

ASSIGNMENT - 6.2

Exploring AWS Services

Deliverable 1:-

① Amazon Elastic Compute Cloud (EC2):-

→ Description :- EC2 provides scalable, on demand virtual servers (instances) in the cloud. You can choose a wide range of operating systems, instance types, and configuration to meet the specific needs of your applications.

→ Use Cases :- Hosting web applications, running backend processes, deploying development & testing environments, building high-performance computing clusters.

→ Benefit :- Scalability (pay only for what you use), flexibility (choose the right instance type), cost effectiveness, reliability.

→ Challenges :- Managing resources & costs, security configuration.

② Amazon Elastic Container Service (ECS):-

→ Description :- ECS manages Docker containers for deploying & scaling containerized applications. It simplifies container orchestration, scheduling & scaling.

→ Use Case :- Building & deploying microservices architectures, deploying serverless applications, managing containerized workloads at scale.

→ Benefits :- Faster Development Cycle, simpler deployments, efficient resource utilization, portability across different environments.

→ Challenges :- Requires knowledge of container technology (Docker), managing container security.

③ Amazon Lambda:-

- Description:- Lambda is a serverless compute service that allows you to run code without managing servers. You pay only for the code that executes & resources it consumes.
- Use Cases:- Building event-driven applications, processing data streams, running background tasks, implementing serverless APIs.
- Benefits:- Reduced operational overhead, simplified scaling, cost efficiency (pay-per-use), high availability & scalability.
- Challenges:- Debugging code execution, limited control underlying infrastructure.

④ Amazon Simple Storage Service (S3):-

- Description:- S3 offer object storage for a wide range of data, from static website content to large media files. It is highly scalable, durable & cost-effective.
- Use Cases:- Storing application data, backups, archives, hosting static website content, media & libraries.
- Benefits:- Scalability, durability, cost-effectiveness, easy access.
- Challenges:- Managing access control for objects, potential egress costs for data retrieval.

⑤ Amazon Elastic Block Store (EBS):-

- Description:- EBS provides persistent block storage volumes for use with EC2 instances. you can attach EBS volumes to instance & use them like traditional hard drive.
- Use Case:- Hosting databases, storing applications data that needs persistence, running high-performance computing applications.
- Benefits:- High availability, scalability, persistence.

⑥ Amazon Elastic File System (EFS):-

- Description:- EFS provides a scalable file storage service for use with EC2 instances. It allows multiple instances to access a shared file system concurrently.
- Use Case:- Hosting content management system (CMS), sharing application data between instances in a cluster, building distributed file systems.
- Benefits:- Scalability, performance, ease of use.
- Challenges:- limited availability zones compared to other services, potential for higher costs for frequently accessed data, managing access control for files.

⑦ Amazon Virtual Private Cloud (VPC):-

- Description:- VPC allows you to create a logically isolated network within the AWS cloud. you can define subnets, security groups & route tables to control flow traffic flows within your VPC's.

- Use Cases:- Building secure & isolated cloud environment, controlling network traffic between resources, meeting compliance requirements.
- Benefits:- Increased security, flexibility, improved manageability.
- Challenges:- Requires understanding of networking concepts, managing complexity as network grows.

⑧ Amazon Elastic Load Balancing (ELB):-

- Description:- ELB distributes incoming traffic across multiple EC2 instances in a load balancer. It ensures high availability & scalability for your applications.