Research on Cloud Storage: Advantages and Disadvantages

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Abstract- *The concept of cloud computing becomes more and more popular nowadays. Not only is cloud computing a technical thing, but it also reduces the consumption of electricity, waste and carbon emissions. A very valuable area of study is data storage in cloud computing. Cloud storage is a digital storage solution using multiple servers.*

This paper introduces the concept of cloud computing and data storage in cloud computing with its advantage and disadvantage. Then we will go through what is cloud storage how does it works and what are there benefits. In the last part we illustrate how to make data storage cheaper and faster.

Keywords- Cloud Computing; Data Storage; Cloud Storage Architecture; Advantages; Disadvantages

I. INTRODUCTION

Cloud computing may help to save and access your computer's data and programmes over the web, rather than the hard drive. The cloud is just a picture of the network. Cloud Computing has changed the IT economy radically, creating new markets, new business models, and a whole new age of business.

Cloud storage may be a model of cloud computing that stores information on the net through a provider of cloud computing that manages and operates data storage as a service. It is supplied with just - in –time capacity and costs on demand, and removes the procurement and maintenance of your own data storage infrastructure.

1. LITERATUREREVIEW

What is Storage for the Cloud and why do we use it?

Cloud storage uses a range of servers to store files, including web aids, as a digital storage solution. Cloud storage has developed in recent years, be it popularity, technology, and being a local storage competitor , primarily due to the welfare it gives:

Safety: Your website backups will be located off-site and on multiple servers. This means that your backup is better secured than when it is saved on a local server against failure and hacking of data.

Availability: You (and your team) may, regardless of your location, access site backups because it is available online. This is not necessary with local storage.

No maintenance required: As long as cloud servers are managed by a different organization, you would not be able to employ experienced IT workers to take care of the server. At the end of the day, a substantial sum of money can be saved.

Every storage solution is distinct. Even so there are two of the major players that provide this storage:

Amazon S3: An alternative that allows various servers around the world to store files(such as backup files).This solution provides file codification and allows you to share those files publicly as well.

Google Cloud: Google Cloud provides unlimited storage space, the more extreme Google Drive is. Furthermore, it enhances security and therefore offers the ability to restart transfer of files following a failure.

1.1 HOW DOES CLOUD STORAGE FUNCTIONS

Cloud storage is purchased from a third-party cloud provider who, during a pay-as-you-go model, owns and manages data storage capacity and delivers it over the internet. Capacity, protection and robustness are handled by these cloud storage providers to build data accessible to your applications all over the world. It uses data centers that has large computer servers to physically stores data and make it available online to users via the web. Users can remotely download their content, store it and receive information as needed.

1.2 CLOUD STORAGE REQUIREMENTS

There are some basic necessities when considering storing data in the cloud.

Imperishability: Data should always be stored, preferably in each facility through multiple installations and multiple devices. Data loss does not result in natural catastrophes, human error, or mechanical faults.

Availability: When appropriate, all data should be available, but there is a difference between production data and archives. The optimal cloud storage would have the right balance of recovery times and costs.

Security: All data, at rest and on the go, is well encrypted. Permissions and access controls should work as well within the cloud as they do for storage on the premises.

II. ARCHITECTURE OF CLOUD STORAGE

Cloud storage architectures essentially include the delivery of storage on demand in a highly scalable and multi-tenant way. In general, cloud storage architectures have a front, which exports an API to the storage. This API in traditional storage systems, however, changes inside the cloud. This is the SCSI protocol. Front ends of the on-line operation, front ends dependent on files and even more traditional ends (such as Internet SCSI, or iSCSI). Eventually, the physical storage for information is introduced by the rear end. This may be an indoor protocol that implements the physical disks with special features or a common rear.
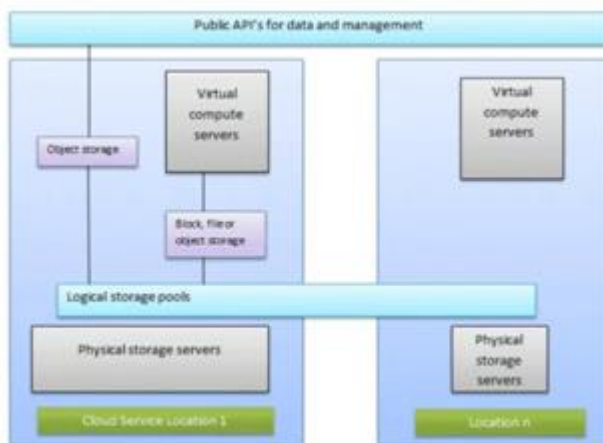
High Level Architecture of cloud storage

