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# AWS KUBERNETES

## **Module 1: Introduction to Kubernetes and AWS**

### 1.1. Introduction to Containerization

#### 1.1.1. What are Containers?

#### 1.1.2. Benefits of Containerization

### 1.2. Introduction to Kubernetes

#### 1.2.1. What is Kubernetes?

#### 1.2.2. Kubernetes Architecture

#### 1.2.3. Key Kubernetes Concepts (Pods, Services, Deployments, etc.)

### 1.3. AWS Services for Kubernetes

#### 1.3.1. Amazon Elastic Kubernetes Service (EKS)

#### 1.3.2. Amazon Container Registry (ECR)

#### 1.3.3. Other AWS Services Integration

## **Module 2: Setting up Kubernetes on AWS**

### 2.1. Creating an AWS Account

#### 2.1.1. AWS Console Overview

#### 2.1.2. IAM Roles and Permissions

### 2.2. Setting up an EKS Cluster

#### 2.2.1. Configuring VPC and Subnets

#### 2.2.2. Cluster Creation with eksctl or AWS Console



### 2.2.3. Worker Node Groups

## **Module 3: Deploying Applications**

### 3.1. Building Docker Containers

#### 3.1.1. Writing Dockerfiles

#### 3.1.2. Building Images with Docker

### 3.2. Deploying Applications on EKS

#### 3.2.1. Kubernetes Deployments

#### 3.2.2. Services and Load Balancers

#### 3.2.3. Helm Charts for Packaging

## **Module 4: Scaling and Managing Kubernetes**

### 4.1. Scaling Applications

#### 4.1.1. Horizontal Pod Autoscaling

#### 4.1.2. Cluster Autoscaling

### 4.2. Monitoring and Logging

#### 4.2.1. Amazon CloudWatch

#### 4.2.2. Kubernetes Dashboard

#### 4.2.3. EKS Optimized Metrics

## **Module 5: Security and Access Control**

### 5.1. Kubernetes RBAC (Role-Based Access Control)

#### 5.1.1. Roles and RoleBindings



### 5.1.2. ServiceAccounts

## 5.2. Securing EKS Clusters

### 5.2.1. Network Policies

### 5.2.2. AWS Identity and Access Management (IAM) Roles

## **Module 6: Advanced Topics**

### 6.1. High Availability and Disaster Recovery

#### 6.1.1. Multi-AZ Deployments

#### 6.1.2. Backup and Restore Strategies

### 6.2. Continuous Integration/Continuous Deployment (CI/CD)

#### 6.2.1. Integrating EKS with CI/CD Tools

#### 6.2.2. Deploying Changes Automatically

## **Module 7: Optimization and Best Practices**

### 7.1. Cost Optimization

#### 7.1.1. Cost Monitoring and Reduction Strategies

#### 7.1.2. EC2 Spot Instances

### 7.2. Best Practices for EKS

#### 7.2.1. Security Best Practices

#### 7.2.2. Performance Optimization

## **Module 8: Project and Hands-on Labs**



## 8.1. Final Project

8.1.1. Building and Deploying a Real-World Application

8.1.2. Troubleshooting and Optimization

## 8.2. Hands-on Labs

8.2.1. Lab Exercises and Quizzes

8.2.2. Troubleshooting Scenarios

## **Module 9: Course Conclusion and Certification**

### 9.1. Review and Recap

9.1.1. Key Concepts

9.1.2. Important Skills

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