Storage networking and NFS

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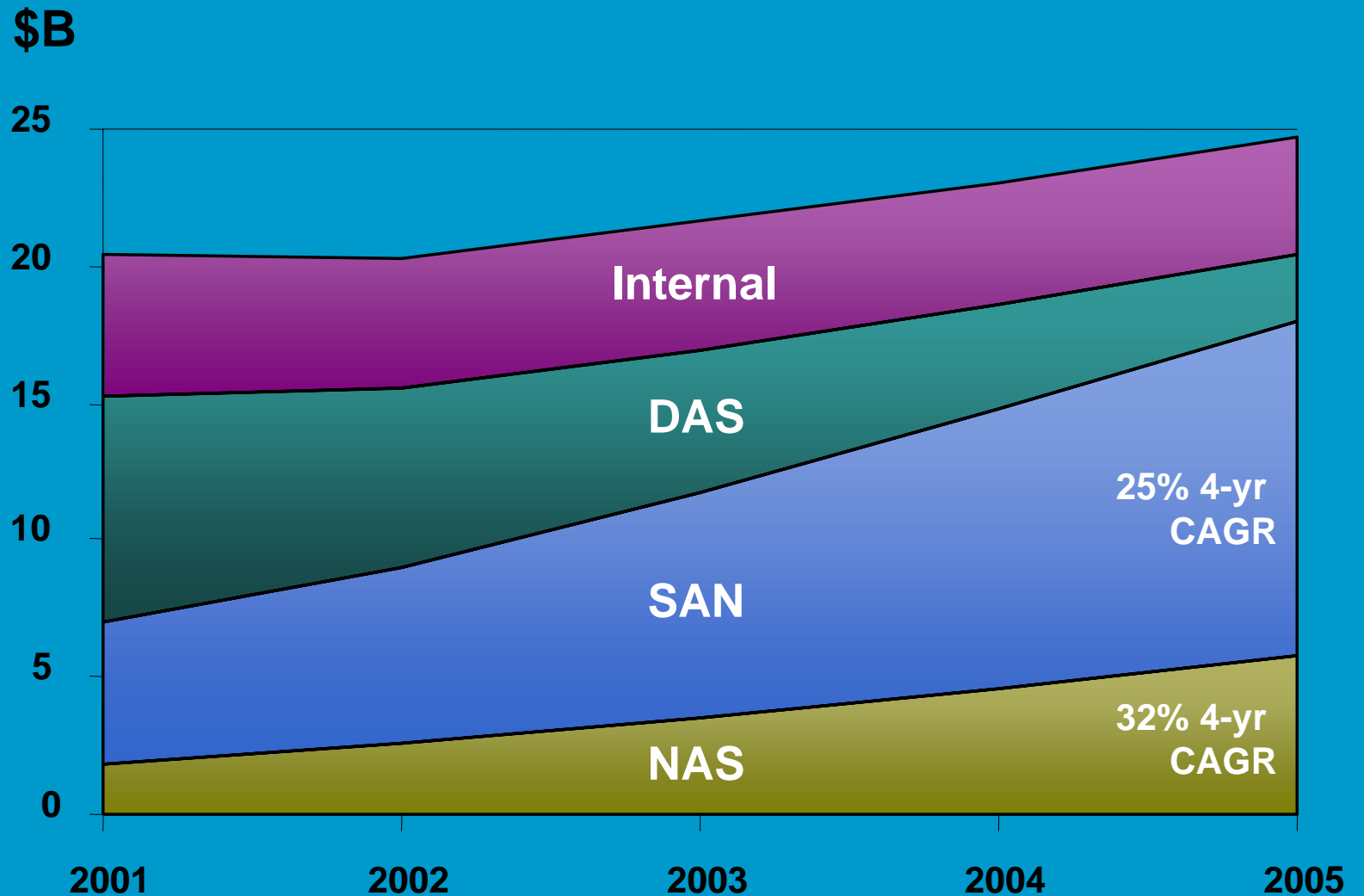
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Storage networking choices

- Broad division of blocks and files

- Application platforms drive default choices

- Technology trends emerging to upset current approaches to deployment

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Open Systems Storage Forecast

