

A Comparative Analysis on Various Cloud Service Providers

Mayank Pandey¹, Anuwanshi Sharma²

How to cite this article:

Mayank Pandey, Anuwanshi Sharma. A Comparative Analysis on Various Cloud Service Providers. *Jr of Clin Forensic Sci.* 2024;2(2):73–78.

Abstract

Today, many Internet related technologies support us at every turn of our lives. Cloud computing is one of them which attracts more and more attention. Cloud computing is used to maintain, organize, and control as it owns mind computer resources online. It provides data and information, infrastructures, and software online. With the help of cloud storage, users can store and manipulate their data on the Internet and easily access it from every where in the vast world. Cloud events have come up recently in the market and attract a lot of businessmen or women. Its demand is increasing day by day among almost all organizations. However, like any other technology, it also has some risk factors. Since privacy is a significant concern for any organization, safely assessing data becomes the biggest concern. Cloud security is one of the most critical problems slowing cloud growth. Illegal attacks on cloud service systems, data leaking, data stealing, and data manipulation are frequently increasing. To provide safe and secure communication and transport of valuable and confidential information or data. This paper provides a review of some risk factors and security measures in the field of cloud computing and also concerns some security techniques companies use to secure user data.

Keywords: Cloud Computing; Cloud Storage; Cloud Computing Security; Public Cloud; Private Cloud; Cloud Service Providers.

INTRODUCTION

Cloud Computing helps users to access software and data over the Internet. It is a vast concept highly dependent on the network or the Internet.



Author's Affiliation: ¹Software Engineer, ²Ph.D. Scholar, Department of Forensic Science, Golgotias University, Greater Noida 201310, Uttar Pradesh, India.

Correspondence: Anuwanshi Sharma, Ph.D. Scholar, Department of Forensic Science, Golgotias University, Greater Noida 201310, Uttar Pradesh, India.

E-mail: anuwanshisharma@gmail.com

Received on: 02.12.2023

Accepted on: 01.02.2024

To overcome trouble shooting problems and delay in server time due to traffic, cloud computing has been introduced in the IT market. With cloud computing, users put the data and software on the Cloud without buying any servers. The cloud provider will manage servers and provide security assurance; hence no worry about the underlying infrastructure. Cloud computing also includes platform individualism since computer software installation is not required. It is the most efficient, flexible, and reliable data access. Now all programs, like online software applications, complex business management systems, etc., work using cloud services. Cloud computing came into existence to save valuable time and money in purchasing, installing, and maintaining physical equipment and its infrastructure. Cloud computing reduces the role of personal servers and computers and makes computing more flexible and accessible. It provides



efficient, fast, and extensive network access, extracts sources from the Cloud, and other special services to users. As a result, cloud computing has been spread globally at a much larger level. Today Cloud computing covers a vast concept of the IT industry. But in this field, the security of data is the biggest problem that reduces cloud servers' growth. In cloud platforms, it is essential to join a security shield to guard our data against malicious attacks. More over, previous research results need more depth and proper analysis and discussion about the security of cloud management systems. Besides security, there are many other risk factors related to cloud services, like lock-in, isolation failure, and secure data exchange failure.

Aim and Objectives

- To develop a basic understanding about the cloud computing and its models.
- Compare different cloud services providers on the basis of their key features.

Working Models of Cloud Computing

Cloud computing means online applications, software, and servers are provided on users' computers via the Internet. It is a method to stock, manage and process documents on cyberspace. Some models make cloud computing flexible, easy to use, cheap, secure, and approachable to users. These are some models of cloud computing:

- Deployment Model
- Service Model

Deployment Model

Cloud computing has four kinds of access: Private, Public, Community, and Hybrid.

- *Public Cloud*

These Services are available for all public use. These types of cloud services are mostly free. It can be retained, managed, and utilized by businesses, academics, or government organizations. This cloud model may need to be more secure for companies or enterprises because it is open to the public. Amazon web service, Oppo cloud, Oracle, Microsoft, and Google are an example of public clouds.

- *Private Cloud*

A private cloud means cloud service only personally used by a single organization like banks. Private Cloud can be situated at the company place

for safety. The secret cloud model forms private networks.

