

Lab 3: Docker Containerization & AWS ECR (CloudShell-Based Lab Manual)

Lab Title:

Docker Containerization and Pushing Images to AWS Elastic Container Registry (ECR)

Objective:

Build a Docker image from a simple web application and push it to AWS ECR (Elastic Container Registry) using AWS CloudShell.

Duration:

2 hours

Pre-requisites:

- AWS Free Tier account with ECR access
 - GitHub account (optional)
 - AWS CLI and Docker installed (CloudShell comes preconfigured)
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Part A: Setup & Create Sample Docker App (15 mins)

1. Launch AWS CloudShell

- Open: <https://console.aws.amazon.com/cloudshell>
- Select Region: us-east-1 (or preferred region with ECR support)

2. Create a Sample Web App with Dockerfile

```
mkdir ~/sample-docker-app
```

```
cd ~/sample-docker-app
```

```
echo '<!DOCTYPE html><html><head><title>Docker Lab</title></head><body><h1>Hello from Docker!</h1></body></html>' > index.html
```

3. Create a Dockerfile

```
echo -e 'FROM nginx:alpine\nCOPY . /usr/share/nginx/html' > Dockerfile
```

Part B: Create ECR Repository (15 mins)

1. Create a new ECR repository

```
ecr_repo_name=sample-web-app
```

```
aws ecr create-repository \
```

```
--repository-name $ecr_repo_name \
```

```
--image-scanning-configuration scanOnPush=true \
```

```
--region us-east-1
```

Note down the **repository URI** returned by the command.

Part C: Authenticate Docker to ECR (10 mins)

1. Authenticate Docker CLI to ECR

```
aws ecr get-login-password \  
  --region us-east-1 | \  
docker login \  
  --username AWS \  
  --password-stdin \  
  <account-id>.dkr.ecr.us-east-1.amazonaws.com
```

Replace `<account-id>` with your actual AWS account ID.

You can find it in the AWS console or run:

```
aws sts get-caller-identity --query Account --output text
```

Part D: Build and Tag the Docker Image (20 mins)

1. Build the Docker Image

```
docker build -t sample-web-app .
```

2. Tag the Image for ECR

```
repo_uri=<your-repo-uri-from-earlier>  
docker tag sample-web-app:latest $repo_uri:latest
```

Part E: Push Docker Image to ECR (15 mins)

1. Push the Tagged Image

```
docker push $repo_uri:latest
```

- You can verify the image in the AWS Console under ECR > Repositories > `sample-web-app`
- You may also use:

```
aws ecr list-images --repository-name sample-web-app
```

Part F: Cleanup (Optional)

If you wish to clean up after the lab:

```
aws ecr delete-repository --repository-name sample-web-app --force
```

To delete local image:

```
docker rmi $repo_uri:latest
```