

Planning the design and estimating cost

Phase 1: Planning the Architecture and Cost Estimation

Objective

The goal of this phase is to plan the system architecture and estimate the cost of running the solution before deploying any AWS resources.

Planning helps in selecting the right AWS services, designing a scalable architecture, and controlling overall cost.

Task 1: Creating the Architecture Diagram

In this task, an architectural diagram was designed to illustrate the proposed solution and how AWS services interact with each other.

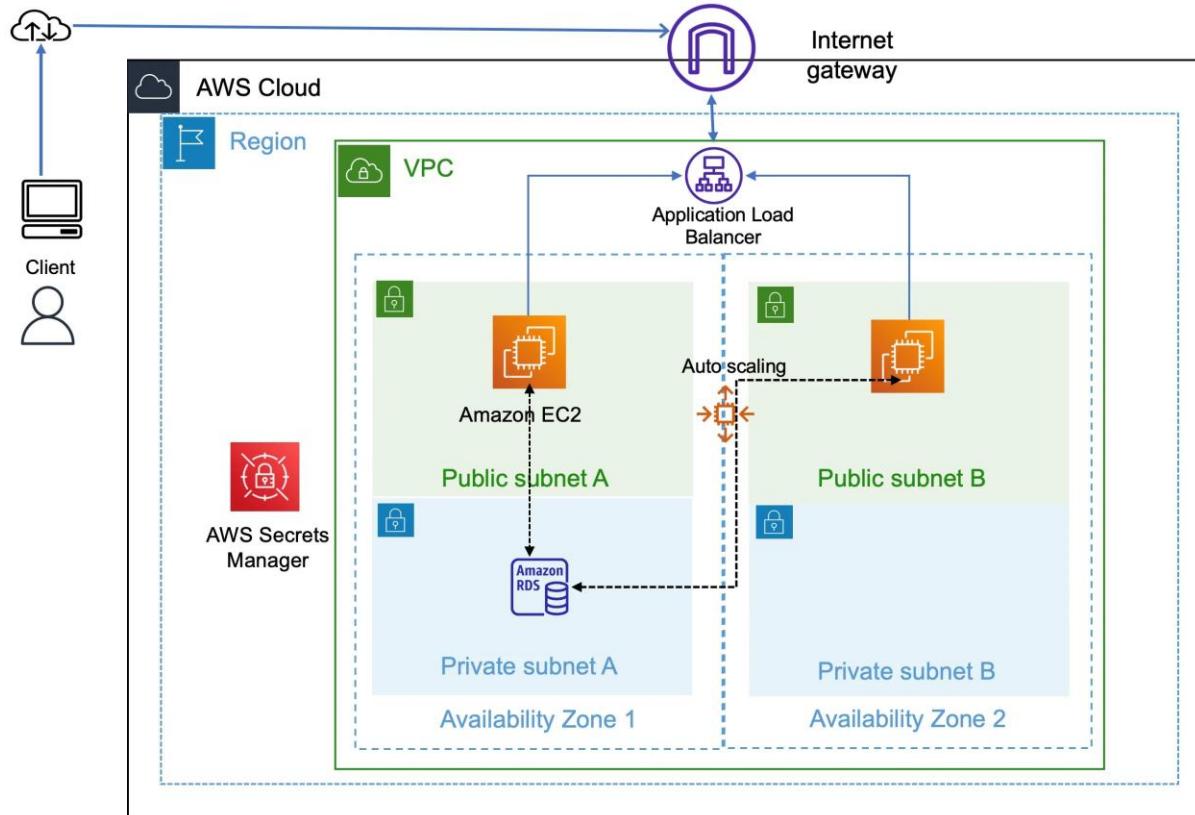
Planned Architecture Components

- Amazon VPC with public and private subnets**

- Application Load Balancer (ALB) in public subnets
- EC2 instances in an Auto Scaling Group for the web application
- Amazon RDS (MySQL) deployed in private subnets
- AWS Secrets Manager to store database credentials securely
- Security Groups to control inbound and outbound traffic

Architecture Design Considerations

- Public subnets are used for internet-facing components (ALB and EC2)
- Private subnets are used for the database to improve security
- Auto Scaling ensures high availability and scalability
- Secrets Manager avoids hardcoding database credentials in the application



Task 2: Developing a Cost Estimate

A cost estimate was developed for running the solution in the ****us-east-1****

(AWS N. Virginia) region for ****12 months****.

The estimate was created using the ****AWS Pricing Calculator****.

AWS Services Included in Cost Estimation

- Amazon EC2 (t3.micro instances)

- Application Load Balancer
- Amazon RDS MySQL (db.t3.micro)
- Elastic Load Balancing data processing
- Amazon EBS storage
- Data transfer (estimated)

Cost Estimation Assumptions

- 2 EC2 instances running continuously
- 1 Application Load Balancer
- 1 RDS MySQL instance (Single-AZ, Dev/Test)
- Moderate traffic usage
- No Multi-AZ for RDS to reduce cost

Cost Optimization Decisions

- Used t3.micro instances to minimize cost
- Selected Dev/Test template for RDS
- Disabled Enhanced Monitoring
- Avoided Multi-AZ deployment for database

The cost estimate was reviewed and adjusted to meet budget constraints.

Outcome of Phase 1

- A clear architectural design was created**
- AWS services were selected based on scalability, security, and cost**
- A 12-month cost estimate was prepared using AWS Pricing Calculator**
- The design and estimate are ready for educator review**

References

- AWS Architecture Icons**
- AWS Reference Architecture Diagrams**
- AWS Pricing Calculator**