Hello World Node.js App on AWS ECS/Fargate with Terraform and GitHub Actions

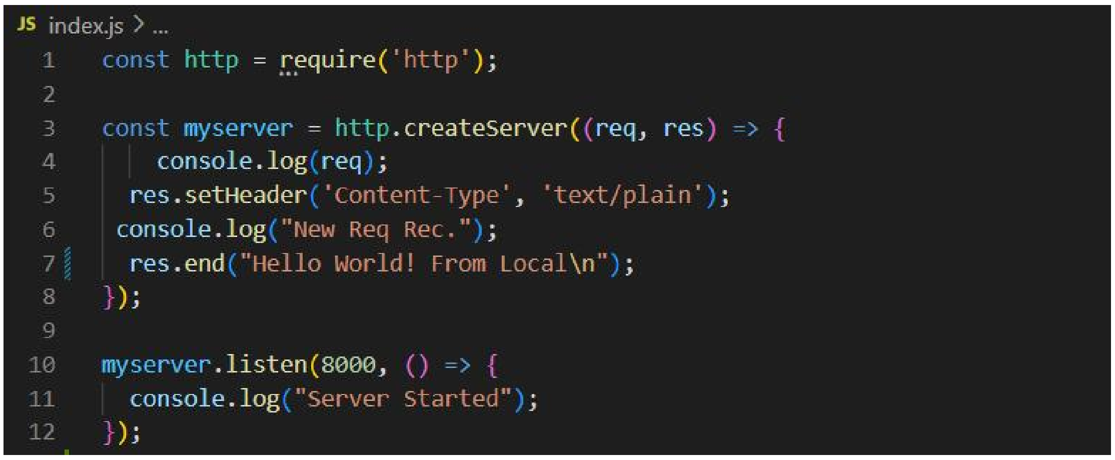
This project demonstrates deploying a simple Hello World Node.js application on Amazon ECS/Fargate using Infrastructure as Code (IaC) with Terraform and a CI/CD pipeline managed by GitHub Actions.

Prerequisites:

- An AWS account with appropriate permissions.
- Terraform installed on your local machine (https://www.terraform.io/).
- AWS CLI configured with credentials for your AWS account (https://docs.aws.amazon.com/cli/).
- A GitHub repository for your project.

1. Node.js Application (index.js):

This file contains the simple Node.js code for the Hello World application:

