# Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)

Course code: AWSRCAE

Who is the course forThose who will provide container orchestration management in the AWS Cloud including: DevOps engineers Systems administratorsWhat we teach you 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.Required skills 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 microservicesTeaching methodsProfessional explanation with practical samples and examples. Teaching materialsAmazon guide book for this course.
Course outlineDay 1
Module 0: Course Introduction
Course preparation activities and agenda
Module 1: Container Fundamentals
Best practices for building applications
Container fundamentals
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

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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
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

| Affiliate | Duration | Course price | ITB |
|---|---|---|---|
| Praha | 3 | 990 € | 0 |
| Bratislava | 3 | 990 € | 0 |

The prices are without VAT.

## Course terms

| Date | Duration | Course price | Type | Course language | Location |
|---|---|---|---|---|---|

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- DevOps engineers
- Systems administrators

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## What we teach you

- 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.
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- 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.

## Required skills

- 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

## Course outline

Day 1

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Container fundamentals

Components of a container

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Kubernetes objects

Kubernetes internals

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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

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Configuring your environment

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Demo: Configuring and deploying clusters in the AWS Management Console

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Preparing for Lab 2: Building an Amazon EKS Cluster
Day 2
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Demo: Configuring Amazon ECR

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Demo: Deploying applications with Helm

Continuous deployment in Amazon EKS

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Designing for cost optimization

Designing for efficiency
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Authentication and authorization

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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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