

Research Article

## A Study on Cloud Storage

**Abhilasha Singh**

Assistant Professor, Department of computer science, singhabhilasha004@gmail.com

### Abstract

Cloud computing is the emerging technology. Cloud computing provides easy access and high performance computing on the data. Another major challenge that today software companies face, are storage of data at affordable cost and make available all the time. This paper provides the study on introduction to cloud storage and virtual storage architecture. The practice of using a network of remote servers hosted on the internet to store, manage and process data, rather than a local server or a personal computer.

### INTRODUCTION

Day to day, the usage of data in the computer has been increasing from common man to organization. The question arises where to store the important data, how to share the data, how to access the data globally, how to manage the data, how to make data available all the time, how can all these be achieved with reasonable cost? The answer to all these questions is cloud computing. NIST [1] defines Cloud computing as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction. The cloud enable users to access the same files and applications from almost any device.

### BENEFITS OF CLOUD COMPUTING

He factors that make more companies to move cloud are:-

- 1.As the services are based on "Pay per use" capital expenditure can be reduced
- 2.User Friendly Environment Quick Deployment.
- 3.Less Energy Consumption.
- 4.Cost saving
- 5.sustainability
- 6.Flexibility

### METHODES OF CLOUD COMPUTING:

There are 4 main types of cloud computing: **public clouds, private clouds, hybrid clouds, and multiclouds. There are also 3 main types of cloud computing services: Infrastructure-as-a-Service (IaaS), Platforms-as-a-Service (PaaS), and Software-as-a-Service (SaaS).**

Choosing a cloud type or cloud service is a unique decision. No 2 clouds are the same (even if they're the same type), and no 2 cloud services are used to solve the same problem. But by understanding the similarities, you can be more informed about how the caveats of each cloud computing type and cloud service might impact your business.

#### 1.Public clouds

(i)Public clouds are cloud environments typically created from IT infrastructure not owned by the end user. Some of the largest public cloud providers include Alibaba Cloud, Amazon Web Services (AWS), Google Cloud, IBM Cloud, and Microsoft Azure.

(ii)Traditional public clouds always ran off-premises, but today's public cloud providers have started offering cloud services on clients' on-premise data centers. This has made location and ownership distinctions obsolete.

(iii)All clouds become public clouds when the environments are partitioned and redistributed to multiple tenants. Fee structures aren't necessary characteristics of public clouds anymore, since some cloud providers (like the

Massachusetts Open Cloud) allow tenants to use their clouds for free. The bare-metal IT infrastructure used by public cloud providers can also be abstracted and sold as IaaS, or it can be developed into a cloud platform sold as PaaS.

## **2.Private clouds**

(i) Private clouds are loosely defined as cloud environments solely dedicated to a single end user or group, where the environment usually runs behind that user or group's firewall. All clouds become private clouds when the underlying IT infrastructure is dedicated to a single customer with completely isolated access.

(ii) But private clouds no longer have to be sourced from on-prem IT infrastructure. Organizations are now building private clouds on rented, vendor-owned data centers located off-premises, which makes any location and ownership rules obsolete. This has also led to a number of private cloud subtypes, including.

## **3.Hybrid clouds**

(i) A hybrid cloud is a seemingly single IT environment created from multiple environments connected through local area networks (LANs), wide area networks (WANs), virtual private **networks (VPNs), and/or APIs.**

(ii) The characteristics of hybrid clouds are complex and the requirements can differ, depending on whom you ask. For example, a hybrid cloud may need to include:

## **4.Multiclouds**

(i) Multiclouds are a cloud approach made up of more than 1 cloud service, from more than 1 cloud vendor—public or private. All hybrid clouds are multiclouds, but not all multiclouds are hybrid clouds. Multiclouds become hybrid clouds when multiple clouds are connected by some form of integration or orchestration.

(ii) A multicloud environment might exist on purpose (to better control sensitive data or as redundant storage space for improved disaster recovery) or by accident (usually the result of shadow IT). Either way, having multiple clouds is becoming more common across enterprises that seek to improve security and performance through an expanded portfolio of environments.

