# **Cloud computing:**

Cloud computing is a technology that allows users to access and use computing resources (such as servers, storage, databases, networking, software) over the internet. Instead of owning and maintaining physical hardware, users can leverage these resources on a pay-as-you-go basis, enabling flexibility and scalability in managing IT infrastructure.

# **AWS and it’s components :**

Amazon Web Services (AWS) is a popular cloud computing platform that offers a wide range of services. Some key components and services of AWS include:

## **1.Compute Services:**

**EC2 (Elastic Compute Cloud):** Provides scalable virtual servers in the cloud.

**Lambda:** Allows serverless computing by running code in response to events.

## **2.Storage Services:**

**S3 (Simple Storage Service):** Object storage for storing and retrieving data.

**EBS (Elastic Block Store):** Persistent block-level storage for EC2 instances.

## **3.Database Services**:

**RDS (Relational Database Service):** Managed relational databases.

**DynamoDB**: NoSQL database for fast and predictable performance.

## **4.Networking:**

**VPC (Virtual Private Cloud):** Allows you to create isolated network environments.

**CloudFront:** Content delivery network (CDN) for fast and secure delivery of data.

## **5.Security and Identity:**

**IAM (Identity and Access Management):** Manages access to AWS services securely.

**KMS (Key Management Service):** Manages encryption keys for securing data.

## **6.Analytics:**

**S3 Glacier:** Low-cost storage class for archival data.

**Athena:** Query data stored in S3 using SQL.

## **7.Machine Learning:**

**Sagemaker:** Fully managed service for building, training, and deploying machine learning models.

**Rekognition:** Image and video analysis service.

## **8.Developer Tools:**

**CodeDeploy:** Automates application deployments.

**CodePipeline:** Automates the continuous delivery pipeline.

## **9.Internet of Things (IoT):**

**IoT Core:** Connects devices to the cloud securely.

## **10.Management Tools:**

**CloudWatch:** Monitors resources and applications.

**CloudTrail:** Records AWS API calls for auditing.

These are just a few examples, and AWS continues to expand its services to meet various cloud computing needs.

# **ELASTIC COMPUTE CLOUD(EC2):**

Amazon Elastic Compute Cloud (Amazon EC2) provides on-demand, scalable computing

capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 reduces hardware costs

so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many

or as few virtual servers as you need, configure security and networking, and manage storage.

You can add capacity (scale up) to handle compute-heavy tasks, such as monthly or yearly

processes, or spikes in website traffic. When usage decreases, you can reduce capacity (scale down) again.

## **FEATURES OF EC2:**

**Amazon Machine Images (AMIs):**

Preconfigured templates for your instances that package the components you need for your server

(including the operating system and additional software).

**Instance types:**

Various configurations of CPU, memory, storage, networking capacity, and graphics hardware for

your instances.

**Key pairs:**

Secure login information for your instances. AWS stores the public key and you store the private

key in a secure place.

**instance store volumes:**

Storage volumes for temporary data that is deleted when you stop, hibernate, or terminate your instance.

**Amazon EBS volumes:**

Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon

EBS).

Regions, Availability Zones, Local Zones, AWS Outposts, and Wavelength Zones:

Multiple physical locations for your resources, such as instances and Amazon EBS

volumes.

**Security groups:**

A virtual firewall that allows you to specify the protocols, ports, and source IP ranges

that can reach your instances, and the destination IP ranges to which your instances

can connect.

**Tags:**

Metadata that you can create and assign to your Amazon EC2 resources.

Virtual private clouds (VPCs):

Virtual networks you can create that are logically isolated from the rest of the AWS