III. TYPES OF STORAGE OF CLOUD

3.1 Personal Cloud Storage: It is a branch of public cloud storage that saves personal data inside the cloud and enables the customer to view information to anywhere. It also provide data synchronization and knowledge exchange across different

devices. An instance of private cloud storage is Apple icloud. PCS devices are a source of the benefits of high-capacity, cloud-based storage for home users without losing control of their details. Users can access content from several computers that use a browser on their PCS system, while mobile apps provide access from iOS and Android devices. Without using a public cloud provider, files are also shared.

3.2 Public Cloud Storage: Public cloud storage is a cloud storage architecture that allows human and organizational data storage, editing, and maintenance. This kind of data resides on a multinational cloud service which is accessible over the network using a subscription-based payment system where users pay exclusively for storage space.

A data company that publicly supports, manages and provide storage for several different users provide public cloud storage .

In addition, the public cloud computing infrastructure is referred to as storage as a service, storage of useful features and internet storage.

3.3 Private Cloud Storage: Private secondary storage is a sort of deport mechanism that, by applying cloud computing and storage technologies, stores the data of an enterprise on in-house storage servers.

Private cloud storage is similar to public cloud storage, providing the storage architecture with usability, scalability, and adaptability. But it is not publicly available, unlike public cloud storage, and is operated by one company and its approved external partners.

Additionally, private cloud storage is referred to as internal cloud storage.

3.4 Hybrid Cloud Storage: This combines proprietary and public cloud computing where sensitive data is housed in a company's private cloud and other data is stored in the public cloud.

IV. PROVIDERS OF CLOUD STORAGE

Types of Secondary depot Providers

Customers and businesses will have to focus on local storage by moving data and software into the cloud .You should select a provider that, while keeping your data secure, will provide the greatest sum of low-cost depot and frequency.

V. ADVANTAGE OF CLOUD STORAGE:

5.1 **Usability and accessibility:** Most cloud platforms are supplied with a drag-and-drop functionality and easy to interface. Google drive can be used as and example on Google or Apple iDrive. Both of them have an easy guide and you can easily upload your file on your online drive without any professional knowledge. For example, you can recover the file that uses a machine or other internet access system if the drive that uses a mobile device has been saved.It doesn't matter where you are now. You can browse your files anywhere in the info centres online if you have an honest Internet connection.

5.2 **Protection**: If any thing relates to the web, then security is our primary concern, and cloud storage services are used mainly by large and small companies, so they make sure the provider gives them better protection when selecting their company's cloud service.

Online storage stores the information by replicated servers and even if one of these database centers crashes, the data is handled, secured and tracked by the opposite data centers. If all the information centers of the database provider malfunction or become ruined, only the data will be lost and it is always completely improbable because there are thousands of information centers in a cloud storage facility.

5.3 **Cost-efficient:** The company just uses the online services to outsource the storage issue. The organization's use of cloud data management reduces the investment of internal resources.

This platform requires little internal power and resources for the company itself; it is managed by the cloud storage service. Several cloud storage providers provide cloud storage for life at a reasonable price, which can be a win-win deal for small organizations and small customers.

5.4 **Easy file sharing:** The file sharing capabilities for each cloud storage provider helps you share your files with other users. You may either send a file to a different user or ask multiple users to see your files. Most suppliers provide a cloud environment where two users can exchange their information using the same cloud provider, but only few suppliers have inter file sharing capabilities.

5.5 **Automation:** Cloud storage operates on your device like a hard drive, and if you want to store any cloud entry, any ongoing activity will not be tempered. Even one client may have an online storage service and therefore, since it is all managed and automatically by the supplier, the current responsibility of one user couldn't influence the position of the other person.

5.6 **Different users:** There can be quite a single usage associated with the same cloud environment. With cloud storage, a regular file can operate with most users. For instance, you might allow several users to view your files and edit them. An approved user from anywhere in the world can access the information in real time.

