

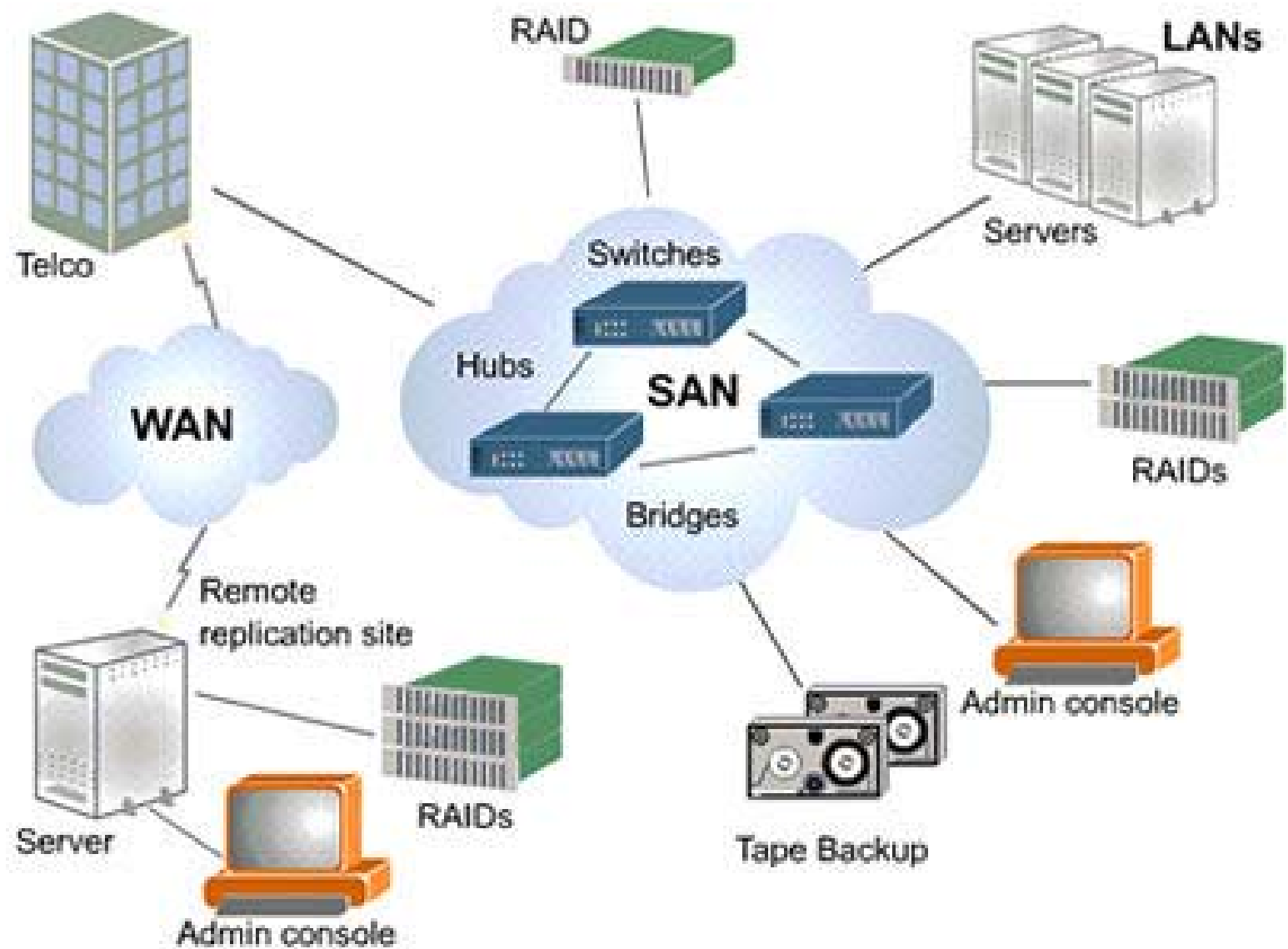


Introduction to **SAN**

by
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What is a SAN?

A SAN is defined as a dedicated Fibre Channel network of interconnected storage and servers that offers any-to-any communication between these devices and allows multiple servers to access the same storage device independently. It is often characterized by its high interconnection data rates (Gigabits / sec) between member storage peripherals and by its highly scalable architecture.



Why SAN?

