

# CLOUD STORAGES: ADVANTAGES AND DISADVANTAGES

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## Abstract

*At this point in time, the idea of cloud computing is gaining more and more mainstream acceptance. The use of cloud computing is not only a technological advancement, but it also helps to cut down on the amount of garbage, carbon emissions, and power that is consumed. Research on the storage of data in cloud computing is an extremely significant topic of study. A digital storage system that makes use of several servers is referred to as cloud storage. In this work, the idea of cloud computing and data storage in cloud computing are presented, together with the advantages and disadvantages of each corresponding notion. After that, we will discuss what cloud storage is, how it operates, and the advantages that come along with it. In this final section, we will demonstrate ways to make data storage more efficient and less expensive.*

**keywords:** *Cloud ,storages, advantages*

## Introduction

The method in which we save, access, and exchange data has been completely transformed by cloud storage options. As a result of the progression of technology, a rising number of individuals and enterprises are turning to cloud storage solutions in order to manage their digital assets. This transition from traditional storage systems that are located on-premises to cloud-based solutions has resulted in a number of benefits as well as some difficulties. Through this conversation, we will investigate the pros and downsides of cloud storage, throwing light on both the advantages of cloud storage as well as the possible pitfalls that it may have. When people and organisations have a thorough awareness of these issues, they are able to make educated judgements on the utilisation of cloud storage solutions to fulfil their requirements for data management.

## Literature Review

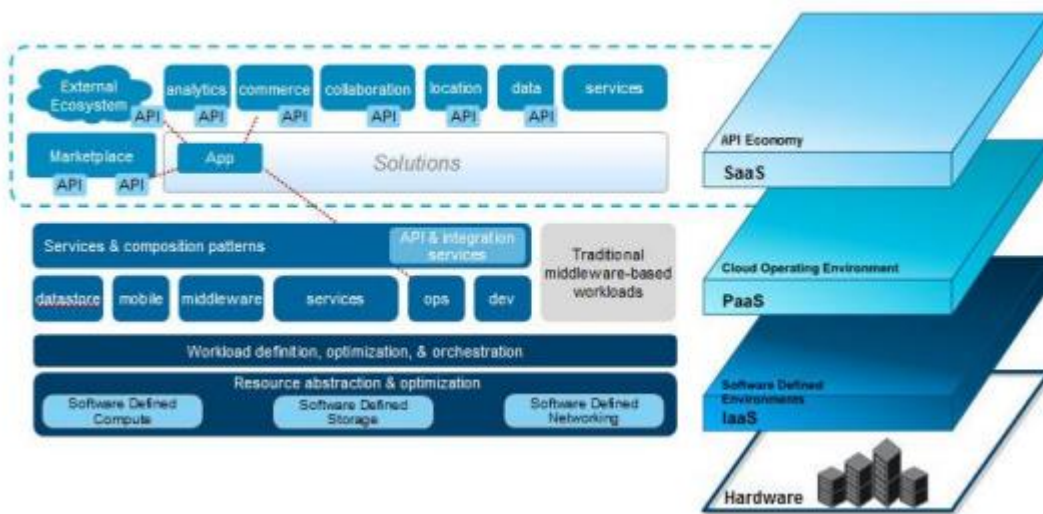
According to Marks and Lozano (2010), the concept of cloud computing is an access to virtualized information technology resources that are located outside of the organisation and may be used on demand. In addition to being accessible over the internet, many materials are shared with other people and require a monthly fee to participate. In addition to this, it provides a straightforward and on-demand access to pools of computing resources that are very elastic. Their customers are able to conceive of computing as being boundless, having reduced expenses, and being trustworthy thanks to cloud computing. Users, on the other hand, do not appear to be concerned with the construction, how it runs, those who operate it, or the location of the facility.

Overall, the cloud has the following four basic characteristics:

- Elasticity: Whenever a customer needs extra resources, the service or storage will be immediately delivered. In contrast, if the customer isn't going to use the service, it will be reduced.
- Self-service provisioning and automatic deprovisioning: Directly from the customer, they might request a storage capacity.
- Application programming interfaces (APIs): The ability to seamlessly interact across programmes and data sources is a major benefit of standard interfaces.
- Billing based on service usage: The businesses pay for the amount of resources that they consume (Hurwitz, Bloor, & Kaufman, 2009).

**Architecture**

Layers are the fundamental building blocks of cloud computing's architecture. A cloud infrastructure, also known as IaaS, a cloud application platform, also known as PaaS, and cloud application software, also known as SaaS, are the three primary layers.



