

KOENIG SOLUTIONS · COURSE OUTLINE

Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)

Learn to deploy, secure, network and scale containerized applications on Amazon EKS, from cluster creation to upgrades.

3 Days

24 HOURS

11

MODULES

61

TOPICS

6

HANDS-ON ACTIVITIES

COURSE OVERVIEW

The Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS) course is designed to equip learners with the skills necessary to deploy, manage, and scale containerized applications using Amazon EKS. Covering a range of topics from Container Fundamentals to Managing Upgrades in Amazon EKS, the course is comprehensive and provides hands-on labs to reinforce learning. Learners will gain a deep understanding of containers, Kubernetes, and the specifics of Amazon EKS, which will prepare them for real-world application deployment. The course also emphasizes Security, networking, and observability within EKS environments, crucial for maintaining robust and efficient systems. By the end of this AWS EKS course, participants will have the practical knowledge needed for EKS certification, positioning them to effectively utilize Amazon EKS in their cloud-native development projects.

WHO THIS COURSE IS FOR

The course provides comprehensive insights into deploying applications using Amazon EKS, catering to IT professionals interested in containerization and Kubernetes.

Cloud Architects

DevOps Engineers

Software Developers

Systems Administrators

IT Managers

Technical Leads

Solution Architects

Cloud DevOps Practitioners

Infrastructure Engineers

Application Support Specialists

Network Engineers focusing on cloud infrastructure

Security Specialists with an interest in container security

Quality Assurance Engineers and Testers involved in CI/CD pipelines

Technical Project Managers overseeing cloud-based projects

Data Engineers deploying data-centric applications in Kubernetes environments

What You Will Learn

- Explain container and Kubernetes fundamentals
- Build an Amazon EKS cluster using eksctl
- Deploy applications with Helm and GitOps workflows
- Configure observability including metrics, logs and tracing
- Apply cost, efficiency and resiliency optimisations
- Manage networking and service mesh with AWS App Mesh
- Implement IAM, RBAC and secrets security controls
- Plan Kubernetes and Amazon EKS version upgrades

COURSE SYLLABUS

11 Modules, 61 Topics

DAY 1

00

Course Introduction

TOPICS

Course preparation activities and agenda

01

Container Fundamentals

TOPICS

Design principles for building applications · Introduction to containers · Components of a container · Writing Dockerfiles

02

Kubernetes Fundamentals

TOPICS

- Challenges of managing multiple containers
- Overview of Kubernetes and its importance
- Components of the Kubernetes control plane
- Kubernetes worker nodes and pods
- Key Kubernetes objects
- Managing Kubernetes using kubectl

Hands-On Lab

03

Amazon EKS Fundamentals

TOPICS

- How Amazon EKS manages the Kubernetes control plane
- Fundamentals of Amazon EKS security
- Extending Amazon EKS to the data plane: Use cases
- Running worker nodes in managed node groups
- Deploying containers on AWS Fargate with Amazon EKS
- Comparison: Amazon EKS tasks vs Kubernetes tasks

04**Hands-On Lab**

Building an Amazon EKS Cluster

TOPICS

- Visual overview of the Amazon EKS architecture for labs
- IAM authentication fundamentals
- Amazon VPC and AWS networking basics
- Methods to create a cluster
- High-level cluster creation steps
- Introduction to eksctl
- **Preparation for Labs:** Reviewing lab activities for the course

DAY 2**05****Hands-On Lab**

Deploying Applications to Your Amazon EKS Cluster

TOPICS

- Publishing container images to Amazon ECR
- Deploying applications using Helm
- Implementing continuous deployment in Amazon EKS
- Introduction to GitOps with Amazon EKS

06**Hands-On Lab**

Architecting on Amazon EKS - Part 1: Observability and Optimization

TOPICS

- Configuring observability in an Amazon EKS cluster
- Collecting and analyzing metrics
- Using metrics for EC2 Auto Scaling
- Managing and accessing logs
- Application tracing in Amazon EKS
- **Insights from observability:** Application and implementation

07

Architecting on Amazon EKS - Part 2: Efficiency, Resiliency, and Cost Management

TOPICS

- Optimizing Amazon EKS application architecture
- Balancing cost, efficiency, and resilience
- Cost anatomy of an Amazon EKS cluster
- Using tagging for pod placement and cost accountability
- Efficient container and worker node sizing

08

Hands-On Lab

Managing Networking in Amazon EKS

TOPICS

- Review of Amazon VPC fundamentals
- Understanding communication components and their importance
- Communication flow in traditional vs Kubernetes architectures
- Networking challenges in Kubernetes
- Comparing Docker and Kubernetes communication models
- Simplifying inter-node communications with Amazon EKS and Amazon VPC
- Managing pod communication in Amazon EKS
- Communication scalability considerations
- Running worker nodes in non-associated subnets
- Managing service name resolution
- Leveraging service mesh solutions with Amazon EKS
- Configuring AWS App Mesh

09

Hands-On Lab

Securing Amazon EKS Clusters

TOPICS

- Integrating IAM with Kubernetes RBAC
- Managing cluster endpoint access control
- Access auditing using AWS CloudTrail logs
- Mitigating container image build security risks
- Securing network communications
- Managing secrets in Amazon EKS

10

Managing Upgrades in Amazon EKS

TOPICS

- Understanding Kubernetes version updates vs Amazon EKS platform version updates
- Upgrading Kubernetes versions
- Upgrading Amazon EKS versions
- Maintaining third-party applications

Practise What You Learn

#	MODULE	ACTIVITY
02	Kubernetes Fundamentals	Hands-On Lab 1: Deploying Kubernetes Pods
04	Building an Amazon EKS Cluster	Hands-On Lab 2: Building an Amazon EKS cluster
05	Deploying Applications to Your Amazon EKS Cluster	Hands-On Lab 3: Deploying Applications
06	Architecting on Amazon EKS - Part 1: Observability and Optimization	Hands-On Lab 4: Monitoring Amazon EKS
08	Managing Networking in Amazon EKS	Hands-On Lab 5: Exploring Amazon EKS Communication
09	Securing Amazon EKS Clusters	Hands-On Lab 6: Securing Amazon EKS

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Hands-on exercises throughout the course
- Delivery by certified instructors and subject matter experts
- Course completion certificate from Koenig

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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Live Online Classes (ILO)

Fly-Me-A-Trainer (FMAT)

Flexi (Self-Paced)

1-on-1 Training

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