

## LFS144 – Introduction to Istio

**Duration: 2 Days (8hrs/day)**

**Prerequisites:**

- Basic Linux Concepts and Command Line
- Knowledge of Kubernetes

**Course Objective:** This course begins with an overview of service meshes in general and Istio in particular. You will learn what problems service meshes solve, and explain Istio's architecture, how Istio functions, and how the environment around a deployed application is configured to allow the application to join the mesh. Through the course's lessons and labs, you will experience and learn how Istio facilitates system observability by collecting and publishing metrics and allows you to control how traffic is routed to your application. Learn how Istio supports canary deployments and other scenarios and makes your distributed applications more resilient through retries, timeouts, and circuit breakers. The final chapter covers more advanced topics, including onboarding workloads running on VMs (outside of Kubernetes) and how Istio provides for extensibility through WebAssembly plugins.

**Lab Requirement:** Koenig DC (CentOS 9)

### Module 1 – Overview of Service Mesh and Istio

Overview of Service Mesh and Istio

### Module 2 – Installing Istio

Introduction

Installing Istio

Lab: Installing Istio

### Module 3 – Observability

Introduction

Observability

Lab: How Istio Exposes Workload Metrics

Lab: See the Metrics Collected in Prometheus

Lab: Grafana Dashboards for Istio

Lab: Deploy Jaeger and Review Some Traces

Lab: Discover the Kiali Console

## **Module 4 – Traffic Management**

Introduction

Lab: Gateways

Traffic Routing in Istio

Lab: Weight-Based Traffic Routing

Advanced Traffic Routing

Lab: Advanced Traffic Routing

Service Resiliency & Failure Injection

Lab: Observing Failure Injection and Delays in Grafana, Jaeger, and Kiali

Lab: Service Entries for Registry-Only Outbound Traffic Policy

## **Module 5 – Security**

Introduction

Access Control

Lab: Mutual TLS

Authorization (authz)

Lab: Access Control

## **Module 6 – Extending the Mesh**

Introduction

Overview of Envoy Proxy

Extending the Envoy Proxy

Lab: Deploying Wasm Plugins to Istio

## **Module 7 – Advanced Topics**

Introduction

Lab: Sidecars for Improved Service Mesh Performance

Lab: Connect a VM Workload to the Istio Mesh

Multi-Cluster Deployments