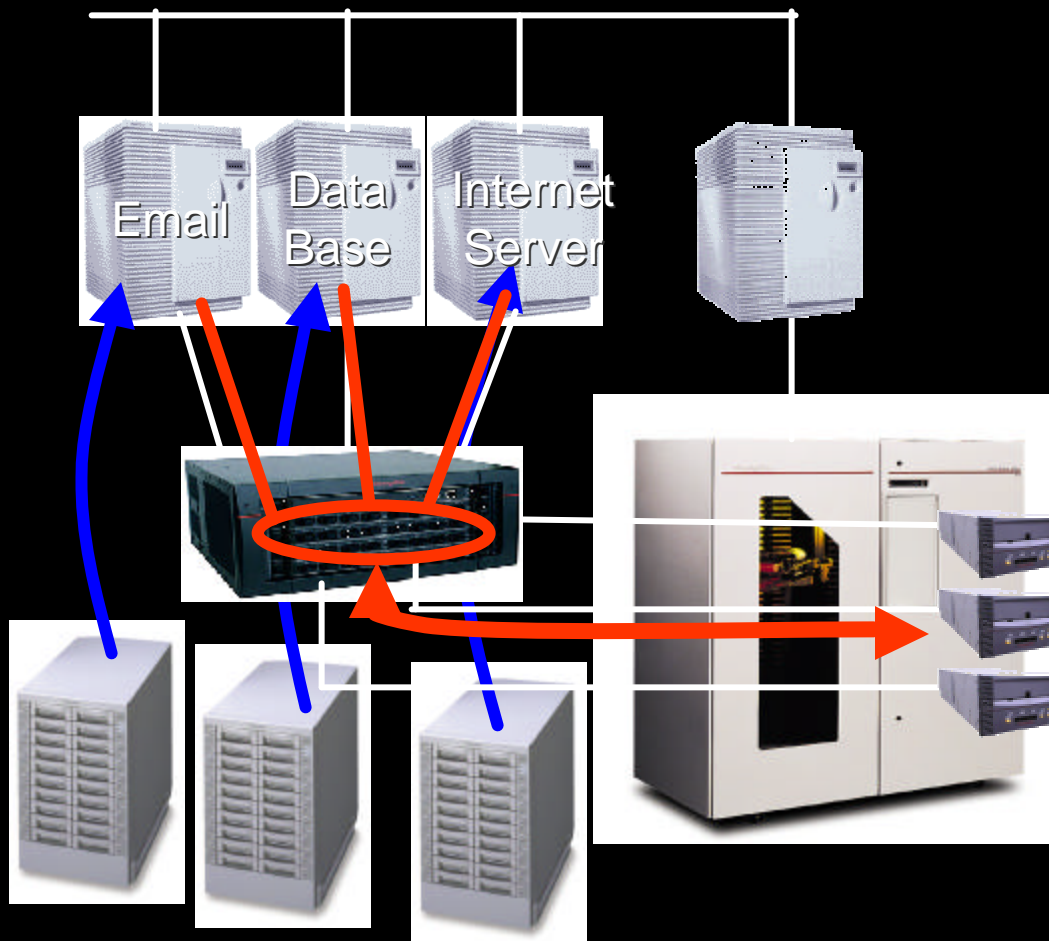
10:00 p.m.

- Backup email server with all tape assets

2:00 a.m.

