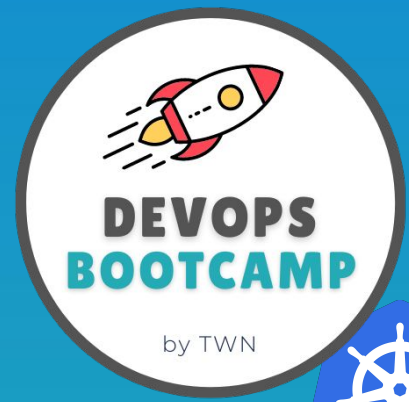




Module Checklist

# Kubernetes on AWS

By TechWorld with Nana



# Video Overview

- ★ Introduction to Container Services on AWS
- ★ Create EKS cluster with Node Group - Part 1
- ★ Create EKS cluster with Node Group - Part 2 (Autoscaling)
- ★ Create EKS cluster with Fargate
- ★ Create EKS cluster with eksctl
- ★ Deploy to EKS cluster from Jenkins Pipeline
- ★ Bonus Video - Deploy to LKE cluster from Jenkins Pipeline
- ★ Note on Best Practices - Credentials for different services in Jenkins
- ★ Complete CI/CD Pipeline with DockerHub
- ★ Complete CI/CD Pipeline with AWS ECR

Demo Projects	
Java Maven App	<a href="https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app">https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app</a>

# Check your progress... 1/6

## Introduction to Container Services on AWS

- ☒ Watched video

## Create EKS cluster with Node Group - Part 1

- ☒ Watched video
- ☒ **Demo executed - Create EKS cluster Part 1:**
  - ☒ Created EKS Role
  - ☒ Created VPC with Cloudformation Template
  - ☒ Created EKS cluster
  - ☒ Connected to EKS cluster with kubectl locally
  - ☒ Created Node Group Role
  - ☒ Created Node Group (EC2 Instances - Worker Nodes)
  - ☒ Configure Auto-Scaling - Deployed cluster-autoscaler Pod
    - Created new Policy for Auto-Scaling Permission
    - Attached new Policy to existing Node Group Role
    - Deployed Autoscaler Component in EKS cluster

### Useful Links:

- Create EKS cluster with AWS Management Console UI:  
<https://docs.aws.amazon.com/eks/latest/userguide/getting-started-console.html>
- EKS VPC CloudFormation template:  
<https://docs.aws.amazon.com/codebuild/latest/userguide/cloudformation-vpc-template.html>
- Create VPC for EKS:  
<https://docs.aws.amazon.com/eks/latest/userguide/create-public-private-vpc.html>

# Check your progress... 2/6



## Create EKS cluster with Node Group - Part 2 (Autoscaling)

- ☒ Watched video
- ☒ Demo executed - Create EKS cluster Part 2:
  - ☒ Configure Auto-Scaling - Deployed cluster-autoscaler Pod
    - Created new Policy for Auto-Scaling Permission
    - Attached new Policy to existing Node Group Role
    - Deployed Autoscaler Component in EKS cluster
  - ☒ Deployed Example application
    - Deployed nginx Pod
    - Deployed nginx Service
    - Started 20 Pods - see autoscaling in action

### Useful Links:

- Cluster Auto-Scaler User Guide:  
<https://docs.aws.amazon.com/eks/latest/userguide/cluster-autoscaler.html>
- Gitlab Project Repo:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/eks-cluster-with-autoscaling>
- Autoscaling Yaml file:  
<https://raw.githubusercontent.com/kubernetes/autoscaler/master/cluster-autoscaler/cloudprovider/aws/examples/cluster-autoscaler-autodiscover.yaml>
- Autoscaling version releases:  
<https://github.com/kubernetes/autoscaler/tags>

## Create EKS cluster with Fargate

- ☒ Watched video
- ☒ Demo executed - EKS with Fargate:
  - ☒ Created Role for Fargate
  - ☒ Created Fargate Profile
  - ☒ Deployed Pod through Fargate

# Check your progress... 3/6



## Create EKS cluster with eksctl

- ☐ Watched videos
- ☐ **Demo executed - Create EKS cluster with eksctl:**
  - ☐ Installed eksctl
  - ☐ Configured AWS credentials to connect eksctl with your AWS account
  - ☐ Created EKS cluster

### Useful Links:

- Installation Guides for eksctl:  
<https://github.com/eksctl-io/eksctl>
- Create K8s cluster command:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/eksctl>

# Check your progress... 4/6

## *EKS & Jenkins*

### Deploy to EKS cluster from Jenkins Pipeline

- ☐ Watched video
- ☐ **Demo executed - Create Pipeline that deploys to EKS cluster:**
  - ☐ Installed kubectl inside Jenkins Container
  - ☐ Installed aws-iam-authenticator inside Jenkins Container
  - ☐ Created ./kube/config and copied inside the Jenkins Container
  - ☐ Created Jenkins Credential
  - ☐ Created simple Jenkinsfile that deploys to EKS cluster

#### Useful Links:

- User guide - Cluster authentication:  
<https://docs.aws.amazon.com/eks/latest/userguide/managing-auth.html>
- Project commands and config files, including aws-iam-authenticator installation steps:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/deploy-to-eks-from-jenkins>
- Create Kubeconfig file:  
<https://docs.aws.amazon.com/eks/latest/userguide/create-kubeconfig.html>
- Jenkinsfile Project Repo:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app>

### Bonus Video - Deploy to LKE cluster from Jenkins Pipeline

- ☐ Watched video
- ☐ **BONUS: Demo executed - Create Pipeline that deploys to LKE cluster:**
  - ☐ Created LKE cluster
  - ☐ Installed Kubernetes CLI Plugin on Jenkins
  - ☐ Created Jenkins Credential with kubeconfig file
  - ☐ Created simple Jenkinsfile that deploys to LKE cluster

#### Useful Links:

- Jenkinsfile Project Repo:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app/-/tree/deploy-to-lke>

# Check your progress... 5/6



## Note on Best Practices - Credentials for different services in Jenkins

- ☐ Watched video

## Complete CI/CD Pipeline with DockerHub

- ☐ Watched video
- ☒ **Demo executed - Complete CI/CD Pipeline with DockerHub:**
  - ☐ Created Deployment and Service for App deployment
  - ☐ Adjust Jenkinsfile to set environment variables with `envsubst`
  - ☐ Installed “gettext-base” tool inside Jenkins Container on DigitalOcean Server to have `envsubst` available
  - ☐ Created Secret for DockerHub Registry in EKS cluster (connect to EKS cluster if not already) and added reference to Deployment file
  - ☐ Executed Jenkins Pipeline

### Useful Links:

- Jenkinsfile Project Repo:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app/-/tree/deployment-on-k8s>
- Envsubst:  
[https://www.gnu.org/software/gettext/manual/html\\_node/envsubst-Invocation.html](https://www.gnu.org/software/gettext/manual/html_node/envsubst-Invocation.html)

# Check your progress... 6/6



## Complete CI/CD Pipeline with AWS ECR

- ☒ Watched video
- ☒ **Demo executed - Complete CI/CD Pipeline with AWS ECR:**
  - ☒ Created ECR Repository
  - ☒ Created Credential for ECR repository in Jenkins
  - ☒ Created Secret for AWS ECR Registry in EKS cluster and adjusted reference in Deployment file
  - ☒ Updated Jenkinsfile
  - ☒ Executed Jenkins Pipeline

### Useful Links:

- Jenkinsfile Project Repo:  
<https://gitlab.com/twn-devops-bootcamp/latest/11-eks/java-maven-app/jenkins-jobs>