Source: IDC, 2002

Fabric Attached Storage

Exchange 2000

Exchange 5.5

Home Dirs

SW Dev

E-mail

Database

Web Farm

Must be SAN

Either SAN or NAS

Must be NAS

FAS Topology

Enterprise SAN · Enterprise NAS · Departmental NAS

iSCSI

Fibre Channel

Dedicated Ethernet

Corporate LAN

SAN (Block)

NetApp® FAS

NAS (File)
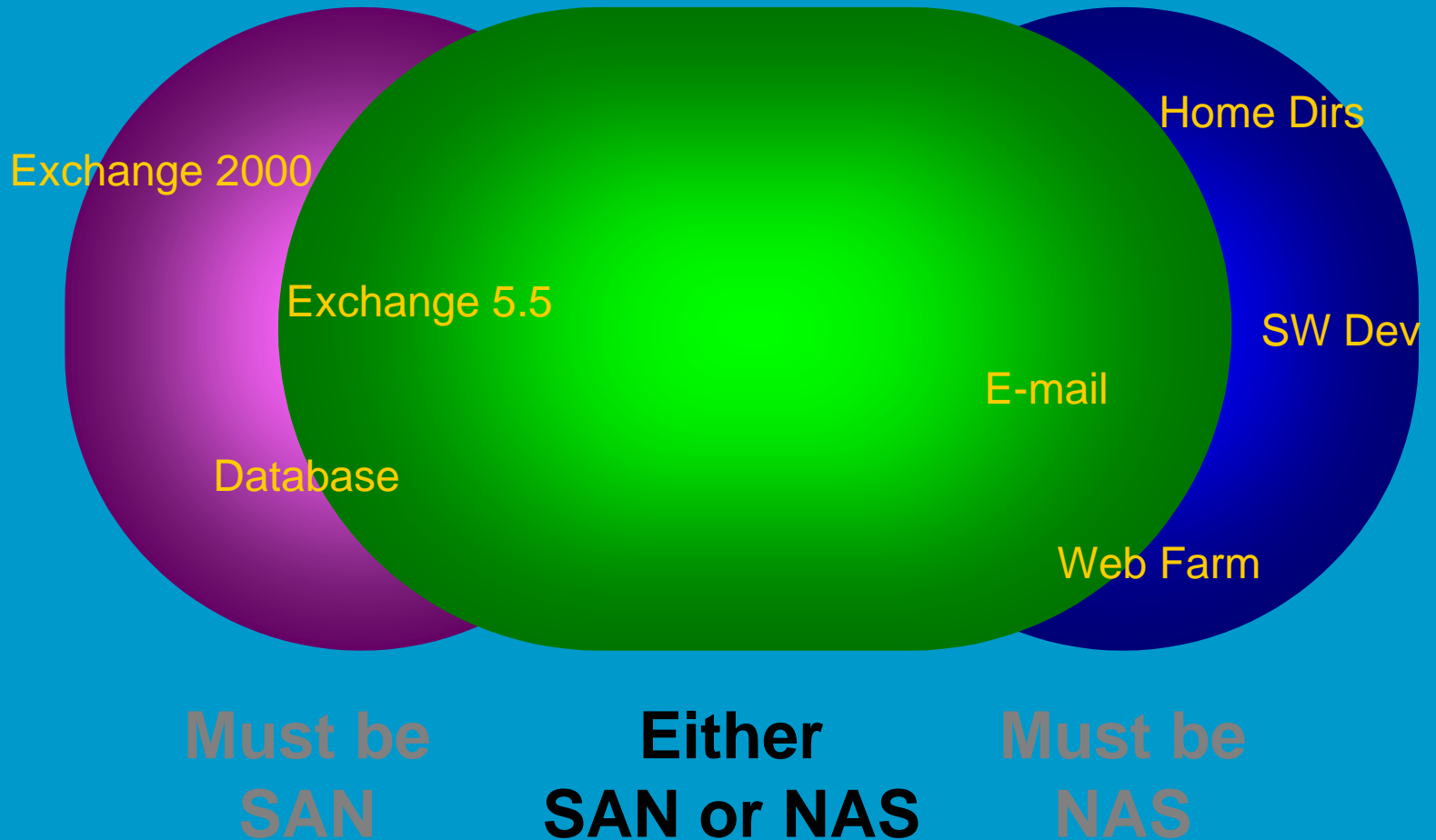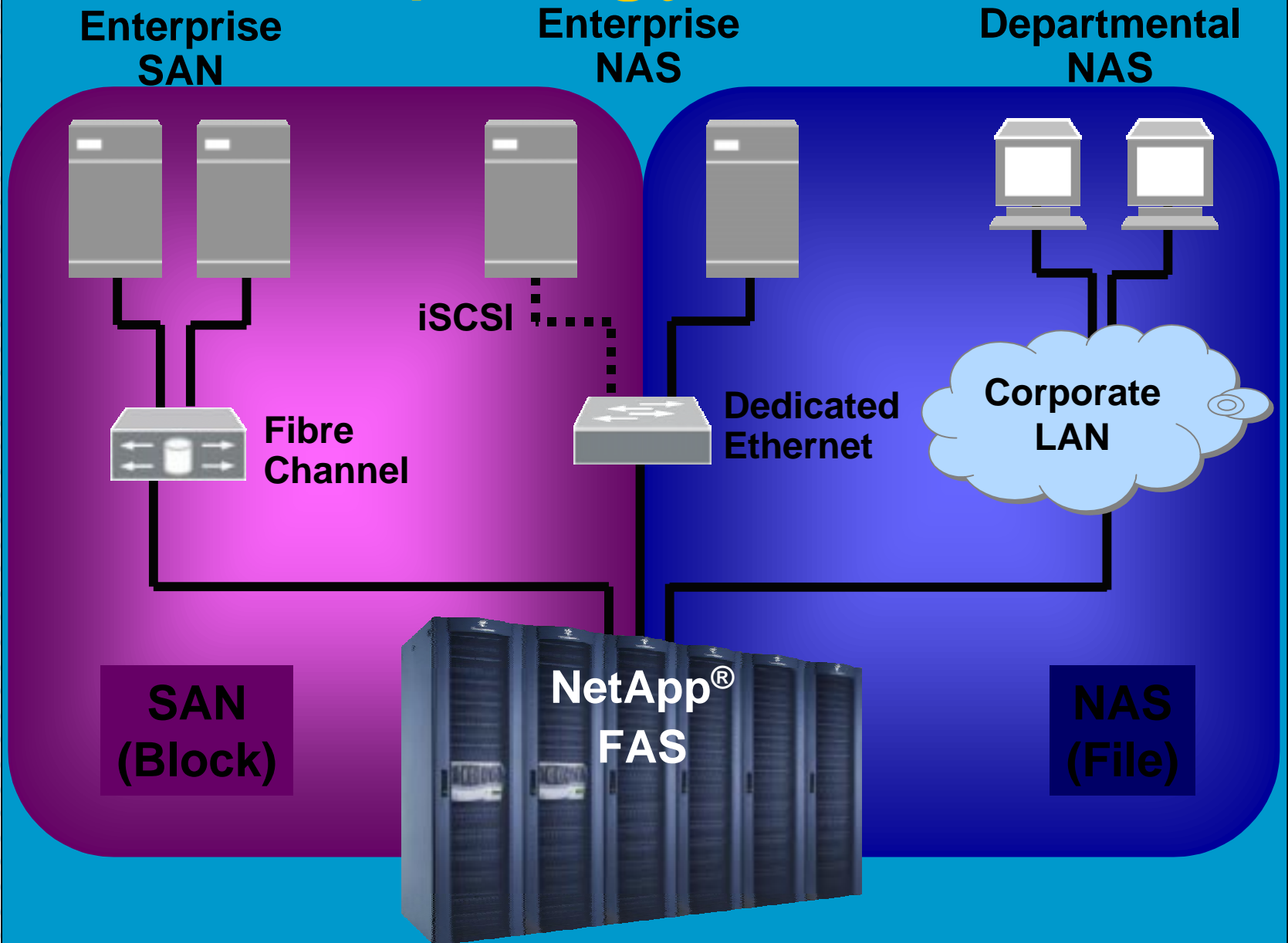
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NFS play

