

DATA CENTER VIRTUALIZATION ACUA6001

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STORAGE SYSTEM

To build storage system we need CPU to process instructions about data flow [1], network interfaces enable communication, Raid controllers manage the system, and HDD store data. To avoid single point of failure (SPOF) two or more devices are required.

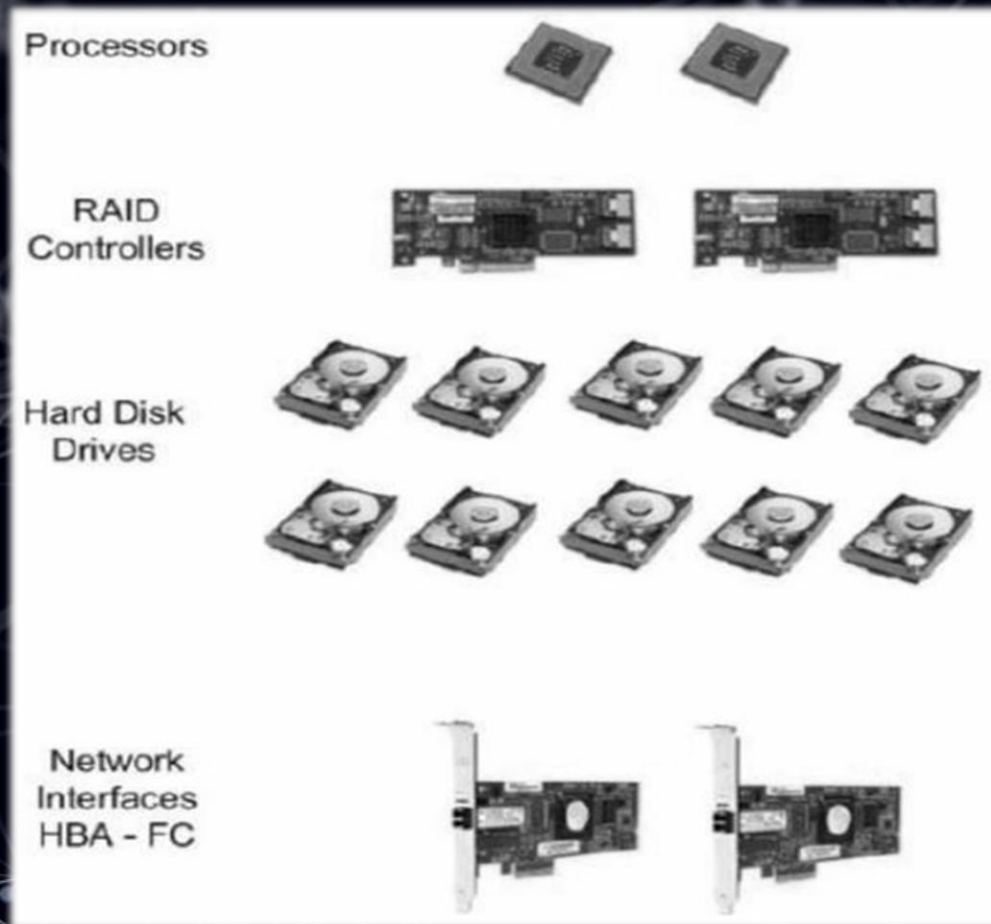


Figure 2 Basic components [1]

SAN OVERVIEW

The Storage Network Industry Association (SNIA) defines the storage area network (SAN) as a network whose primary purpose is the transfer of data between computer systems and storage elements [1].

