Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)

Kód kurzu: AWSRCAE

Amazon EKS makes it easy for you to run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane. In this course, you will learn container management and orchestration for Kubernetes using Amazon EKS. You will build an Amazon EKS cluster, configure the environment, deploy the cluster, and then add applications to your cluster. You will manage container images using Amazon Elastic Container Registry (ECR) and learn how to automate application deployment. You will deploy applications using CI/CD tools. You will learn how to monitor and scale your environment by using metrics, logging, tracing, and horizontal/vertical scaling. You will learn how to design and manage a large container environment by designing for efficiency, cost, and resiliency. You will configure AWS networking services to support the cluster and learn how to secure your Amazon EKS environment.

Pro koho je kurz určen

Those who will provide container orchestration management in the AWS Cloud including:

- DevOps engineers
- Systems administrators

Co Vás naučíme

- Review and examine containers, Kubernetes and Amazon EKS fundamentals and the impact of containers on workflows.
- Build an Amazon EKS cluster by selecting the correct compute resources to support worker nodes.
- Secure your environment with AWS Identity and Access Management (IAM) authentication by creating an Amazon EKS service role for your cluster deploy an application on the cluster. Publish container images to ECR and secure access via IAM policy.
- Automate and deploy applications, examine automation tools and pipelines. Create a GitOps pipeline using WeaveFlux.
- Collect monitoring data through metrics, logs, tracing with AWS X-Ray and identify metrics for performance tuning. Review scenarios where bottlenecks require the best scaling approach using horizontal or vertical scaling.
- Assess the tradeoffs between efficiency, resiliency, and cost and impact for tuning one over the other. Describe and outline a holistic, iterative approach to optimizing your environment. Design for cost, efficiency, and resiliency
- Configure the AWS networking services to support the cluster. Describe how EKS/Amazon Virtual Private Cloud (VPC) functions and simplifies inter-node communications. Describe the function of VPC Container Network Interface (CNI). Review the benefits of a service mesh.
- Upgrade your Kubernetes, Amazon EKS, and third party tools.

Požadované vstupní znalosti

- Completed Amazon Elastic Kubernetes Service (EKS) Primer
- Completed AWS Cloud Practitioner Essentials (or equivalent real-world experience)
- Basic Linux administration experience
- Basic network administration experience
- Basic knowledge of containers and microservices

Studijní materiály

Studijní materiál Amazon.

Osnova kurzu

Day 1

Module 0: Course Introduction

Course preparation activities and agenda

Module 1: Container Fundamentals

Best practices for building applications

Container fundamentals

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Components of a container
Module 2: Kubernetes Fundamentals
Container orchestration

Kubernetes objects

Kubernetes internals

Preparing for Lab 1: Deploying Kubernetes Pods
Module 3: Amazon EKS Fundamentals
Introduction to Amazon EKS

Amazon EKS control plane

Amazon EKS data plane

Fundamentals of Amazon EKS security

Amazon EKS API
Module 4: Building an Amazon EKS Cluster
Configuring your environment

Creating an Amazon EKS cluster

Demo: Configuring and deploying clusters in the AWS Management Console

Working with eksctl

Preparing for Lab 2: Building an Amazon EKS Cluster
Day 2
Module 5: Deploying Applications to Your Amazon EKS Cluster
Configuring Amazon Elastic Container Registry (Amazon ECR)

Demo: Configuring Amazon ECR

Deploying applications with Helm

Demo: Deploying applications with Helm

Continuous deployment in Amazon EKS

GitOps and Amazon EKS

Preparing for Lab 3: Deploying App
Module 6: Configuring Observability in Amazon EKS
Configuring observability in an Amazon EKS cluster

Collecting metrics

Using metrics for automatic scaling

Managing logs

Application tracing in Amazon EKS

Gaining and applying insight from observability

Preparing for Lab 4: Monitoring Amazon EKS
Module 7: Balancing Efficiency, Resilience, and Cost Optimization in Amazon EKS
The high level overview

Designing for resilience

Designing for cost optimization

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Designing for efficiency
Day 3
Module 8: Managing Networking in Amazon EKS
Review: Networking in AWS

Communicating in Amazon EKS

Managing your IP space

Deploying a service mesh

Preparing for Lab 5: Exploring Amazon EKS Communication
Module 9: Managing Authentication and Authorization in Amazon EKS
Understanding the AWS shared responsibility model

Authentication and authorization

Managing IAM and RBAC

Demo: Customizing RBAC roles

Managing pod permissions using RBAC service accounts
Module 10: Implementing Secure Workflows
Securing cluster endpoint access

Improving the security of your workflows

Improving host and network security

Managing secrets

Preparing for Lab 6: Securing Amazon EKS
Module 11: Managing Upgrades in Amazon EKS
Planning for an upgrade

Upgrading your Kubernetes version

Amazon EKS platform versions

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