



**NANYANG  
TECHNOLOGICAL  
UNIVERSITY**  
SINGAPORE

# Continuous Deployment - Container

Cloud Infrastructure Engineering

**Nanyang Technological University  
& Skills Union - 2022/2023**

# Course Content

- Self Study Check In
- Redo Activity - Create Repo in AWS ECR
- Redo Activity - Push a Docker Image to ECR
- Redo Activity - Create GitHub Action workflow and Push a Docker Image to ECR as part of workflow job/actions
- Activity -

What is the recommended approach for handling configuration in containerized applications in a continuous deployment workflow with Docker?

- a. Embedding configuration in the Docker image.
- b. Storing configuration in environment variables.
- c. Using a configuration management tool like Ansible.
- d. Keeping configuration in a separate Git repository.

# Continuous Deployment - Container



# Things we'll need from AWS

To successfully run a Docker container on ECS, we will need the following components:

1. An **ECR** (Elastic Container Registry) repository. This is where our Docker images will be stored.
2. An **ECS Cluster**.
3. An **ECS task definition**. This is basically what describes the containers that we will run. We're going to have a single container, our sample application.

We already have a task definition in form of a JSON: `ecs-task-definition.json`

4. An **ECS Service**, which will run our task definition in the ECS Cluster we'll create.

# Activity

Instructor

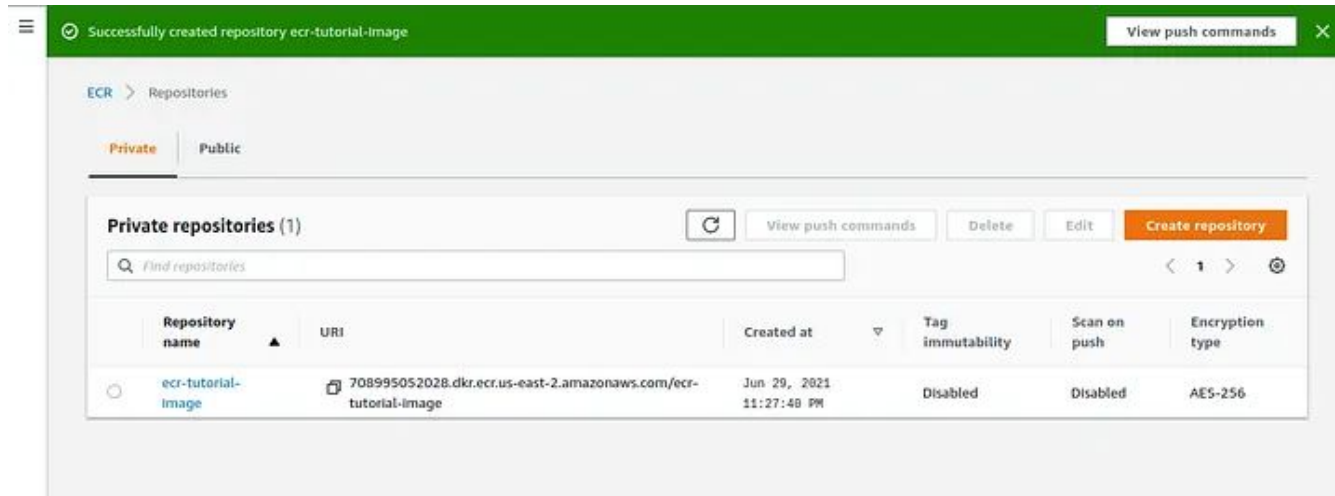
- Ask to use AWS use single region for all learner for easier monitoring

# AWS ECR



# Instructor - Activity - Show Existing Repo

Instructor demonstrate where to see the Repo in ECR





# AWS ECS Cluster



# Instructor - Activity - AWS ECS Cluster

Instructor demonstrate how to setting up the AWS ECS Cluster

New ECS Experience

Tell us what you think

Amazon Elastic Container Service

Clusters

Namespaces [New](#)

Task definitions

Account settings [New](#)

Install AWS Copilot

Amazon ECR

Repositories

AWS Batch

AWS Proton

Documentation

Discover products

Subscriptions

Create cluster

An Amazon ECS cluster groups together tasks, and services, and allows for shared capacity and common configurations. All of your tasks, services, and capacity must belong to a cluster.

Cluster configuration

Cluster name

Cohort1\_Cluster

There can be a maximum of 255 characters. The valid characters are letters (uppercase and lowercase), numbers, hyphens, and underscores.

