

The logo features the letters 'AWS' in a bold, blue, sans-serif typeface. The background is a light gray gradient, framed by abstract blue geometric shapes on the left and right sides.

# AWS

Training

# Outline

- ▶ what is cloud computing
- ▶ *Aws*
  - ▶ s3 and ec2

# Cloud Computing

- ▶ **Cloud Computing** is the delivery of **computing services** — like servers, storage, databases, networking, software, and analytics — over the **internet (“the cloud”)** instead of using your own physical computer or local server.
- ▶ **Key Characteristics:**
  - ▶ **On-demand:** Get resources whenever you need them.
  - ▶ **Scalable:** Increase or decrease resources based on usage.
  - ▶ **Pay-as-you-go:** You only pay for what you use.
  - ▶ **Accessible anywhere:** From any device with internet access.
  - ▶ **Managed by provider:** The cloud provider handles maintenance, updates, and security.
- ▶ **Examples of Cloud Providers:**
  - ▶ Amazon Web Services (AWS)
  - ▶ Microsoft Azure
  - ▶ Google Cloud Platform (GCP)
  - ▶ IBM Cloud

# AWS (Amazon Web Services)

- ▶ **AWS is Amazon's cloud computing platform – the world's largest and most widely used.**
- ▶ **It provides over 200 fully featured services, including:**
  - ▶ **Compute** → EC2 (servers)
  - ▶ **Storage** → S3 (file storage)
  - ▶ **Databases** → RDS, DynamoDB
  - ▶ **Networking** → VPC, Route 53
  - ▶ **AI/ML** → SageMaker
  - ▶ **Security** → IAM, KMS
  - ▶ **Developer tools** → CodeBuild, CodeDeploy
- ▶ **AWS Advantages:**
  - ▶ Highly reliable and secure
  - ▶ Global infrastructure (data centers around the world)
  - ▶ Flexible pricing and scalability
  - ▶ Broad set of tools and integrations

# ..AWS

- ▶ **Amazon Web Services (AWS)** is a **comprehensive cloud computing platform** provided by **Amazon**.
- ▶ It offers **on-demand access** to computing power, storage, databases, networking, and many other services – all delivered over the **internet**.
- ▶ In simple terms:
  - ▶ AWS lets you **rent computers, storage, and services** from Amazon's data centers instead of buying and maintaining your own servers.

# Features of AWS

- ▶ On-Demand
  - ▶ Get resources instantly when needed.
- ▶ Pay-as-you-go
  - ▶ Pay only for what you use — no upfront cost.
- ▶ Scalable
  - ▶ Scale up or down automatically.
- ▶ Secure
  - ▶ Built-in encryption, identity management, and compliance.
- ▶ Wide Range of Services
  - ▶ 200+ services across compute, storage, databases, AI, and more.
- ▶ Global Infrastructure
  - ▶ Data centers in many countries for low-latency access.

# Main Categories of AWS Services

## ▶ Compute

- ▶ These services provide **processing power** for your applications.
  - ▶ **EC2 (Elastic Compute Cloud)**: Virtual servers in the cloud.
  - ▶ **Lambda**: Run code without managing servers (serverless computing).
  - ▶ **Elastic Beanstalk**: Deploy and manage web apps easily.
  - ▶ **ECS / EKS**: Run and manage containers (Docker/Kubernetes).

## ▶ Storage

- ▶ Used to **store and back up data** safely and at scale.
  - ▶ **S3 (Simple Storage Service)**: Object storage for files, images, and backups.
  - ▶ **EBS (Elastic Block Store)**: Disk storage for EC2 instances.
  - ▶ **Glacier**: Low-cost, long-term data archiving.

## ▶ Database

- ▶ Manage relational or NoSQL databases.
  - ▶ **RDS (Relational Database Service)**: Managed SQL databases (MySQL, PostgreSQL, Oracle, etc.)
  - ▶ **DynamoDB**: NoSQL database for fast and flexible apps.
  - ▶ **Redshift**: Data warehousing for analytics.

# Main Categories of AWS Services

## ▶ Networking

- ▶ Helps connect your resources securely.
  - ▶ **VPC (Virtual Private Cloud):** Private network within AWS.
  - ▶ **Route 53:** DNS and domain registration service.
  - ▶ **CloudFront:** Content delivery network (CDN) for faster website loading.
  - ▶ **API Gateway:** Manage and secure APIs.