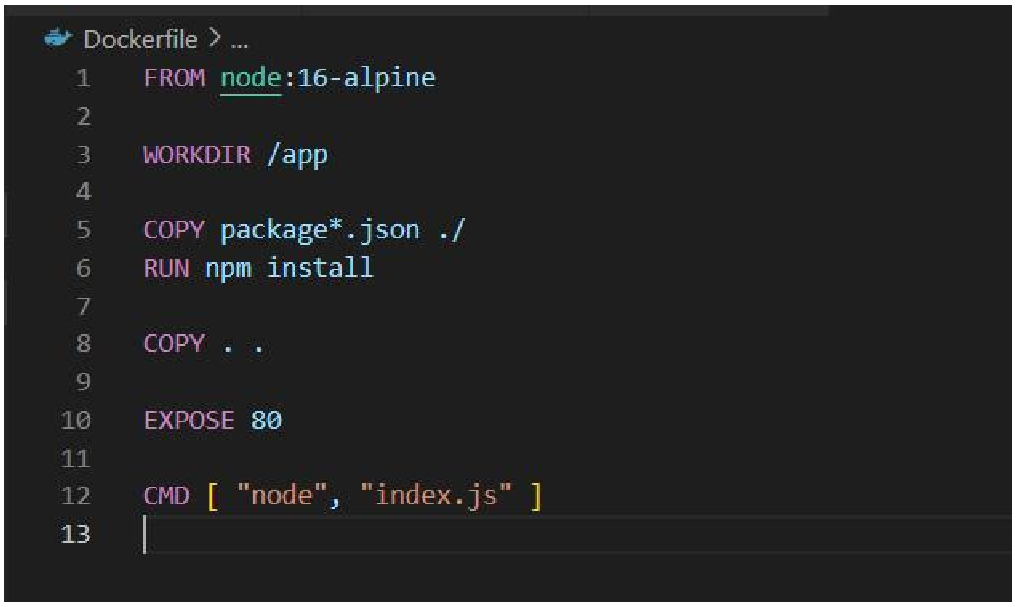


index.js > ...

```
const http = require('http');

const myserver = http.createServer((req, res) => {
    console.log(req);
  res.setHeader('Content-Type', 'text/plain');
 console.log("New Req Rec.");
  res.end("Hello World! From Local\n");
});

myserver.listen(8000, () => {
  console.log("Server Started");
});
```

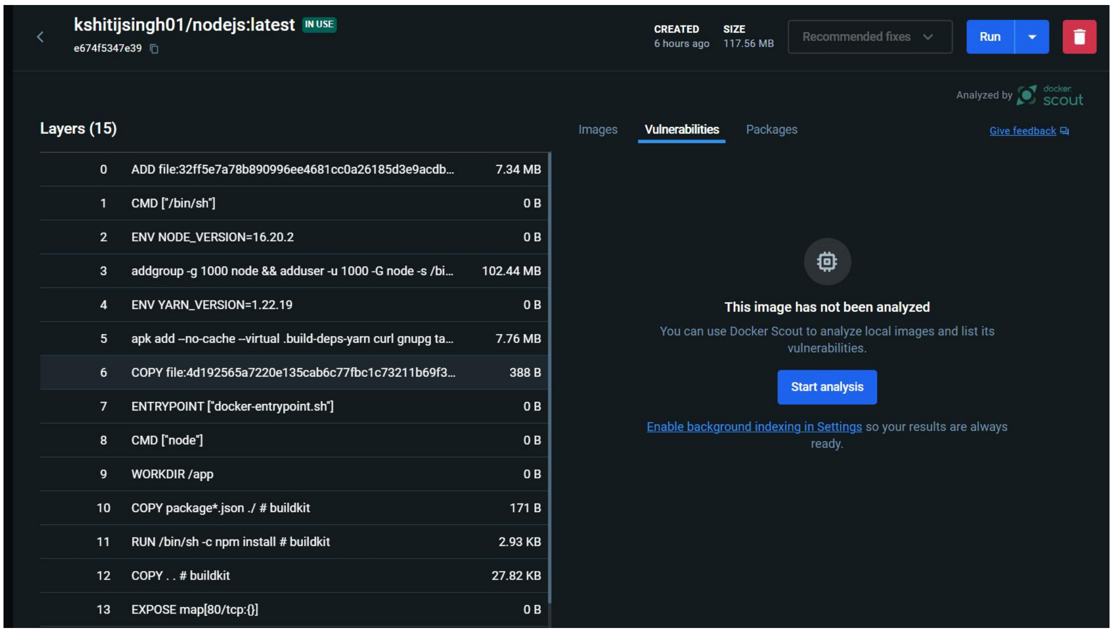
2. Dockerfile:

This file defines how to build the Docker image for your Node.js application:



```
Dockerfile > ...
FROM node:16-alpine

WORKDIR /app

COPY package*.json ./
RUN npm install

COPY . .

EXPOSE 80

CMD [ "node", "index.js" ]

```

This Dockerfile defines a Docker image based on the node:16-alpine image. It installs dependencies from package.json, copies the application code, and starts the Node.js server using the CMD instruction.



Layers (15)