- Backup Web server with all tape assets

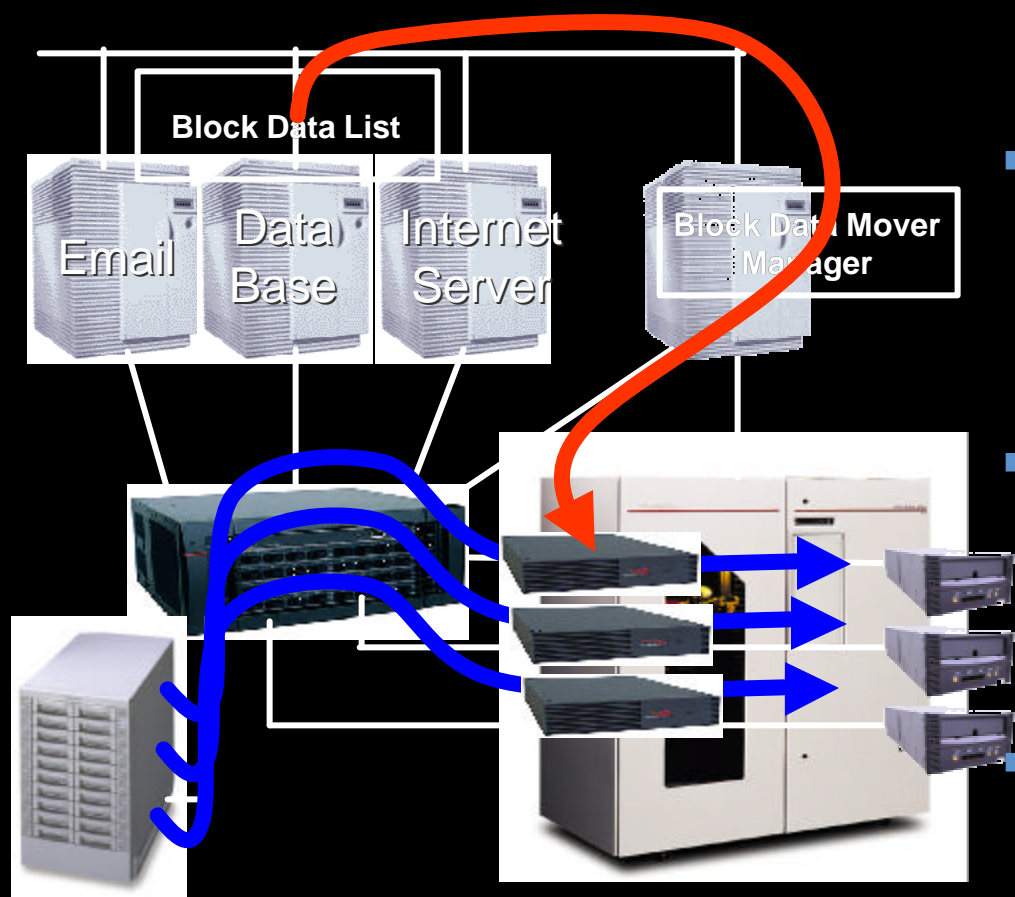
SAN: Pooled Tape Benefits



Characteristics

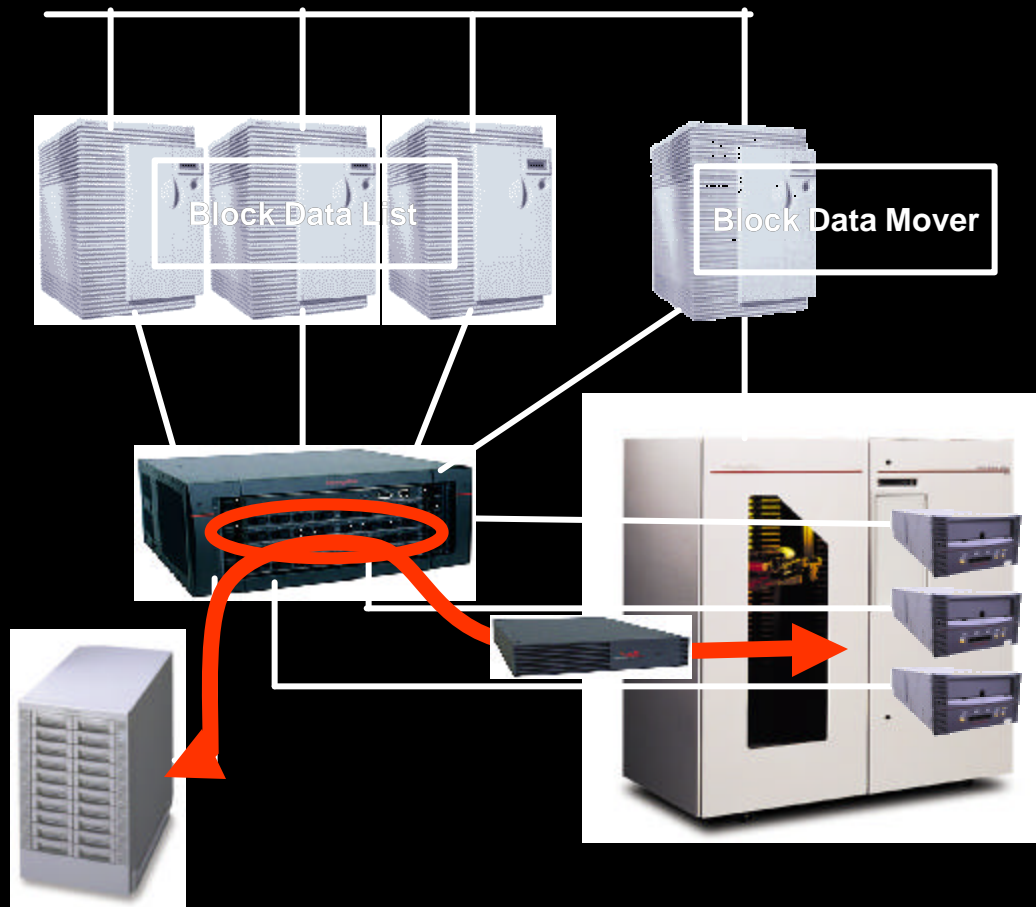
- **Performance**
 - Fibre
- **Operational Impact**
 - Client transparent backup windows
 - Borrowed server bandwidth
- **Availability**
 - Pooled drives at fibre performance
- **Cost**
 - Moderate
 - Justify fewer more robust drives
- **Scale** (as storage grows)
 - Add drives as performance dictates
- **Distance**
 - Fibre distances

SAN: HOSTfree Scheme



- **4:00 a.m.**
 - Changes to the marketing data base are sent to data mover
 - Drive and path are allocated
- **5:00 a.m.**
 - Backup begins
 - Changes to the Web server base are sent to data mover
 - Drive and path are allocated
 - Backup begins
- **6:00 a.m.**
 - Changes to the email server are sent to data mover
 - Drive and path are allocated
 - Backup begins
- **8:00 a.m.**
 - Summary report in administrators' morning email

SAN: HOSTfree Benefits



Characteristics

- **Performance**
 - Fibre
- **Operational Impact**
 - Transparent backup windows
 - Transparent to server
- **Availability**
 - Pooled drives at fibre performance
- **Cost**
 - Moderate
 - Justify fewer more robust drives
- **Scale** (as storage grows)
 - Add drives as performance dictates
- **Distance**
 - Fibre distances

