**Introduction to cloud computing**

**Cloud computing** is a method/medium of delivering computer services via the internet, such as cloud storage, cloud network, networking, cloud gaming, and many more. A few examples are shown below.

Now days cloud computing is one of the most essential as well as an important part of the internet because to maintain a very much big amount of data we required a lot of storage and this storage can’t be maintained on our computer system as there is storage and power cut issue for an alternative for this problem, we use big cloud datacenters which work 24\*7 hours for whole 365 days and for the maintenance and the cloud storage we want to subscribe annual/monthly services.

However, if we chose Cloud Computing, a cloud vendor will be in charge of the hardware acquisition and upkeep. They also provide a diverse range of software and platform as a service. We can rent any essential services required for cloud computing. The cloud computing services will be priced on a per-user basis.

• Importance of virtualization in cloud

Virtualization in cloud computing enables allow multiple systems and OS to run on the same server at the same time and which reduces the cost of cloud computing also increases the efficiency of the company hardware and software. It also provides security, scalability, mobility, and security against attacks hackers, and much more at an effective cost. And day by day this virtualization technique getting advanced also provides a family environment for business.

The cloud environment provides a readily accessible web gateway that allows users to control compute, storage, network, and application resources. The following are some cloud providers that supply servers for websites or platforms.

**1)Amazon web services (AWS)**



**2)Microsoft Azure**



**3)Google cloud platform**

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**4)Godaddy**



**5)IBM cloud services**



• History of cloud computing

Cloud computing came into the picture when in the late ’90s all the computers are connected and shared web resources over the internet. Then Joseph Carl Robnett Licklider thinks that we also connect these computers over the cloud that is they can transmit the resources over the internet. From there in 1983 first cloud computing services are provided to the consumers in which consumers can store a small amount of data over the disk and that data can be accessed from any place and time using the internet.

John MacCharty delivered a speech at MIT that computing should be sold over like utility services like water, food, and electricity. But at that time cloud computing is not fully developed that can be utilized by the person but now cloud computing is developed and can be sold over the internet.

In 1999, Salesforce.com began providing apps and basic services to clients via a website. The application was made available to companies over the Internet, bringing the concept of computing as a utility to fruition.

Amazon Web Services was created in 2002, and it provides services such as storage, computing, and even human intelligence. However, it wasn't until the Elastic Compute Cloud debuted in 2006 that a fully commercial service was offered to everyone. In 2009, Google Apps began selling cloud computing enterprise apps.

All of the key players are involved in the evolution of cloud computing, some earlier than others. Microsoft launched Windows Azure in 2009, and since then, companies such as Oracle and HP have joined the competition. This illustrates that cloud computing has now made its way into the mainstream.

Before getting the knowledge of cloud computing there is a client and server, the client refers to hardware or software to access cloud computing. And server refers to the centralized storage in which all the data is stored, and all the data controller is managed over 3rd party service providers. If a single user wants to access the cloud services over the internet, then that user wants to connect over the internet and take then they can access over their services.

The digital sector evolves daily. Technology is always evolving, and it may be difficult to keep up with all of the latest advances and inventions. While cloud computing isn't necessarily a new phenomenon, businesses have just recently begun to turn to it.

The influence of cloud computing on the data business and end consumers, in general, cannot be overstated. This unique digital solution has revolutionized and transformed many elements of daily living.

Cloud computing has enabled organizations of all sizes to save expenses and expand their products, from start-ups to established corporations. This is because they no longer necessitate the usage of additional hardware and software.

However, the realm of cloud computing remains ambiguous and perplexing for many. We'll offer you an overview of cloud computing and demonstrate how it may be utilized in a variety of fields, from developers to the realm of cyber security.

As the cloud computing word is made from two words i.e, cloud + computing Cloud refers to the delivery of resources according to demand and computing means any computer computation process that can be done over the internet.

Cloud computing is the supply of computer resources as a service, which means that the cloud provider owns and manages the resources rather than the end user.

Prior to the widespread use of cloud computing, companies and common computer users had to purchase and maintain the software and hardware that they desired to utilize. Businesses and individuals now have access to a multitude of on-demand computing resources as internet-accessed services, thanks to the expanding availability of cloud-based apps, storage, services, and devices.

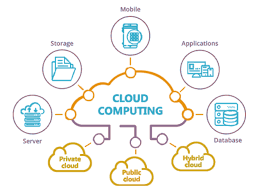
• Delivery modes in cloud computing are mainly divided into 3 types that are

1. IaaS
2. SaaS
3. PaaS

IaaS = IaaS stands for infrastructures as a service is the type of cloud computing that offers multi-layers security on the data and also offers essential computing storage, network storage on demand and it is online for all 24x7 throughout the years. IaaS work on paying money and getting online computing services and these services are maintained by third-party service providers.