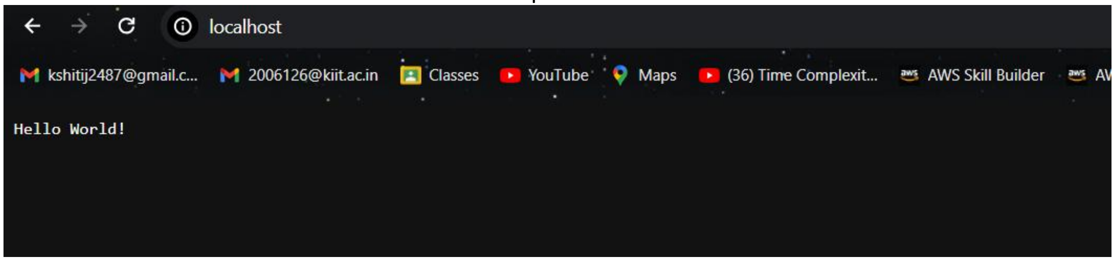
0	ADD file:32ff5e7a78b890996ee4681cc0a26185d3e9acdb...	7.34 MB
1	CMD ["/bin/sh"]	0 B
2	ENV NODE_VERSION=16.20.2	0 B
3	addgroup -g 1000 node && adduser -u 1000 -G node -s /bi...	102.44 MB
4	ENV YARN_VERSION=1.22.19	0 B
5	apk add --no-cache --virtual .build-deps-yarn curl gnupg ta...	7.76 MB
6	COPY file:4d192565a7220e135cab6c77fbc1c73211b69f3...	388 B
7	ENTRYPOINT ["docker-entrypoint.sh"]	0 B
8	CMD ["node"]	0 B
9	WORKDIR /app	0 B
10	COPY package*.json ./ # buildkit	171 B
11	RUN /bin/sh -c npm install # buildkit	2.93 KB
12	COPY . . # buildkit	27.82 KB
13	EXPOSE map[80/tcp:{}]	0 B

This image has not been analyzed

You can use Docker Scout to analyze local images and list its vulnerabilities.

Enable background indexing in Settings so your results are always ready.

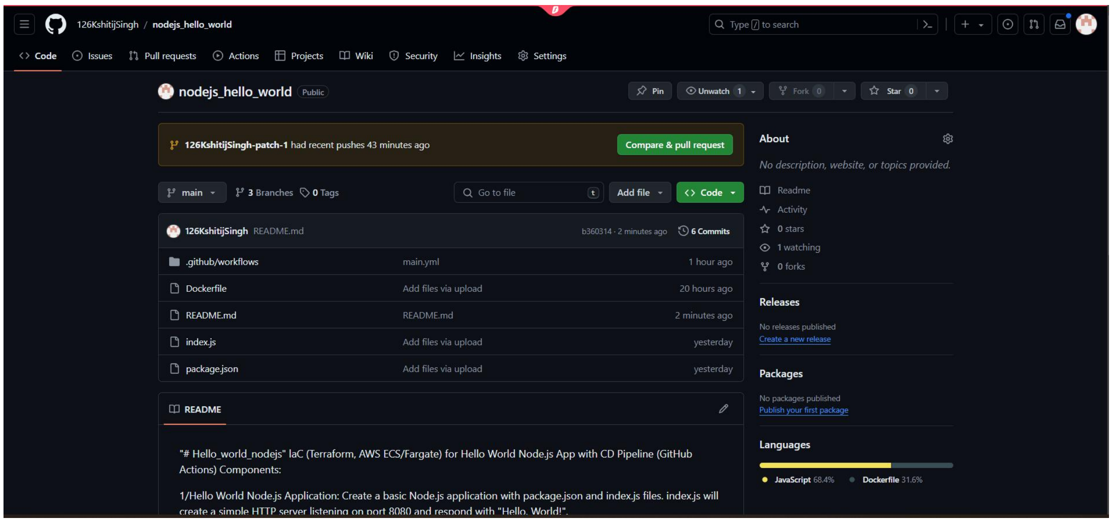
It will show this dockerfile and also show the output in the browser



```
Hello World!
```

3. Deploy on GitHub

Create a new repository on GitHub (https://github.com/).



126KshitijSingh / nodejs_hello_world

nodejs_hello_world Public

126KshitijSingh-patch-1 had recent pushes 43 minutes ago

main · 3 Branches · 0 Tags

126KshitijSingh README.md · b360314 · 2 minutes ago · 6 Commits

.github/workflows	main.yml	1 hour ago
Dockerfile	Add files via upload	20 hours ago
README.md	README.md	2 minutes ago
index.js	Add files via upload	yesterday
package.json	Add files via upload	yesterday

README

"# Hello_world_nodejs" IaC (Terraform, AWS ECS/Fargate) for Hello World Node.js App with CD Pipeline (GitHub Actions) Components:

1/Hello World Node.js Application: Create a basic Node.js application with package.json and index.js files. index.js will create a simple HTTP server listening on port 8080 and respond with "Hello, World!".