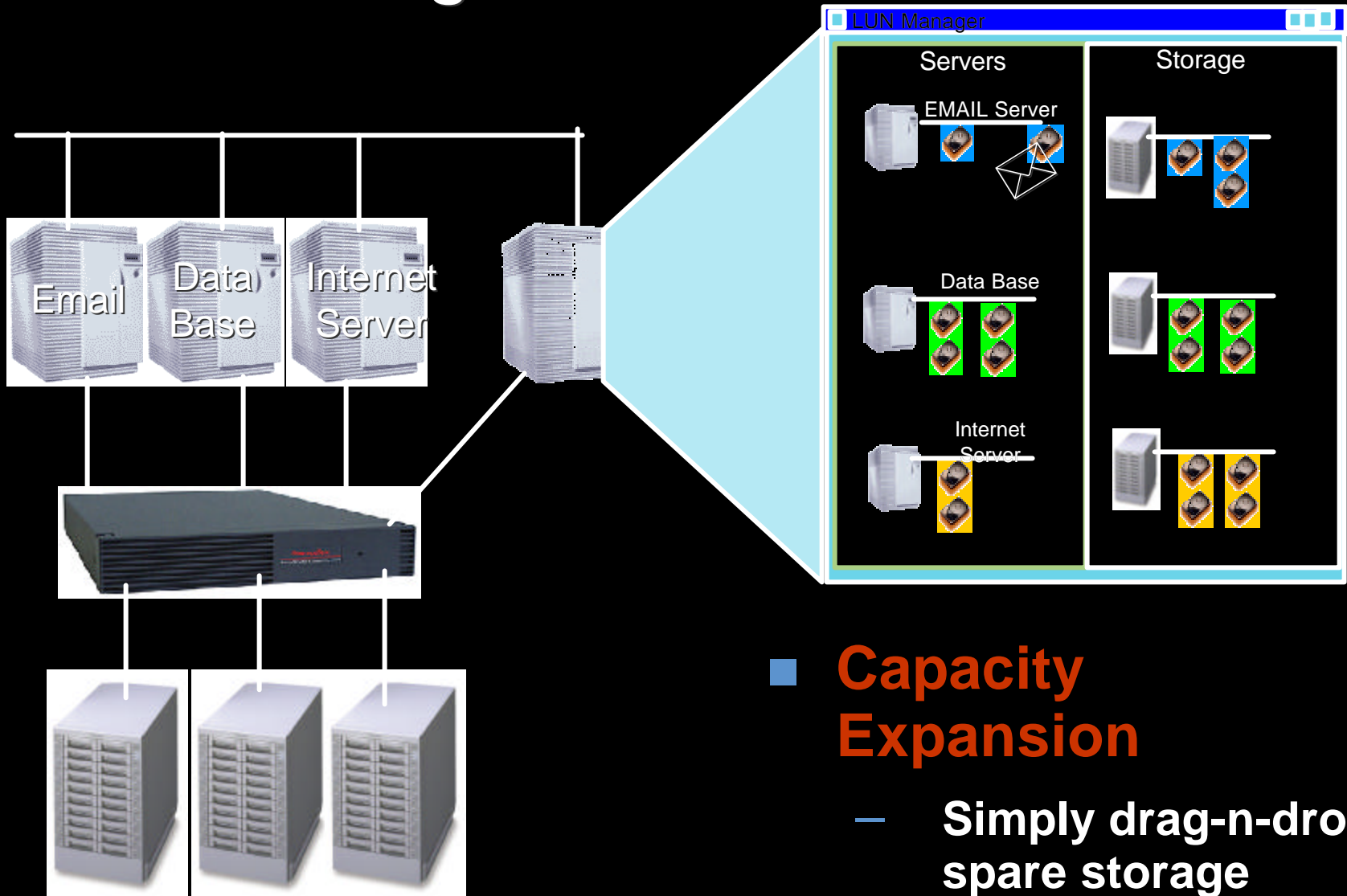
Managing Disk Growth

Adding Capacity



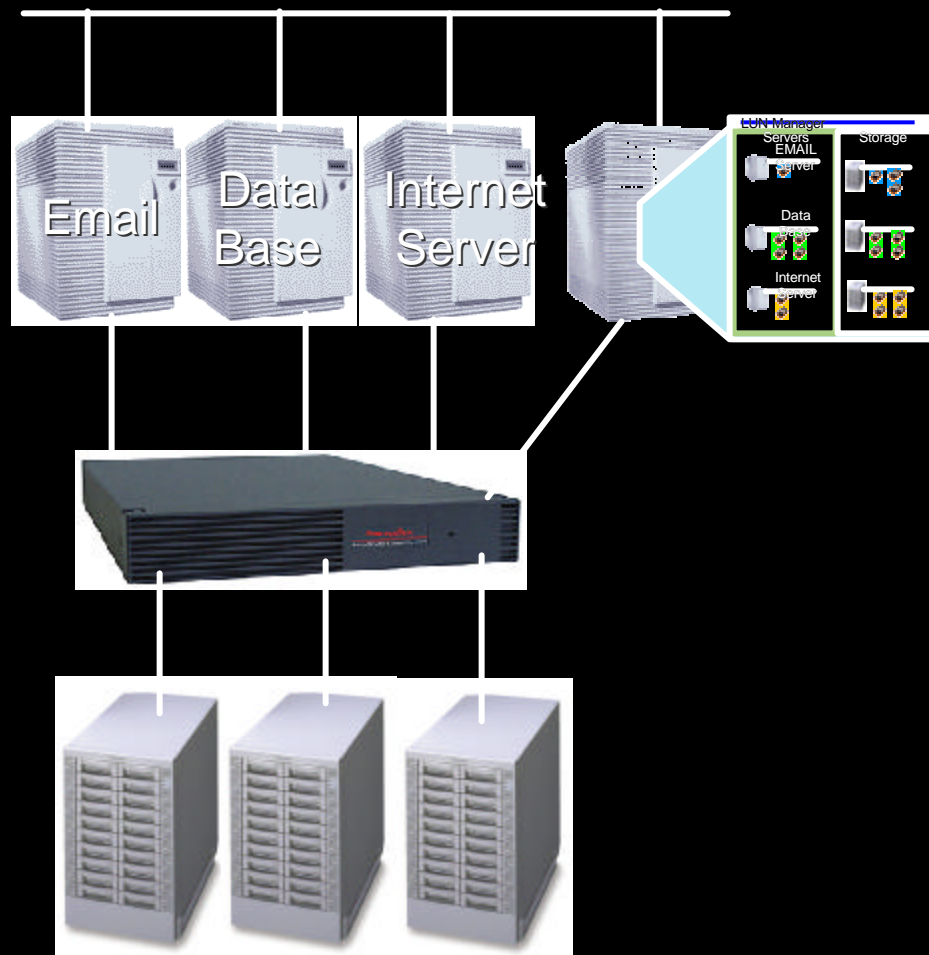
- **8:00 a.m.**
 - The email server is out of storage
 - The Internet server has a new array that was just installed....
- **8:30 a.m.**
 - Buy more disk and wait for it to arrive
 - Take the Web and email server down to move storage
- **9:00 a.m.**
 - CEO calls, he can't get to his email for the second time this quarter
- **9:10 a.m.**
 - CEO calls to schedule a meeting with the CIO to discuss business impact of downtime

