

IT8001

Information Storage and Management

Professional Elective

Topic

Direct Attached Storage



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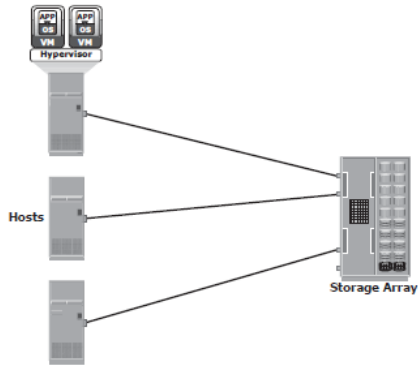
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Evaluate storage architectures, including storage subsystems, DAS, SAN, NAS, and CAS.

DAS is an architecture in which storage is connected directly to the hosts. The internal disk drive of a host and the directly-connected external storage array are some examples of DAS. Although the implementation of storage networking technologies is gaining popularity, DAS has remained suitable for localized data access in a small environment, such as personal computing and workgroups.

Types of DAS



Internal
DAS

External DAS architectures, the host connects directly to the external storage device, and data is accessed at the block level.

In most cases, communication between the host and the storage device takes place over a SCSI or FC protocol.

In **internal DAS** architectures, the storage device is internally connected to the host by a serial or parallel bus.

The physical bus has distance limitations and can be sustained only over a shorter distance for high speed connectivity.

In addition, most internal buses can support only a limited number of devices, and they occupy a large amount of space inside the host, making maintenance of other components difficult.

External
DAS

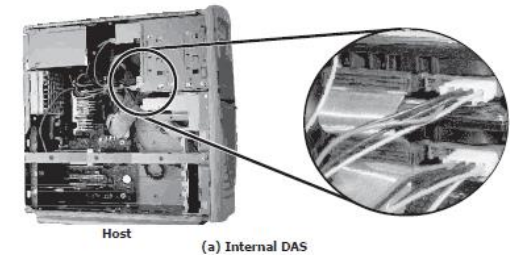


Image courtesy EMC Corporation, "Information Storage and Management"

DAS Benefits

DAS requires a relatively lower initial investment than storage networking architectures.

The DAS configuration is simple and can be deployed easily and rapidly.

The setup is managed using host-based tools, such as the host OS, which makes storage management tasks easy for small environments.

DAS has a simple architecture, it requires fewer management tasks and less hardware and software elements to set up and operate.

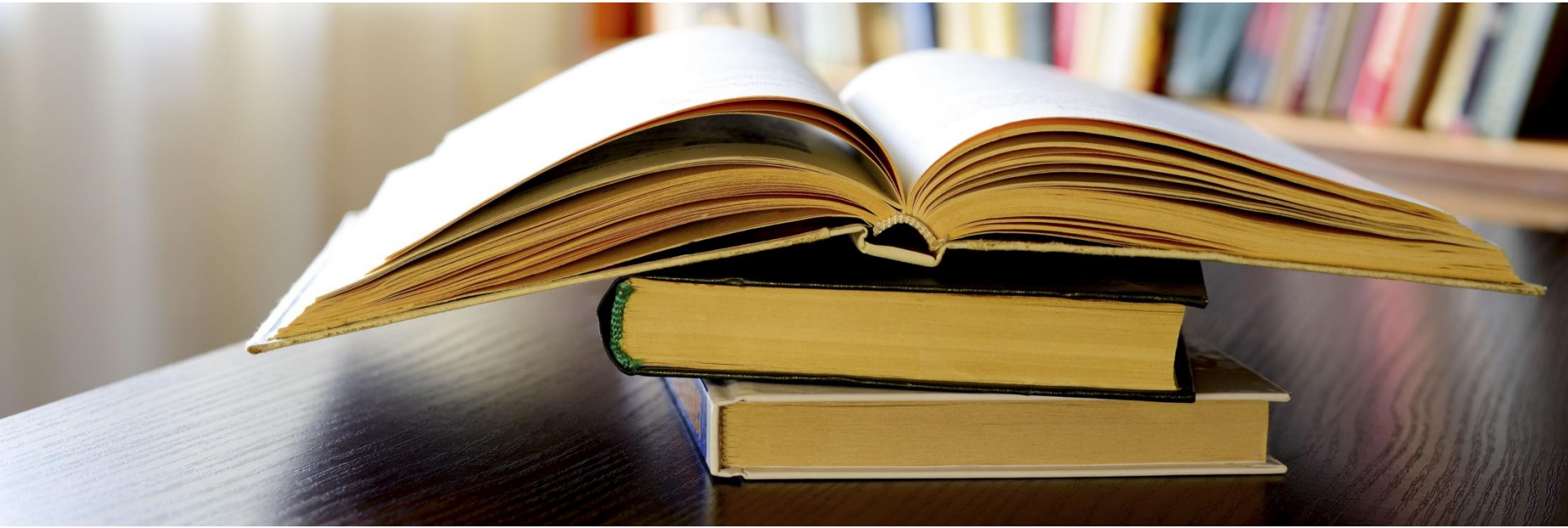
DAS Limitations

DAS does not scale well. A storage array has a limited number of ports, which restricts the number of hosts that can directly connect to the storage.

When capacities are reached, the service availability may be compromised.

DAS does not make optimal use of resources due to its limited capability to share front-end ports.

In DAS environments, unused resources cannot be easily reallocated, resulting in islands of over-utilized and under-utilized storage pools.



References

EMC Corporation, "Information Storage and Management" , Wiley, India.
Robert Spalding, "Storage Networks: The Complete Reference", Tata McGraw Hill, Osborne, 2003.



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