Running Containers on Amazon Elastic Kubernetes Service (Amazon EKS) – Intensive Training («AWSA09»)

In this course, you will learn container management and orchestration for Kubernetes using Amazon EKS.

Duration: 3 days
Price: 3'200.–
Course documents: Digital original AWS course books

Content

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.

Day 1
Module 0: Course Introduction

- Course preparation activities and agenda

Module 1: Kubernetes Fundamentals

- Container orchestration
- Kubernetes objects
- Kubernetes internals

Module 2: Amazon EKS Fundamentals

- Introduction to Amazon EKS
- Amazon EKS control plane
- Amazon EKS data plane
- Fundamentals of Amazon EKS security
- Amazon EKS API

Module 3: Building an Amazon EKS Cluster

- Configuring your environment
- Creating an Amazon EKS cluster
- Demo: Deploying a cluster
- Deploying worker nodes
- Demo: Completing a cluster configuration
- Preparing for Lab 1: Building an Amazon EKS Cluster

Module 4: 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 2: Deploying Applications

Day 2

Module 5: 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 3: Monitoring Amazon EKS

Module 6: Balancing Efficiency, Resilience, and Cost Optimization in Amazon EKS

- The high level overview
- Designing for resilience
- Designing for cost optimization
- Designing for efficiency

Module 7: Managing Networking in Amazon EKS

- Review: Networking in AWS
- Communicating in Amazon EKS
- Managing your IP space
- Deploying a service mesh
- Preparing for Lab 4: Exploring Amazon EKS Communication

Day 3

Module 8: 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 9: Implementing Secure Workflows

- Securing cluster endpoint access
- Improving the security of your workflows
- Improving host and network security
- Managing secrets
- Preparing for Lab 5: Securing Amazon EKS

Module 10: Managing Upgrades in Amazon EKS

- Planning for an upgrade
- Upgrading your Kubernetes version
- Amazon EKS platform versions

Key Learnings

- Describe 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 and Kubernetes Role Based Access Control (RBAC) authorization
- Deploy an application on the cluster
- Publish container images to Amazon ECR and secure access via IAM policy
- Deploy applications using automated tools and pipelines. Create a GitOps pipeline using WeaveFlux
- Collect monitoring data through metrics, logs, and 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 the impact of tuning for one over the others. Describe and outline a holistic, iterative approach to optimizing your environment. Design for cost, efficiency, and resiliency
- Configure AWS networking services to support the cluster. Describe how Amazon Virtual Private Cloud (VPC) supports Amazon EKS clusters and simplifies inter-node communications
- Describe the function of the VPC Container Network Interface (CNI)
- Review the benefits of a service mesh
- Upgrade Kubernetes, Amazon EKS, and third party tools

Methodology & didactics

This course includes instructor lecture, presentations, hands-on labs, demonstrations, and group exercises/discussions.

Target audience

This course is intended for the following job roles:

- Solution Architect
- CloudOps
- DevOps

Why should you attend this specific course? What are my benefits from taking this course? The **Voice of the Instructor answers these questions**. We have asked our instructor team to write a short text about WHY this course is very relevant for the respective job roles and what you can expect from attending the course. You can find this section in the course description under the «*Additional Information*» section.

Requirements

We recommend that attendees of this course have:

- completed «Introduction to Containers»
- 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

- AWS Cloud Practitioner Essentials – Intensive Training («AWSE03»)

Additional information

Voice of the Instructor

Whether you are just starting to learn Kubernetes from scratch or seeking managed Kubernetes services for existing workloads, the «Running Containers on Amazon EKS» course is perfect for you! Join us on this three-day journey to learn everything you need to know to startusing managed Kubernetes on the AWS cloud. Kubernetes may not be for the faint of heart, but when combined with the power of AWS and the convenience of a managed environment for the control plane, it provides an excellent starting point for learning and safely taking baby steps in the world of container orchestration.

This course is designed for both beginners and experienced users of Kubernetes. If you have already used Kubernetes on-premises and want to take your containerized apps to the next level in the AWS cloud, you'll find everything you need to start customizing your own EKS clusters as you see fit. Throughout the course, we will discuss topics such as EKS cluster anatomy, AWS resources and services involved in operating EKS at different levels, as well as addressing performance, cost optimization, and security.

This course offers hands-on labs led by expert instructors, providing real-world experience in configuring, deploying, and managing EKS clusters, while also fostering networking opportunities with professionals and peers. Additionally, students will benefit from extended post-course lab access, ensuring a strong foundation for continued learning and growth in their Kubernetes journey. Join us on this exciting and informative journey to learn how to efficiently use Kubernetes on AWS, and enhance your skills in managing containerized applications.

Any questions?

We are happy to advise you on +41 44 447 21 21 or info@digicomp.ch. You can find detailed information about dates on www.digicomp.ch/courses-it-provider/amazon-web-services-aws/aws-cloudops/course-running-containers-on-amazon-elastic-kubernetes-service-amazon-eks-intensive-training