## **CLOUD STORAGE**

Cloud storage is a service that maintains data, manages and backs up remotely and makes data available to users over the network (via internet). There are many cloud storage providers. Most of the providers provide free space up to certain gigabytes. For ex: Drop Box provides free space up to 2GB, Google Drive, Box, Amazon, Apple Cloud provide free space up to 5GB, Microsoft Sky Drive provides free space up to 7GB. Customers have to pay an amount according to the plan if they cross the free space limit. Features like maximum file size, auto backup, bandwidth, upgrade for limited space differ from one provider to another provider like maximum file size in Drop Box is 300MB whereas maximum file size in Google Drive is 1TB. By using cloud storage service, customers need not invest on storage devices, even technical support is not required for maintenance, the storage, backup, disaster recovery. The concept of cloud storage is not worth when the client is able to store and manage the data at low cost when compared through the use of cloud. So, the cloud should be designed in such a way that it is cost effective, autonomous, computable, multi-tenant, scalable, available, control, efficient.

Both Legacy and New applications. Cloud storage standards define roles and responsibilities for archiving, retrieving, data ownership. This also provides standard auditing ways so that calculations are done in a consistent manner. These are helpful to the cloud storage providers, cloud storage subscribers, cloud storage developers, cloud storage service brokers. By using CDMI, cloud storage subscribers can easily identify the providers according to their requirements. Even, the CDMI provides a common interface for providers to advertise their specific capabilities so that subscribers can easily identify the providers.