## ▶ Security and Identity

- ▶ Protect your applications and data.
  - ▶ **IAM (Identity and Access Management):** Control who can access what.
  - ▶ **KMS (Key Management Service):** Manage encryption keys.
  - ▶ **Cognito:** Authentication for web/mobile apps.

## ▶ Developer Tools

- ▶ For continuous integration and deployment (CI/CD).
  - ▶ **CodeCommit:** Source control (like Git).
  - ▶ **CodeBuild:** Build your apps automatically.
  - ▶ **CodeDeploy:** Deploy apps to EC2 or on-premises servers.
  - ▶ **CodePipeline:** Automate your software release process.



# Main Categories of AWS Services

## ▶ Analytics

- ▶ Turn your data into insights.
  - ▶ **Athena:** Query S3 data using SQL.
  - ▶ **EMR:** Big data processing (Hadoop, Spark).
  - ▶ **QuickSight:** Business intelligence and dashboards.

## ▶ Machine Learning / AI

- ▶ Add AI to your apps without building models from scratch.
  - ▶ **SageMaker:** Train and deploy ML models.
  - ▶ **Rekognition:** Image and video analysis.
  - ▶ **Polly:** Text-to-speech.
  - ▶ **Comprehend:** Natural language processing.

## ▶ AWS Global Infrastructure

- ▶ AWS operates in multiple **Regions** around the world.
- ▶ Each Region contains several **Availability Zones (AZs)** – separate data centers for reliability.
- ▶ Example:
  - ▶ Region: Asia Pacific (Mumbai)
    - ▶ |—— AZ-1a
    - ▶ |—— AZ-1b
    - ▶ |—— AZ-1c
- ▶ This design ensures **high availability and disaster recovery**.

# Steps: Hosting a Website on AWS

- ▶ **Store static files (HTML, CSS, JS) in S3.**
- ▶ **Host backend app (Java, Node.js, Python, etc.) on EC2.**
- ▶ **Use RDS for the database.**
- ▶ **Route traffic with Route 53 (DNS).**
- ▶ **Speed up delivery with CloudFront (CDN).**