Through a network of storage devices in a SAN, large numbers of Users can simultaneously access storage subsystems through multiple Redundant paths. This architecture offloads the data transfer bandwidth Between storage systems from the LAN and servers.

Today's storage requirements include:

- The ability to support a wide array of operating systems, platforms, Connections and storage architectures
- Universal data access
- Seamless scalability
- centralized administration for increased performance and uptime

Reasons for moving to SAN

1. eBusiness

eBusiness is changing the face of the data center. This dramatic shift towards information-centric business operations is forcing a restructuring of the static model of recent years to a hyper-dynamic, flexible data center superstructure that can shift rapidly to meet the needs of today's internet-driven organizations.

SANs will play an important role in this new model as the need to access increasing volumes of stored information becomes more and more crucial to the survival of any organization.

Reasons for moving to SAN

2. The Data Explosion

Due partially to the fact that electronic information shared in today's eBusiness environment is now rich with graphics, audio and video, the amount of information stored in a data center may double or triple a single year, with total capacity exceeding hundreds of Terabytes as a result, the total cost of managing all that data is growing exponentially as server-attached storage often exceeds the cost of the server itself, and management costs increase the total cost of ownership up to seven times the procurement costs.

Most challenging of all, executives, customers, business partners, and internal users expect virtually “24 by forever” access to information.

Reasons for moving to SAN

3. SANs at the Core of the eBusiness Revolution

This shift towards eBusiness is already forcing a revolution in data center operations in which storage area networking (SAN) will play a large role. The traditional data center typified by most Global 100 companies has been viewed as something of a “glass house”, housing large mainframe class computers with stable and carefully managed infrastructure to serve internal corporate users.

However, the new internet-driven data center, and particularly storage systems, is being designed to accommodate the rapid change necessary to keep pace with eBusiness growth. The SAN is becoming a key component of this new data center.

SANs promise to bring mainframe-class storage management functionality to the open systems world, meeting needs for the flexibility, high availability, lower cost and vendor choice that today’s rapidly changing IT infrastructure demands.

Benefits

- 1. Virtuality:** Virtualization minimizes the complexity of capacity provisioning by creating a pool from one or more disks or storage systems and allocating that storage from the pool to hosts as needed.
- 2. Scalability:** By decoupling the direct link from server to storage, SANs allow for the seamless addition of more storage and servers
- 3. Availability:** SANs ensure high availability by removing single points of failure and allowing storage and servers to be scaled without downtime.

Benefits

4. Efficiency: SANs dramatically improve your storage ROI through consolidation and increasing utilization of tape or disk devices as much as 80%. Storage resources are pooled and shared across hosts, enabling the investment to be shared across the enterprise.

5. Open connectivity: SANs allow multi-OS and multi-vendor storage to be managed as one coherent pool. Customers can continue using legacy devices and avoid replacing all existing storage.

6. Cost effectiveness: SANs are usually justified by savings realized through the sharing tape drives; however, they are also cost effective for Enterprises requiring high-speed access to substantial volumes of data from multiple networked servers.

The Promise of SANs – Virtualization and Visualization

Today SAN applications are solving the point storage problems resulting from the eBusiness revolution. Specific SAN applications such as clustering and backup provide the dramatic increases in performance and availability necessary to support the realignment of business operations around electronic information. However, the true promise of storage networking has yet to be fulfilled.

