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A Survey on Storage Virtualization System

Devendra D. Borse

Department of Computer Engineering, Bharati Vidyapeeth Deemed University College of Engineering, Pune Deemed University, Pune

Abstract: At the present time, this system presents the storage virtualization impact at different layers of the storage load. Here is an active development in the capability of storage virtualization, and therefore the converting power in the particular enterprise storage appliances connected with the for high accessibility as well as it desires a Storage Area Network (SAN) structural design for providing the storage virtualization, performance fundamentals. This technique of virtualization implements us through a collection and management of storage resources requires for Storage Area Network with the help of various servers and the storage mechanisms of the system. In this paper, the term of virtualization is defined as, the formation of a virtual interpretation of a resource like a server, a network or an operating system wherever the structure is separating the apparatus into single or further eliminating surroundings. So, the storage virtualization implements us through a grouping and managing storage devices for Storage Area Network among the various servers as well as the storage resources. This paper, proposes the most important goal of virtualization method is not essential to be expensive and not involves the performance of depository devices. Hence, these methods focus us on how virtualization helps security, Memory Management, Management of resources and Disaster Recovery. This paper produces more information on the different levels of the storage virtualization that are part of the framework for the active storage system. All the levels of virtualization that, we will contributes us with specific improvements, but also it is limited in their Capacities that achieves the limitations of virtualization system.

Keywords: Virtualization, Network, Virtualization of storage, Storage Area Network (SAN), Attached Storage (NAS), Server, Storage resource, Virtual Machine etc.

I. INTRODUCTION

In this system, virtualization is a suitable method of theoretical resources into logical view, increases consumption and capacity of IT resources. For example, yet separation of a hard disk drive is calculated as virtualization. The motive behind this is, we have a single hard disk drive, and that separate it into two partitions so as to provide us to several hard drives. Here, the last part of describing to us what the term of virtualization is all about [1] [2]. The most important application of virtualization to storage services and several for the reason of aggregating functions, hiding difficulty, or adding new capabilities to low level of storage resources. Nowadays, in information technology the data storage method is one of the best dynamic regions. As a result of the high-performance networking between servers and storage resources, storage technology has undergone a fast conversion as one innovates later another storage solution forward. In this paper, the growth of the latest storage technologies is frequently declared by the

fast implementation of networked storage via nearly all huge enterprises and organization. Today, Businesses, governments, and many organizations depend on information and its unprocessed form as data lastly occupies anywhere on storage media for the active storage of virtualization system.[1] Applying the latest technologies to necessary accessing of information, and simplify its organization has readily understandable value. Storage systems are complex, and a special reason computer considered to provide storage capacity along with highly developed data protection features. In this paper, virtualization is mainly separated into following types they are below:

- 1) Server Virtualization (Full and Para-Virtualization)
- 2) Client Virtualization
- 3) Storage Virtualization (consists of Virtual Storage)

Now, the main part of this system is mainly focuses on the important types of storage virtualization. Furthermore, also we will be made clear its benefits and drawbacks; also it shows the different levels of storage virtualization technique. [2]

A. Server Virtualization

With server virtualization, we will observe that an individual server achieves the task of different servers, shared, as it separations out the resources or strategies of the corresponding server over the several atmosphere.

B. Client Virtualization

Here, we will investigate that the system carries out the guiding in the useful approach of client virtualization and also restores the client's resources like as desktops, laptops and mobile devices. So, this system permits a development for client mechanism of management.

C. Storage Virtualization

The term of storage virtualization is necessary to carry out the required movements of separating the existing storage space into virtual volumes corresponding of the physical design of the specific storage components.(e.g. Disk Drives, RAID subsystems).In storage area network (SAN) is an essential for the management of large chunks of storing information in a constant way and centrally placed. There is a fast development of the storage capacity and handing out power in different project installation activities. Its pairing obtains with the need of high accessibility and the daily activities, which actually needs the storage design to allow the faultless calculation of storage not including some free time. Thus, this type of networks has concluded the strategic goal at the most excellent for the reason of the storage virtualization system.

In this survey, Section II gives the Literature survey for active storage requirement and also used the different methods used in this survey of the active storage requirement of virtualization system and storing of data.

II. LITERATURE SURVEY

Virtualization system is the most important resource of data storage that allows the cloud computing. In this survey, cloud computing is required for the reason of the local resource is restricted and not dependable across a several devices of storage. Many researchers have considered storage virtualization recently. We have restricted previous work according to the main challenges in the storage virtualization system.[1]

- 1) *Implementation:* This author [1][2] has implemented the storage space virtualization methodology on the SCSI target simulator. These systems are compatible for all operating systems and breaks on the target host. Mostly, this method was depending on a mapping table to modify the SCSI command address. Free space of storing information was controlled with the use of bitmap techniques. Lastly; this type of technique was not practically implemented in this survey.
- 2) *Security:* In this survey [3] they used effective method for the security implementation in a virtualized storage atmosphere, establish that the system has every ordinary software security problem for the reason that the services of virtualization should allowed by hypervisor that is a software program.
- 3) *Storage Management:* Author [4] has implemented out of band virtualization technique for large SAN. In this survey, the implementation of storage management was extremely strong to control the breakdown.Thus; this technique of management is based on SLAS2 approach for scaling round robin stripped volume. Even their approach of storage was able to handle memory and power breakdown problem, although they never produced the protection to the information stored in the cloud computing.
- 4) *Power Management:* This author [5] has proposed the multiple protocol switch using PCI Express protocol with the use of PCIe switch fabric for I/O and switch virtualization method to recognize the high bandwidth. Low power and low latency, multiple protocol switching are used in this methodology of management.

In this survey, we find out the difficulty in storage virtualization that is effectively a distributed storage system. Thus, we accomplish the study of various possibilities of scheming of a storage area network (SAN) and to obtain an optimized solution for it.