# Amazon S3 (Simple Storage Service)

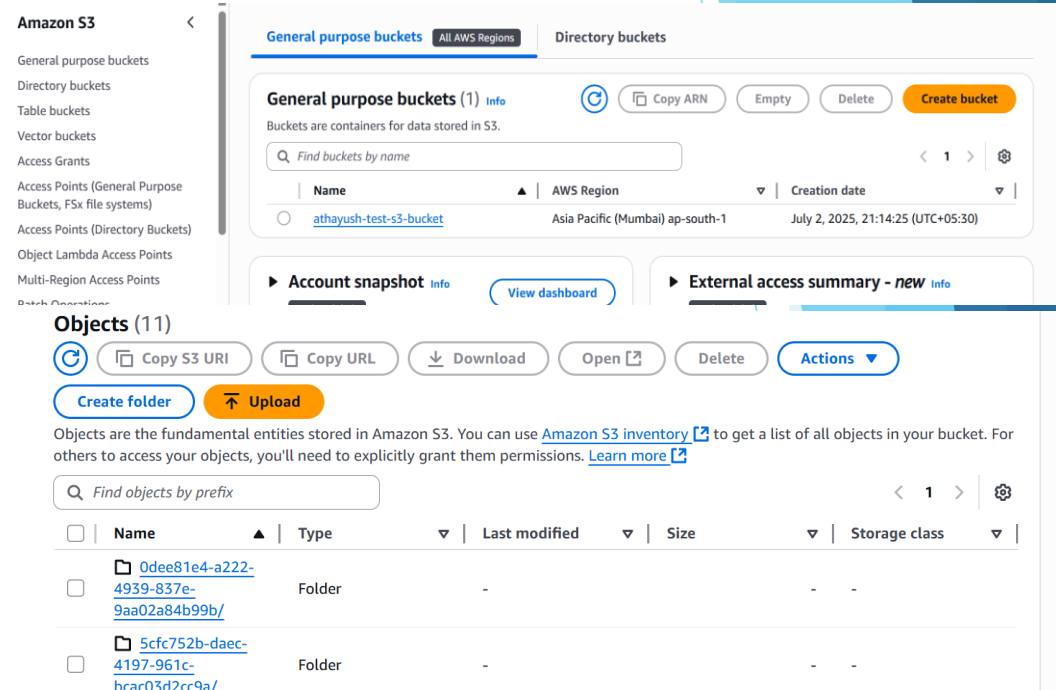
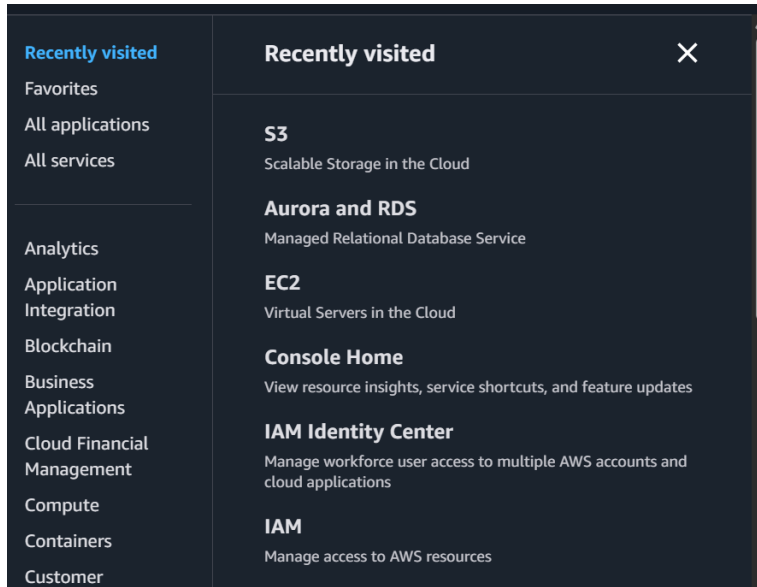
- ▶ **Amazon S3** is a **cloud storage service** used to store and retrieve any amount of data — like files, images, videos, backups, or logs.
- ▶ **Key Features:**
  - ▶ **Object-based storage** (not block or file-based)
  - ▶ **Scalable** — store unlimited data
  - ▶ **Durable** — 99.999999999% (11 nines) durability
  - ▶ **Secure** — access control, encryption
  - ▶ **Used for** → Backup, static websites, big data analytics, etc.
- ▶ **Example:**
  - ▶ You can upload files to S3 buckets (like folders), for example:
  - ▶ my-bucket/
    - ▶ |—— images/
      - ▶ |     |—— logo.png
    - ▶ |—— videos/
      - ▶ |     |—— intro.mp4
  - ▶ You can then access them from anywhere via a URL.

# Steps S3

- ▶ Create bucket (name + region)
- ▶ Upload a test file (index.html)
- ▶ Decide public vs private → set Block Public Access / bucket policy
- ▶ (Optional) Enable static website hosting
- ▶ Enable versioning (if needed)
- ▶ Add lifecycle rules to manage cost
- ▶ Confirm default encryption set
- ▶ Enable access logging / CloudTrail

# S3 buckets

[https://athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-function+randomUUID\(\)+%7B+%5Bnative+code%5D+%7D](https://athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-function+randomUUID()+%7B+%5Bnative+code%5D+%7D)



**Owner**  
03ce5624565a3c6f35dc8197c9ca8eb4672afb52e904c739da51f782b3b134d3

**AWS Region**  
Asia Pacific (Mumbai) ap-south-1

**Last modified**  
September 21, 2025, 20:01:17 (UTC+05:30)

**Size**  
318.0 KB

**Type**  
767Z-function randomUUID() { [native code] }

**Key**  
0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14:31:15.767Z-function randomUUID() { [native code] }

**S3 URI**  
[s3://athayush-test-s3-bucket/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14:31:15.767Z-function randomUUID\(\) { \[native code\] }](s3://athayush-test-s3-bucket/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14:31:15.767Z-function randomUUID() { [native code] })