The Promise of SANs

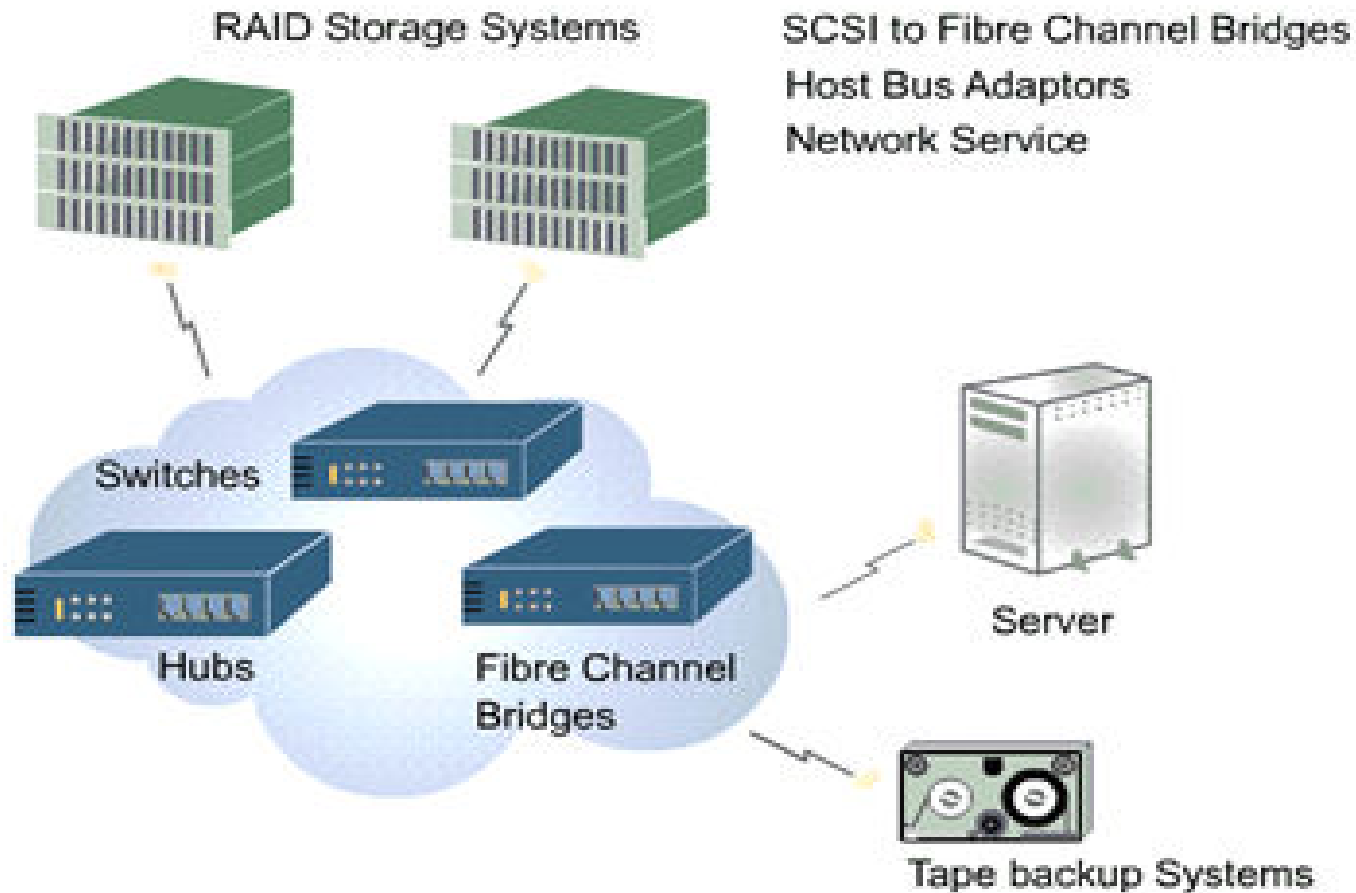
Promises

SANs have the potential to deliver high levels of availability, all while maintaining costs and adapting to unpredictable change into today's eBusiness environment. In fact, many customers are already deploying large SAN installations and realizing substantial benefits.