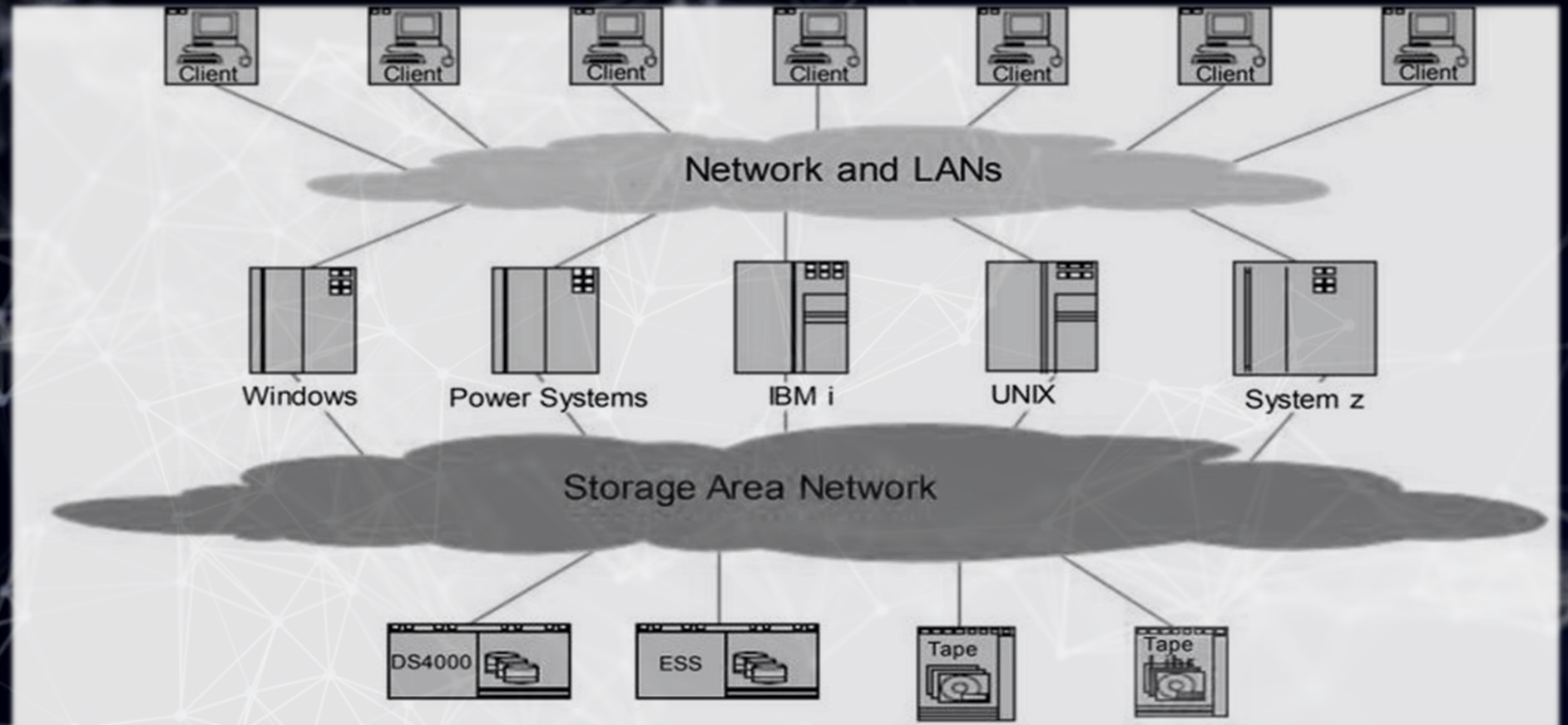


Figure 1 SAN architecture [1]

REDUNDANT ARRAY OF INDEPENDENT DISKS

RAID is technology that maintain more than one HDD synchronization, and manages all writes and reads to and from HDD [1]. It improves fault tolerant of storage system, it comes whit a variety of configurations.

