

- **Deploy a Pre-Built Dockerized Application:**

- Use a provided Docker image containing a simple web application.
- Deploy the application on AWS using EC2 instances.
- Set up necessary networking and security configurations.
- Ensure the application is scalable and highly available.

Task Breakdown:

Deploy the Dockerized Application using Terraform

Steps:

- 1. Infrastructure as Code (IaC):**

- a. Use Terraform to automate the provisioning of infrastructure.

- 2. Provision an EC2 Instance:**

- a. Launch an EC2 instance using an appropriate Amazon Machine Image (AMI).
- b. Ensure the instance has the necessary IAM roles and permissions.

- 3. Install Docker on the EC2 Instance:**

- a. Update the package repository and install Docker.
- b. Ensure Docker service is running.

- 4. Run the Provided Docker Image:**

- a. Pull the provided Docker image from Docker Hub (<https://hub.docker.com/r/yeasy/simple-web/>).
- b. Run the Docker container on the EC2 instance.
- c. Verify that the application is running correctly.

- 5. Configure Security Groups:**

- a. Create a security group to allow HTTP/HTTPS traffic to the EC2 instance.
- b. Ensure that the instance is secure and follows best practices for security.

- 6. Set Up Auto-Scaling and Load Balancing:**

- a. Configure an Auto Scaling group to ensure high availability and scalability.
- b. Set up an Elastic Load Balancer (ELB) to distribute traffic across multiple instances.

Bonus Points

- 1. Write your own application:**

- a. Write a web application in any language that prints the origin public IP of any request it receives in reverse: e.g. if my ip is 1.2.3.4 it should be printed as 4.3.2.1
- b. Build a docker image of your app.

- 2. Advanced Networking Configuration:**

- a. Set up a Virtual Private Cloud (VPC) with public and private subnets.
- b. Deploy the application in a private subnet and use a NAT gateway for outgoing traffic.

- 3. Database Integration:**

- a. Integrate a managed database service like Amazon RDS or DynamoDB.
- b. Ensure the application can connect to the database securely.

Deliverables

- 1. Documentation:**

- a. A step-by-step guide on how to set up and deploy the application.
  - b. Any assumptions made and troubleshooting steps.
- 2. Code and Configuration Files:**
- a. Any scripts, configuration files, or IaC templates used in the setup process.