- Scalable services

- Traditional home directories

- Lower TCO because of TCP/IP

- Database deployments and encroachment in enterprise apps

Wrenches and wildcards

- Cost

- Customer perception of NAS, acceptance of SAN (actually SCSI)

- Emergence of iSCSI providing lower TCO for blocks (the selling point for NAS)

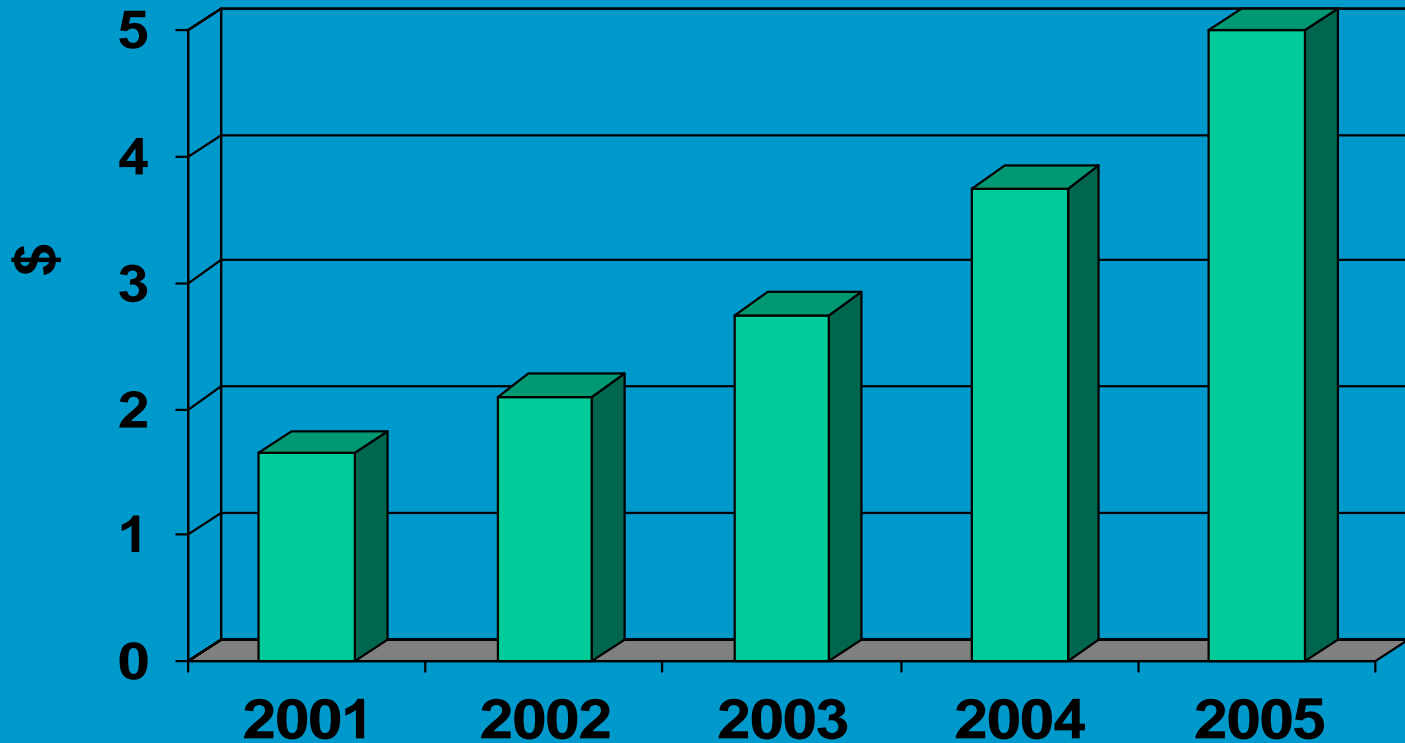- RDMA emergence and technologies like DAFS

