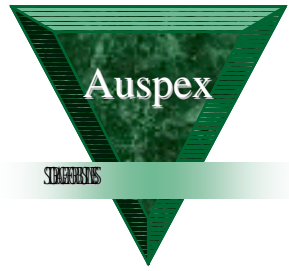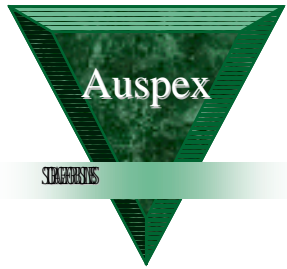# NAS/SAN Integration

Eighth NASA/Goddard Space Flight Center

Conference on Mass Storage Systems and Technology

March 30, 2000
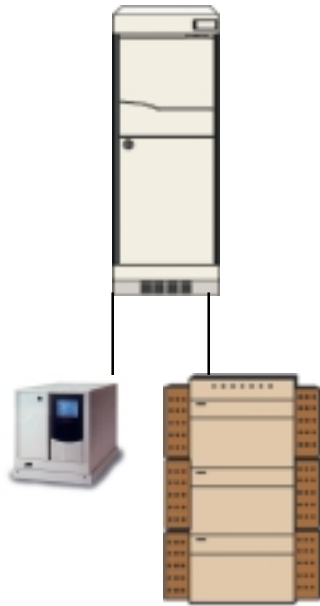
Agenda

▼ Introduction

▼ The types and roles of storage

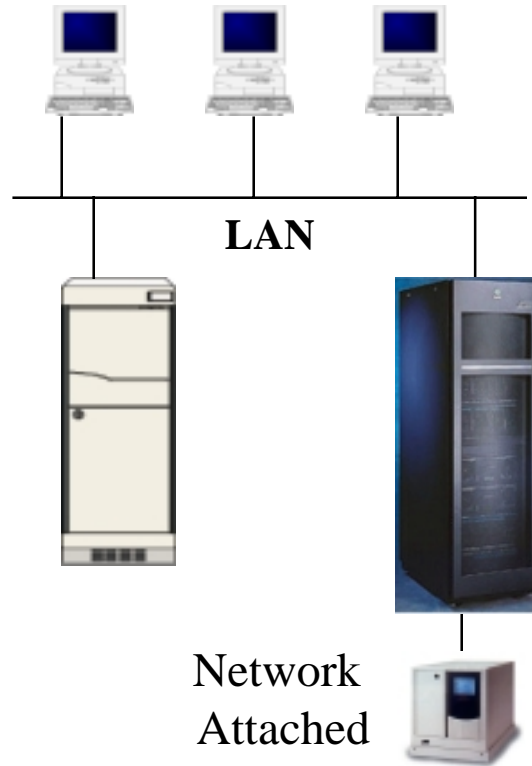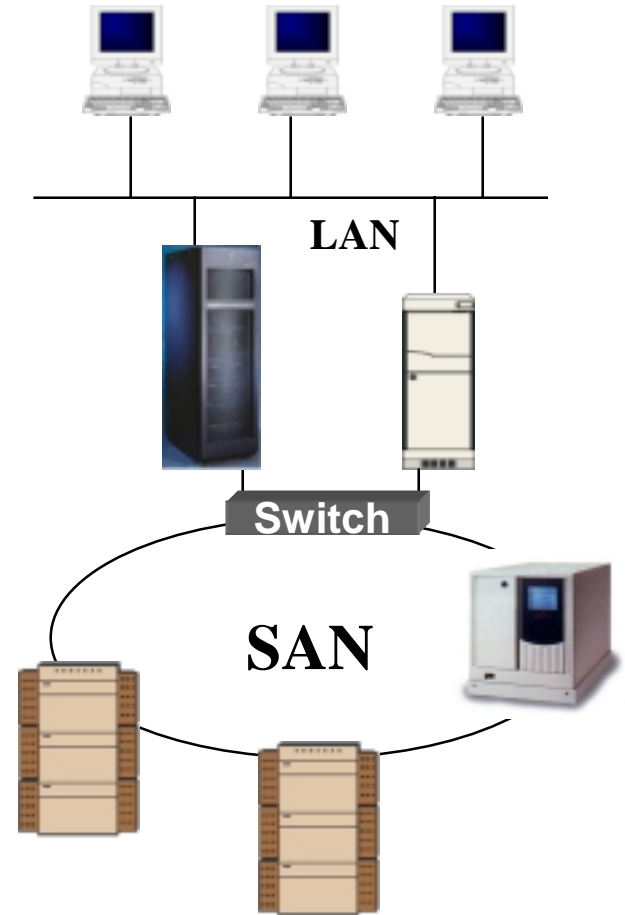▼ Integrating storage as a business advantage

