

**Istio with EKS (Elastic Kubernetes Service)**

**Course Number:** CLD-128
**Duration:** 2 days

**Overview**

This Elastic Kubernetes Service (EKS) training introduces Istio, a service mesh solution. Learners learn how to deploy and manage Istio on EKS and master traffic management, security, observability, and service-to-service communication in a microservices architecture.

**Prerequisites**

All participants must have taken [Introduction to Docker and Kubernetes](file:////training/docker-kubernetes-introduction) or have equivalent experience.

**Materials**

All Istio with EKS training attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computers for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will work well.

**Objectives**

* Understand the fundamentals of service mesh and Istio
* Deploy Istio on EKS and configure its components
* Manage traffic routing and observe advanced networking in Istio
* Implement Istio security features like mutual TLS and authorization policies
* Gain insights into microservices performance using Istio observability tools

**Outline**

* introduction
* What is a Service Mesh?
	+ Challenges in microservices networking
	+ Service mesh solutions and benefits
* Istio Overview
	+ Key features: traffic management, security, and observability
	+ Istio architecture: Envoy proxy, control plane components
	+ Sidecar vs. Ambient mode
* Elastic Kubernetes Service (EKS) Overview
	+ Benefits of using EKS for container orchestration
	+ Prerequisites for Istio deployment on EKS
* Installing Istio on EKS
	+ Configuring EKS clusters
	+ Installing Istio using Helm or Istioctl
	+ Verifying the installation
* Core Traffic Features
	+ Traffic splitting, retries, and timeouts
	+ Implementing canary deployments and blue-green deployments
* Istio Gateway and VirtualService Resources
	+ Configuring ingress and egress traffic
	+ Path-based and header-based routing
* Monitoring and Telemetry
	+ Istio metrics and logs using Prometheus and Grafana
	+ Distributed tracing with Jaeger
	+ Service graph visualization using Kiali
* Securing Service-to-Service Communication
	+ Mutual TLS (mTLS) setup
	+ Istio authentication policies
* Authorization Policies
	+ Configuring role-based access control (RBAC)
	+ Enforcing security policies
* Optimizing Istio for Performance
	+ Fine-tuning Envoy proxies
	+ Resource management for Istio components
* Scaling and Upgrading Istio
	+ Rolling updates for Istio control plane
	+ Strategies for multi-cluster service mesh
* Troubleshooting Common Issues
* Conclusion