

Project Name

"Creation and Management of AWS Infrastructure for High Availability and Secure Web Application"

Project Description

This project involves the migration and management of a high availability and secure web application to AWS infrastructure. Using Nginx web server, it will create a high performance and secure web application by integrating AWS services such as auto-scaling and log management.

Stages:

1. Creating AWS Account and Basic Infrastructure:

- **Creating Virtual Private Cloud (VPC):** VPC configuration including public and private subnets, Route Tables and Internet Gateway will be made.
- **Creation of Security Groups:** Configure the appropriate security groups for traffic coming to the web server.

2. Creating EC2 Instances:

- **Create Auto Scaling Groups for high availability:** Configure Auto Scaling for automatically scaled EC2 instances running in multiple Availability Zones.
- **Creating Launch Configuration and Launch Templates:** The properties of EC2 instances will be defined and instances will be created according to these configurations.
- **Creating Elastic Load Balancer (ELB):** ELB will be configured to provide traffic distribution and high availability.

3. Installation and Management of Nginx Web Server:

- Install Nginx web server on EC2 instances.
- **Optimising Nginx configuration:** Nginx will be configured to run with high performance and security measures will be added.
- The ports required for the web application will be opened and routing rules will be set.

4. Database Management:

- a. Create a relational database with Amazon RDS: Create a database suitable for the web application.
- b. Create an RDS database backup and restore strategy.

5. Logging and Monitoring Management:

- a. Configure logging with CloudWatch Logs: Send Nginx access and error logs to CloudWatch Logs.
- b. Create CloudWatch Alarms: Set CloudWatch alarms to receive push notifications, for example, for high CPU usage or network traffic.

6. Security and Access Controls:

- a. Create AWS Identity and Access Management (IAM) roles and policies: Define IAM roles and policies required for security.
- b. Use AWS Inspector to scan for vulnerabilities: Continuously scan your application and infrastructure for vulnerabilities.

7. Automation and Scaling:

- a. Automate with AWS Lambda: For example, create AWS Lambda functions for backup operations, security fixes, or log cleanup operations.
- b. Create Auto Scaling Policies: For example, create Auto Scaling Policies to automatically scale EC2 instances when traffic increases.

8. Documentation and Reporting:

- a. Document all configurations and steps throughout your project.
- b. Regularly monitor metrics collected by AWS CloudWatch and other AWS services and generate performance reports.