About

No description, website, or topics provided.

Readme · Activity · 0 stars · 1 watching · 0 forks

Releases: No releases published

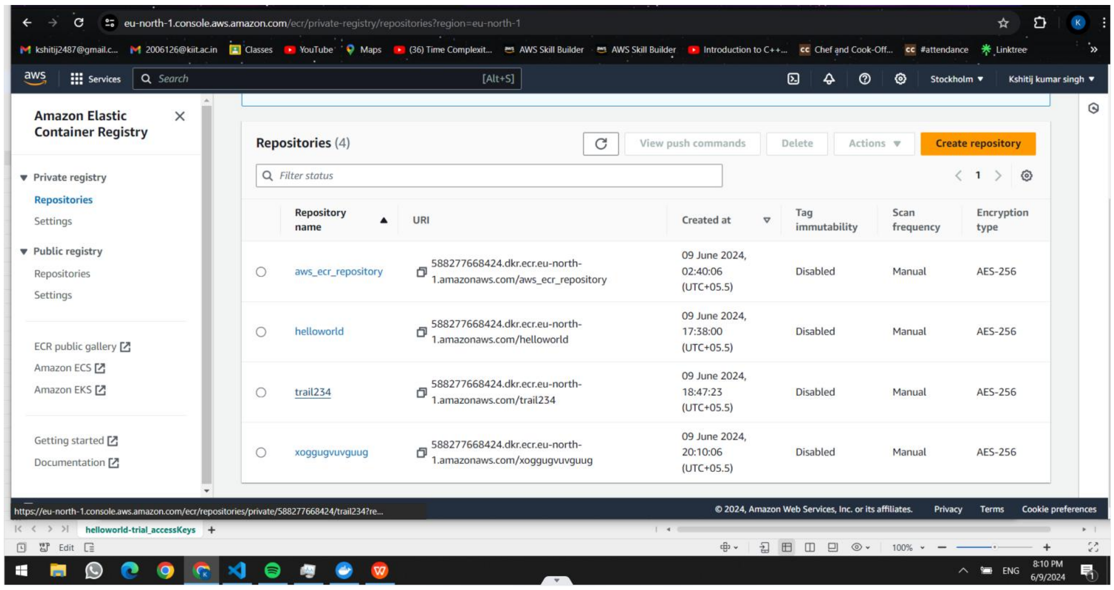
Packages: No packages published

Languages: JavaScript 68.4% · Dockerfile 31.6%

4.AWS Deployment

ECR Repository:

- Creates an ECR repository as resource to store the Docker image for your application.



eu-north-1.console.aws.amazon.com/ecr/private-registry/repositories?region=eu-north-1

Amazon Elastic Container Registry

Repositories (4)

Repository name	URI	Created at	Tag immutability	Scan frequency	Encryption type
aws_ecr_repository	588277668424.dkr.ecr.eu-north-1.amazonaws.com/aws_ecr_repository	09 June 2024, 02:40:06 (UTC+05.5)	Disabled	Manual	AES-256
helloworld	588277668424.dkr.ecr.eu-north-1.amazonaws.com/helloworld	09 June 2024, 17:38:00 (UTC+05.5)	Disabled	Manual	AES-256
trail234	588277668424.dkr.ecr.eu-north-1.amazonaws.com/trail234	09 June 2024, 18:47:23 (UTC+05.5)	Disabled	Manual	AES-256
xoggugvuvguug	588277668424.dkr.ecr.eu-north-1.amazonaws.com/xoggugvuvguug	09 June 2024, 20:10:06 (UTC+05.5)	Disabled	Manual	AES-256