- *Community Cloud*

Community cloud provides applications and information storage to a community of consumers from organizations with common concerns such as army missions and policy.

- *Hybrid Cloud*

Hybrid Cloud is mainly a combination of both public and private clouds that allows data to be shared between them; in which for confidential activities, users use a private Cloud, while everyday activities are completed by using a public Cloud. It gives greater flexibility and more deployment options.

Service Models

Based on service models, cloud computing is distributed in three models: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS).

- *Infrastructure-as-a-Service*

IaaS is the simple service level, offering easy access to machines, both physical and virtual, virtual storage, etc. Over the Internet, it offers virtualized computer resources. Concerns regarding the underlying actual machine are unfounded. It removes the user from the actual tool. IaaS offers a variety of resources, including hard drives, RAM, IP addresses, and CPU cores. In order to meet the demands of its customers, it offers the most potent servers and networking technologies.

- *Platform-as-a-Service*

When users use the PaaS model, they do not get access to the operating system; all get access to a user interface. There is no control over servers, storage, operating system, etc. It provides platforms for development and deployment tools, etc. It manages files and storage, which helps the coder focus on code rather than managing files. It is mainly used in the trading of own software. It is also a vast and profitable business model.

- *Software-as-a-Service*

It provides online software services to clients. Here, users need a user interface or servers; for example, the salesforce cloud is a typical example. Sales force.com delivers the customer relationship manager on a cloud structure to its consumer and charges them for it. SaaS provides benefits in terms of scalability, efficiency, and performance.

Issues Related to Service Models

It indicates the standard procedure of risk evaluation. It uses the data to detect the resources. It gives the basis for risk treatment. It is the best method with some profits and also has some risks. Information on a particular person or industry can easily be replaced in the Cloud.

Risk Inherit In SPI Model

SaaS	Encryption key loss
	Insolvent of provider
	Risks of data locality
	Incorrect data management
	Vendor support not provide
	Registration of customer action
PaaS	Problem related to service-oriental architecture
	Software interface problems
	Lack of legacy system
IaaS	Virtual machine security
	Identification of data source
	Limitation of VM
Common	Unauthorized access
	Violation of information security
	Incorrect data management
	Problem with real analysis methods

Some problems which can occur in cloud computing are as follows;

- *Security and Privacy*

It is the basic need of a client or an organization. It uses the virtual techniques and data of any person. They may reveal the data and use these data for harmful purposes. It is always risky to give essential data to service providers.

- *Legal Issues*

Worries stick with the confidentiality of individual data through legislative levels. This is all about the leak of private data in public, such as military projects, country government projects, etc.

- *Lock-In*

It is arduous for clients to change from one Cloud Service Provider to another. The result limits the user's privilege to hook up with a particular CSP for service. In this situation, clients become dependent on a specific cloud provider and can only easily change their CSP domain with substantial costs and legal constraints.

- *Lack of Portability*

Transferring work from one SaaS domain to another is tough because workflow, user interfaces, and sustenance characters can be provider precise.

- *Management Interface Compromise*

These are some of the limitations for clients in managing the interface.

- *Insecure or Incomplete Data Deletion*

The client's data may need to be appropriately deleted, which is the responsibility of the CSP. It is because many copies of data are stored in servers for recovery purposes but need to be remembered to delete.

Cloud Based Devices

There are many cloud service providers in the IT market. Some of them are Amazon web service, Drop box, and One Drive. Now we will know about some security measures this cloud service provider took.

➤ AWS

AWS is one of the most popular and significant cloud storage services for users. AWS is famous for its security of confidential information. It is one the most secure and reliable with efficient speed. It also has no capacity limitations. AWS infrastructures are designed based on safety performs that are significant for the security of customers' information. AWS structure offers hardware, operational software, safety values, network, and further essential amenities. By now, it is fully immersed in the IT market. AWS has a very advanced structural design because of its tremendous involvement designing and creating data cores. AWS has extraordinary network safety as it has an unresolved network structural design that is adequately measured and accomplished. The following are the explanations for the top network architecture of AWS:

- Secure Architecture
- Secure Access
- Security of Information

➤ Dropbox Security

It was developed in September 2008. It gives users to edit and share the date on the internet. It can be used to secure files. Some other security features are:

- Sharing Controls and Permissions

- Lost Device Protection
- Account Transfer
- User Authentication
- One Drive Security

Microsoft launched its cloud storage services in the IT market in 2007 under One Drive. Now the users of One Drive reached 500 million (approx.). One Drive uses per file encryption technology, which encrypts every individual file stored in One Drive with a unique key.