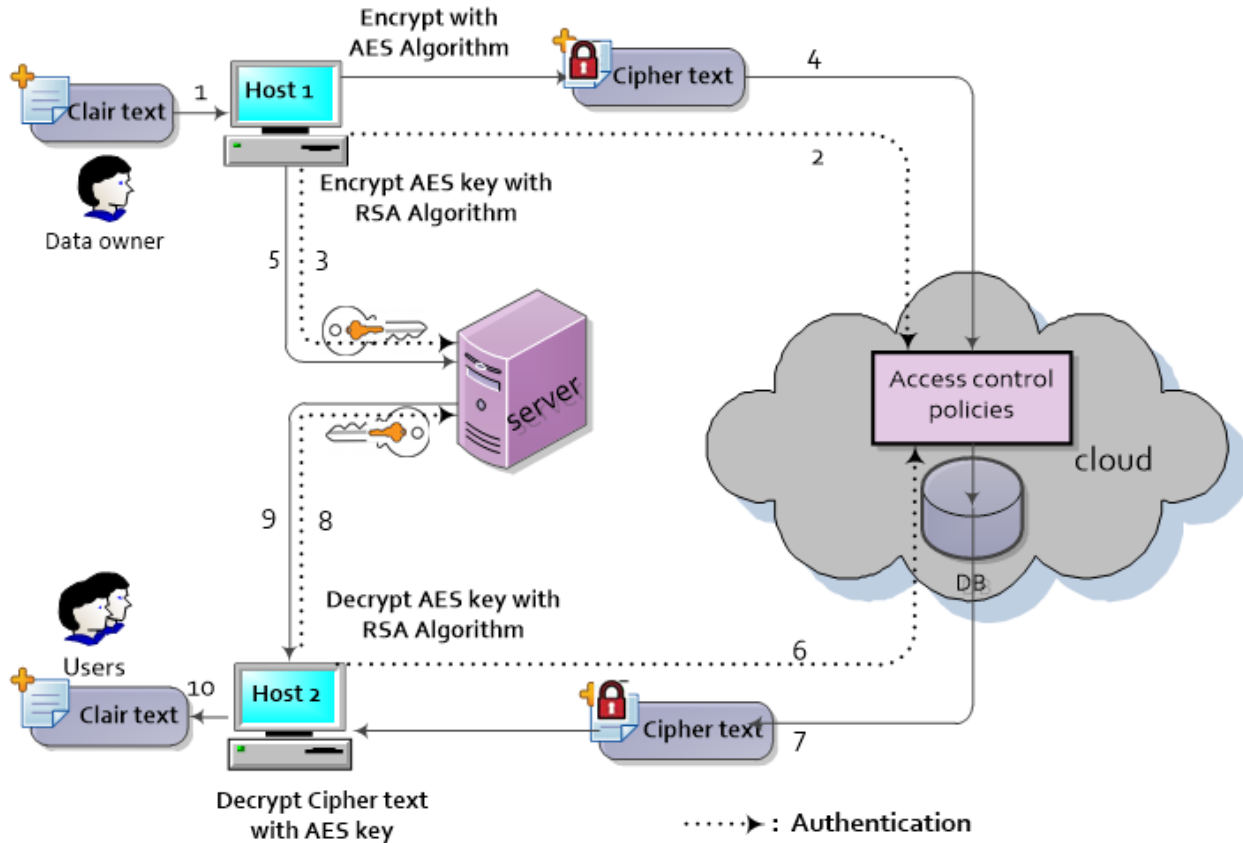


Figure: Cloud Storage Model

**GENERAL CLOUD STORAGE ARCHITECTURE ,**

Cloud storage architecture consists of front end, middleware, back end. The front end can be web service frontend, file based front end, and even more traditional front ends. The middleware consists of storage logic which implements various features like replication, data reduction, data placement algorithms. The back end implements the physical storage for data. The access methods for cloud are different from traditional storage as the cloud holds different type of data of different customers. Most of the providers implement multiple access methods.

**VIRTUAL STORAGE ARCHITECTURE:-**An important part of the cloud model is the concept of a pool of resources that is drawn from upon the demand in small increments .The recent innovation that has made this possible is virtualization. Cloud Storage is simply the delivery of virtualized storage on demand. This architecture is based on Storage Virtualization Model. It consists of three layers namely

- 1.Interface Layer,
- 2.Rule and Metadata Management,
3. Virtual Storage Management.

In Interface Layer, Administrator and users are provided with the interface modes that may include icommands, client web browsers. The Rule and Metadata Management layer consists of 2 parts Upper layer and Under layer. The upper layer consists of separate interface for client and admin Both interface's have different rights. Rule is created from the Operating Transactions. In the client interface, user requests are sent to the Resource Based Services and Meta-Based Services.

present in the Under layer. Resource based service control resource scheduling, where as Meta-based Service manages the Meta data. Physical device virtualization and data file request load balancing is taken care by the Virtual Storage Management layer. Parameters like bandwidth. rotating speed etc are maintained by URM. System maintains a table holding these parameters and also routing table. After analyzing all resource nodes, system will assemble the collection in logic space and structure .

## CONCLUSION

cloud computing is recently new technological development that has the potential to have a great impact on the world. It has many benefits that it provides to its users and businesses. For example, some of the benefits that it provides to businesses, is that it reduces operating cost by spending less on maintenance and software upgrades and focus more on the businesses itself. But there are other challenges the cloud computing must overcome. People are very skeptical about whether their data is secure and private. There are no standards or regulations worldwide provided data through cloud computing. Europe has data protection laws but the US, being one of the most technologically advanced nation, does not have any data protection laws. Users also worry about who can disclose their data and have ownership of their data. But once, there are standards and regulation worldwide, cloud computing will revolutionize the future.

## REFERENCES

1. E.Gorelik. "Cloud Computing Models", Massachusetts Institute of Technology Cambridge, MA.2013. Available: <http://web.mit.edu/smadnick/www/wp/2013-01.pdf>
2. K.Parsi, M.Lahari Comparative Study of Different Deployment in a Cloud. IJARCSSE [online].3(5).pp-512-515.
3. <http://www.baylor.edu/business/mis/nonprofits/doc.php/197132.pdf>
4. R.Aronika Paul RajanS.Shanmugapriya (2012 May-Jun).Evolution of Cloud Storage as Cloud Computing Infrastructure Service. IOSRJCE. 1(1).pp-38-45. [6] Gurudatt Kulkarni Rani WaghmarRajnikantPalwe, VidyaWaykule, Hemant BankarKudilikKoli. "Cloud Storage Architecture" IEEE International conference on
5. Telecommunication Systems, Services, and Applications (TSSA)
6. M. Tim Jones. (2010). "Anatomy of Cloud Storage Infrastructure IBM Available:[https://www.ibm.com/developerworks/cloud/library/cl\\_cloudstorage](https://www.ibm.com/developerworks/cloud/library/cl_cloudstorage)
7. PravinO.Balbudhe,PradipO.Balbudhe.(2013.MAR).Cloud Storage Reference Model for Cloud Computing.IJIEASR.2(3).pp-81-85
8. Hao Liu Shijun Liu XiangruMeng,ChengweiYang.