▼ Conclusion

Types of Storage

Auspex

SYSTEMS

LAN

LAN

Switch
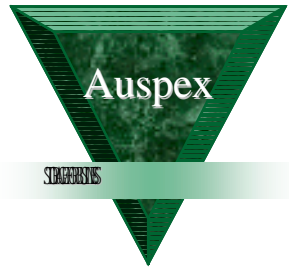
SAN

Direct
Attached
Storage

Network
Attached
Storage

SAN Attached Storage

DAS

NAS

SAS

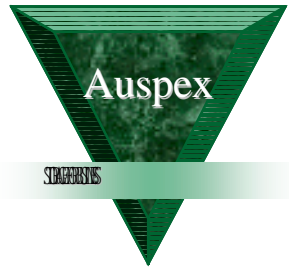# Best fits for storage

▼ **DAS**

– Low initial cost for <u>local</u> storage & applications

▼ **NAS**

– Storage <u>consolidation</u> of UNIX and NT files

– Client access of <u>large files</u>, even on the <u>internet</u>

▼ **SAS**
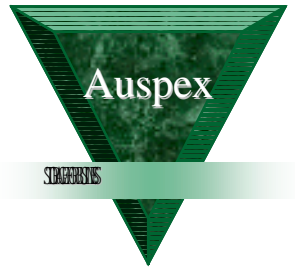
– High volume <u>movement</u> of data off the LAN

Storage is your business

▼ Holds the crown jewels
  – Intellectual property
  – Customer information

▼ Revenue generating center

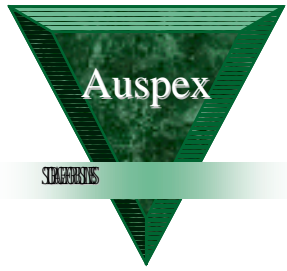▼ Disaster prevention

▼ Replication of data to remote locations

Benefits of NAS today

▼ Storage consolidation

▼ True data sharing for UNIX and NT

▼ Scalability and connectivity

▼ Reduced management costs

▼ Increased productivity

▼ Reduce risk

▼ Cut time to market
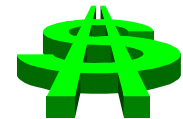
Auspex NAS is the intelligent gateway to the SAN