SAN: Disk Pooling



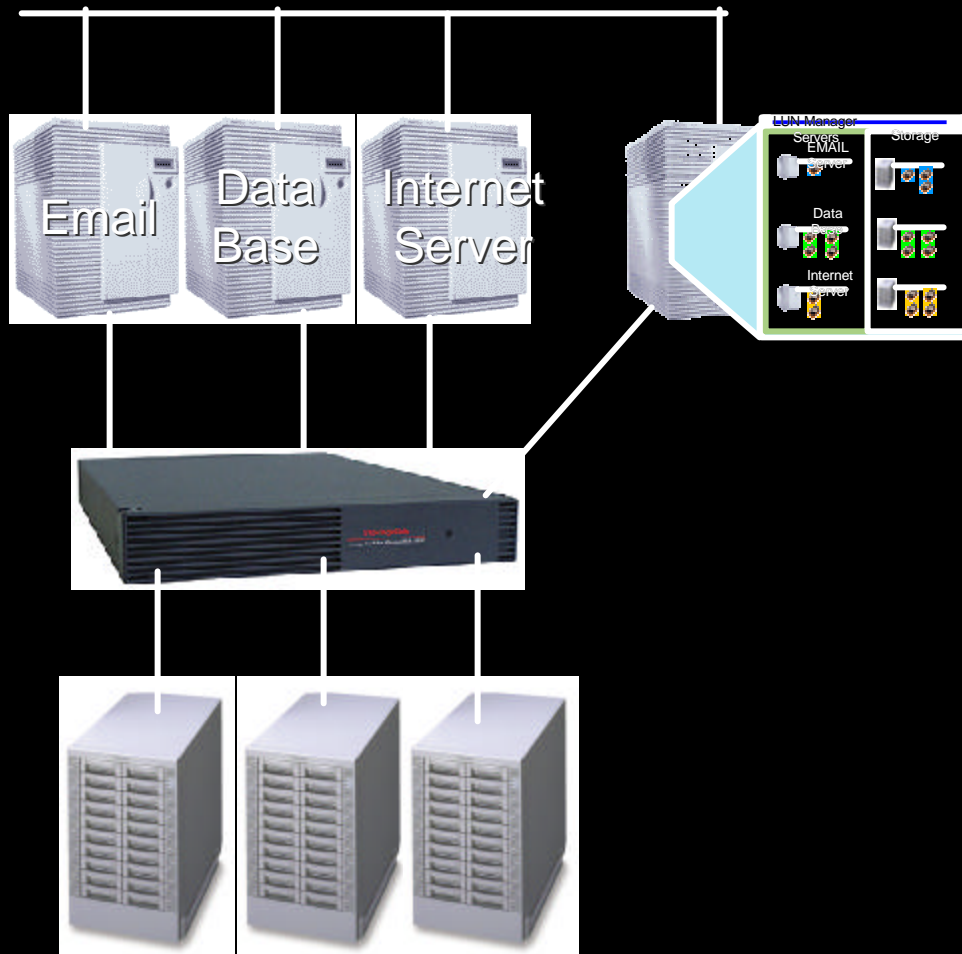
- **Capacity Expansion**
 - Simply drag-n-drop spare storage where you want it!