III.EVOLUTION OF STORAGE TECHNOLOGY

On this Evolution of storage virtualization, we analysis the formation of construction for storage virtualization process from physical to logical layer. Storage evolution of technology is the core functionality and original component of the computer to hold the digital data. Here, three types of data storage are given in virtualization technology. So they are followed; Direct Attached Storage (DAS), Network Attached Storage (NAS) and Storage Area Network (SAN).[1]

- 1) *Direct Attached Storage (DAS):* This method is locally attached storage procedures to servers with the help of a direct communication pathway linking to the server and storage resources. So the connectivity of data storage among the server and the storage devices are on an assigned the separate path from the network cabling. Approach of information is provided by the use of an intellectual controller. DAS are also permitted for one server to reflector another.

- 2) *Network Attached Storage (NAS)*: NAS is like file-level access storage architecture having storage elements attached directly to a LAN. It produces a file access to various computer systems. So, data storage is accessed directly through the network in other storage system. Shared storage files added into an Additional layer of NAS. Finally, this system uses both of which are IP applications. NFS (Network File System) or CIFS (Common Internet File System).
- 3) *Storage Area Networks (SANs)*: In this network, SANs give block-level access to shared data storage when SAN is connected to the servers. In a SAN, the Block level access refers to the particular blocks of data on a storage device as opposed to file level access. Here, each of the file will include a number of blocks. SANs provide high accessibility and active business continuity for critical data environments. SANs are usually switched fabric architectures using Fiber Channel (FC) for connectivity between servers.

IV. PROPOSED SYSTEM

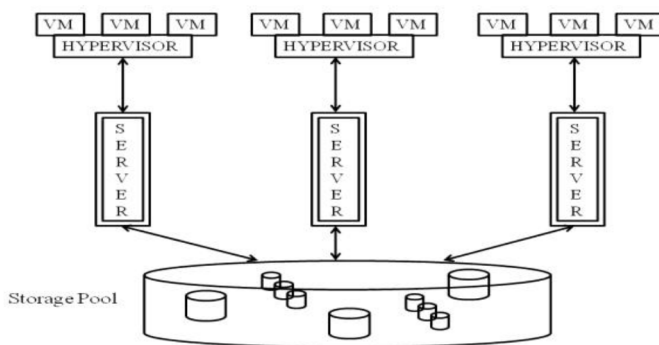


Fig.1: Architecture of storage virtualization

This system proposed the execution of the active storage virtualization method for improving an adequate and time-consuming in storing and converting of a large quantity of data. In the above figure (Fig.1) shows the architecture of storage virtualization. In this paper, implements a virtual machine (VM) is an operating system (OS) or application environment that is installed on software, which assume dedicated hardware. The user has the same experience on a virtual machine as they would have on committing hardware. Specialized software, called as a hypervisor, emulates the PC client or server's CPU, memory, hard disk, network and other hardware resources completely, permissive virtual machines to share the resources. The hypervisor can follow several virtual hardware platforms that are isolated from each other, allowing virtual machines to run Linux and Windows Server operating systems.[1] [2]

A. Levels Of Storage Virtualization

In this paper, we implemented the different levels of Storage virtualization in the storage environment. So they describe in below and its structure shown in figure of Levels of Storage virtualization taxonomy (Fig.2). There, the storage virtualization taxonomy gives an organized classification of storage virtualization. It's having three types of Virtualization The first level of the storage virtualization taxonomy addresses. It specifies the types of virtualization: block virtualization, file virtualization, disk virtualization, tape virtualization, or any other device virtualization. [1]

Block Virtualization is also called as a storage Virtualization method that binds the several of free storage devices together which also known as merging. Its appearance takes one single individual storage device to as the host. By using I/O devices It accomplishes address re-mapping from physical to logical address. Its operation gets achieved in storage area network. Disk Virtualization is also called as storage virtualization technique. In this technique we use a shared disk manager in the virtual world. Logical disks are Virtual disks are composed by the virtualization device and are made visible to the essential host or server, thus given that a common area for the management of every the shared volumes in the virtual world. In Tape Virtualization, is used for backup and recovery sense. A Virtual Tape / Virtual Tape Library (VTL) present a storage component (generally a hard disk drive) which serves the reason of a TL or TD for the providing us with existing backup component. Storage is shared and faster in data installation process this is the advantages of tape Virtualization .File Virtualization is Called as a storage virtualization technique this operates on file level in a computer device. It also carries merging of records where it unites many of the storage devices every

into one single logical pool. Thus, it is a significant element of the file area network (FAN) and also the network file management (NFM) fields.

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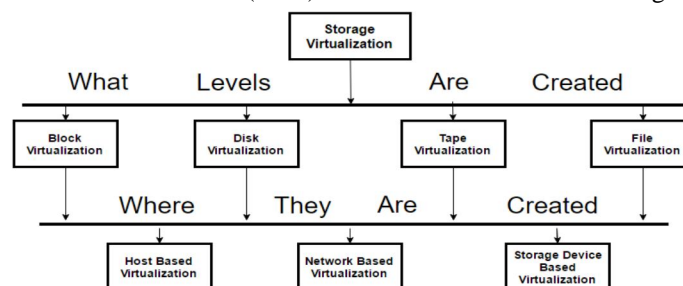


Fig.2: Levels of Storage virtualization taxonomy

V. CONCLUSION

In this paper, we proposed the Storage Virtualization technique as well as their relation with the storage topologies, which are Storage Area Network and Network Attached Storage. This system introduced for virtualization of active storage and its requirement to be low-cost and not affect the performance. Lastly, allowing for its high performance and storage, effectiveness and its ability to increase or scalability of the data proves its future scope in the new world of technology.

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