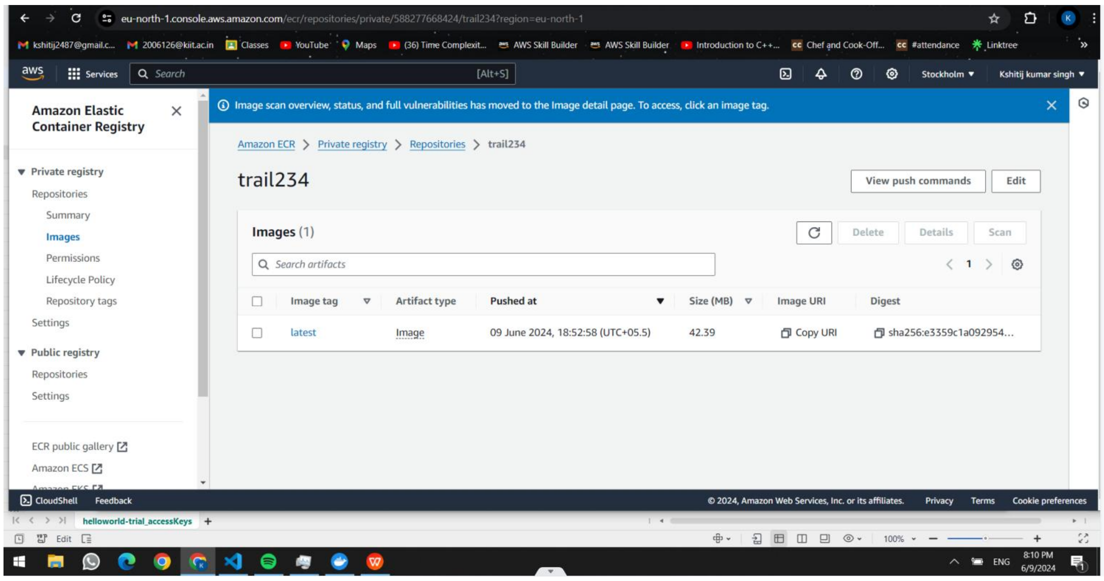

eu-north-1.console.aws.amazon.com/ecr/repositories/private/588277668424/trail234?region=eu-north-1

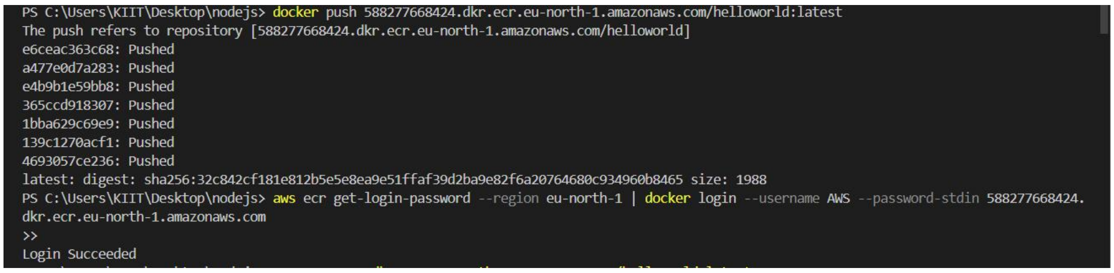
Image scan overview, status, and full vulnerabilities has moved to the Image detail page. To access, click an image tag.