SAN: Disk Pooling



- **8:00 a.m.**
 - The email server is out of storage
- **8:30 a.m.**
 - Check the SAN for spare storage
 - Drag spare storage to email server
- **9:00 a.m.**
 - CEO calls and compliments you on restoring his email so quickly
- **9:10 a.m.**
 - CIO calls to acknowledge your foresight in installing a SAN

SAN: Disk Pooling Benefits



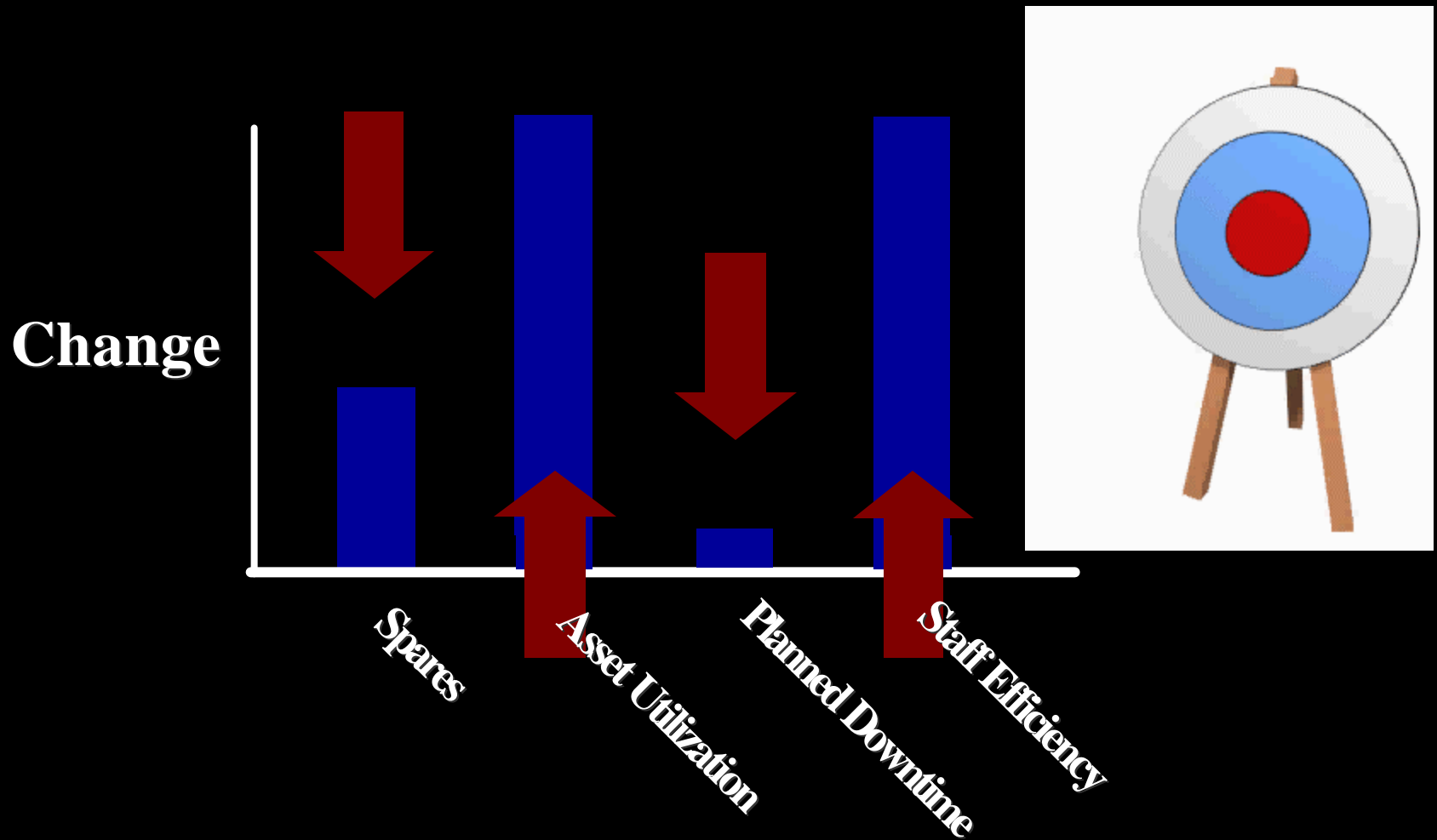
Characteristics

- **Performance**
 - Multiple path fibre
- **Operational Impact**
 - Hot configuration
- **Availability**
 - Pooled drives at fibre performance
- **Cost**
 - Lowest TCMS
 - Justify fewer more robust disk subsystems
- **Scale** (as storage grows)
 - Add drives as performance and capacity dictates
- **Distance**
 - Fibre distances