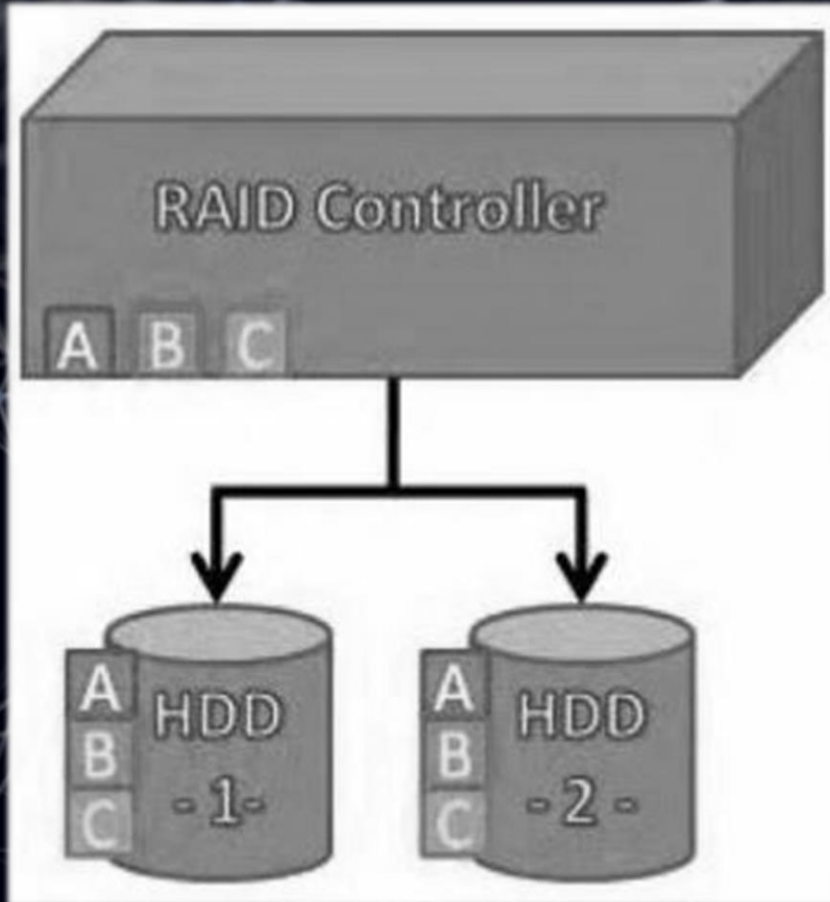


Figure 3 RAID 1 diagram [1]

SAN ADVANTAGES

If utilized correctly, SAN can offer the following benefits:

- Improve application availability
 - Increase application performance
 - Centralized and consolidated storage
 - Transfer and safeguarding data to remote sites
 - Simplified management
-

SAN COMPONENTS

On top of the basic storage system components, SAN connectivity utilizes switches, routers, hubs etc.

