Project name: Containerized Microservices with ECS Fargate

GitHub repo: https://github.com/Mithra1995/sampleproject.git

Objective

To design, deploy, and manage a containerized microservices architecture using AWS services, specifically AWS ECS Fargate . The goal is to create a robust, scalable, and secure infrastructure to run microservices in the cloud using Docker containers. The project will include the following:
- **Containerization of Microservices** using Docker
- **Deployment using ECS Fargate**
- **CI/CD pipeline for continuous delivery and management** of microservices
- **Monitoring and Logging** for performance insights

Architecture Overview

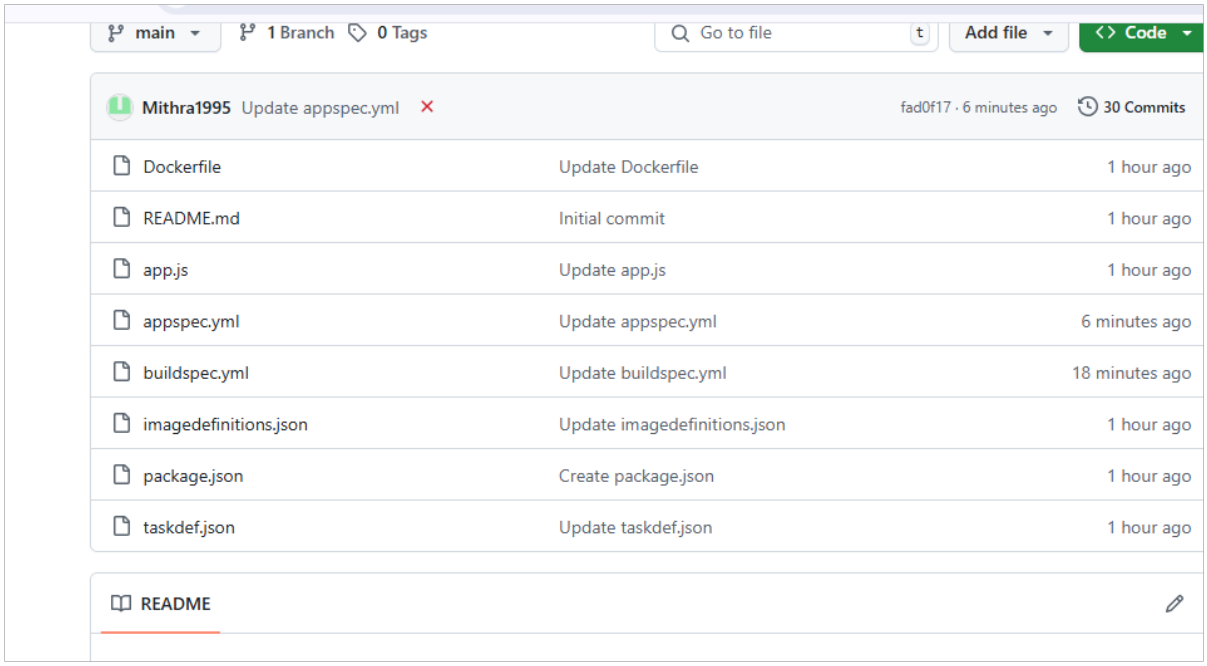
The architecture consists of multiple AWS services to support microservices, which include ECS Fargate, Application Load Balancer (ALB) for traffic routing. This will be coupled with CI/CD pipelines using Jenkins or AWS CodePipeline.