SAN Futures: Integrated Pooling



Measure the Advantage

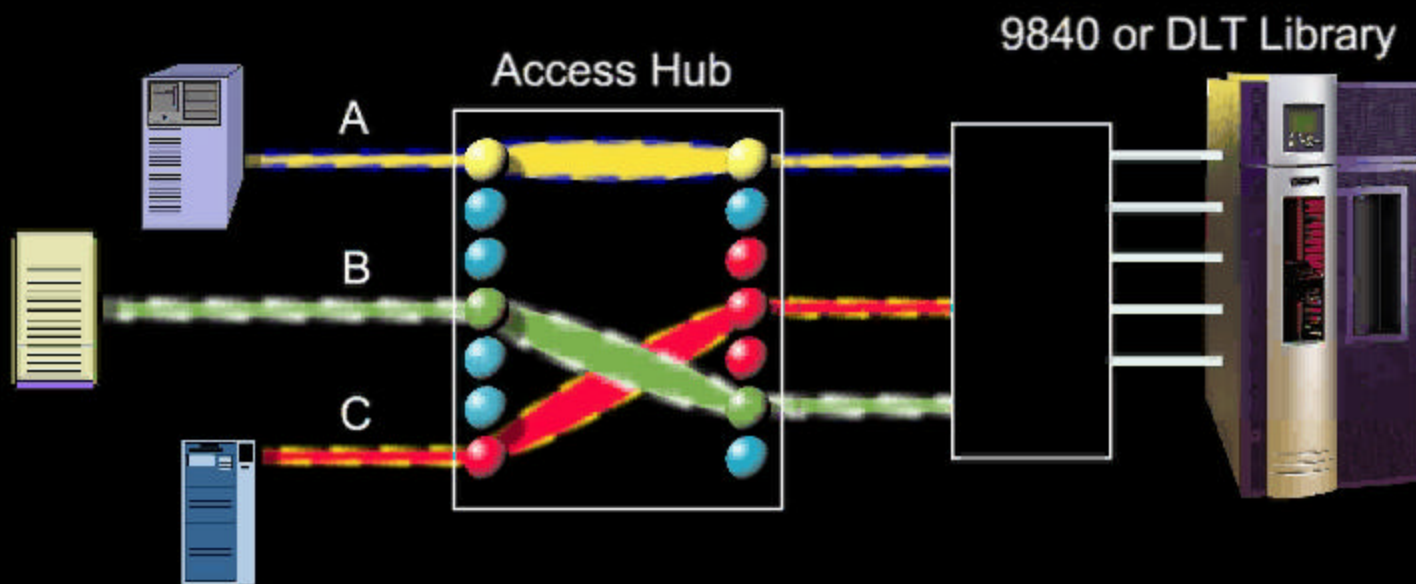


An Emerging Opportunity and Strength!

■ SANs

- Over 600 named customers
 - ◆ Many more sites
- Over 50,000 ports installed
- Brocade's 6th Largest Customer and Growing
- A New Second Generation (SN6000)
 - ◆ CeBIT 2000
 - ◆ A perfect controller for Switched SAN environments allowing users to share and manage common resources

