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Running Containers on EKS

Course Benefits & Agenda

Overview

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, your students will learn container management and orchestration for Kubernetes using Amazon EKS.

Your students will build an Amazon EKS cluster, configure the environment, deploy the cluster, and then add applications to their cluster. They will manage container images using Amazon Elastic Container Registry (ECR) and learn how to automate application deployment. They will deploy applications using CI/CD tools. They will learn how to monitor and scale their environment by using metrics, logging, tracing, and horizontal/vertical scaling. They will learn how to design and manage a large container environment by designing for efficiency, cost, and resiliency. They will configure AWS networking services to support the cluster and learn how to secure their Amazon EKS environment.

Course Benefits

This course teaches you how to:

- 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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- Secure their environment with AWS Identity and Access Management (IAM) authentication by creating an Amazon EKS service role for their 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 their 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 Kubernetes, Amazon EKS, and third party tools.

Agenda

Day 1

Module	Topic
Module 1	Kubernetes Fundamentals
Module 2	Amazon EKS Fundamentals
Module 3	Building an Amazon EKS cluster
Lab 1	Building an Amazon EKS cluster
Module 4	Deploying applications to your Amazon EKS cluster

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Agenda

Day 2

Module	Topic
Lab 2	Deploying applications
Module 5	Configuring observability in Amazon EKS
Lab 3	Monitoring Amazon EKS
Module 6	Balancing Efficiency, Resilience, and Cost Optimization in Amazon EKS
Module 7	Manage networking in Amazon EKS

Day 3

Module	Topic
Lab 4	Exploring EKS Communication
Module 8	Managing Authentication and Authorization in Amazon EKS
Module 9	Implementing Secure Workflows
Lab 5	Securing Amazon EKS
Module 10	Managing Upgrades in Amazon EKS