872b899c8121da5afb4059c565c93af6

**Object URL**  
[https://athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-function+randomUUID\(\)+%7B+%5Bnative+code%5D+%7D](https://athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-function+randomUUID()+%7B+%5Bnative+code%5D+%7D)

[athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-functio...](https://athayush-test-s3-bucket.s3.ap-south-1.amazonaws.com/0dee81e4-a222-4939-837e-9aa02a84b99b/2025-09-21T14%3A31%3A15.767Z-function+randomUUID()+%7B+%5Bnative+code%5D+%7D)

# Amazon EC2 (Elastic Compute Cloud)

- ▶ **Amazon EC2 provides virtual servers (instances)** in the cloud that you can use to run your applications.
- ▶ **Key Features:**
  - ▶ **Compute service** → provides CPU, memory, storage, and OS
  - ▶ **Elastic** → start/stop/resize instances anytime
  - ▶ **Customizable** → choose instance types (e.g., t2.micro, m5.large)
  - ▶ **Pay only for usage** (hourly or per second billing)
  - ▶ **Secure and isolated** from other users
- ▶ **Example:**
  - ▶ You can:
    - ▶ Launch an **EC2 instance** (like a Linux or Windows server)
    - ▶ Deploy your web app or API there
    - ▶ Connect via SSH or RDP
    - ▶ Scale automatically with **Auto Scaling** and **Load Balancer**

# Key Concepts

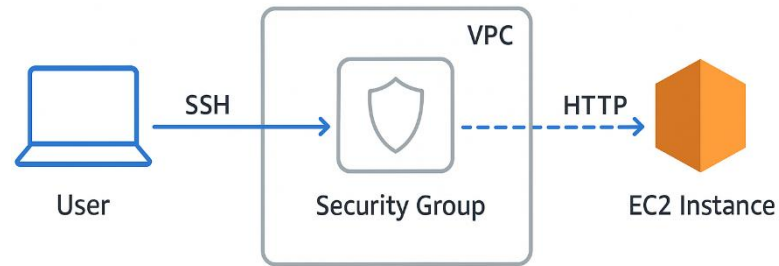
Term	Meaning
<b>Instance</b>	A virtual server running on AWS
<b>AMI (Amazon Machine Image)</b>	A template that contains OS + software configuration
<b>Instance Type</b>	Defines hardware (CPU, RAM, network speed) e.g., t2.micro, m5.large
<b>EBS (Elastic Block Store)</b>	Persistent storage (virtual hard disk) attached to an instance
<b>Key Pair</b>	SSH keys for securely connecting to your instance
<b>Security Group</b>	A virtual firewall that controls inbound/outbound traffic
<b>Elastic IP</b>	A static, public IPv4 address for your instance
<b>User Data</b>	A script that runs automatically when instance launches (used for setup)

# Steps : Amazon EC2

Step	Action	Description
Log in	Open AWS Console → EC2	Access the EC2 dashboard from AWS.
Launch Instance	Click <b>Launch Instance</b>	Start creating your virtual server.
Choose AMI	Select OS (Amazon Linux, Ubuntu, Windows)	Defines what operating system your instance runs.
Choose Instance Type	e.g., <b>t2.micro</b>	Select CPU and memory size (Free Tier eligible).
Configure Details	Set networking, IAM role, user data	Choose VPC/subnet, enable public IP, optionally add startup script.
Add Storage	Specify disk size (EBS)	Default is 8 GB; you can increase if needed.
Configure Security Group	Set firewall rules	Open ports like <b>22 (SSH)</b> and <b>80 (HTTP)</b> as needed.
Create Key Pair	Download .pem file	Used to securely connect to your instance.
Launch Instance	Click <b>Launch</b>	AWS provisions the virtual server for you.
Connect to Instance	SSH (Linux/Mac) or PuTTY (Windows)	Use your key pair and public IP to log in.
(Optional)	Host a web app	Install web server (Apache/Nginx) to serve content.
Stop/Terminate	Manage costs	Stop to pause billing or terminate to delete.



# EC2



- ▶ **Amazon EC2** lets you launch, configure, and manage virtual servers in the cloud – choose an AMI, instance type, security, and storage, then connect via SSH to run applications securely and on demand.
- ▶ **Security Groups** → control inbound/outbound traffic.
- ▶ **EBS (Elastic Block Store)** → your instance's persistent hard drive.
- ▶ **Elastic IP** → a fixed public IP you can attach to an instance.
- ▶ **User Data** → scripts run automatically at launch (for setup).

