**What Is Cloud Computing :**

Cloud Computing means storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. Cloud computing is also referred to as Internet-based computing, it is a technology where the resource is provided as a service through the Internet to the user. The data that is stored can be files, images, documents, or any other storable document.

**How Cloud Computing Works?**

Cloud computing helps users in easily accessing computing resources like storage and processing over the internet rather than local hardware.

* **Infrastructure:**Cloud computing depends on remote network servers hosted on internet for store, manage, and process the data.
* **On-Demand Access:** Users can access cloud services and resources based on-demand they can scale up or down the without having to invest for physical hardware.
* **Types of Services:**Cloud computing offers various benefits such as cost saving, scalability, reliability and accessibility it reduces capital expenditures, improves efficiency.

**What Are The Types of Cloud Computing Services :**

**The following are the types of Cloud Computing:**

1. [Infrastructure as a Service (IaaS)](https://www.geeksforgeeks.org/infrastructure-as-a-service-iaas/)
2. [Platform as a Service (PaaS)](https://www.geeksforgeeks.org/platform-as-a-service-paas-and-its-types/)
3. [Software as a Service (SaaS)](https://www.geeksforgeeks.org/software-as-a-service-saas/)
4. [Function as a Service (FaaS)](https://www.geeksforgeeks.org/google-cloud-platform-understanding-functions-as-a-service-faas/)
5. **Infrastructure as a Service ( IaaS ) :**

Infrastructure as a Service (IaaS) is a type of cloud computing that gives people access to IT tools like virtual computers, storage, and networks through the internet. You don’t need to buy or manage physical hardware. Instead, you pay only for what you use.

**Here are some key benefits of using IaaS:**

* **Flexibility and Control:**IaaS comes up with providing virtualized computing resources such as VMs, Storage, and networks facilitating users with control over the Operating system and applications.
* **Reducing Expenses of Hardware**: IaaS provides business cost savings with the elimination of physical infrastructure investments making it cost-effective.
* **Scalability of Resources:** The cloud provides in scaling of hardware resources up or down as per demand facilitating optimal performance with cost efficiency.

1. **Platform as a Service ( PaaS ) :**

Platform as a Service (PaaS) is a cloud computing model where a third-party provider offers the software and hardware tools needed to develop, test, and run applications. This allows users to focus on building their applications without worrying about managing servers or infrastructure.

**For example,** AWS Elastic Beanstalk is a PaaS offered by Amazon Web Services that helps developers quickly deploy and manage applications while AWS takes care of the needed resources like servers, load balancing, and scaling.

**Here are some key benefits of using PaaS:**

* **Simplifying the Development:**Platform as a Service offers application development by keeping the underlying Infrastructure as an Abstraction. It helps the developers to completely focus on application logic and background operations are completely managed by the AWS platform.
* **Enhancing Efficiency and Productivity:** PaaS lowers the Management of Infrastructure complexity, speeding up the Execution time and bringing the updates quickly to market by streamlining the development process.
* **Automation of Scaling:** Management of resource scaling, guaranteeing the program's workload efficiency is ensured by PaaS.

1. **Software as a Service (SaaS) :**

Software as a Service (SaaS) is a way of using software over the internet instead of installing it on your computer. The software is hosted by a company, and you can use it just by logging in through a web browser. You don’t need to worry about updates, maintenance, or storage the provider takes care of all that.

A common example is Google Docs. You can write and share documents online without downloading any software.

**Here are some key benefits of using SaaS:**

* **Collaboration and Accessibility:** Software as a Service (SaaS) helps users to easily access applications without having the requirement of local installations. It is fully managed by the AWS Software working as a service over the internet encouraging effortless cooperation and ease of access.
* **Automation of Updates:**SaaS providers manage the handling of software maintenance with automatic latest updates ensuring users gain experience with the latest features and security patches.
* **Cost Efficiency:**SaaS acts as a cost-effective solution by reducing the overhead of IT support by eliminating the need for individual software licenses.

1. **Function as a Service (FaaS) :**

Function as a service (FaaS) is a cloud-computing service that allows customers to run code in response to events, without managing the complex infrastructure. You just write the code, upload it and the cloud provider runs it only when it's needed. You pay only for the time your code runs.

**For example,** with AWS Lambda, you can write a function that resizes images whenever someone uploads a photo to your website. You don’t need to keep a server running all the time AWS runs your function only when a photo is uploaded.

**Here are some key benefits of using SaaS:**

* **Event-Driven Execution:** FaaS helps in the maintenance of servers and infrastructure making users worry about it. FaaS facilitates the developers to run code as a response to the events.
* **Cost Efficiency:**FaaS facilitates cost efficiency by coming up with the principle **Pay as per you Run** for the computing resources used.
* **Scalability and Agility:** Serverless Architectures scale effortlessly in handing the workloads promoting agility in development and deployment.

**What Are Cloud Deployment Models :**

**The following are the Cloud Deployment Models:**

**1. Private Deployment Model**

It provides an enhancement in protection and customization by cloud resource utilization as per particular specified requirements. It is perfect for companies which looking for security and compliance needs.

**2. Public Deployment Model**

It comes with offering a pay-as-you-go principle for scalability and accessibility of cloud resources for numerous users. it ensures cost-effectiveness by providing enterprise-needed services.

**3. Hybrid Deployment Model**

It comes up with a combination of elements of both private and public clouds providing seamless data and application processing in between environments. It offers flexibility in optimizing resources such as sensitive data in private clouds and important scalable applications in the public cloud.

**Advantages of Cloud Computing :**

**The following are main advantages of Cloud Computing:**

**1. Cost Efficiency**

Cloud Computing provides flexible pricing to the users with the principal pay-as-you-go model. It helps in lessening capital expenditures of Infrastructure, particularly for small and medium-sized businesses companies.

**2. Flexibility and Scalability**

Cloud services facilitate the scaling of resources based on demand. It ensures the efficiency of businesses in handling various workloads without the need for large amounts of investments in hardware during the periods of low demand.

**3. Collaboration and Accessibility**

Cloud computing provides easy access to data and applications from anywhere over the internet. This encourages collaborative team participation from different locations through shared documents and projects in real-time resulting in quality and productive outputs.

**Disadvantages of Cloud Computing :**

**The following are the main disadvantages of Cloud Computing:**

**1. Security Concerns**

Storing of sensitive data on external servers raised more security concerns which is one of the main drawbacks of cloud computing.

**2. Downtime and Reliability**

Even though cloud services are usually dependable, they may also have unexpected interruptions and downtimes. These might be raised because of server problems, Network issues or maintenance disruptions in Cloud providers which negative effect on business operations, creating issues for users accessing their apps.