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An Automated Storage Area Network

Priyanka Khandekar

Department of Information technology
MIT College, Maharashtra
priyankakhandekar23@yahoo.in

Dr. Kishor Kolhe

Department of Information technology
MIT College, Maharashtra

Abstract: *the Fast growth of data intensive applications has caused a changed in the traditional storage model. The server to disk approach is being replaced by storage area network (SANs), which enables storage to be externalized from the server, thus allowing storage devices to be shared among multiple servers by using threshold cryptography to secure data. A storage area network is a secure high speed data transfer network that provides access to consolidated block level storage to resolve this issues we have proposed a scheme named threshold cryptography within which information from owner will be divided among its users in cluster and partial key will be shared with all user for decryption.it has a virtual process to extend the storage capacity without any HDD attached to the client host server. SAN devices appear to serve as attached drives, eliminating traditional network bottle neck. The partial key will be used by the user for decryption. However, it also introduces new challenges for ensuring the confidentiality, integrity and access control of data so to provide data security, data integrity threshold cryptography technique is used. The proposed scheme uses capability list to control the access. This proposed scheme not only provides the study information con denasality however additionally reduces the quantity of keys.*

Keywords: *Encryption, SANs, Outsourced Data, Access Control, Threshold Cryptography.*

1. INTRODUCTION

The rapid growth of data intensive applications, such as system simulation, modeling, the Internet and intranet browsing, multimedia, transaction processing, e-business, and data warehousing and mining are continuously driving the demand for more data storage capacity. Moreover, at the same time, that network bandwidth is constantly increasing, the ever more powerful network clients continue to overburden traditional

A storage area network (SAN) is a secure high-speed data transfer network that provides access to consolidated block level storage. SAN makes a network of storage devices accessible to multiple servers. SAN devices appear to servers as attached drives, eliminating traditional network bottlenecks. SANs are sometimes also referred to SAN storage, SAN network, network SAN etc.

This situation, as well as the growth of networking in organizations, has caused that large companies may have hundreds of servers distributed over tens of sites, storing terabytes of data that contain vital information. The dependence of these organizations on the networked data is higher than ever before. SANs, where the storage devices are connected directly to a high-speed network, can provide high scalability and throughput guarantees; SANs allow any-to-anywhere access across the network, using interconnect elements such as routers, gateways, hubs and switches; they also facilitate storage sharing between possibly heterogeneous servers to improve storage utilization and reduce downtime.

iSCSI, which stands for the Internet Small Computer System Interface, works on top of the Transport Control Protocol (TCP) and allows the SCSI command to be sent end-to-end over local-area networks (LANs), wide-area networks (WANs) or the Internet. IBM developed iSCSI as a proof of concept in 1998 and presented the first draft of the iSCSI standard to the Internet Engineering Task Force (IETF) in 2000. The protocol was ratified in 2003.

iSCSI works by transporting block-level data between an iSCSI initiator on a server and an iSCSI target on a storage device. The iSCSI protocol encapsulates SCSI commands and assembles the data in packets for the TCP/IP layer. Packets are sent over the network using a point-to-point connection. Upon arrival, the iSCSI protocol disassembles the packets, separating the SCSI commands so the operating system (OS) will see the storage as a local SCSI device that can be formatted as usual. Today, some of

iSCSI's popularity in small to midsize businesses (SMBs) has to do with the way server virtualization makes use of storage pools. In a virtualized environment, the storage pool is accessible to all the hosts within the cluster and the cluster nodes communicate with the storage pool over the network through the use of the iSCSI protocol. In this paper, we are analyzing the mechanism of an Automated System which can share any Block device

1.1 NECESSARY BACKGROUND AND PRELIMINARIES

In this section, background information and the notations that are necessary for the upcoming discussion are presented.

1.2 Storage area network

SAN is defined by the transport it uses and the encapsulation standard it follows. A storage area network (SAN) is any high-performance network whose primary purpose is to enable storage devices to communicate with computer systems and with each other.