Amazon ECR > Private registry > Repositories > trail234

trail234

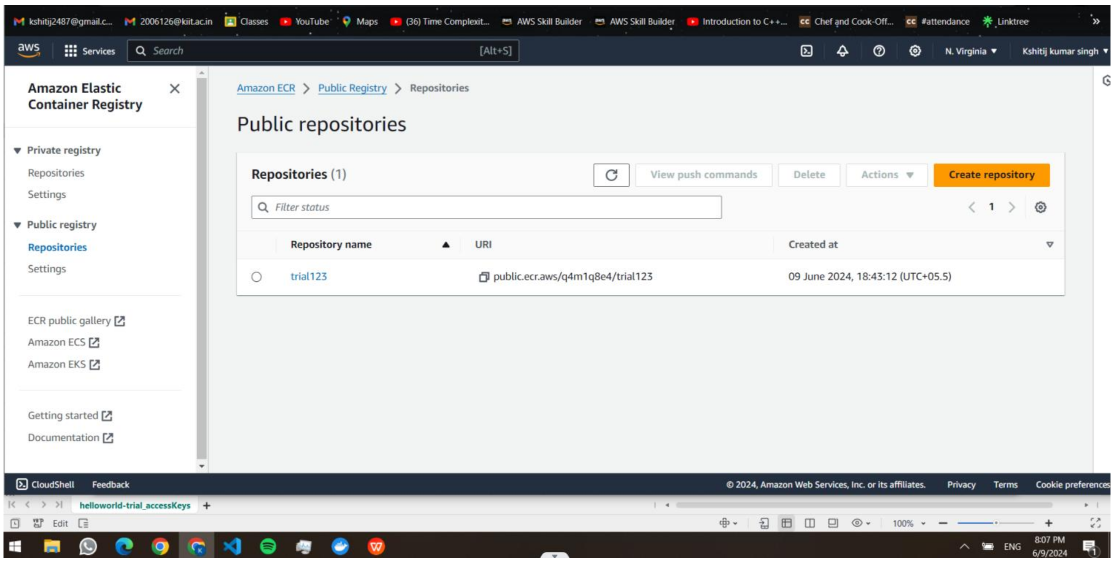
Images (1)

	Image tag	Artifact type	Pushed at	Size (MB)	Image URI	Digest
☐	latest	Image	09 June 2024, 18:52:58 (UTC+05.5)	42.39	Copy URI	sha256:e3359c1a092954...


```
PS C:\Users\KIIT\Desktop\nodejs> docker push 588277668424.dkr.ecr.eu-north-1.amazonaws.com/helloworld:latest
The push refers to repository [588277668424.dkr.ecr.eu-north-1.amazonaws.com/helloworld]
e6ceac363c68: Pushed
a477e0d7a283: Pushed
e4b9b1e59bb8: Pushed
365ccd918307: Pushed
1bba629c69e9: Pushed
139c1270acf1: Pushed
4693057ce236: Pushed
latest: digest: sha256:32c842cf181e812b5e5e8ea9e51ffaf39d2ba9e82f6a20764680c934960b8465 size: 1988
PS C:\Users\KIIT\Desktop\nodejs> aws ecr get-login-password --region eu-north-1 | docker login --username AWS --password-stdin 588277668424.
dkr.ecr.eu-north-1.amazonaws.com
>>
Login Succeeded
```

Push the Docker Image to ECR:

Use the docker push command to push your locally built image to the ECR repository in aws.


Amazon ECR > Public Registry > Repositories

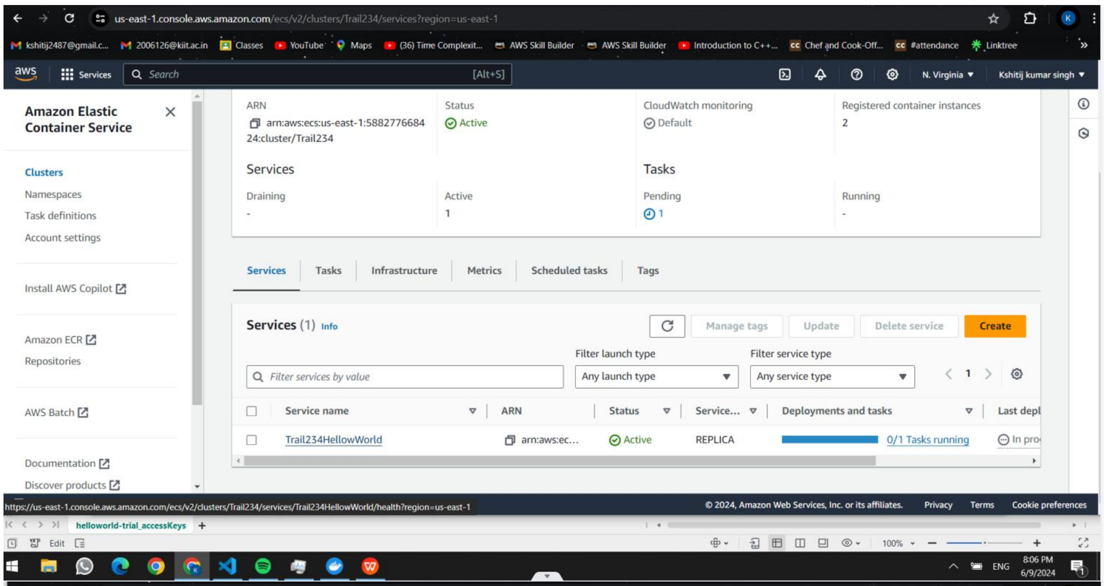
Public repositories

Repositories (1)

