Amazon Web Services (AWS)

A Comprehensive Guide to Cloud Computing

What is AWS ?

- **AWS (Amazon Web Services) is a cloud computing platform by Amazon.**
- **It provides on-demand IT services like storage, computing power, and databases.**
- **AWS helps businesses run applications without owning physical servers.**
- **It allows users to pay only for what they use, reducing upfront costs.**

Who Uses AWS

- **Startups use AWS for low-cost infrastructure and fast deployment.**
- **Enterprises rely on AWS for scalability, data analytics, and global reach.**
- **Developers & IT teams use AWS for building, testing, and deploying apps.**
- **Government and education sectors use it for research, storage, and security needs.**

When AWS Was Launched

- **AWS was officially launched in March 2006 by Amazon.**
- **It started with simple services like S3 (storage) and EC2 (compute), and SQS (Simple queue service).**
- **Over time, AWS added hundreds of services across AI, data, and networking.**
- **Today, it's the largest and most mature cloud platform in the world.**

AWS Market Share

- AWS holds around 30–32% of the global public cloud market.
- It competes mainly with Microsoft Azure and Google Cloud.
- AWS leads because of broad service variety and global coverage.
- Millions of companies use AWS—from small startups to global enterprises.

AWS Cloud Use Cases

- **Web Hosting: Easily deploy websites with scalable backend.**
- **Data Storage & Backup: Store massive data securely and reliably.**
- **Machine Learning & AI: Build intelligent apps with AWS AI services.**
- **Big Data Analytics: Process and analyze large datasets efficiently.**

AWS Infrastructure

- **AWS infrastructure is made up of Regions, Availability Zones, and Edge Locations.**
- **Each Region has multiple Availability Zones (data centers).**
- **Redundancy & fault tolerance are built through this distributed design.**
- **Edge locations help deliver content faster via Amazon CloudFront (CDN).**

https://infrastructure.aws

AWS Regions

- **A Region is a physical geographic area containing multiple data centers.**
- **Each region provides low latency and compliance with local laws.**
- **Examples: US East (N. Virginia), Asia Pacific (Mumbai), Europe (Frankfurt).**
- **AWS currently has 30+ regions worldwide, expanding each year.**

How to Choose an AWS Region

- **Latency: Choose a region closest to your users for better performance.**
- **Compliance: Select region that meets your legal and data residency needs.**
- **Service Availability: Not all AWS services are available in every region.**
- **Cost: Pricing varies by region; compare before deployment.**

AWS Availability Zones (AZs)

- **Each region has many AZs, which are isolated data centers.**
- **AZs are connected through high-speed, private networks.**
- **They offer high availability and disaster recovery capability.**
- **Deploying resources across multiple AZs ensures maximum uptime.**

AWS Identity & Access Management (IAM)

IAM Users & Groups

- **IAM is a Global Service means it doesn't belong to any region.**
- **Root account is created by default and shouldn't be used or shared.**
- **Users are people within your organization and can be grouped.**
- **Groups only contain users, not other groups.**
- **Users don't have to belong to a group and one user can belong to multiple groups.**