Services Used

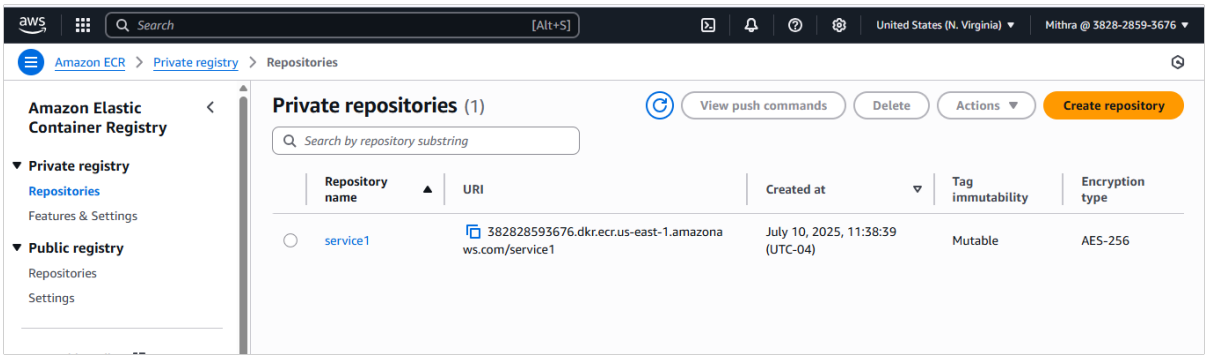
- **Amazon ECS Fargate** or **Amazon EKS** (Elastic Kubernetes Service) for container orchestration
- **Amazon RDS** (Relational Database Service) for database storage
- **AWS Application Load Balancer** (ALB) for routing traffic to microservices
- **Amazon VPC** (Virtual Private Cloud) for networking and security
- **AWS CloudWatch** for monitoring and logging
- **Docker** for containerizing microservices
- **Amazon ECR** (Elastic Container Registry) for storing Docker images
- **AWS CodePipeline / Jenkins** for CI/CD automation