5.7 **Synchronization:** The sync function is given by every storage provider. With synchronization, any system you like will synchronize the cloud storage data with it.As we have said, though, we would use synchronization to view our data from every device or any part of the planet. You will log in from any computer with the valid knowledge to your subscription storage service and will be ready to view all your data stored in cloud storage. It is not necessary to transfer data from one computer to another, but you would like an accurate internet connection to provide access to any or any of your files.

5.8 **Convenience:** To access or display your files, you need no hard disc or flash drive — it's all done online. However, you would need a memory card otherwise you can retrieve the information on your device if you want to download some file or data. But it may not take up much space on your computer if you want to surf your files. Although any changes to the information are made, all changes are reflected in every system synced with the storage service. You don't need a cloud storage service

specialist or professional know-how. The seller himself is responsible for all the jobs.

5.9 Scalable: Cloud computing that is scalable and flexible. The service package will be upgraded if there is not enough data plan. And you don't need to transfer data from one place to another and add some more space to your computing environment with some extra functionality.

VI. DISADVANTAGE OF CLOUD STORAGE:

6.1 Drag and drop: The drag and drop alternative will also circulate from one area to another your particular facts, so make sure that an alternative drag and drop is used instead. Apply the reproductive and paste procedure simply.

6.2 Internet Dependency: Without the net, while downloading the report from the cloud garage, you can't get access to your facts. If there may be an issue with a web connection, the facts you downloaded can be corrupted.

6.3 Data safety and privateness: Many cloud garage providers lack field so fin formation security and privacy, and there are numerous instances in which the facts from the cloud garage are leaked.

6.4 Costly cloud storage: Since they are primarily configured for commercial use, most of the best Cloud providers are expensive. Any functionality may need to be sacrificed if you opt for a cheaper scheme.

6.5 Connection to the Internet: Cloud-based storage depends on an online connection. You will have problems gaining access to your storage if you are on a slow network. If you find yourself offline, you will not be prepared to access your files.

6.6 Costs: For uploading and downloading files from the cloud, there are additional costs. If you attempt to access multiple files over and over again, this can add up fast.

6.7 Hard Drives: Storage in the cloud is intended to eliminate our reliance on hard drives, right? Some providers of business cloud storage also need physical hard drives as well.

6.8 Support: Cloud storage support is not the best, particularly if you are using a free version of a cloud

provider. You are referred to aknowledge domain or FAQs by several providers.

VII. WAYS TO MAKE CLOUD DATASTORAGE FASTER AND CHEAPER

7.1 Architecture of the right cloud data storage for the application:

The interface, backend, applications, databases and technical features are the core elements that work together to make a basic cloud infrastructure suitable for any use. Different cloud types have different combinations and user controls, namely private, public, hybrid, and multi cloud, making them ideal for various needs. For eg, a public cloud is very flexible, economical and extremely reliable. In the other hand, a private cloud can be a small cost, but it provides improved security and personalization. A hybrid provides a mix of public and personal cloud technologies into a particular cloud storage in a heterogeneous model, while various cloud providers provide many virtualization.

A company may have specific requirements for hosting its applications, so first understanding their requirements is essential. A company will then describe the necessary design of the cloud data storage to include on-demand storage with agreed budget and requirements.

7.2 Depending on the type of use, select cloud storage:

We know that various organizations have different needs and give their customers different types of services, so the essence of their files or the data provided is often different. For instance, an organisation that provides a streaming service has a great deal of media data to accommodate fast broadband storage volumes.

After choosing the correct public, private, or hybrid layout, which can be represented as file, blocks and object-based storage at three levels, you would like to know how to save this information. The storage of a single entity is referred to by the file as a private file (document or spreadsheet). Applications which always need reciprocal file access and which often require a method of filing use it. With an easy, structured and open platform, it works well for organizing data. In SAN (storage area network) architectures, block-level storage is used and refers to a private block of raw storage data. For business applications such as databases or ERP systems, this format is suitable. Unorganized content such as videos, audio, pictures, and scanned images benefits from object-based storage. It's ideal for building modern applications that require scale and adaptability from scratch.

Choosing the proper storage will help boost the appliance's efficiency.