LANfree™ Backup

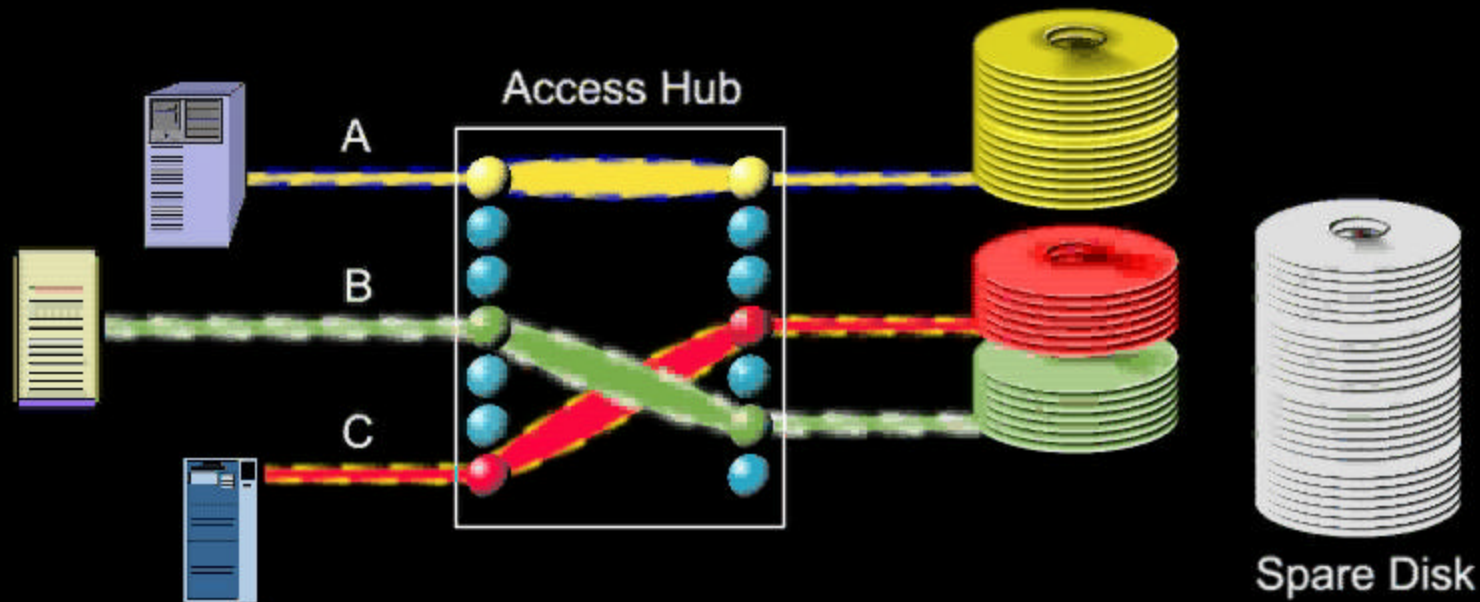


Freeing businesses from the impact of backup

Dynamic allocation of storage devices (e.g. tape) to multiple servers

Leverage multiple tape drives to each server to reduce your backup window

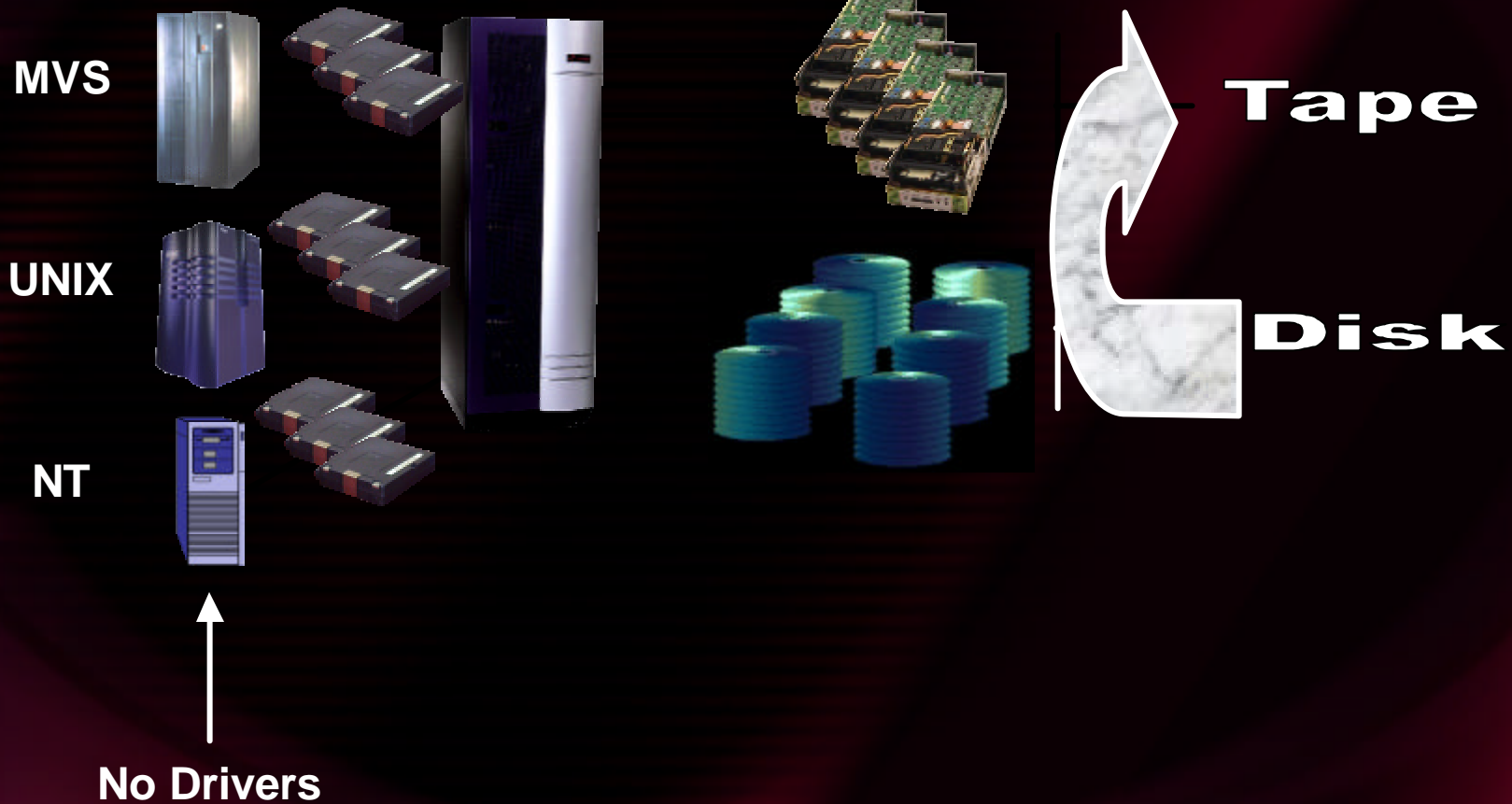
Disk On Demand



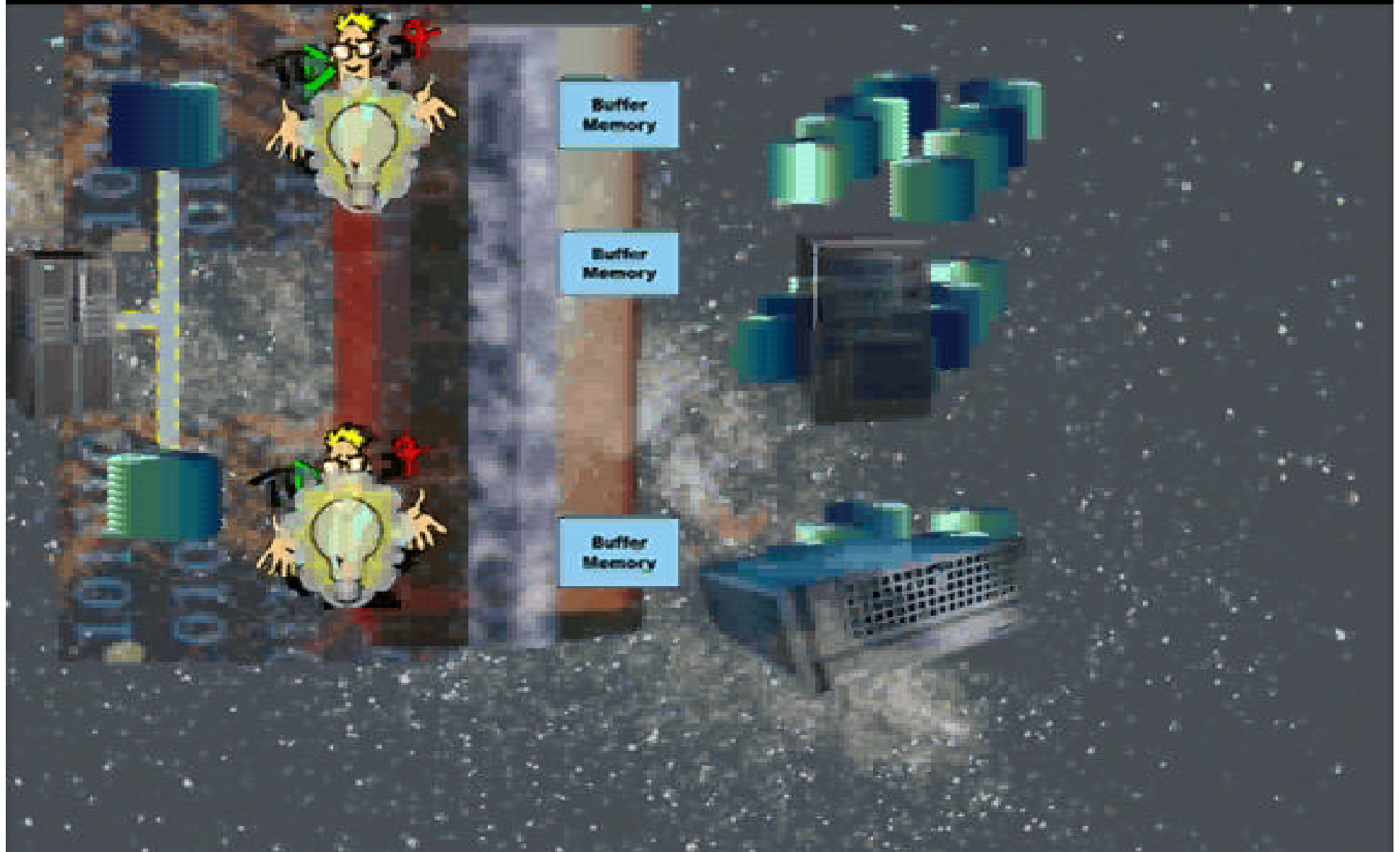
Freeing businesses from downtime
Dynamic expansion of disk capacity for UNIX & NT
Clustering & Fail-Over to maximize uptime
Share the spare disk capacity to reduce costs