Step-by-Step Implementation Tasks

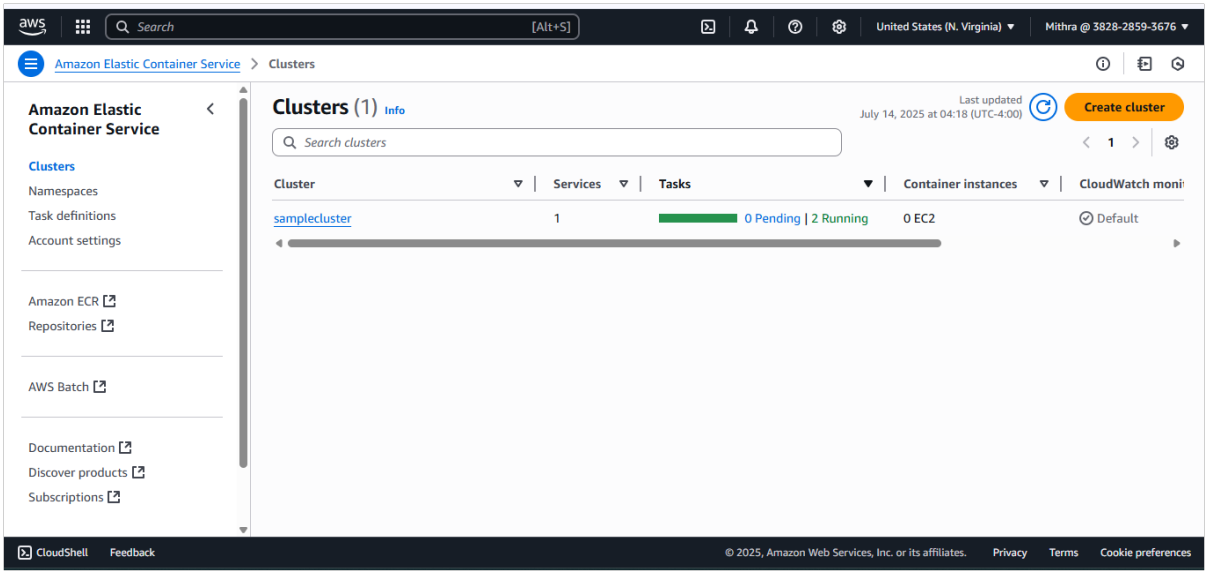
Step 1: Push the code to GitHub repo



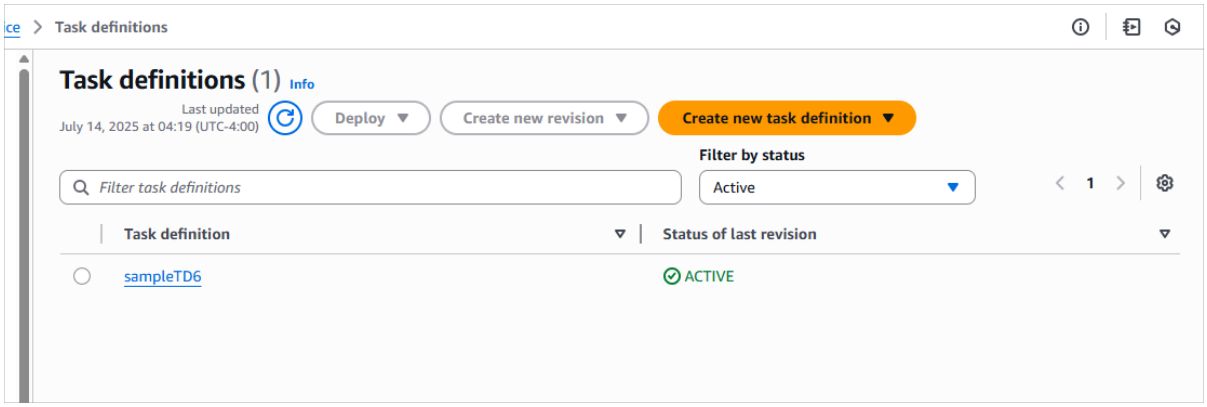
Step 2: create ECR

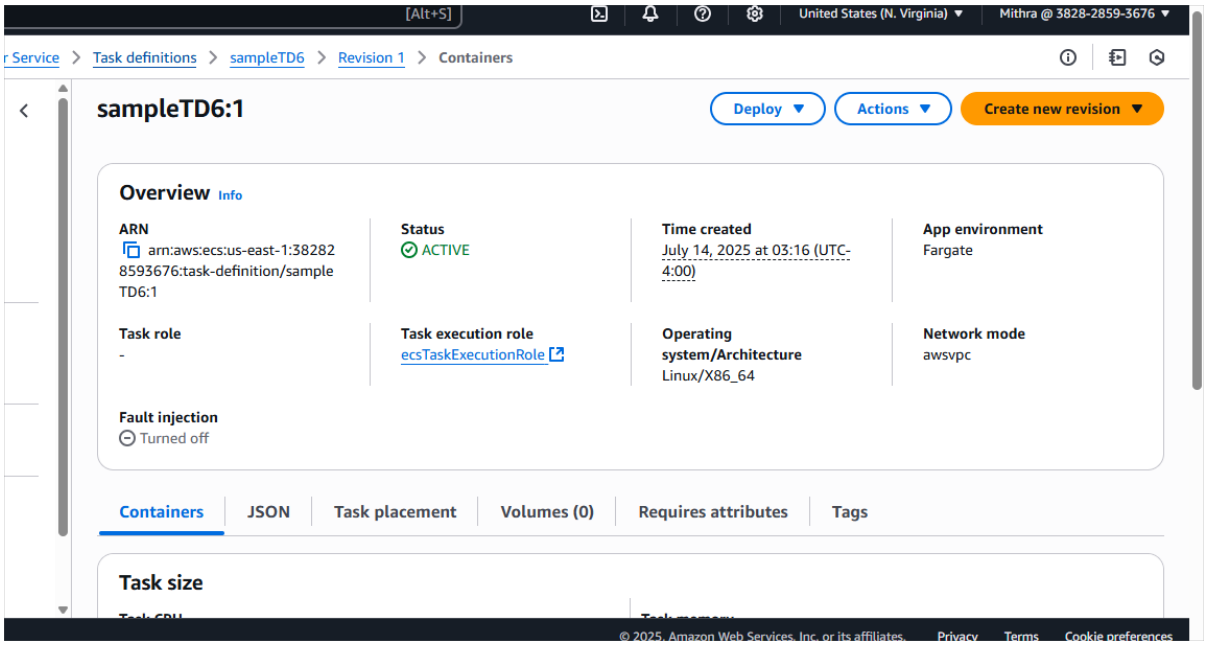


Step 3: Create ECS



Step 4: create task definition with container port and ECR




[Alt+S]
United States (N. Virginia)
Mithra @ 3828-2859-3676
Service > Task definitions > sampleTD6 > Revision 1 > Containers
sampleTD6:1
Deploy
Actions
Create new revision
Overview Info
ARN
arn:aws:ecs:us-east-1:382828593676:task-definition/sampleTD6:1
Status
ACTIVE
Time created
July 14, 2025 at 03:16 (UTC-4:00)
App environment
Fargate
Task role
-
Task execution role
ecsTaskExecutionRole