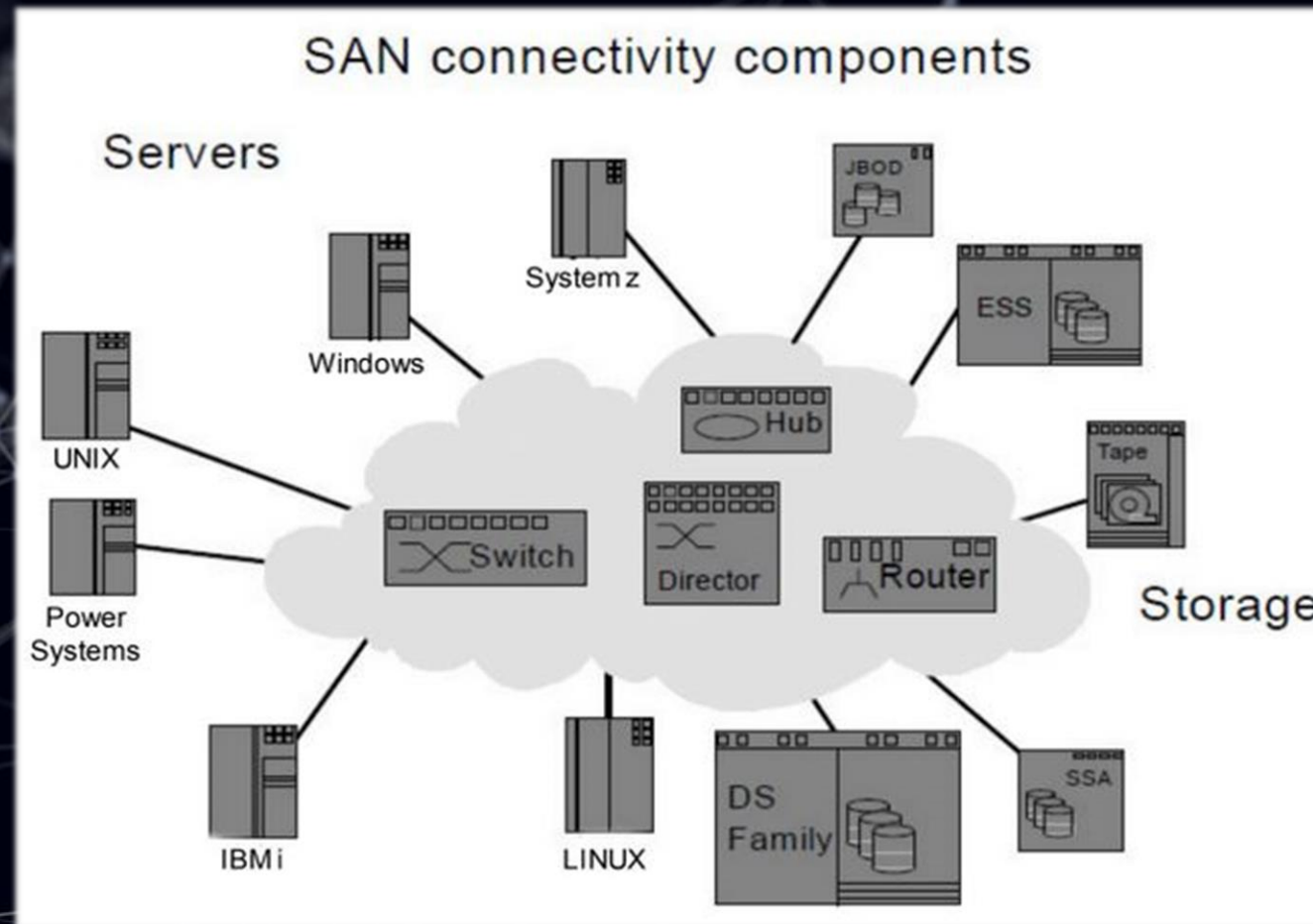


Figure 4 Connectivity components [1]

CISCO UCS

Cisco Unified Computing System™ (Cisco UCS®) is an integrated computing infrastructure with intent-based management to automate and accelerate deployment of all your applications, including virtualization and cloud computing, scale-out and bare-metal workloads, and in-memory analytics, as well as edge computing that supports remote and branch locations and massive amounts of data from the Internet of Things (IoT) [2].