Top Cloud Service Providers

Cloud service providers are companies that sell IT (information technology) as a service online. The term “cloud computing” describes the practice of storing and retrieving data through the internet. It does not save any data on the hard drive of computer. Users may access data from a remote computer with the help of cloud computing companies.

Companies that offer cloud computing services offer a range of products and services, including virtual desktops, servers, and whole application development platforms. Here is a list of carefully selected cloud service providers. All of the many cloud computing services available today are included on this list of cloud providers.

Kamatera

A cloud server tool created by Kamatera resembles a physical server in many ways. It ran on a simulated structure cloud, which made it very elastic and affordable. This cloud server’s price is created on the industry standard pay-as-you-go concept.

Characteristics

- Thirteen data centers for maximum presentation and accessibility spread across four continents.
- VPS hosting that is tailored to your needs and is customized.
- Scalability makes it possible to rapidly install firewalls, load balancers, private networks, and software like pf Sense, Docker, CPanel, Drupal, Jenkins, Word Press, Magento, node. JS, and many others.
- Unlimited Traffic on all SSDs. Scale across hundreds of servers in seconds, with a 99.95%

Up-Time Guarantee.

- Billing Options: Daily or Monthly, 365 days a year Support for Tech Human.

Linode

The largest Independent Open Cloud Provider is Linode, which was established in 2003 and has more than 800,000 customers in 196 countries. Users can deploy more and receive industry leading price performance with our Linux virtual machines, global infrastructure, and transparent pricing. The cost is the same through out all eleven data centers, and there are no additional costs or contracts to sign.

- Affordable Gifts of free bundled transfers are included in shared plans for ordinary work loads.
- Instances with high memory and dedicated CPU cores.
- GPUs are available for video processing, scientific computing, and machine learning.
- Scalable Block Storage and S3 Compatible Object Storage.
- A 60-day trial with \$100 in free credits is offered.

Amazon Web Services

AWS, Amazon’s cloud web hosting platform, provides quick, adaptable, dependable, and affordable solutions. One of the major cloud service providers, it provides a construction block service that can be used to develop and organize any cloud uses. Subsequently it was the first to enter in the market, it is the most well-known.

Features

- Easy Registration.
- Speedy Deployments.
- Enables simple control of ability adding and deletion.
- Adequate access to unlimited capacity.
- Centralized management and billing.
- One of the cloud providers, it provides hybrid capabilities and hourly charging.

Hostinger

With data centers in the Netherlands, Lithuania, the United Kingdom, Singapore, India, France, Brazil, and North America, Hostinger is a reasonably priced

and reputable cloud hosting service. Choosing the data center at checkout is simple.

Features

- Enhanced for Performance & Speed.
- It includes integration support for G-Suite and Office 365.
- Dependable technologies and servers.
- Simple to use.
- Customized panel interface with dedicated resources and simple scalability from a VPS.
- Free website setup and transfer.
- Guaranteed 99.9% uptime and down time notifications.

Scala Hosting

Nothing significant has occurred in the accomplished cloud sector for the previous ten years. Because of this, Scala Hosting created SPanel, an ALL-IN-ONE cloud administration platform that is 100% well suited with cPanel and enables every website holder to have a cheap, entirely achieved cloud VPS with the highest level of security.

Benefits

- Any time ask anything - Fully managed live technical assistance.
- Shield Free & Effortless Immigration for all websites, an isolated cloud container, high accessibility and severance, three photographs on three separate storage servers, daily backups, and AI-powered cyber security are all included.
- 10 + data center sites worldwide, including the US, Asia, and Europe.
- Industry Leading Performance: Lightning fast speeds, superior networking, and 100% SSD storage.
- Flexible cloud without limitations - Pay for what users need and take advantage of unrestricted software freedom.