Operating system/Architecture
Linux/X86_64
Network mode
awsvpc
Fault injection
Turned off
Containers
JSON
Task placement
Volumes (0)
Requires attributes
Tags
Task size
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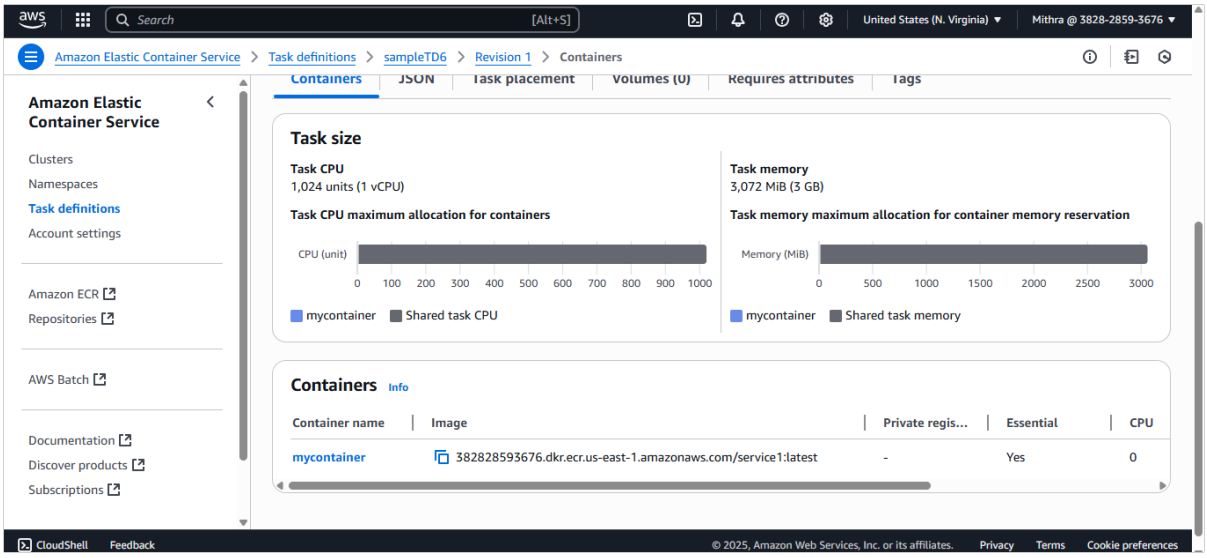
Search
[Alt+S]
United States (N. Virginia)
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Amazon Elastic Container Service > Task definitions > sampleTD6 > Revision 1 > Containers
Amazon Elastic Container Service
Clusters
Namespaces
Task definitions
Account settings
Amazon ECR
Repositories
AWS Batch
Documentation
Discover products
Subscriptions
Containers
JSON
Task placement
Volumes (0)
Requires attributes
Tags
Task size
Task CPU