	Repository name	URI	Created at
○	trial123	public.ecr.aws/q4m1q8e4/trial123	09 June 2024, 18:43:12 (UTC+05.5)

Creating a Public GitHub Repository and Deploying to AWS ECS

This guide outlines the steps for creating a public GitHub repository to share your project for viewing purposes and deploying your Hello World Node.js application to AWS ECS using the AWS CLI



us-east-1.console.aws.amazon.com/ecs/v2/clusters/Trail234/services?region=us-east-1

ARN	Status	CloudWatch monitoring	Registered container instances
arn:aws:ecs:us-east-1:588277668424:cluster/Trail234	Active	Default	2

Services

Draining	Active
-	1

Tasks

Pending	Running
1	-

Services | Tasks | Infrastructure | Metrics | Scheduled tasks | Tags

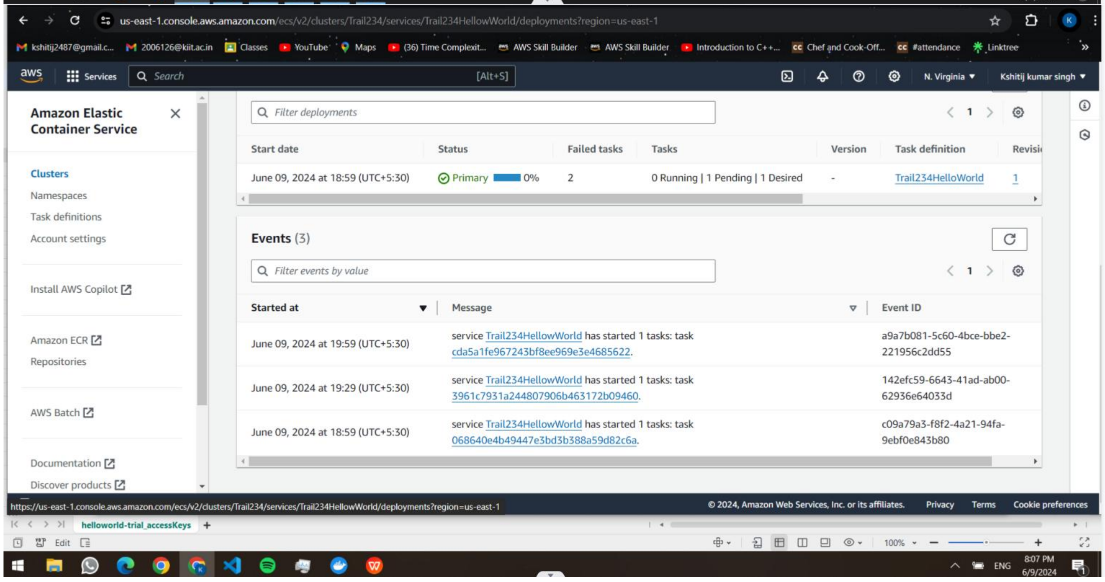
Services (1) Info

Filter launch type: Any launch type
Filter service type: Any service type

Service name	ARN	Status	Service...	Deployments and tasks	Last depl
Trail234HellowWorld	arn:aws:ec...	Active	REPLICA	0/1 Tasks running	In pro

https://us-east-1.console.aws.amazon.com/ecs/v2/clusters/Trail234/services/Trail234HellowWorld/health?region=us-east-1

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences



us-east-1.console.aws.amazon.com/ecs/v2/clusters/Trail234/services/Trail234HellowWorld/deployments?region=us-east-1