Data replication/protection with Auspex TurboCopy

Austin

Chicago

Preferred TCP/IP network connection between IO Nodes

Copy whole file systems, directories, files, or "Snapshots" of live file systems

Primary Server Location A
~~~~~~~~~~
Secondary File System for Location B

Primary Server Location B
~~~~~~~~~~
Secondary File System for Location A
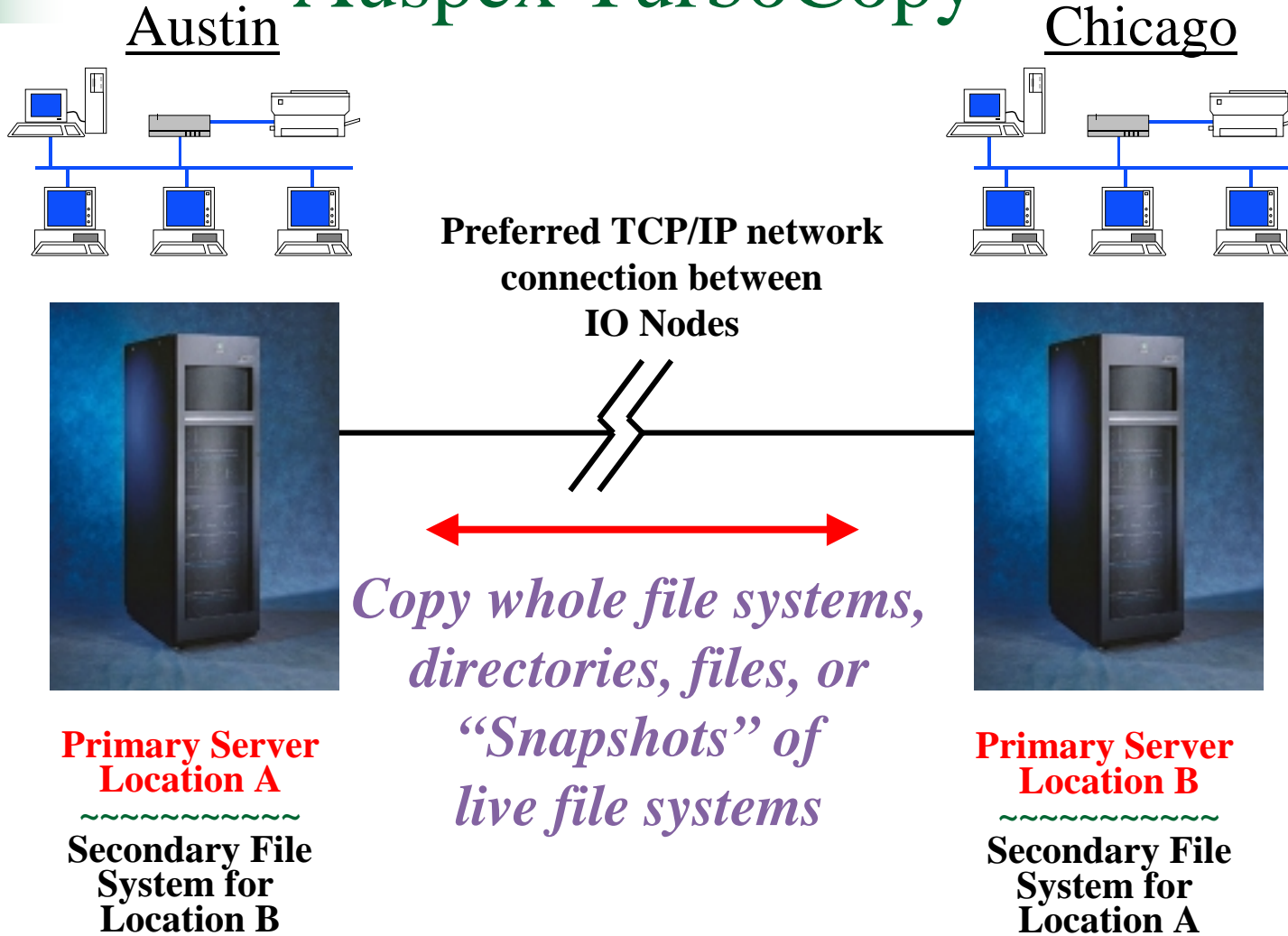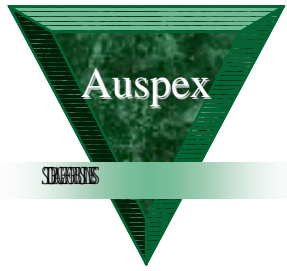
Remote Data Replication