**Figure 1.** Architecture of Computing on the Cloud

Infrastructure as a Service (IaaS) is the layer that encompasses cloud storage as one of its components. Included in this layer are both the physical and virtual resources that were utilised in the construction of the cloud. Servers, both physical and virtual, have the responsibility of providing and managing resources. According to Marks and Lozano (2010), storage pools are not aware of the applications that are currently operating on them.

**Understanding Infrastructure as a Service**

According to the definition provided by Hurwitz, Bloor, and Kaufman (2009), Infrastructure as a Service (IaaS) refers to the procurement of servers, networking technologies, storage, and data centre space on a subscription basis. The transfer of these services may require the use of virtualization technologies and operating systems. IaaS customers do not purchase computer resources; rather, they pay rent based on how much they use the service. It is possible for a client to obtain more resources promptly if he need more than he had anticipated, which is one of the characteristics. As a result, the infrastructure may be increased or decreased in accordance with the requirements of the application. Also included in these services are service level agreements (SLAs), which specify the amount of time that the resource will be accessible. According to Hurwitz, Bloor, and Kaufman (2009), businesses that are engaged in research-intensive initiatives are the ideal candidates for infrastructure as a service. When using IaaS, researchers are able to conduct testing at extremely remote levels. The organisations that have wants that are comparable to one another might acquire the power or storage when they require it, rather than spending the money for the most essential level of necessity.

## Cloud Storage

When a user, consumer, or corporation makes use of cloud storage, it indicates that their data will be saved in the cloud rather than on a local system. A client service and network connectivity are required in order to complete the process of gaining access to the data. Cloud storage provides clients with the ability to access their data from any location, even if they do not have access to the network of their organisation (Galloway, 2013). This is one of the advantages presented by cloud storage. The reliance on online storage has risen as a result of the proliferation of stronger wireless networks and the rising usage of mobile devices in the context of BYOD (Bring-your-own-device) policies (Erturk & Iles, 2015).

## Physical Storage Infrastructure

During the 1980s, the storage was connected to servers and mainframes, and the programmes that were operating on the same computers made use of this storage. After that, storage area networks (SAN) came into being, and the storage became fragmented while simultaneously being connected by high-performance network connections. Because of this, various servers were able to access the same storage pools, which in turn simplified the management of storage. Additionally, network access storage (NAS) brought about comparable advantages, but for applications with lesser performance characteristics. (2010) According to Marks and Lozano. Consequently, the separation of those storage resources led to the generation of a focus on data and physical infrastructure, which resulted in benefits such as a decrease in costs and more flexibility.

## Storage as a Service

According to Galloway (2013), Storage as a Service provides clients or customers with space on a cloud rather than requiring them to purchase their own physical storage. Because it offers a low-cost option for backup, replication, and disaster recovery, this service has been increasingly popular in recent years. It is therefore possible for a cloud provider to lease storage at an on-demand fee, which results in a reduction in operational expenses. There is a comprehensive selection of cloud storage providers, each of which offers a client programme that allows users to access the storage space via the network. Some of them provide clients the ability to store any kind of data, while others are limited to storing documents such as emails or digital

photographs. It is the responsibility of the vendors to provide a redundancy strategy and to maintain hundreds or thousands of data servers in order to guarantee that all client data will be accessible at any time.

## Advantages of Cloud Storage

There are several advantages to keeping data on the cloud as opposed to making use of local storage.

- When it comes to storage, companies only pay for what they use. It generates operational costs instead of capital expenditures.
- The data is easily available and dependable. Instead of being stored locally, the data is made available on the web across many storage systems.
- More robust safety measures to take during emergencies. In the event of a fire or other natural catastrophe, the organization's local backup may become unavailable.
- Hardware redundancy and automated storage failover are features offered by cloud companies. As a result, hardware failures are less likely to cause service disruptions. The suppliers are well-versed in the distribution of copies to minimise hardware failure.
- Storage capabilities that are practically endless. The prices will go down if the client doesn't need any additional storage.
- Balancing tasks. Through the use of workload balancing, cloud companies assist their clients in attaining optimal performance.
- Storage in one cohesive perspective. A consolidated picture of storage utilisation is possible with the help of the export that cloud companies offer (Galloway, 2013).