Restore Market

Disk storage used for backup

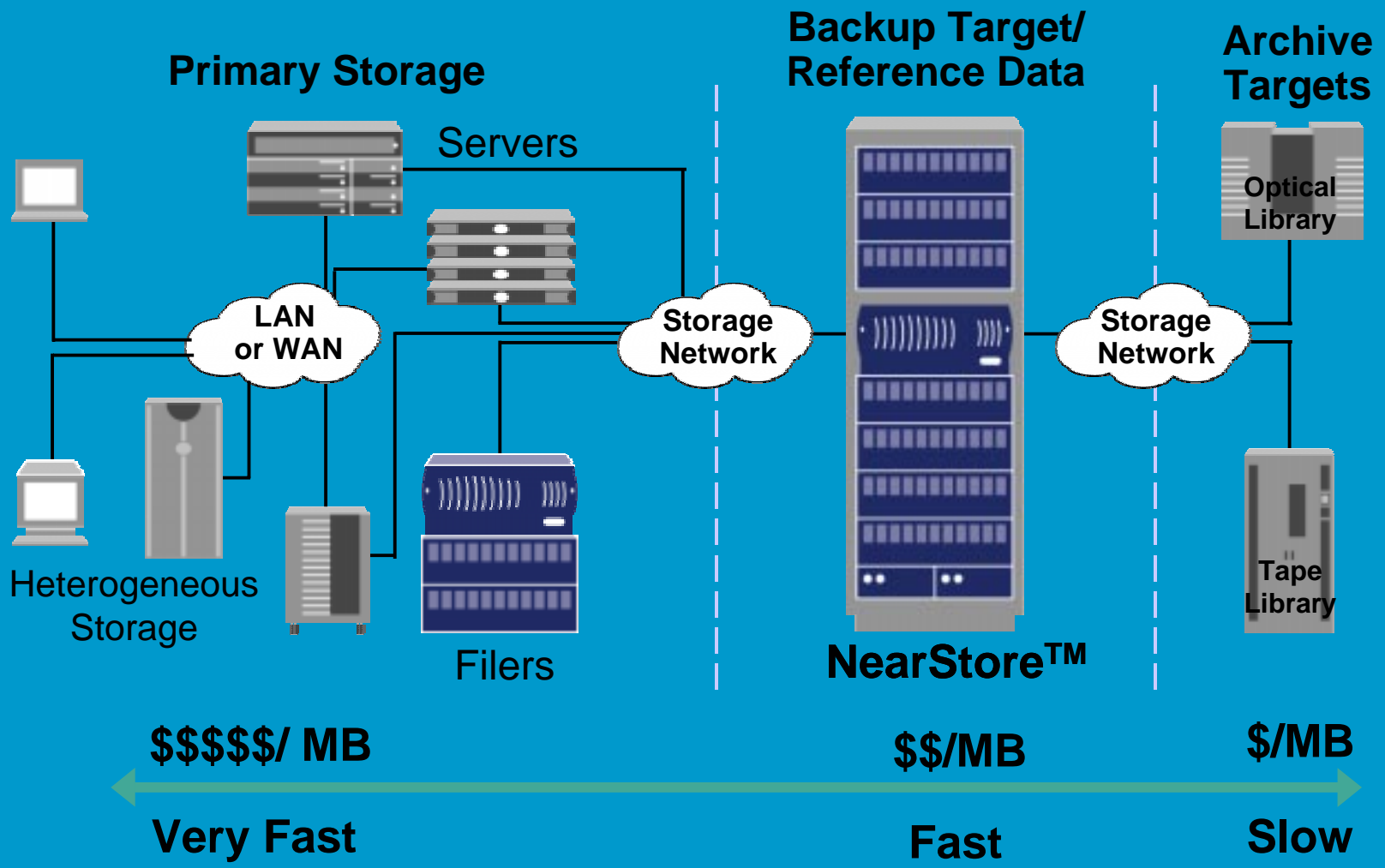**Source: Strategic Research, April 2002**

Economics

- Acceptable downtime is application dependent

- Simplest – but most costly - approach is full mirror online

- Damn those ATA drives are cheap

Emerging Storage Hierarchy

Primary Storage

Servers

LAN or WAN

Heterogeneous Storage

Filers

Backup Target/ Reference Data

Storage Network

Storage Network

NearStore™

Archive Targets

Optical Library

Tape Library

$$$$$/ MB

$$/MB

$/MB

Very Fast

Fast

Slow

Where does NFS Version 4 fit in all of this?

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NFS Version 4 obstacles

- Customer perception is primary obstacle to further deployment

- Vendor investment in high performance, high reliability NFS is inadequate

- NFS manageability is wanting (say AFS – but don't leap far)

- Repeat of implementation problems?

Investment in NAS

TPC-C submissions:

Bull
Dell
Fujitsu
Fujitsu Siemens
HP
IBM
NEC
Network Appliance
Sun
Unisys

The only NAS result - DAFS

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DAFS is the highest performance NAS sol'n available today.

NFS Version 4 introduction will not change this.

Management

- Storage hierarchy not completely solved in initial work

- Common global naming not defined by protocol

- Integration with data recovery tools lagging

NFS Version 4 promise

- Ubiquitous secure, scalable NAS

- Strong open standard, defined process for managed evolution

- Traction in implementations, investment in open source references

- Industry and research investment to ensure feature delivery

Questions