Cloud Computing provides us means of accessing the applications as utilities over the Internet. It allows us to create, configure, and customize the applications online.

Cloud computing platforms:

AWS (Amazon Web Services)

GCP (Google Cloud platform)

Azure

Different type of Services:

IAAS: Iaas is also known as **Hardware as a Service (HaaS)**. It is one of the layers of the cloud computing platform. It allows customers to outsource their IT infrastructures such as servers, networking, processing, storage, virtual machines, and other resources. Customers access these resources on the Internet using a pay-as-per use model.

PAAS: Platform as a Service (PaaS) provides a runtime environment. It allows programmers to easily create, test, run, and deploy web applications. You can purchase these applications from a cloud service provider on a pay-as-per use basis and access them using the Internet connection. In PaaS, back end scalability is managed by the cloud service provider, so end- users do not need to worry about managing the infrastructure.

PaaS includes infrastructure (servers, storage, and networking) and platform (middleware, development tools, database management systems, business intelligence, and more) to support the web application life cycle.

SaaS: (Software As A Service) is also known as "**On-Demand Software**". It is a software distribution model in which services are hosted by a cloud service provider. These services are available to end-users over the internet so, the end-users do not need to install any software on their devices to access these services.

AWS Console:

[AWS Management Console (amazon.com)](https://aws.amazon.com/console/)

Topics: AWS Fundamentals, EC2, S3, CI/CD Deployment on cloud, cloud testing, data store

What is AWS?

* AWS stands for **Amazon Web Services**.
* The AWS service is provided by the Amazon that uses distributed IT infrastructure to provide different IT resources available on demand. It provides different services such as infrastructure as a service (IaaS), platform as a service (PaaS) and packaged software as a service (SaaS).
* Amazon launched AWS, a cloud computing platform to allow the different organizations to take advantage of reliable IT infrastructure.

Different services provided in AWS:

Storage Services (S3): Simple Storage Service:

* S3 is a safe place to store the files.
* It is Object-based storage, i.e., you can store the images, word files, pdf files, etc.
* The files which are stored in S3 can be from 0 Bytes to 5 TB.
* It has unlimited storage means that you can store the data as much you want.
* Files are stored in Bucket. A bucket is like a folder available in S3 that stores the files.
* S3 is a universal namespace, i.e., the names must be unique globally. Bucket contains a DNS address. Therefore, the bucket must contain a unique name to generate a unique DNS address.

Cloud Computing (EC2: Elastic Compute Cloud):

* Amazon EC2 changes the economics of computing by allowing you to pay only for the resources that you actually use. Rather than you previously buy physical servers, you would look for a server that has more CPU capacity, RAM capacity and you buy a server over 5 year term, so you have to plan for 5 years in advance. People spend a lot of capital in such investments. EC2 allows you to pay for the capacity that you actually use.
* Amazon EC2 provides the developers with the tools to build resilient applications that isolate themselves from some common scenarios.

Database Services (RDS):

* **Amazon Relational Database Service:** It supports six commonly used database engines.
* **Amazon Aurora:** It is a MySQL-Compatible relational database with five times performance.
* **Amazon DynamoDB:** It is a fast and flexible NoSQL database service.
* **Amazon Redshift:** It is a petabyte-scale data warehouse service.
* **Amazon Elasticache:** It is an in-memory cache service with support for Memcached and Redis.
* **AWS Database Migration Service:** It is a service that provides easy and inexpensive to migrate your databases to AWS cloud.

AWS VPC:

* VPC stands for Virtual Private Cloud.
* Amazon Virtual Private Cloud (Amazon VPC) provides a logically isolated area of the AWS cloud where you can launch AWS resources in a virtual network that you define.
* You have complete control over your virtual networking environment, including a selection of your IP address range, the creation of subnets, and configuration of route tables and network gateways.
* You can easily customize the network configuration for your Amazon Virtual Private Cloud. For example, you can create a public-facing subnet for web servers that can access to the internet and can also place your backend system such as databases or application servers to a private-facing subnet.
* You can provide multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet.

IAM:

* IAM stands for Identity Access Management.
* IAM allows you to manage users and their level of access to the aws console.
* It is used to set users, permissions and roles. It allows you to grant access to the different parts of the aws platform.
* AWS Identity and Access Management is a web service that enables Amazon Web Services (AWS) customers to manage users and user permissions in AWS.
* With IAM, Organizations can centrally manage users, security credentials such as access keys, and permissions that control which AWS resources users can access.
* Without IAM, Organizations with multiple users must either create multiple user accounts, each with its own billing and subscriptions to AWS products or share an account with a single security credential. Without IAM, you also don't have control about the tasks that the users can do.
* IAM enables the organization to create multiple users, each with its own security credentials, controlled and billed to a single aws account. IAM allows the user to do only what they need to do as a part of the user's job.