## ARCHITECTURE OF CLOUD STORAGE

In its most basic form, cloud storage designs involve the provision of storage on demand in a manner that is both highly scalable and supports multiple tenants. In general, cloud storage designs consist of a front that brings an application programming interface (API) to the storage. This application programming interface (API) in traditional storage systems, on the other hand, is different in the cloud. This is the protocol known as SCSI. There are front ends that are based on files, front ends that are depending on the online operation, and even more traditional front ends (such as Internet SCSI, or iSCSI). At some point in time, the rear end will be responsible for introducing the physical storage for the information. It is possible that this is an indoor protocol that implements the physical discs with unique characteristics or a common rear.

## DISADVANTAGE OF CLOUD STORAGE:

Drag and drop: Additionally, the drag and drop option will move your specific data from one location to another; therefore, it is imperative that you make use of an alternate drag and drop option instead. Utilise the reproductive and paste method in a straightforward manner.

**Internet Dependency:** In the event that you do not have access to the internet, you will be unable to access your data when downloading the report from the cloud storage. In the event that there is a problem with your internet connection, the information that you downloaded can get damaged.

**Data safety and privateness:** various cloud storage providers do not provide enough field so fin formation security and privacy, and there are various cases in which the information stored in the cloud storage sheds light on the situation.

**Costly cloud storage:** Due to the fact that they are primarily designed for business purposes, the majority of the top cloud providers are prohibitively pricey. If you go with a more affordable plan, it is possible that you may have to give up some features.

**Connection to the Internet:** Storage that is hosted in the cloud requires a connection to the internet. Should you be connected to a sluggish network, you will have difficulties in getting access to your storage. If you find yourself offline, you will not be able to access your data since you will not be prepared.

**Costs:** There are additional fees that accompany the process of uploading and downloading data from the cloud. If you repeatedly try to access many files, this can quickly build up to a significant amount of dollars.

**Hard Drives:** One of the goals of cloud storage is to reduce or remove the need for us to rely on hard drives, right? A number of cloud storage providers for businesses require actual hard drives in addition to their services.

**Support:** In instance, if you are utilising a free edition of a cloud service, the support for cloud storage is not the finest. You may be directed to a knowledge area or frequently asked questions by a number of suppliers.

## **The application-specific architecture of the most appropriate cloud data storage:**

The interface, the backend, the applications, the databases, and the technological characteristics are the fundamental components that, when combined, provide a fundamental cloud infrastructure that is suited for every application. Various varieties of cloud computing, including private, public, hybrid, and multi-cloud, each provide a unique mix of user controls and configurations, making them suitable for a wide range of applications. An example of this would be a public cloud, which is very adaptable, cost-effective, and dependable. With a private cloud, on the other hand, the cost may be relatively low, but it offers enhanced security and the ability to personalise user experience. A hybrid utilises a combination of public and personal cloud technologies to create a specific cloud storage system that operates according to a heterogeneous paradigm. On the other hand, several cloud providers provide a wide range of virtualization options. Due to the fact that a company could have particular needs for the hosting of its applications, it is vital to first and foremost understand those requirements. Following this, a corporation will outline the necessary architecture of the cloud data storage, which will include on-demand storage, along with the needs and budget that have been agreed upon.

## **Depending on the type of use, select cloud storage:**

It is common knowledge that different organisations have varied requirements and serve their clients with a variety of services; thus, the core of their files or the data that they supply is frequently distinct from one

another. An example of this would be a company that offers a streaming service and has a significant amount of media material that has to be stored in order to meet high-speed broadband storage volumes. You would like to know how to preserve this information after you have selected the appropriate public, private, or hybrid layout, which may be represented as file, block, and object-based storage at three different levels. In the context of the file, the storage of a single entity is referred to as a private file (document or spreadsheet). Application programmes that require a technique of filing and that always demand access to files in a reciprocal manner are the ones that utilise it. It is an effective method for organising data since it is a platform that is simple, well-structured, and open. It is common practice to employ block-level storage in storage area network (SAN) designs. This type of storage refers to a private block of raw storage data. This format is appropriate for use in business applications such as database management systems and enterprise resource planning (ERP) systems. The utilisation of object-based storage is advantageous for the storing of disorganised content such as films, music, photos, and scanned images. It is quite suitable for the construction of contemporary applications that demand scalability and adaptability from the ground up. Increasing the efficiency of the appliance may be accomplished by selecting the appropriate storage.