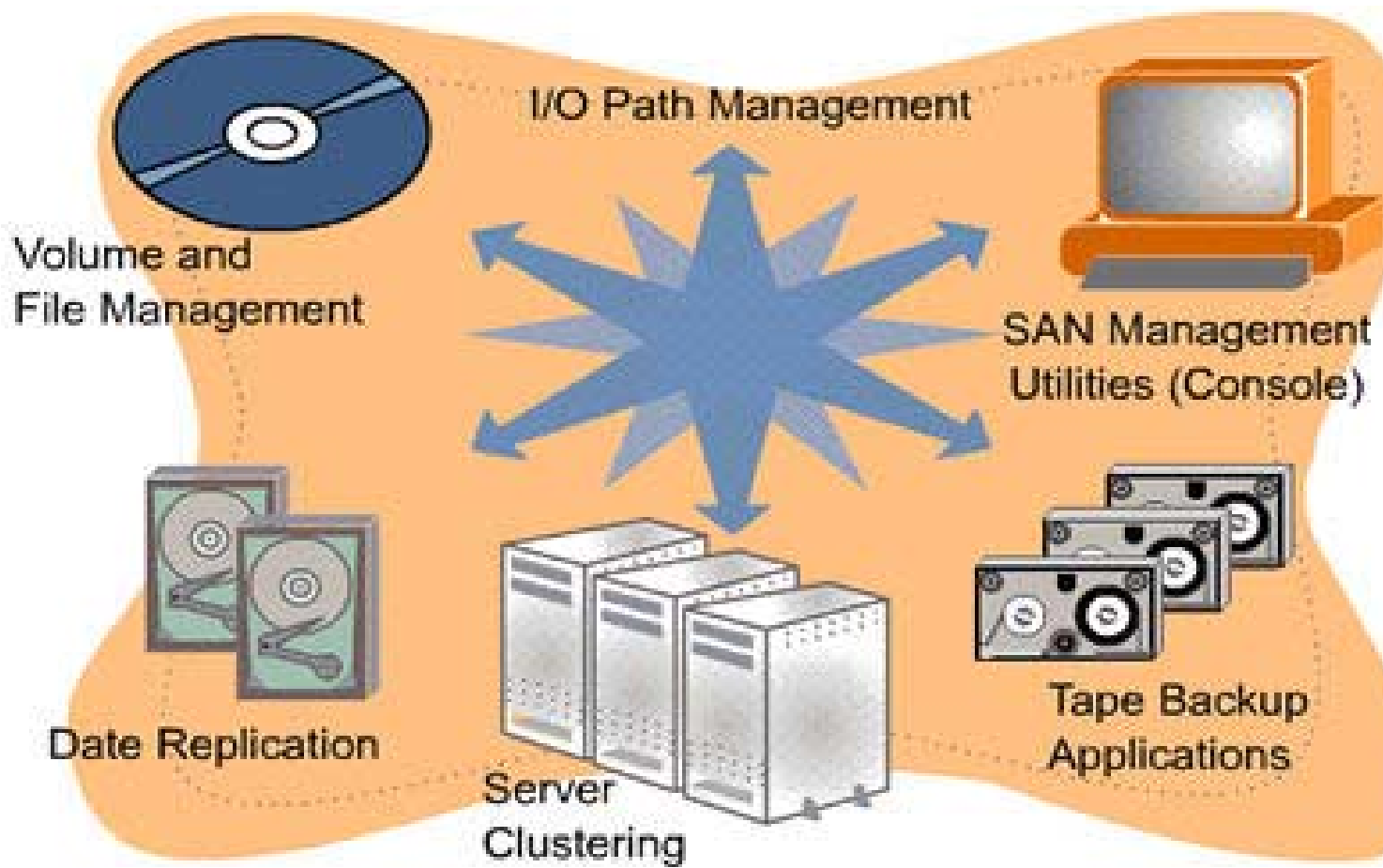
In this centralized environment, a much smaller, highly trained staff equipped with advanced storage management tools can manage significantly larger amounts of stored data than in a traditional, highly distributed environment.

Components of SAN

SAN Hardware components



SAN Software components



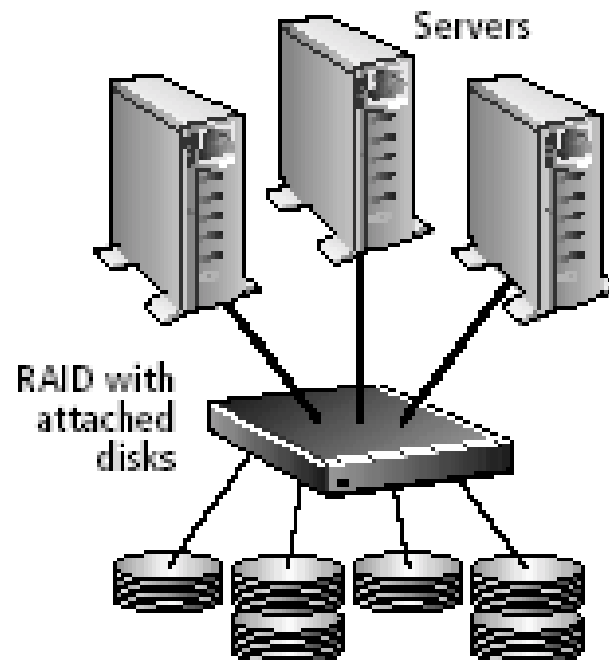
SAN Applications

- Reducing Total Cost of Storage with SANs
- Peripheral sharing
- Capacity Management
- Increased Availability Without Exponential Costs
- Virtualization of Physical Storage to Minimize Application Disruption
- Reducing the Cost of Availability with Multiple Paths to Storage
- Automation of Manual Tasks using Policies