Networking

By default tasks and services run in the default subnets for your default VPC. To use the non-default VPC, specify the VPC and subnets.

VPC

Use a VPC with public and private subnets. By default, VPCs are created for your AWS account. To create a new VPC, go to the [VPC Console](#).

vpc-4155a827

default

Subnets

Select the subnets where your tasks run. We recommend that you use three subnets for production.

Choose subnets

subnet-04056e91a09a5b4bf

subnet-0228a9297aefac578

subnet-bea677f6

subnet-29ed7170

Default namespace - optional

Select the namespace to specify a group of services that make up your application. You can overwrite this value at the service level.

Cohort1\_Cluster

Infrastructure

Your cluster is automatically configured for AWS Fargate (serverless) with two capacity providers. Add Amazon EC2 instances, or external instances using ECS Anywhere.

AWS Fargate (serverless)

Pay as you go. Use if you have tiny, batch, or burst workloads or for zero maintenance overhead. The cluster has Fargate and Fargate Spot capacity providers by default.

Amazon EC2 instances

Manual configurations. Use for large workloads with consistent resource demands.

External instances using ECS Anywhere

Manual configurations. Use to add data center compute.

Monitoring - optional

Container Insights is off by default. When you use Container Insights, there is a cost associated with it.

Tags - optional

Tags help you to identify and organize your clusters.

Cancel

Create

Cluster Cohort1\_Cluster creation is in progress.

View in CloudFormation

Amazon Elastic Container Service > Clusters

Clusters (0)

Search clusters

Cluster

Services

Tasks

Registered container instances

CloudWatch monitoring

Capacity provider strategy

No clusters

No clusters to display

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Services  [Option+S]

New ECS Experience  
 Tell us what you think

**Amazon Elastic Container Service**

Clusters  
 Namespaces [New...](#)  
**Task definitions**  
 Account settings [New](#)  
 Install AWS Copilot [↗](#)

Amazon Elastic Container Service > Task definitions

Task definitions (0) [Info](#)

No matches

[Status of last revision = ACTIVE](#) [X](#) [Clear filters](#)

[Create new task definition](#) [Create new task definition with JSON](#)

Task definition	Status of last revision
No task definitions No task definitions to display. <a href="#">Create new task definition</a>	

```

{
  "family": "sctp-cloud-infra",
  "executionRoleArn": "arn:aws:iam::255945442255:role/ecsTaskExecutionRole",
  "networkMode": "awsvpc",
  "containerDefinitions": [
    {
      "name": "sctp-cloud-infra",
      "image": "255945442255.dkr.ecr.ap-southeast-1.amazonaws.com/sctp-cloud-infra:latest",
      "portMappings": [
        {
          "containerPort": 3000,
          "hostPort": 3000,
          "protocol": "tcp"
        }
      ],
      "essential": true
    }
  ],
  "requiresCompatibilities": [
    "FARGATE"
  ],
  "cpu": "512",
  "memory": "1024"
}
    
```



# AWS ECS Service



# Instructor - Activity - AWS ECS Service

Instructor demonstrate how to setting up the AWS ECS Service

## sctp-cloud-infra-cluster




Update cluster

Delete cluster

## Cluster overview

ARN

 sctp-cloud-infra-cluster

Status

 Active

CloudWatch monitoring

 Default

Registered container instances

-

## Services

Draining

-

Active

1

## Tasks

Pending

 1

Running

-

Services

Tasks

Infrastructure

Metrics

Scheduled tasks

Tags

Services (1) [Info](#)

Manage tags

Update

Delete service

Create

 Filter services by value

All launch types ▼

All service types ▼

&lt; 1 &gt;



Service name ▼

Status ▼

ARN

Service... ▼

Deployments and tasks ▼

Last deploy... ▼

Task de... ▼

Re



sctp-cloud-infra-ecs-service

 Active arn:aws:ecs...

REPLICA

 0/1 Tasks ru... In progress

sctp-clou...

3



# Learner - Activity - AWS ECS Service

Learner demonstrate how to setting up the AWS ECS Service





# Github Action



# Test The App



**TERMINATE ALL THE INSTANCES/ SERVICES YOU CREATED ON AWS  
AT THE END OF THE CLASS**



# Activity

Learner:

- Clean up AWS.
- Remove/delete/terminate all service/ resources that you created.

Instructor

- Clean up AWS.
- Remove/delete/terminate all service/ resources that you created.
- Check the AWS account after learner clean up.

End