# EC2 Services

The image shows a screenshot of the AWS Management Console's 'Recently visited' section. On the left is a dark blue sidebar with a list of navigation links: 'Recently visited' (highlighted in blue), 'Favorites', 'All applications', 'All services', 'Analytics', 'Application Integration', 'Blockchain', 'Business Applications', 'Cloud Financial Management', 'Compute', 'Containers', and 'Customer'. The main content area has a dark blue header with the title 'Recently visited' and a close button (an 'X' icon). Below the header, there are four cards, each representing a recently visited service. Each card has a large icon (S3, Aurora and RDS, EC2, Console Home), a title, and a brief description. The cards are: 1. S3: Scalable Storage in the Cloud. 2. Aurora and RDS: Managed Relational Database Service. 3. EC2: Virtual Servers in the Cloud. 4. Console Home: View resource insights, service shortcuts, and feature updates. Below these are two more cards: 5. IAM Identity Center: Manage workforce user access to multiple AWS accounts and cloud applications. 6. IAM: Manage access to AWS resources.

**AWS Global View**

- Resource explorer
- Global search**
- Regions and Zones **New**
- Settings

### Global search (1)

Perform a global search to search for specific resources across all Regions for which your account is enabled

 Download CSV

Manage

 Find resources by attribute or tag

Resource Type = Instance

**Clear filters**

Name	Resource ID	Resource Type	Region
AthayushDev...	i-07e343a800f68573c	Instance	ap-south-1

aws [Alt+S] Asia Pacific (Mumbai) AdministratorAccess/monica@Th

account ID: 0073-0393-0032

EC2

Dashboard

AWS Global View

Events

▼ Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

▼ Images

Compute

# Amazon Elastic Compute Cloud (EC2)

## Create, manage, and monitor virtual servers in the cloud.

Amazon Elastic Compute Cloud (Amazon EC2) offers the broadest and deepest compute platform, with over 600 instance types and a choice of the latest processors, storage, networking, operating systems, and purchase models to help you best match the needs of your workload.

Launch a virtual server

Launch instance

View dashboard

Get started walkthroughs

Get started tutorial

The screenshot displays the AWS Global View interface. On the left, there's a sidebar with 'AWS Global View' and 'Resource explorer'. The main area shows a 'Summary' section at the top, indicating that resources are being fetched across all opted-in regions and that the update is complete. Below this, four large cards show aggregate counts: Compute (1), Storage (3), Networking (327), and Security (41). A detailed 'resource summary' table follows, listing various services like Instances, Volumes, NAT gateways, Elastic IPs, Network interfaces, VPCs, Auto scaling groups, Egress only internet gateways, Endpoint services, VPC peering connections, Subnets, Route tables, Internet gateways, Managed prefix lists, Capacity Reservations, Security groups, VPC endpoints, DHCP option sets, and Network ACLs, along with their respective counts per region.

Region	Compute	Storage	Networking	Security
ap-south-1	1	3	327	41

Resource Type	Count	Status / Regions
Instances	1	in 1 regions
Volumes	1	in 1 regions
NAT gateways	0	in 0 regions
Elastic IPs	0	in 0 regions
Network interfaces	5	in 1 regions
VPCs	17	in 17 regions
Auto scaling groups	0	in 0 regions
Egress only internet gateways	0	in 0 regions
Endpoint services	0	in 0 regions
VPC peering connections	0	in 0 regions
Subnets	58	in 17 regions
Route tables	18	in 17 regions
Internet gateways	17	in 17 regions
Managed prefix lists	195	in 17 regions
Capacity Reservations	0	in 0 regions
Security groups	24	in 17 regions
VPC endpoints	0	in 0 regions
DHCP option sets	17	in 17 regions
Network ACLs	17	in 17 regions



The background features abstract, overlapping geometric shapes in various shades of blue, ranging from light sky blue to deep navy blue. These shapes are primarily located on the left and right sides of the frame, creating a modern, dynamic feel. The central area is a plain, light grayish-white.

# Thank you

EO Session