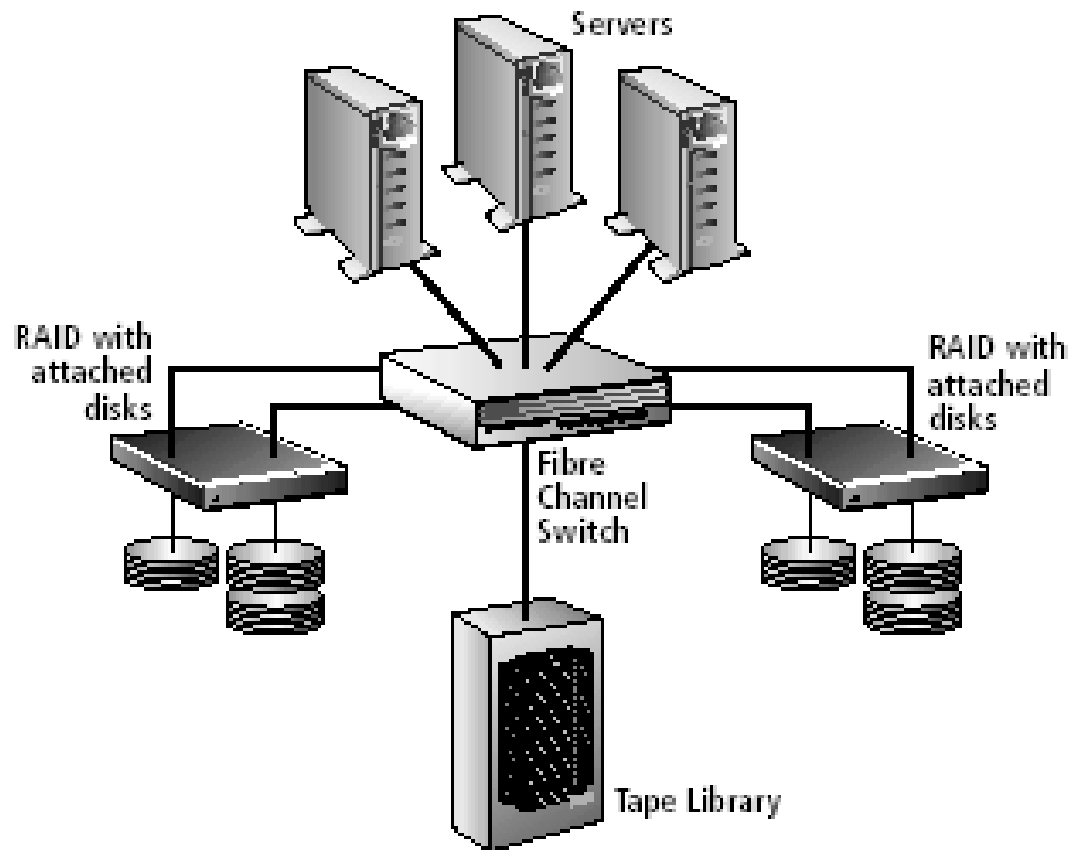
The State of SAN Topologies Today

- Widespread Point-to-Point Fibre Channel
- Multiple application and vendors through manually “zoned” switch and arrays in marquis sites
- Single hub or switch for fan-out topologies or shared devices