## **Pick the required cloud economy according to your needs:**

Azure Storage and Amazon S3 are two examples of the types of data management choices that cloud providers feature in their offerings. Through the payment of a monthly or yearly subscription fee, you are able to obtain the necessary amount of disc space in addition to additional advantages. Despite the fact that public cloud solutions for subscription platforms are frequently considered to be highly cost-effective, several businesses are hesitant to utilise them due to the fact that they transport their data that is kept outside of their network premises. In the event that there is a significant concern regarding the safety of the data that is being processed, the business ought to consider selecting a personal cloud in which the management of information is maintained within the network of the company. A mixed cloud is a cloud computing model that is utilised by certain organisations. In this model, certain services are managed internally, while others are given to third parties in the cloud. Dell EMC Corporate Hybrid Cloud, IBM Elastic Disc Server, and Microsoft Azure Stack are the three suppliers that the corporation considers to be the most successful in the purchase and selling of these systems. Each and every item must be completed.

## **SOME OF THE FREE CLOUD STORAGE SERVICES ARE**

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

**Google Drive:** On Google, users may take use of free data storage for up to 15 gigabytes. Google Drive is among the cloud services that offers the most flexibility. Gmail and Google Images are two examples of Google services that share the same amount of storage space on Google's servers. Users of iOS and Android now have the ability to easily access mobile applications due to their availability. It gives us the ability to synchronise data between our system and the cloud.

**One Drive:** Users of Microsoft Windows are the ones who will benefit the most from using one drive. It provides a free storage space of 5 gigabytes. Microsoft's products have been thoroughly incorporated into the system. The files will continue to be modified even if they are not downloaded. As opposed to users of a single drive, it is feasible to share files with other users who are using the same drive. **Box for Dropping:** In addition to having exceptional storage capacity, it also features a web interface for third-party programmes

that is not just simpler but also easy to interact with. To welcome brand new customers, Dropbox offers a free storage space of 2 gigabytes. On the other hand, there are additional ways to boost this room without having to pay for it, such as inviting friends, filling up the guideline requirements (250 MB), and so on. In addition to desktop software for Windows, Linux, and Mac, there are also applications for smartphones, such as those for Android, iOS, and Kindle. When using the web version, it is possible to make changes to files without having to download them first.

## CONCLUSION

One of the most important areas of study in the world of computer usage is cloud data management technology, which also answers the problem of how cloud data is stored. Within the scope of this work, we provide cloud computing and cloud storage ideas that are comparable. All of the most important information regarding cloud storage is included in this article. Storage in the cloud is more favourable than traditional storage due to its availability, scalability, and efficiency. Additionally, it is more portable and meets accessibility standards than traditional storage. Establishing a Cloud Storage System The scalability and availability of the system are both improved by virtualization, which also offers safety within the virtual environment while simultaneously making the environment more complicated.

## References

- [1] Amazon. (2016). Amazon Web Services, Inc. Retrieved from [https://aws.amazon.com/?nc2=h\\_lg](https://aws.amazon.com/?nc2=h_lg)
- [2] Diaz, A. & Ferris, C. (2013). IBM's open cloud architecture. Retrieved from <http://www.ibm.com/developerworks/cloud/library/cl-open-architecture/cl-open-architecturepdf.pdf>
- [3] Erturk, E., & Iles, R. (2015). Case study on cloud based library software as a service: Evaluating EZproxy. *Journal of Emerging Trends in Computing and Information Sciences*, 6(10), 545-549. Retrieved from [https://www.researchgate.net/publication/284285073\\_Case\\_Study\\_on\\_Cloud\\_Based\\_Library\\_Software\\_as\\_a\\_Service\\_Evaluating\\_EZproxy](https://www.researchgate.net/publication/284285073_Case_Study_on_Cloud_Based_Library_Software_as_a_Service_Evaluating_EZproxy)
- [4] Galloway, J. M. (2013). A cloud architecture for reducing costs in local parallel and distributed virtualized cloud environments (Order No. 3596134). Available from ProQuest Dissertations & Theses Global. (1447247455).
- [5] GoGrid. (2012). GoGrid Cloud Storage. Retrieved from [https://wiki.gogrid.com/index.php/Cloud\\_Storage](https://wiki.gogrid.com/index.php/Cloud_Storage)
- [6] Hurwitz, J., Bloor, R. & Kaufman, M. (2009). *Cloud Computing For Dummies*. New Jersey, NJ: Wiley. Retrieved from ProQuest ebrary database.
- [7] Marks, E. & Lozano, B. (2010). *Cloud Computing*. New Jersey, NJ: Wiley.
- [8] Rackspace. (2016). Rackspace Hosting. Retrieved from <https://www.rackspace.com/en-au/cloud/block-storage>