Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS)

Duration: 3 Days Course Code: GK7381

Overview:

In this course, you will learn how to use Amazon EKS to manage and orchestrate containers with Kubernetes.

With Amazon EKS you can run Kubernetes on AWS without needing to install, operate, and maintain your own Kubernetes control plane. You will manage container images using Amazon Elastic Container Registry (Amazon ECR) and learn how to automate application deployment. You will deploy applications using continuous integration and delivery (CI/CD) tools. You will learn how to monitor and scale your environment by using metrics, logging, tracing, and horizontal and vertical scaling. You will also manage storage for your containerized applications, configure AWS networking services to support the cluster, and learn how to secure your Amazon EKS environment.

Updated August 2026

Target Audience:

This course is intended for people who provide container orchestration management in the AWS Cloud, including:
- Cloud architects
- DevOps engineers
- Systems administrators

Objectives:

- **In this course, you will learn to:**
- Describe the main components of Kubernetes, including the key objects and the core components of the Kubernetes API.
- Describe how Amazon EKS manages the Kubernetes control plane and parts of the data plane.
- Build and maintain an Amazon EKS cluster.
- Deploy applications to an Amazon EKS cluster.
- Manage applications running in enterprise-scale Amazon EKS clusters.
- Configure efficient, secure communication both within the cluster and with outside services.
- Configure observability in an Amazon EKS cluster.
- Provision storage for applications running on Amazon EKS.
- Secure an Amazon EKS cluster.

Prerequisites:

We recommend that attendees of this course have:

- Completed Introduction to Containers
- Completed Amazon EKS Primer
- Completed AWS Cloud Practitioner Essentials (or have equivalent real-world experience)
- Basic Linux administration experience
- Basic network administration experience

Testing and Certification

None

Follow-on-Courses:

- GK0630 - Practical Data Science with Amazon SageMaker
- GK110001 - Amazon SageMaker Studio for Data Scientists
- GK910029 - Machine Learning Engineering on AWS

Content:

Day 1

Module 1: Kubernetes Fundamentals

- Benefits of containers
- Container orchestration
- Kubernetes internals
- Pod scheduling
- Kubernetes objects

Module 2: Amazon EKS Fundamentals

- Introduction to Amazon EKS
- Amazon EKS control plane
- Amazon EKS data plane
- Fundamentals of Amazon EKS security
- Two APIs: Kubernetes and Amazon EKS
- Hands-On Lab: Deploying Kubernetes Pods

Module 3: Building and maintaining an Amazon EKS cluster

- Creating an Amazon EKS cluster
- Deploying nodes
- Planning for an upgrade
- Upgrading your Kubernetes version

Module 4: Deploying Applications to Your Amazon EKS Cluster

- Application deployment methods
- Working with Amazon ECR
- Deploying applications with Helm
- Hands-On Lab: Deploying Applications

Day 2

Module 5: Managing Applications at Scale in Amazon EKS

- Scale to meet demand in Amazon EKS
- Continuous deployment in Amazon EKS
- GitOps and Amazon EKS
- Hands-On Lab: Continuous Deployment and GitOps

Module 6: Managing Networking in Amazon EKS

- Review: Networking in AWS
- Communicating in Amazon EKS
- Improving Pod-level security
- Load balancing with Services

Module 7: Configuring Observability in Amazon EKS

- Configuring observability in an Amazon EKS cluster
- Collecting metrics
- Managing logs
- Application tracing in Amazon EKS
- Hands-On Lab: Monitoring Amazon EKS

Day 3

Module 8: Managing Storage in Amazon EKS

- Design patterns for storage
- Persistent storage in Kubernetes
- Persistent storage with AWS storage services
- Managing secrets
- Hands-On Lab: Persistent Storage in Amazon EKS

Module 9: Managing Security in Amazon EKS

- Cloud security fundamentals
- Authentication and authorization
- Managing IAM and RBAC
- Managing Pod permissions using RBAC service accounts
- Hands-On Lab: Capstone Exercis

Additional Information:

Activities:
This course includes presentations, hands-on labs, demonstrations, and group exercises.

Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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