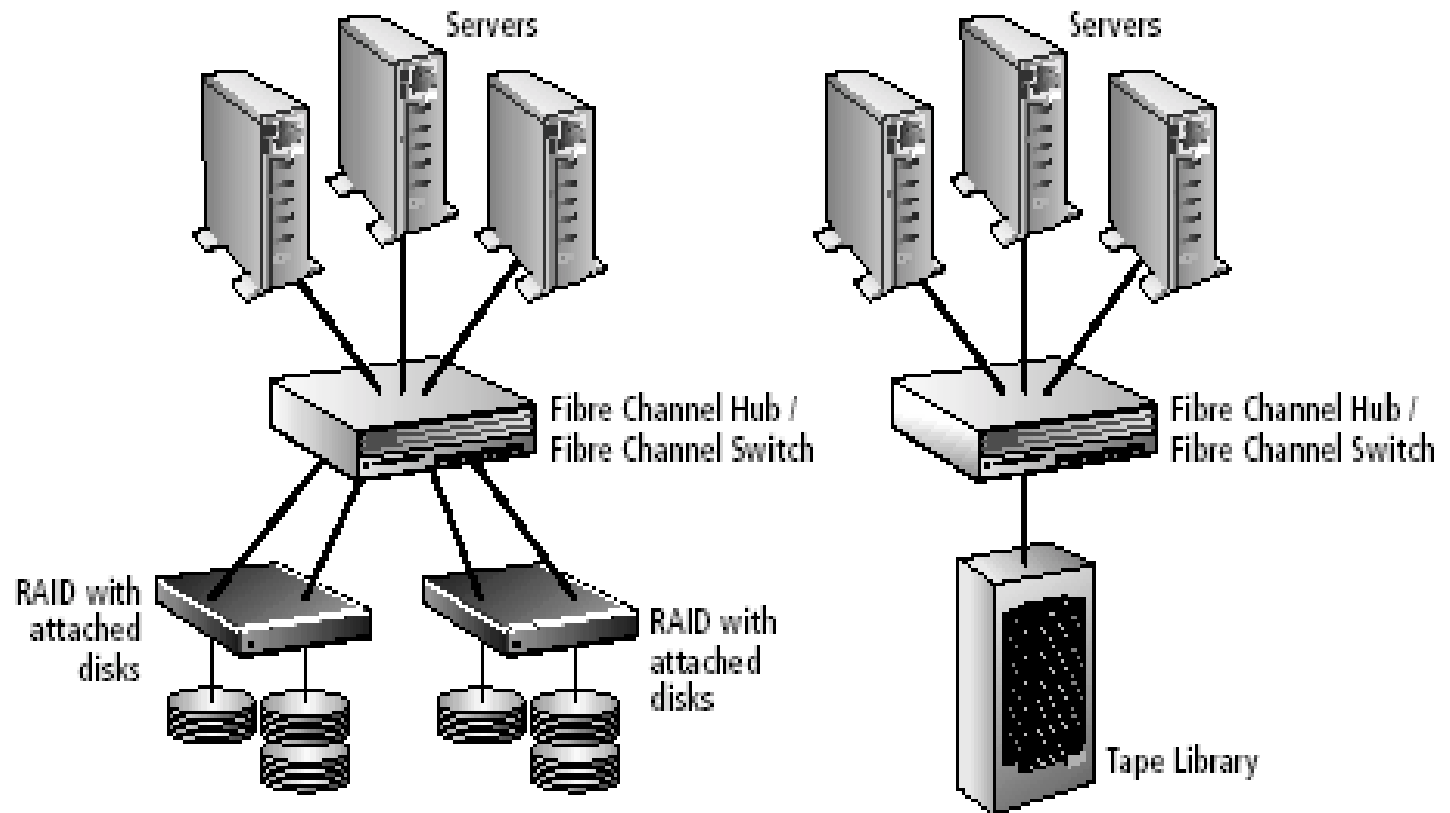
Widespread Point-to-Point Fibre Channel



Multiple application and vendors through manually “zoned” switch and arrays in marquis sites



Single hub or switch for fan-out topologies or shared devices



1.

SAN Vs NAS

- SANs are optimized for high-volume block-oriented data transfers
- SANs are based on open industry-standard network protocols—such as Fibre Channel
- SANs support a broad range of applications—including providing storage for NAS appliances
- NAS is designed to provide data access at the file level.
- NAS are based on open industry-standard network protocols—such as TCP/IP
- NAS storage is typically limited to applications that access data at the file level

Realizing Return on Investment Today

1. Identify one application or part of your data center infrastructure that is pushing the limits of existing storage architectures, and choose a corresponding SAN application to solve that particular issue.
2. Choose a small group of strategic vendors to design and deploy your SAN configuration. Wherever possible, source Fibre Channel components through a reseller, integrator, or enterprise storage vendor who has already rigorously tested a specific configuration based on those components. Also, make sure to choose vendors that are investing in the future of SAN technology in order to reap the benefits of new SAN features as they become available.

Realizing Return on Investment Today

3. Deploy a proof of concept SAN configuration to prove the robustness of the configuration before implementing the solution in a production environment. SANs are not yet plug-and-play, so changing drivers or topologies without performing regressions testing or enlisting the help of an integrator or consulting services organization puts the robustness of a SAN configuration, and the data it supports, at risk.

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Thank you

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