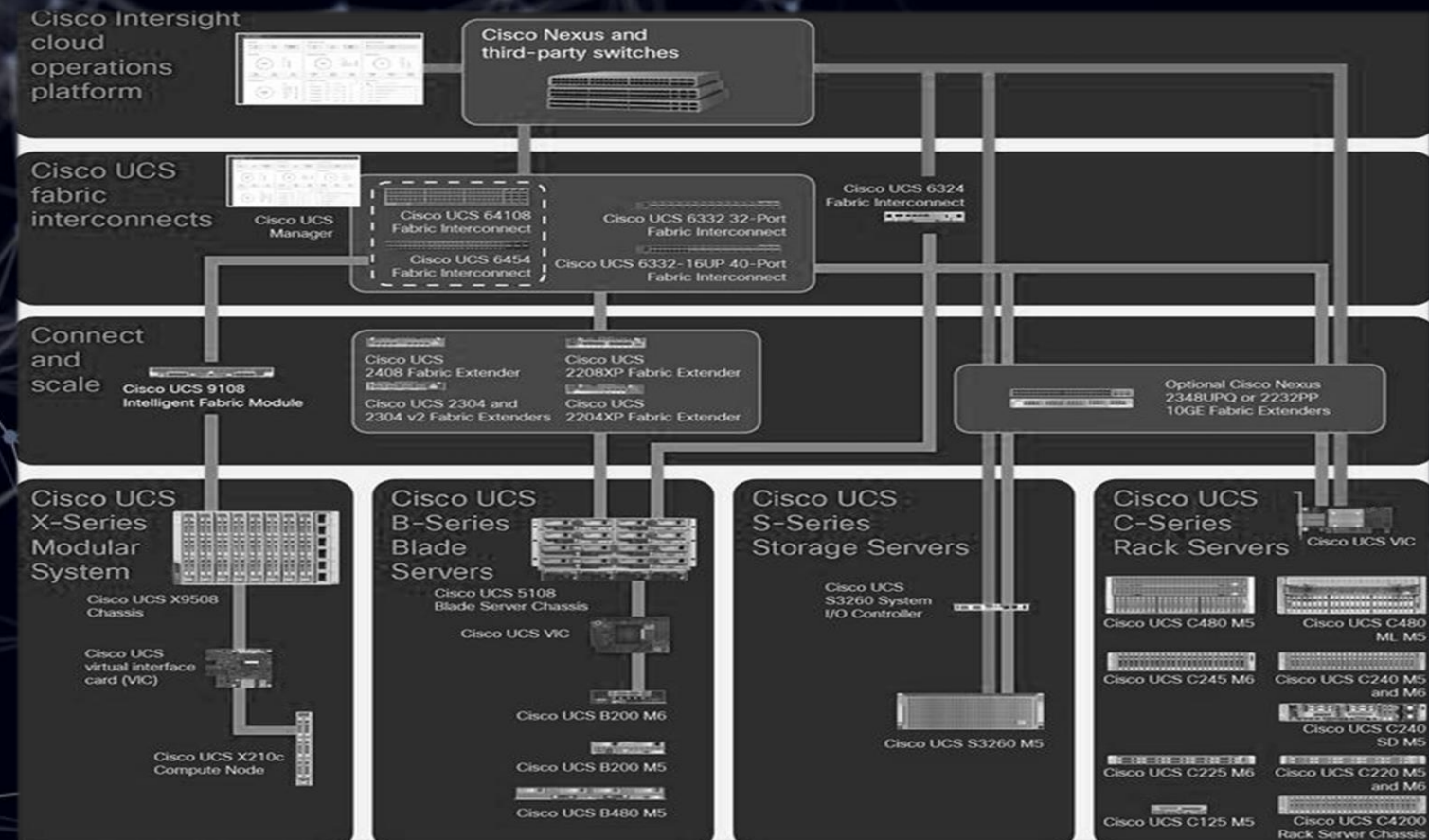


Figure 5 UCS component hierarchy [2]

SAN PROTOCOLS

Four of most used protocol for storage area networking [3]:

- Fiber Channel
- Fiber Channel over TCP/IP
- Internet Fiber Channel Protocol
- Internet SCSI

INFRASTRUCTURE SIMPLIFICATION

To achieve infrastructure simplification four fundamental methods stand out [1]:

- Consolidation
- Virtualization
- Automation
- Integration

INFORMATION LIFECYCLE MANAGEMENT

Information lifecycle management: ILM is a process for managing information through its lifecycle, from conception until intentional disposal [1]. The ILM manages information in a manner that optimizes storage and a high level of access at the lowest cost.

BUSINESS CONTINUITY

In today`s on-demand era, the business climate is highly competitive. Continuous business operations are no longer optional; they are imperative to emerge successful and highly competitive. Implementing a correct SAN solution can aid in disaster recovery (DR) [1], reduce the recovery time objective for the current DR plan. Specific vendor solutions require SAN that runs in the background, such as IBM Vmware Site Recovery Manager [1].

BIBLIOGRAPHY AND REFERENCES

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[2] “Cisco Unified Computing System - Cisco Unified Computing System Solution Overview,” Cisco, Jul. 03, 2021.
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[3] R. Telikepalli, T. Drwiega, and J. Yan, “Storage area network extension solutions and their performance assessment,” IEEE Communications Magazine, vol. 42, no. 4, pp. 56–63, Apr. 2004, doi: 10.1109/mcom.2004.1284930.
