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► **To cite this version:**

Allan Liu, Ting Yu. Overview of Cloud Storage. International Journal of Scientific & Technology Research, 2018. hal-02889947

HAL Id: hal-02889947

<https://hal.science/hal-02889947>

Submitted on 6 Jul 2020

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Overview of Cloud Storage

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Abstract— Cloud computing is an emerging service and computing platform and it has taken commercial computing by storm. Through web services, the cloud computing platform provides easy access to the organization's storage infrastructure and high-performance computing. Cloud computing is also an emerging business paradigm. Cloud computing provides the facility of huge scalability, high performance, reliability at very low cost compared to the dedicated storage systems. This article provides an introduction to cloud computing and cloud storage and different deployment modules. The general architecture of the cloud storage is also discussed along with its advantages and disadvantages for the organizations.

Index Terms— Cloud Storage, Emerging Technology, Cloud Computing, Secure Storage, Cloud Storage Models

1 INTRODUCTION

In this era of technological advancements, Cloud computing has played a very vital role in changing the way of storing information and run applications. Now, Almost Everything is hosted on a "Cloud" instead of running programs and data on the individual computer. Cloud computing provides you the facility of accessing the data from anywhere in the world and allows different people and groups to collaborate.

Businesses and organizations use cloud storage to store their data, documents, and share them with their employees. Cloud storage provides the opportunity to of data sharing with the other people in case of collaboration. Providers like Google, Amazon, Microsoft, IBM, Sun Microsystems, and Sales force are establishing data centers on several locations around the world for hosting cloud computing applications. The purpose of this is to ensure reliability in case of site failure and provide redundancy.

Cloud computing services requirements vary from user to user depending on their need of the organization. The service provider of cloud storage has to flexible according to the need of the user at the same time kept the user isolated from the backend infrastructure. One of the major uses of cloud computing is data storage. With the cloud storage, Data is stored on several third-party servers instead of one dedicated server which is traditionally used for data storage. Cloud storage provides numerous advantages like which include security, protection, and financial benefits. Financially, the virtual resources of the clouds are more cost-effective and cheaper than the physical resources of a computer or a network. For security, the data which is stored on a cloud is more secure from hardware crashes or accidental reassurance as it is stored on multiple machines, and even if one of the machines goes offline, others keep running. If anyone of machine crashes, the data will be secured because it is stored on multiple machines.

2 CLOUD STORAGE

Cloud storage can be described as a service model in which data is transmitted and stored remotely on the remote storage systems. Stored data is backed up and maintained on these remote storage systems and made available for the users over the network (for example; internet). For Cloud storage, users pay monthly depending on their consumption rates to cloud storage providers.

3 DEPLOYMENT MODELS

Deployment of cloud computing differs depending on the requirement. There are following cloud-based storage access model and each has particular characteristics that support the need of its users and need of the services in particular ways:

3.1 Public Cloud

This type of cloud infrastructure is available to the public on a commercial basis, provided by the cloud storage provider. This service required very little financial outlay as compared to the expenditure requirements of the other storage models of cloud computing

3.2 Private Cloud

A private cloud is deployed and maintained for a specific organization or company by the service provider. The operations could be in house or with a third party on the premises.

3.3 Hybrid Cloud

Hybrid Cloud infrastructure consists of several clouds of different types and provides the ability to transfer data from one cloud to another through its interface abilities. Depending on the needs and requirements of the organization, the combination could be of private and public clouds.

3.4 Community Cloud

This type of cloud infrastructure shares similar storage among the different organizations and companies that have the same requirements and interests. As the cost is shared among the organization, capital expenditure can be limited. The operation could be with the third party on-premises or in-house.

4 CLOUD STORAGE ARCHITECTURE

There is no specific set of attributes when it comes to the architecture of the cloud storage and several cloud storage architecture schemes exist among different cloud storage platforms. But typically, cloud storage consists of thousands of storage devices and which are clustered by the distributed file system, a network, and other storage middleware to provide the services of cloud storage to the users. The typical structure of cloud storage consists of the storage resource pool, Service level agreements (SLA), distributed file system and services interfaces, etc. Cloud storage architectures are mostly about the storage delivery on-demand in a multi-tanned and highly scalable way. Generally, Cloud storage architecture includes a front end that exports an API for storage access. In the typical storage systems, this API is SCSI protocol but In clouds, these API is growing and in Cloud, we can find file service front ends, web service front ends and even the traditional front ends like (iSCSI and internet SCSI). Behind the front end is a layer of middleware which is called storage logic. This layer is used to implement several features like data reduction, replication. The back end of the cloud storage architecture implements the physical storage of the data which could be an internet protocol that implements the particular features or it also could be a traditional back end for the physical disks.

5 DATA CENTERS

There are different types and hundreds of different storage systems. Some Storage systems have a very specific focus for example only storing web emails or digital pictures. Some Storage systems are available to store every type of data. Some cloud storage systems are very big while others are just small operations. The facilities that house the cloud storage systems and its associated components are called Data centers.

Advantage of Cloud Storage:

The advantages of cloud storage can be as following:

1. **Off-Site Backup:** Cloud storage provides the facility of offsite (remote) backups of the data to the companies and organization which is very cost-effective.
2. **File Accessibility:** Despite the location, cloud storage data can be accessed from anywhere in the world with the help of the internet.
3. **Security of Data:** Cloud storage provides the security and protection of data from cybercriminals and uses authentication before allowing users to access the data.
4. **Effective Use of Bandwidth:** Through cloud storage the bandwidth can be used more effectively for example; a web link can be shared through an email instead of

sending files.

5. **Ease of Management:** The maintenance of the general infrastructure, hardware, and software are simplified drastically by an application in the cloud. Users or client of cloud storage can easily manage their data through a web browser with simple clicks and leaving all the headaches to the cloud service provider.
6. **Cost-effectiveness:** Cloud storage services provide the organizations a cost-effective solution by eliminating costly systems and people required to maintain them. The availability and scalability of cloud services are also financially unmatched.

The disadvantage of cloud storage:

The disadvantages of cloud storage are the following:

1. **Dependency on a third party:** A third party service provider is responsible for the stored data and including the confidential data of the organization so it is very important when selecting a vendor to examine security standards of him prior investing
2. **Dependency on Internet Speed:** Access to the stored data depends on the internet connection. So, if internet connection is down there will be a problem in accessing the data stored on the cloud.
3. **Higher Cost for huge data:** For the organizations that have huge data to be stored, it might be very costly to have more space for data even after the first few gigabytes of stored data
4. **Minimal Control:** The cloud service provider manages all the data and storage framework and also maintains it. So, the client/ customer have no/minimal control over it.

6 CONCLUSION

Cloud storage is an emerging technology and has a great changing impact on the way businesses and organizations manage their information and data. Cloud storage provides massive scalability, high performance, data resiliency, and 99.999% readability. There are four different types of deployment models of cloud storage provided by cloud services provider according to the requirements of the clients. The general architecture of the cloud storage is also discussed in the article along with the pros and cons.

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