Start date	Status	Failed tasks	Tasks	Version	Task definition	Revisi
June 09, 2024 at 18:59 (UTC+5:30)	Primary 0%	2	0 Running | 1 Pending | 1 Desired	-	Trail234HelloWorld	1

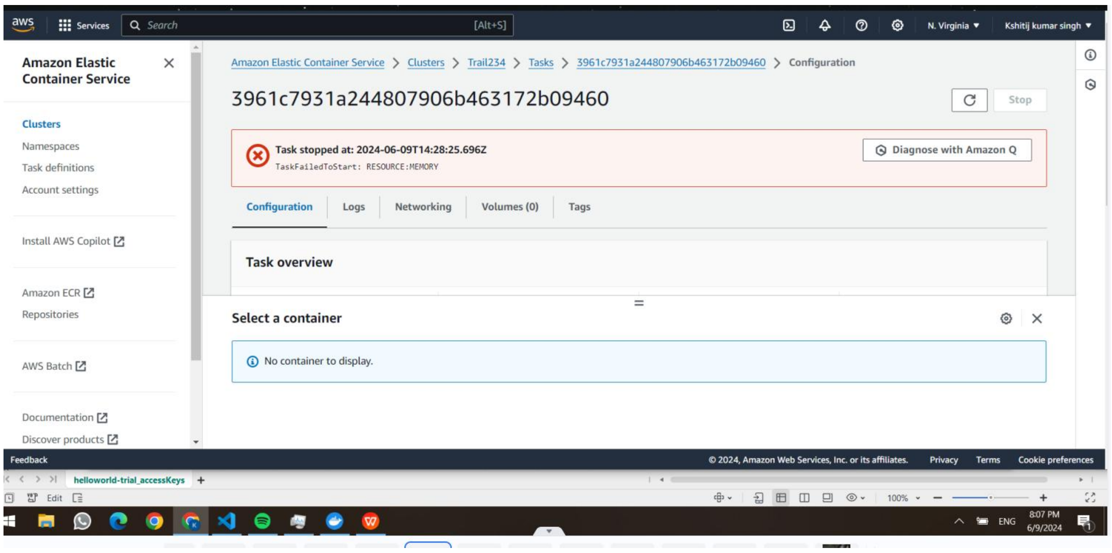
Events (3)

Started at	Message	Event ID
June 09, 2024 at 19:59 (UTC+5:30)	service Trail234HellowWorld has started 1 tasks: task cda5a1fe967243bf8ee969e3e4685622.	a9a7b081-5c60-4bce-bbe2-221956c2dd55
June 09, 2024 at 19:29 (UTC+5:30)	service Trail234HellowWorld has started 1 tasks: task 3961c7931a244807906b463172b09460.	142efc59-6643-41ad-ab00-62936e64033d
June 09, 2024 at 18:59 (UTC+5:30)	service Trail234HellowWorld has started 1 tasks: task 068640e4b49447e3bd3b388a59d82c6a.	c09a79a3-f8f2-4a21-94fa-9ebf0e843b80

https://us-east-1.console.aws.amazon.com/ecs/v2/clusters/Trail234/services/Trail234HellowWorld/deployments?region=us-east-1

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Public Cloud Deployment: Ensure you have an AWS account with proper permissions. Configure AWS CLI with your credentials for command execution. Use Secrets Manager or environment variables for sensitive data.


Amazon Elastic Container Service > Clusters > Trail234 > Tasks > 3961c7931a244807906b463172b09460 > Configuration

3961c7931a244807906b463172b09460

Task stopped at: 2024-06-09T14:28:25.696Z
`TaskFailedToStart: RESOURCE:MEMORY`

Task overview

Select a container

No container to display.

After extensive efforts and following numerous processes, I encountered persistent issues during the execution of the project on AWS. Despite configuring the infrastructure and deployment pipeline, the process consistently fails due to insufficient storage capacity required to store files for execution. This issue has been a recurring obstacle, preventing the successful deployment of the application. The lack of adequate storage resources on the AWS setup is the primary factor hindering the completion of this project. Further actions are required to address the storage constraints to ensure the smooth execution of the deployment pipeline.