SaaS = SaaS stands for Software as a service is a way of delivery of software and applications over the web internetas a service. Installing and maintaining the software is a heavy task for an individual or a group of a company Which can be done easily using SaaS. SaaS is also known as on-demand software maintained by 3rd party online computing providers.

PaaS = PaaS stands for Platform as a Service, and as the name implies, it provides computer platforms such as an operating system, a programming language execution environment, a database, a web server, and so on. Example of PaaS is the Google cloud platform, Microsoft Cloud service provider, IBM cloud services, and much more.



• There are many advantages of cloud computing some of the examples are given below according to the cost speed and scalability cost of cloud computing depends.

1) **Cost**: If any fresh company wants to make a website, then cloud services reduce the costs and resources for required maintenance, charges, and Infrastructure, hardware.

2) **Speed**: According to the type of server charges and costs of cloud services, speed can vary from company to company but there will be hardly milliseconds difference between click process and visibility of the content over sites, Overall resources can be accessed within seconds from the cloud services within a single click.

**3) Scalability:** In the future, if the business leading on the online web, then we have the option to increase or decrease the size of the cloud services according to business needs and requirements. From the U.S we can control the business in INDIA using cloud services.

4) Reliability: Depending on the sort of cloud service, data backup and recovery will be quick, which is essential for business continuity.

**5) Security**: Google and amazon services providers have many layers of protection in their cloud server that other than company employees no one is allowed to visit the company server. Many cloud computing web service providers/vendors offer terms and conditions, technologies, and control the security of the data.

• Based on their usability cloud services over the web or internet cloud computing

is divided into three types.

1)**Public cloud**: The cloud resources that are operated by a third party are known as public cloud. Google, Amazon web services provider falls in the public cloud category. The public cloud generally provides the server, software, hardware, storage, and data integrity. While using the web services data integrity and security is the most important part of a cloud service provided by the public cloud vendor as their increasing demand.

**Pros of a public cloud**

* Easy scalability
* No geographical restrictions
* Cost-effective
* Highly reliable
* Easy to manage

**Cons of a public cloud**

* Not considered the safest option for protected data

2)**Private Cloud:**A private cloud is made by a company/ or an individual for their business work and personal use only it will be costlier for an individual company to build its data centers as a company wants to invest more money in the infrastructures, maintenance, and workers.

**Pros of a private cloud**

* Improved level of security
* Greater control over the server
* Customizable

**Cons of a private cloud**

* Harder to access data from different and complex locations
* Requires IT expertise

**3)Hybrid Cloud:**Hybrid clouds are the combination of public and private clouds, which are bonded together by technology that allows the data packet to be shared between them. Hybrid cloud provides flexibility for the deployment of data in business. Hybrid clouds act as a bridge between private clouds and public clouds. Hybrid clouds provide the flexibility for the exchange of data between public clouds and private clouds.

**Pros of a hybrid cloud**

* Highly flexible and scalable
* Cost-effective

**Cons of a hybrid cloud**

• Because it is utilized in both private and public clouds, communication at the network level

may be conflicting.

• Now let us talk about a real-life example of cloud services.

1.For example, a company wants to build a website for their company promotion. And that company contain more than 1000 employee than that company firstly want to buy a domain for their websites.

Once the website programming should be done then cloud hosting is required for listing the website over the internet.

Company that provides the hosting will provide many perks such as security and integrity of the data, backup of the data, increase and decrease the storage size of hosting according to traffic on the website servers, and one of the most important key feathers that it reduces the cost of building infrastructures and data centers for storing of data.

Exchange of packets from websites to the servers over the internet can be done within milliseconds but this millisecond also depends on the cloud services. Now websites are ready to publish over the internet and the traffic over the website depends on the SEO of the website.

2. Nowadays many things are available over cloud services from cloud music, storage to Cloud games. For the gaming community cloud games created vast opportunities for the online gamers that they don’t require high-end pc and high specs processors and graphic like RYZEN 7, RTX 3080ti for there

gaming only, they needed a high-speed internet and rest all things will depend on the cloud servers and cloud services.

• Cloud computing is used in many places such as

1)Cloud Storage

2)Cloud Games

3)Cloud Music

4)Cloud Backup Of data

All huge data of many companies are maintained on the cloud servers that only can be done with the help of google cloud services.

Apple company has been best created the best cloud ecosystem that any text written in the IMAC will automatically sync to all other devices using the same apple id by using cloud services.

Google provides free 15GB of drive cloud storage to every user that can be utilized by the user and maintained by the company.

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Thank You!