Cloud Ways

Managed cloud hosting from Cloud ways is available to agencies, businesses, and SMBs. Top cloud service providers including AWS, Google Cloud, DigitalOcean, Vultr, and Linode have worked

with the platform. Users can develop, deploy, and manage programmes like PHP, Laravel, Word Press, and Magento if you have past experience managing cloud servers. Instead of worrying about the challenging technical parts of server management, security, and maintenance, Cloud ways users can focus on business development.

Features

- Simple 1: Click App Installation for PHP 7 Servers.
- Redis and PHP-FPM are already set up.
- Gratuitous SSL Certificates.
- Scripted Backups.
- Setting for Staging.

OVH cloud

Public cloud software called OVH cloud utilizes the most significant hardware and operates on a vast scale. It provides an infrastructure with the best price/performance ratio available.

Features

- To expand the storage capacity on your servers, users may add one or more drives.
- It is built using SSD technology, providing excellent read and write speed.
- Rebuild mode is a feature that enables users to restart the operating system rather than the instance.
- To complete the library, users may input the photographs.

Cloud sigma

Cloud sigma offers hosting services for virtual private servers and flexible cloud servers. It provides a clear and transparent pricing strategy. Their cloud servers make it simple to broadcast at multiple GB speeds.

Features

- It supports in obtaining total command and flexibility over your cloud surroundings.
- Enables mixing and matching of all SSD and magnetic storage.

According to certification, the maximum ISO 27001 standards for safety and data confidentiality have been met by this cloud computing service tool.

Microsoft Azure

Microsoft introduced its Azure cloud platform

in February 2010. This open source, flexible cloud boards services in hosting, service administration, information storage, and development.

Features

- Windows Azure provides the best option for users data needs.
- Provides cost-effectiveness, scalability, and flexibility.
- Provides uniformity through clouds with recognizable tools and possessions.
- Enabling to adjust IT resources in line with your business demands.

Google Cloud Platform

GCP and the G suite are two solutions and products that makeup Google Cloud. It enables to over come any business obstacle easily.

Features

- One of the cloud providers that enable scaling with open, adaptable technologies is this one.
- Utilize data analytics and accessible AI to solve problems.
- Remove the need to install expensive servers.
- It gives access to a broad range of cloud services that user may use to enhance organization.

CONCLUSION

This technique grows faster days in these days and faces many difficulties like security. Cloud computing has come up recently in the market and attracted a lot of businessmen and women. Its demand is increasing day by day among almost all organizations. However, like any other technology, it also has some risk factors. Since privacy is a significant concern for any organization, data security becomes the biggest concern. Primarily organizations are using these technologies with

high-risk rates. In this paper, we discussed the different cloud data security mechanisms. Using some of the features adopted by these devices, we quickly achieve a high data security level.

Declarations

Ethical Approval: Not Applicable

Competing Interests: No Competing Interests

Authors' contributions

First Author: Collecting the Material and review it

Second Author: Compilation of work

Funding: Not Applicable

Availability of data and materials: N/A

REFERENCES

1. Mohiuddin Ahmed, Abu Sina Md. Raju Chowdhury, Mustaq Ahmed, Md. Mahmudul Hasan Rafee" An Advanced Survey on Cloud Computing and State-of-the-art Research Issues" IJCSI International Journal of Computer Science Issues, Vol. 9, Issue 1, No 1, January 2012.
2. Jensen, Meiko, Jörg Schwenk, Nils Gruschka, and Luigi Lo Iacono. "On technical security issues in cloud computing." In Cloud Computing, 2009. CLOUD'09. IEEE International Conference on, pp. 109-116. IEEE, 2009.
3. Berger, Stefan, Ramón Cáceres, Kenneth Goldman, Dimitrios Pendarakis, Ronald Perez, Josyula R. Rao, Eran Rom *et al.* "Security for the cloud infrastructure: Trusted virtual data center implementation." IBM Journal of Research and Development 53, no. 4 (2009): 6-1.
4. G. Frankova, Ganna. "Service level agreements: web services and security." In Web Engineering , pp. 556-562. Springer Berlin Heidelberg, 2007.
5. Boss, Greg, Padma Malladi, Dennis Quan, Linda Legregni, and Harold Hall. "Cloud computing." IBM white paper, Version 1 (2007).