▼ Reduce data loss with remote replicas

▼ Effective e-Business content distribution

▼ Increase decision support capability

▼ Reach new markets faster

▼ Use data resources better

Present: Islands of SAN

Future: The "Intelligent Gateway"
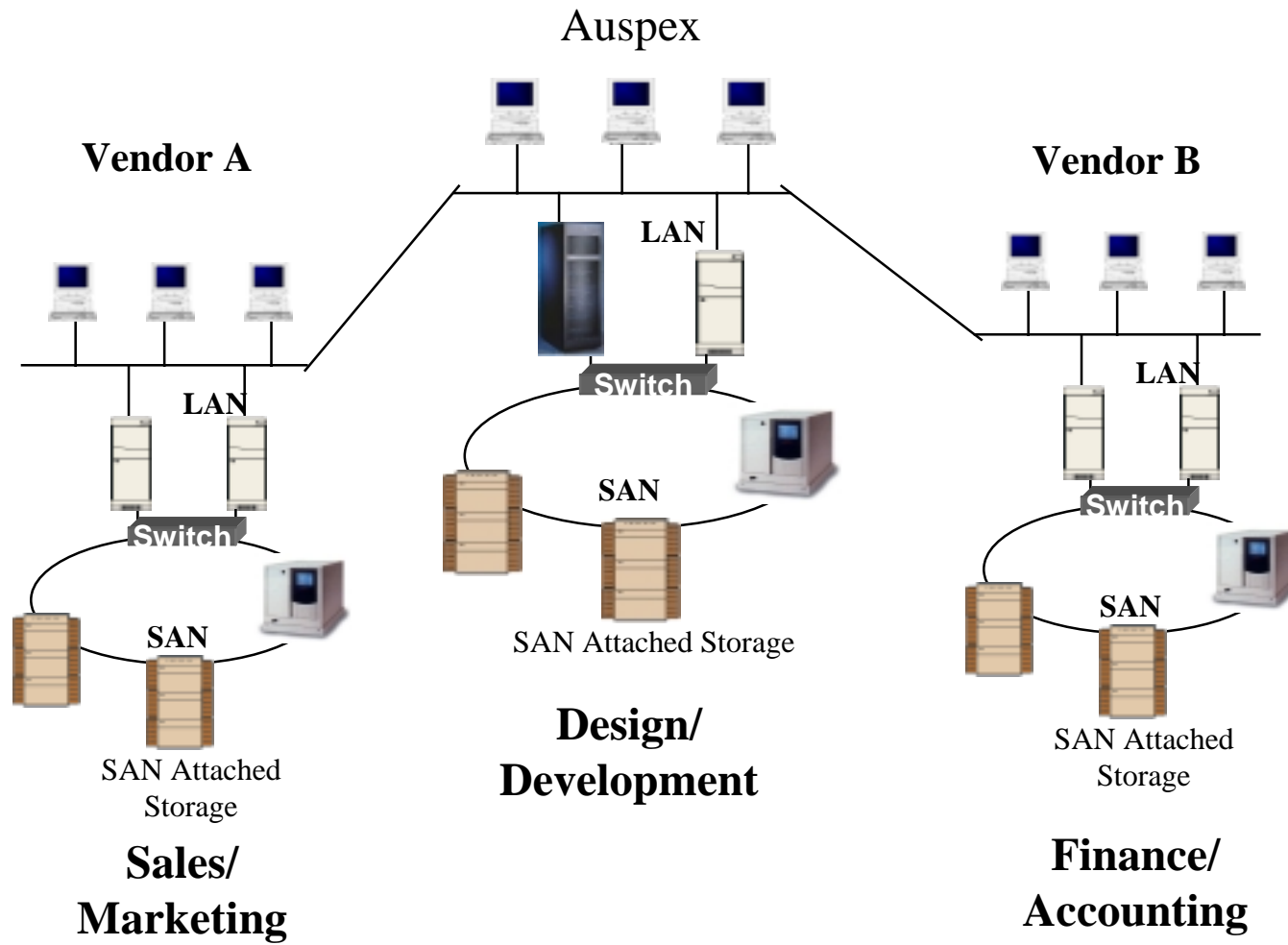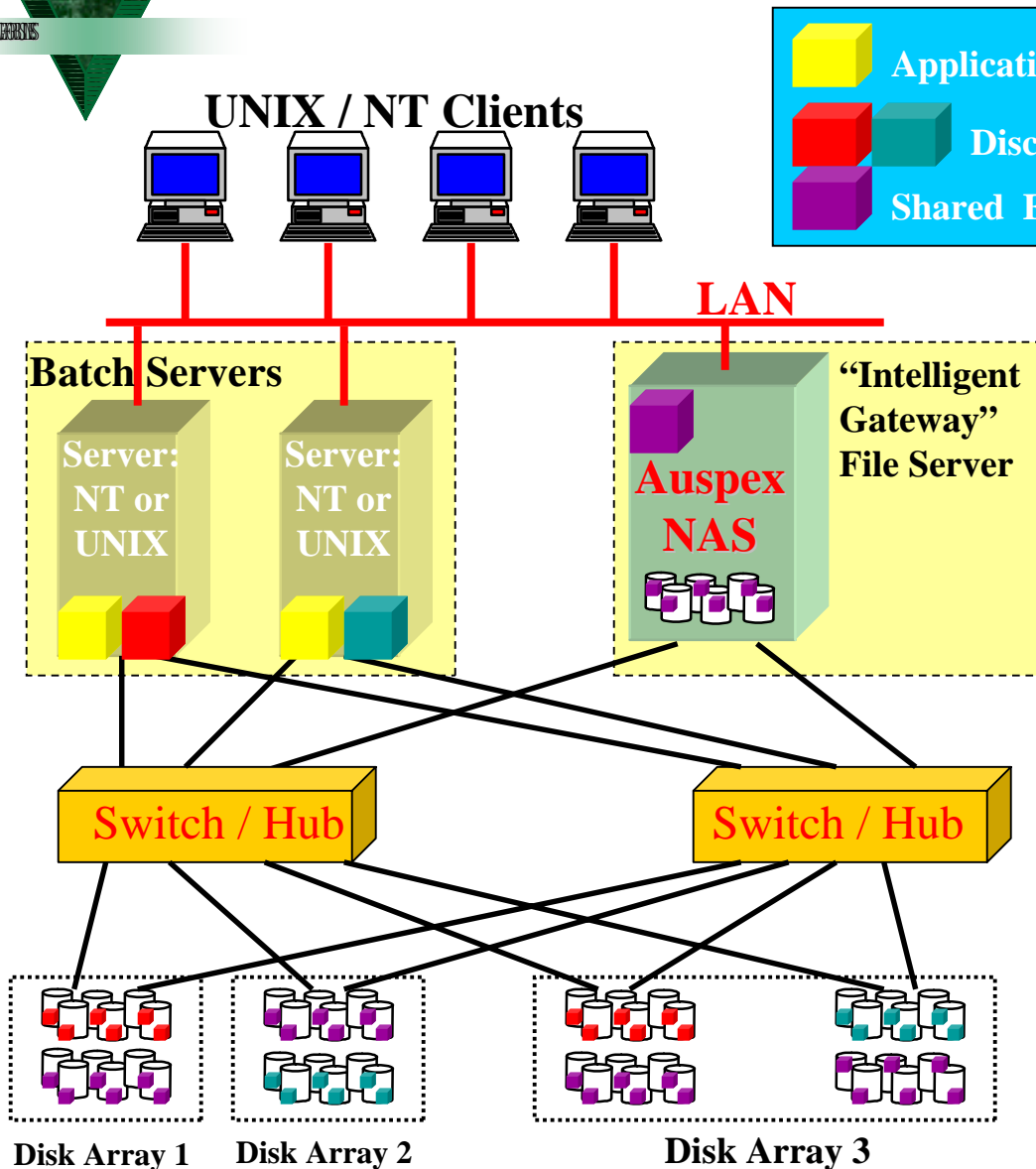
Auspex