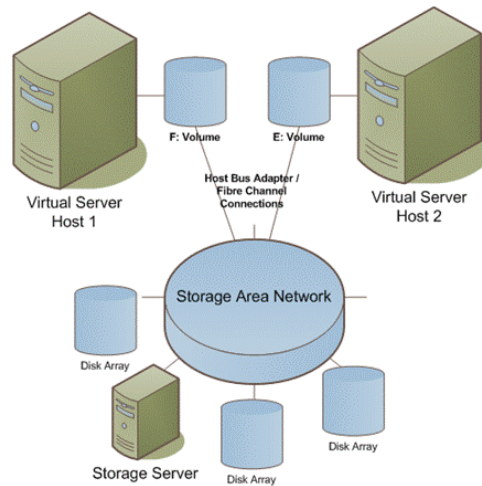


Figure 1.SAN basic architecture.

1.3 iSCSI protocol

iSCSI storage area networks have been around for more than a decade now. They originally arose as a cut-price alternative for smaller organizations that needed block storage but couldn't run to the cost and complexity of Fibre Channel. For some time they were the SME-targeted little brother to market leader Fibre Channel in terms of performance and reliability. But, iSCSI SAN products are now a fully-featured part of most storage array maker's product ranges and with the speed of 10Gbps Ethernet and careful network design can be the equal of Fibre Channel. This ComputerWeekly.com guide walks you through the basics of [iSCSI SANs](#), iSCSI SAN implementation, iSCSI and virtualisation and iSCSI networks, switching and security.

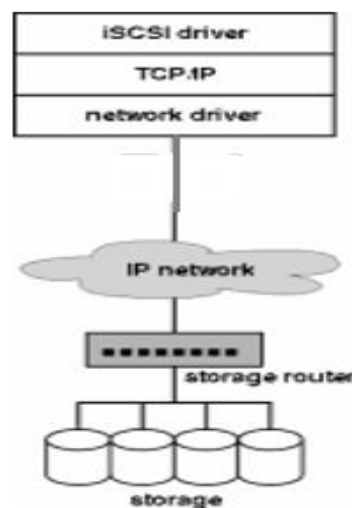


Figure 2. iSCSI Architecture.

2. PROPOSED SYSTEM

In this section, the proposed automated SAN solution using iscsi protocol is divided into some module which was shown below briefly.

2.1 Server side lan scanning

The preliminary work on modeling and simulations of server side lan scanning is to first of all setup for the process. so we need to assign new lun to lvm process and create a new database. Therefore, firstly new physical volume in existing volume group attached, then create new logical volume. It displaying database to pvs, ls, and size of san vg. Which scan for new lan in the system. All these done within the server side lan scanning.

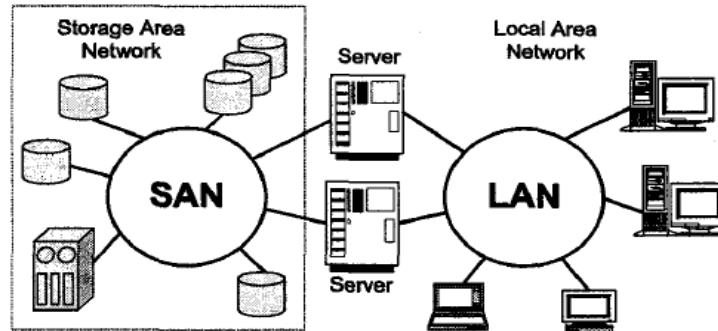
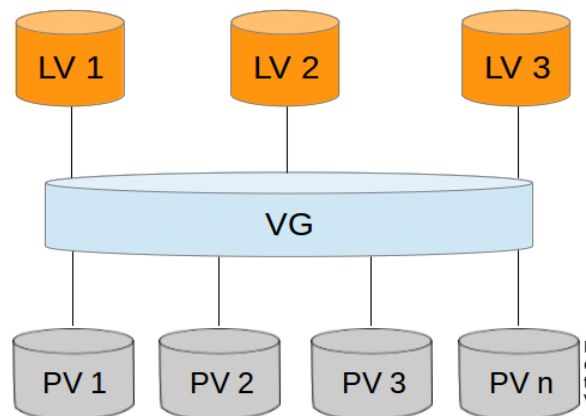


Figure 2.1. Server side LAN scanning environment.

2.3 Logical volume managing LVM:

We consider that LVM is a system of managing logical volumes or file systems, that is much more advanced and flexible than the traditional method of partitioning a disk into one or more segments and formatting that partition with a filesystem.



Most of the commands in LVM are very similar to each other. Each valid command is preceded by one of the following:

- Physical Volume = pv
- Volume Group = vg
- Logical Volume = lv

2.4 Physical volume Creation

The physical volume commands are for adding or removing hard drives in volume groups. Volume group commands are for changing what abstracted set of physical partitions are presented to your operating in logical volumes. Logical volume commands will present the volume groups as partitions so that your operating system can use the designated space.