SN6000 Foundation

Virtual Storage Pools



SN6000 Disk Operations



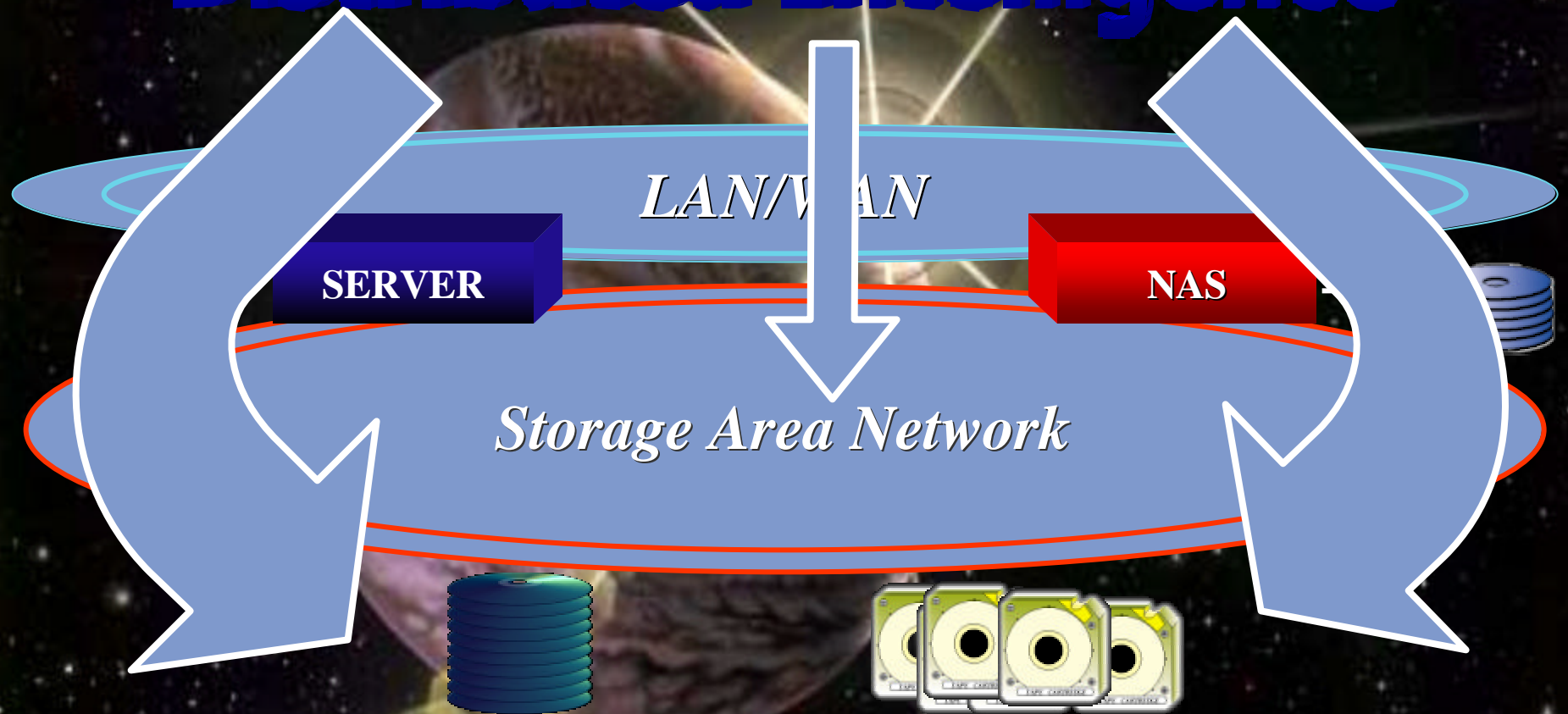


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Information-Centric View

Distributed Intelligence



Summary

- **The new millennium is ushering in the New Information Age**
- **Internet and e-commerce changes the business paradigm**
- **A full hierarchy of virtualized storage and networks will be the foundation that e-commerce is built on**
- **StorageTek is helping you to make information powerful**



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