# Overview

Amazon Elastic Kubernetes Service (Amazon EKS) simplifies running Kubernetes environments on AWS without requiring you to install, operate, and maintain your own Kubernetes control plane.

In this course, you will learn the core practices of container management and orchestration for Kubernetes environments using Amazon EKS.

Throughout the training, you will create an Amazon EKS cluster, configure the required environment, and prepare the cluster for deployment. You will then deploy applications to the cluster and gain practical experience in managing container-based workloads.

You will explore how Amazon Elastic Container Registry (Amazon ECR) can be used to manage container images and learn how application deployment processes can be automated. You will deploy applications with CI/CD tools and create a GitOps pipeline using WeaveFlux.

The course also covers monitoring your environment through metrics, logging, and tracing, including the use of AWS X-Ray. You will examine horizontal and vertical scaling approaches and evaluate which scaling method is appropriate when performance bottlenecks occur.

In addition, you will assess how large container environments can be designed and managed with efficiency, cost, and resiliency in mind. You will configure AWS networking services to support your Amazon EKS cluster and explore essential practices for securing an Amazon EKS environment.

# Prerequisites

Before attending this course, participants are recommended to complete the following digital course:

- Amazon Elastic Kubernetes Service (EKS) Primer

# Who Should Attend

This course is intended for professionals who are responsible for, or plan to work with, container orchestration and management in the AWS Cloud.

It is particularly suitable for:

- DevOps engineers
- Systems administrators

## What You Will Learn

By the end of this course, participants will be able to:

- Review the fundamentals of containers, Kubernetes, and Amazon EKS, and examine how containers affect workflows.
- Build an Amazon EKS cluster by selecting appropriate compute resources to support worker nodes.
- Secure the environment with AWS Identity and Access Management (IAM) authentication by creating an Amazon EKS service role for the cluster.
- Deploy applications to the cluster, publish container images to Amazon ECR, and secure access through IAM policies.
- Automate application deployments, examine automation tools and pipelines, and create a GitOps pipeline using WeaveFlux.
- Collect monitoring data using metrics, logs, and tracing; work with AWS X-Ray; and identify metrics that can support performance tuning.
- Evaluate scenarios involving performance bottlenecks and determine whether horizontal or vertical scaling is the more appropriate approach.
- Assess the trade-offs between efficiency, resiliency, and cost and apply a holistic, iterative approach to environment optimization.
- Configure AWS networking services to support the cluster.
- Explain how Amazon EKS and Amazon Virtual Private Cloud (VPC) work together to support and simplify communication between nodes.
- Describe the role of the VPC Container Network Interface (CNI) and review the benefits of using a service mesh.
- Understand the key considerations involved in upgrading Kubernetes, Amazon EKS, and third-party tools.