7.3 Pick the required cloud economy according to your needs:

Types of data management options provided by cloud suppliers include Azure Storage and Amazon S3. You get the requisite amount of disc space and other features by paying a monthly or yearly subscription fee. Public cloud solutions for such subscription platforms are often deemed cost-effective, but some companies are reluctant to use them because they ship their stored data outside of their network premises. The corporation should then choose a personal cloud in which the management of information remains in a firm's network, in the event that the security of the data processed is a big issue. Often, some organizations use a mixed cloud in which some services are handled internally, and others are provided to third parties in the cloud. The company's leading providers in the sale of these platforms are Dell EMC Corporate Hybrid Cloud, IBM Elastic Disk Server, and Microsoft Azure Stack. Everything needs to be done.

7.4 How sensitive the details are (security vs. efficiency):

Security is another major concern for knowledge storage within the cloud. Compared to growing physical storage, the cloud provides a cheaper alternative, but it also has security-related concerns. To stop any data breach or compromise, organizations must tackle challenges such as security and performance.

One easy way to secure such valuable knowledge is to use cryptography. All data stored in the cloud are first encrypted, ensuring that it would not be possible for any hackers to misuse the information without having the appropriate decryption key. But this method is concerned: it will do what it can to decide an old algorithm like MD5 on secure encryption (SHA 3). It can also impact the application's efficiency, as encryption will impede transmission speeds when the amount of information is heavy.

Another important aspect is the high abundance of information that can be guaranteed by the geological redundancy (physical separation of datacenters between geographic locations). This ensures you can still manage the application however increases the total expense and complexity of the system. In addition, IT teams should affirm that they understand the regulatory enforcement, management and costs concerns when selecting this. Before considering such an investment, companies should also consider specific factors such as delays, performances and conditions of durability.

7.5 Additional options for the configuration to think about:

There are also other factors, such as automatic uploading and synchronization, self-scaling options, or max capping / warning, that you can search for in conjunction with your cloud storage. Auto-upload will lead to higher storage costs or exhaustion of the existing data storage cap easily.

Furthermore, you will need to consider auto-scaling storage ability in your application (for example, automated subscription of additional storage spaces as soon because it reaches existing capacity).It can also be a simple and hassle-free way to enable this feature by default for your application, but it can quickly cause large operating budgets. When the storage limit exceeds a threshold, it allows you plenty of time to think about expanding the capacity or packaging current data, and to build extra storage space.

In addition, some other variables tend to be provided by special requirements in addition to the above listed observable variables. For eg, the organization has to organize a two-day online event that includes or offers time-based discount scheme to thousands of consumers. These activities will mean that the apps require extra storage capacity to accommodate for traffic loads. You would like to ensure that the selected cloud computing space, where you have installed your services properly, supports those special criteria.

VIII. SOME OF THE FREE CLOUD STORAGE SERVICES ARE

In cloud computing, Google is among the biggest. It is offering:

Google Drive: Free data storage is available at Google for up to 15 Gb. Drive is one of the most accommodating cloud services. Google also shares its disc space with other Google sites such as Gmail and Google Images. Mobile applications are now available for easy access by iOS and Android users. It enables us to synchronize data from system to cloud.

One Drive: One drive is particularly suitable for Microsoft Windows users. It allows for 5GB of free storage. Microsoft products have been integrated excellently. The files will still be edited without downloading. But not one drive users, it is possible to share files with other users on one drive.

Drop Box: It has outstanding storage support with a web interface for third-party applications that is also simplified and simple to use.

Dropbox provides 2GB of free space for brand new users. However, there are other ways to raise this room without paying, such as welcoming mates, filling in the guideline (250 MB), etc.

There are Windows, Linux and Mac desktop applications, and smartphone apps, including Android, iOS, and Kindle.

The web version allows files to be modified without the need to download them.

IX. CONCLUSION

Cloud data management technology is a crucial field in the use of computers and resolves the storage mode of cloud data. We present similar cloud computing and cloud storage principles in this paper. The primary cloud storage information is provided in this document. Storage in the Cloud because of its availability, scalability, efficiency, is more advantageous than conventional   storage,   portability and its criteria for accessibility. Implementing Cloud Storage Virtualization improves the scalability, availability but provides protection within the virtual at an equal time the surroundings are complex. Therefore, a part from virtualization, focus should be put on security in virtual memory.

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