UNIX / NT Clients

LAN

Application code	
Discrete File Systems	
Shared File System	

Batch Servers

Server: NT or UNIX

Server: NT or UNIX

"Intelligent Gateway" File Server

Auspex NAS

Switch / Hub

Switch / Hub

Disk Array 1   Disk Array 2   Disk Array 3

BENEFITS

- **Same as NAS PLUS…**

- **Application Response Time**: Speeds data delivery to clients

- **Offloads Servers**: Performs file serving of SAN data to LAN. Extends server investment and speeds application execution

- **Resource Utilization**: Utilizes SAN storage pool, delivers SAN backup resources to the network
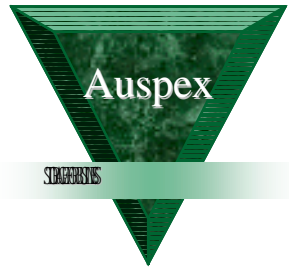
Benefits of SAN

The Current Benefits of SAN

▼ Performance improvements on the LAN

▼ LAN-free, Serverless backup - the "Killer App"

▼ Larger networks over larger distances

The Future Benefits of SAN

▼ Shared storage pools

– Assign storage where needed

▼ Multi-vendor interoperability

– Switches, storage, management utilities

Conclusion

▼ Storage in a corporate environment is a powerful tool for corporate competitiveness

▼ NAS provides several advantages for storage consolidation, increased productivity, and cost reduction