1,024 units (1 vCPU)
Task memory
3,072 MiB (3 GB)
Task CPU maximum allocation for containers
CPU (unit)
0 100 200 300 400 500 600 700 800 900 1000
mycontainer
Shared task CPU
Task memory maximum allocation for container memory reservation
Memory (MiB)
0 500 1000 1500 2000 2500 3000
mycontainer
Shared task memory
Containers Info
Container name
Image
Private regis...
Essential
CPU
mycontainer
382828593676.dkr.ecr.us-east-1.amazonaws.com/service1:latest
-
Yes
0
CloudShell
Feedback
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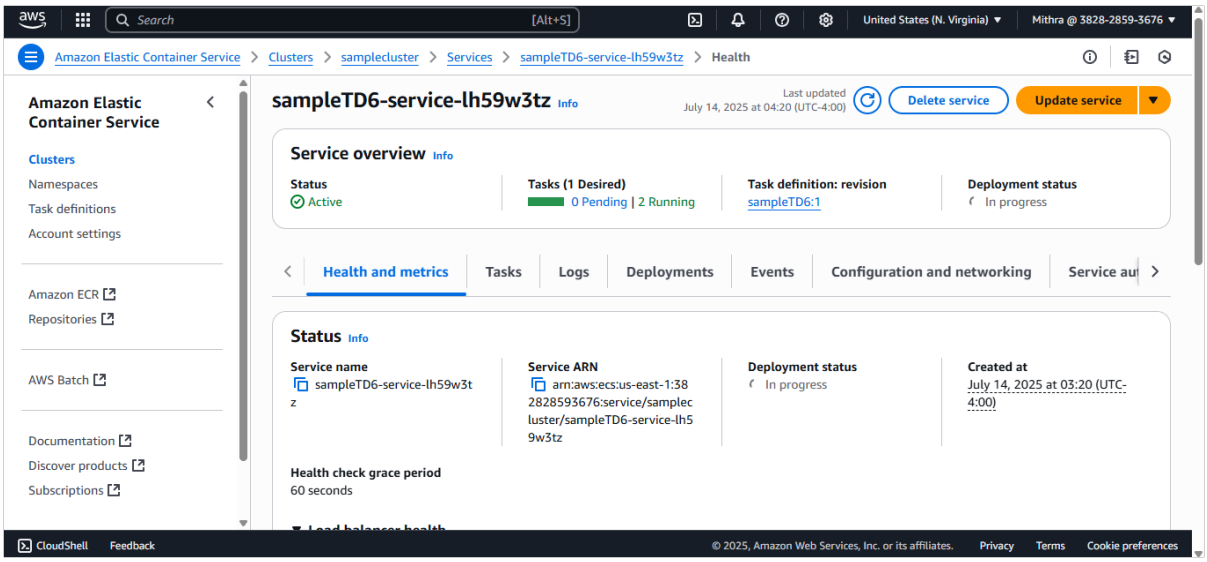
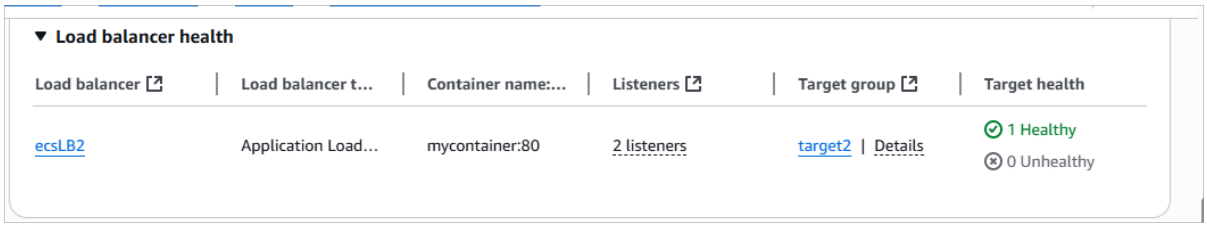
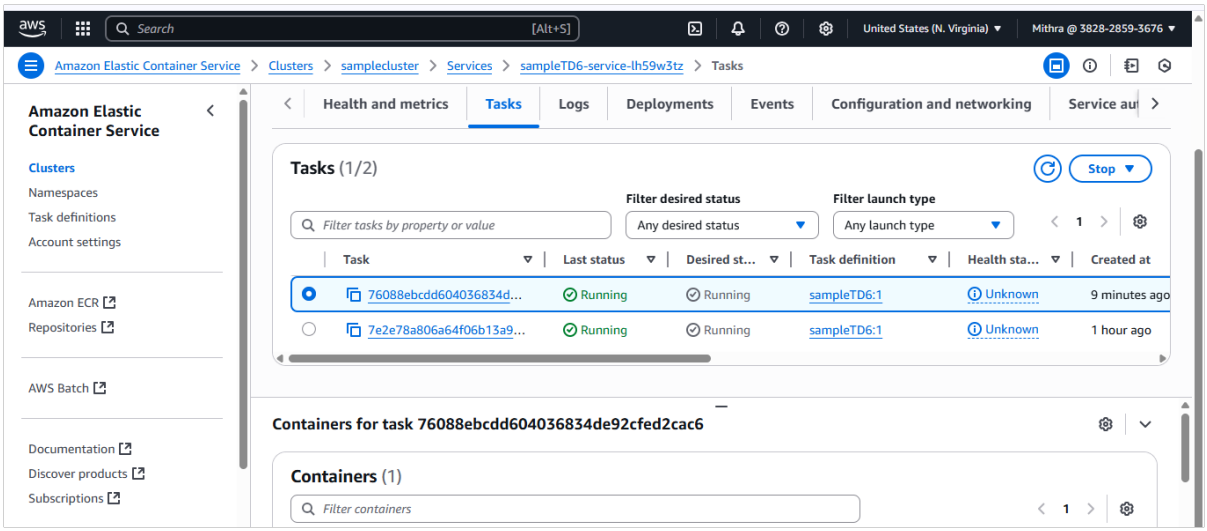
Step 5: create service for ECS