We will start from scratch with a brand new hard drive with no partitions or information on it. Start by finding which disk you will be working with. (/dev/sda, sdb, etc.)

(a) Volume Group Creation

Now that we have a partition designated and physical volume created we need to create the volume group. This only takes one command.

```
vgcreate vgpool /dev/sdb1
```

Vgpool is the name of the new volume group we created. You can name it whatever you'd like but it is recommended to put vg at the front of the label so if you reference it later you will know it is a volume group

(b) Logical Volume Creation

Logical volumes are the partitions that your operating system uses in LVM. To create a logical volume we first need to have a physical volume and volume group. Here are all of the steps necessary to create a new logical volume.

To create the logical volume that LVM will use:

```
lvcreate -L 3G -n lvstuff vgpool
```

4. IDENTIFYING THE CLIENT INFORMATION

Identifying the client means obtaining certain basic information about your client and any third party directing, instructing or who has the authority to direct or instruct your clients such as a name and address. You must obtain this information whenever you are retained to provide legal services to a client unless an exemption applies.

Checking client state ol/offline:

- (b) logging with credentials :
- (c) Mount storage:
- (d) Update database:

5. EXPECTED RESULTS

It is expected that the proposed system will give the following results as compared to the existing system.

A. Processing Time Graph

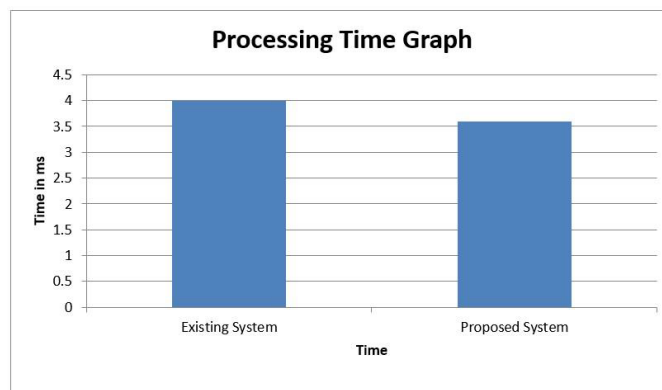


Fig. 5.1 shows processing time for existing system and proposed a system. The existing system requires more time than proposed system. It is expected that proposed work will improve the detection rate and will reduce the time required by using automated SAN solution.

5.1. Precision Graph

Fig. 5.1 shows a precision graph for the existing and proposed system. It is calculated in percentages. It represents the accuracy of the system. It is expected that the proposed system will increase the precision rate.

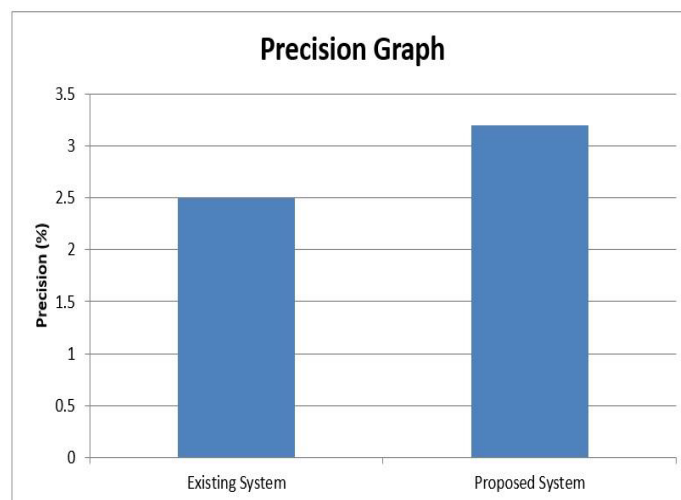


Figure 5.1 Precision graph

CONCLUSION

ISCSI storage area networks have been around for more than a decade now. They originally arose as a cut-price alternative for smaller organisations that needed block storage but couldn't run to the cost and complexity of Fibre Channel. In this paper, we discuss the fiber channel SAN, how it helps to the enterprise through various simulation tools. Now we are trying to provide an automated storage system to the client host's server through ISCSI SAN technique. We are trying to make an easy virtual process to extend the storage capacity without any HDD attached to the client host's server.

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