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Storage Devices

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Abstract— **A subnetwork of storage devices that are connected with one another over a high speed network connection is Storage Area Network(SAN). It allows all designated users on the network to access multiple storage devices not only the storage devices installed within their computers. Once a SAN is constructed and all the storage devices are shared within the SAN, it is than connected to the servers that are accessed by network users. Large backup disk arrays can be stored on an off-site location and shared on a SAN where users can access them remotely. SANs are used for storage redundancy purposes in case of unexpected disaster and loss of data. A SAN typically supports data storage, retrieval and replication on business networks using high-end servers, multiple disk arrays and interconnect technology.**

Index Terms— **Network, Storage, Devices, Disks, Applications.**

I. INTRODUCTION

A Storage Area Network is a specialised, high speed network that provides block level network access to storage. SANs are composed of hosts, switches, storage elements and storage devices that are interconnected using a wide variety of technologies, topologies and protocols. SANs are used to improve application availability e.g. multiple data paths, enhance application performance, increase storage utilisation and effectiveness e.g. consolidate storage resources, provide tiered storage etc. and improve data protection and security. SANs play an important role in organisation's business continuity management(BCM) activities. A SAN presents storage devices to a host such that the storage appears to be locally attached.

SANs are helpful in backup and disaster recovery settings. Within a SAN, data can be transferred from one storage device to another without interacting with a server. This speeds up the backup process and eliminates the need to use server CPU cycles for backup. Many SANs use fibre channel technology or other networking protocols that allow the networks to span longer distances geographically. That makes it more feasible for companies to keep their backup data in remote locations. Three major components are needed to setup a simple SAN –a SAN switch, a storage device and a server. SAN might also include routers, bridges and gateways to extend the SAN over large areas and to connect to other parts of the data centre network. Process of deploying a SAN first includes designing a SAN taking into account current needs and future scalability requirements. Necessary hardware is arranged, installed and software is configured for managing the SAN.

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Thus SANs are primarily used to enhance storage devices such as disk arrays, tape libraries accessible to servers so that the devices appear to the operating systems as locally attached devices. Storage virtualisation hides the physical storage from applications on host systems and presents a simplified view of storage resources to the applications. Virtualization allows the application to reference the storage resource by its common name wherethe actual storage could be on complex multi-layered multipath storage networks. RAID is an early example of storage virtualization. Host based storage virtualization could be implemented on the host through logical volume management which provides the logical view of the storage to the host operating system. Storage virtualization could be implemented on the SAN switches. Each server is assigned a LUN(logical unit number) to access the storage resources. Here we have ease of configuration and management, redundancy and high availability. There is potential bottleneck on the switch and high cost.

II. BENEFITS

Benefits of SAN include storage consolidation, data sharing , improved backup and recovery, cost effectiveness, ease of data migration, disaster tolerance, data integrity, high performance, high availability server clustering, lan free and server free data movement. In SAN storage type is in blocks, data transmission is through fibre channel, access mode is through servers, complexity is difficult and management cost is low. Storage is accessed at block level and not at file level. Thus a SAN is a network designed to transfer data from servers to targets and is alternative to directly attached storage architecture where the storage is connected to the servers on general purpose networks.

REFERENCES

[1] R. B. Boppana, J. Hastad, and S. Zachos, "Does co-NP have short interactive proofs?," Inf.Process. Lett., vol. 25, no. 2, pp. 127–132, 1987.
[2] S. Goldwasser and M. Sipser, "Private coins versus public coins in interactive proof systems," in STOC '86, pp. 59–68, 1986.
[3] G. Gratzer, General Lattice Theory. Birkhauser, 1998.
[4] W. Imrich and S. Klavzar, Product Graphs: Structure and Recognition. Wiley, 2000.
[5] B. Jonsson, "The unique factorization problem for finite relational structures," Colloq. Math.,vol. 14, pp. 1–32, 1966.
[6] R. Konig, U. Maurer, and R. Renner, "On the power of quantum memory," IEEE Transactions on Information Theory, vol. 51, no. 7, pp. 2391–2401, 2005.
[7] R. Konig, U. Maurer, and S. Tessaro, "Abstract storage devices." Available at http://www.arxiv.org/abs/0706.2746, June 2007.
[8] B. Kopf and D. Basin, "An information-theoretic model for adaptive side-channel attacks," in ACM CCS 2007, pp. 286–296, 2007.
[9] M. O. Rabin, "How to exchange secrets with oblivious transfer." Technical Memo TR-81,
[10] Aiken Computation Laboratory, Harvard University, 1981.

[11] C. E. Shannon, "The zero-error capacity of a noisy channel," IEEE Transactions on Information Theory, vol. 2, pp. 8–19, 1956.
[12] S. Tessaro, "An abstract model for storage devices," Sept. 2005. Master Thesis, ETH Zurich.

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JyotiMadabhushi, B.E, M.S. has got more than 25 years of work experience in IT industry with more than one and a half decade experience in project management. She has worked in various capacities from being a hands on technical person to project manager, program manager, portfolio manager to strategic business unit head mapping her portfolio to the changing trends in IT.