Search
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United States (N. Virginia)
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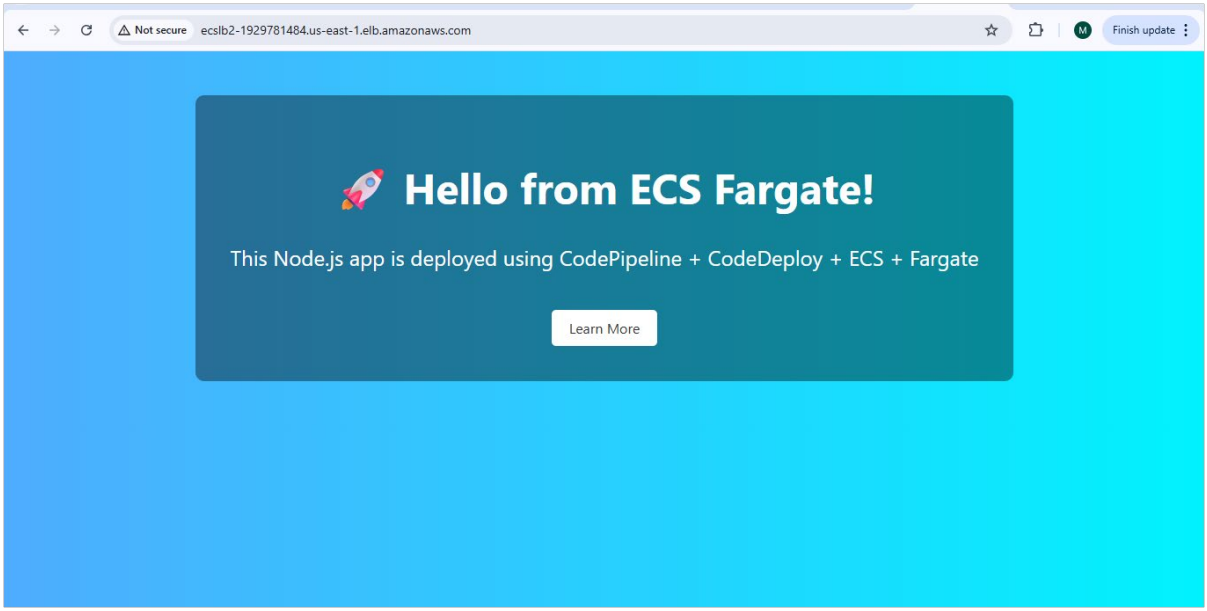
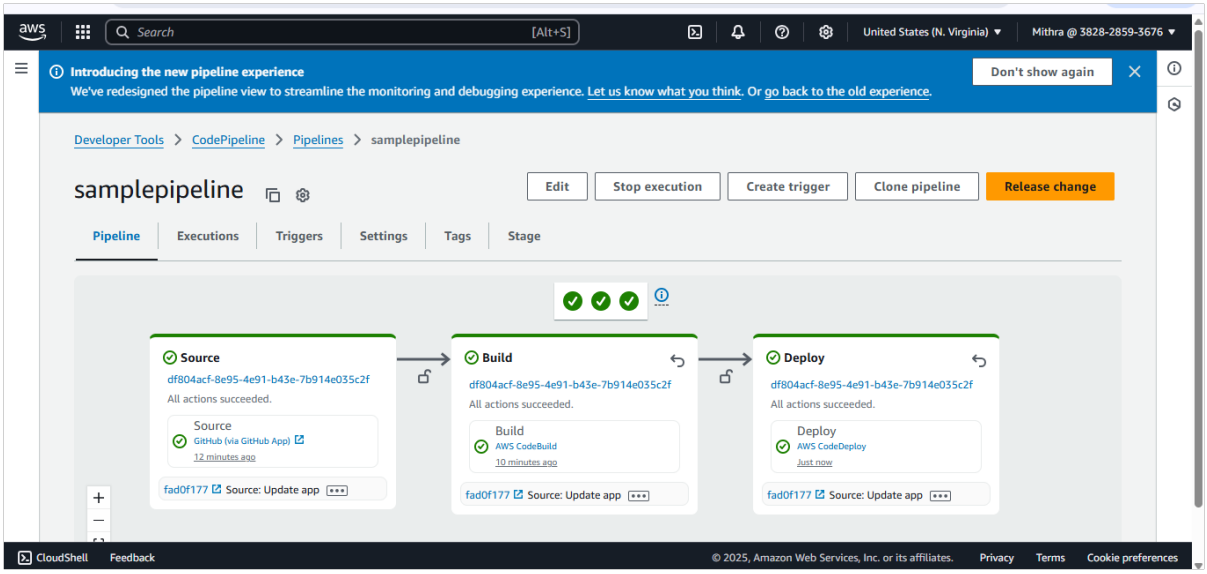
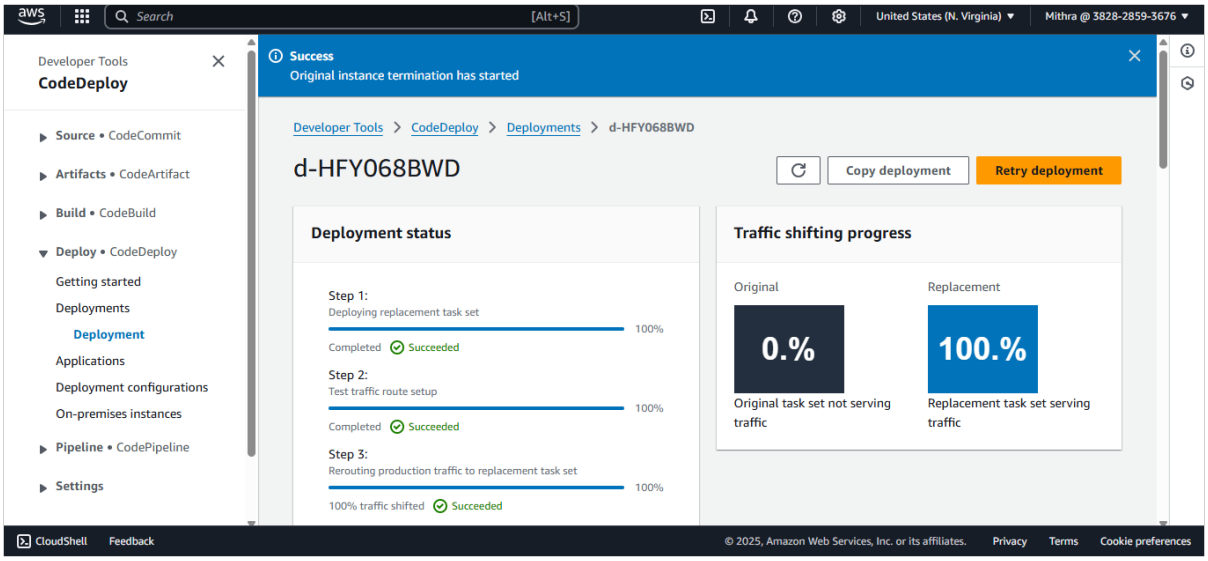
Amazon Elastic Container Service
Clusters
samplecluster
Services
sampleTD6-service-lh59w3tz
Tasks
Amazon Elastic Container Service
Clusters
Namespaces
Task definitions
Account settings
Amazon ECR
Repositories
AWS Batch
Documentation
Discover products
Subscriptions
Health and metrics
Tasks
Logs
Deployments
Events
Configuration and networking
Service au
Tasks (1/2)
Stop
Filter desired status
Any desired status
Filter launch type
Any launch type
Filter tasks by property or value
Task
Last status
Desired st...
Task definition
Health sta...
Created at
76088ebcdd604036834d...
Running
Running
sampleTD6:1
Unknown
9 minutes ago
7e2e78a806a64f06b13a9...
Running
Running
sampleTD6:1
Unknown
1 hour ago
Containers for task 76088ebcdd604036834de92cfed2cac6
Containers (1)
Filter containers


Not secure
ecslb2-1929781484.us-east-1.elb.amazonaws.com
Finish update
Hello from ECS Fargate!
This Node.js app is deployed using CodePipeline + CodeDeploy + ECS + Fargate
Learn More

Step 6 : create code pipeline with AWS codedeploy

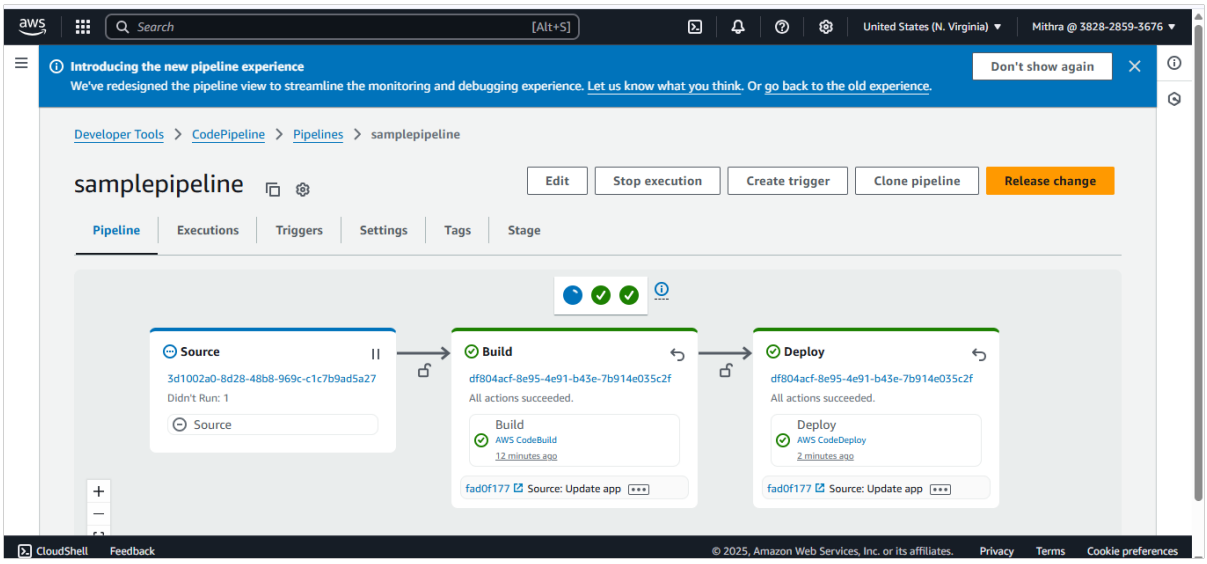




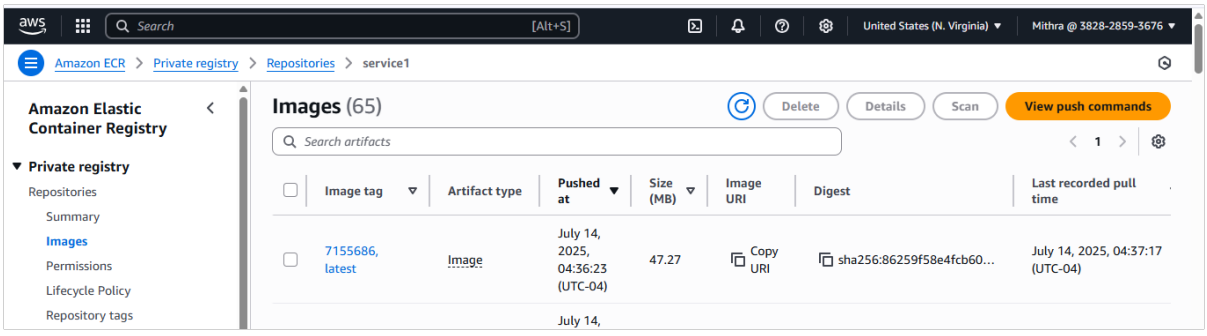
Step 7: Now change the code in github and check

```
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Welcome to ECS Project</title>
  <style>
    body {
```

Step 8: Now the pipeline triggered again



Step 9: Image is pushed to ECR



Step 10: now the traffic is moving to replacement task