# Building Resilient Microservices with Istio and Red Hat OpenShift Service Mesh (DO328) Training

Duration: **3 Day**

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## Overview

Control, manage, trace, and secure microservices communications with **Red Hat OpenShift Service Mesh**, powered by **Istio**.

Modern microservice applications can become complex to manage, especially as the number of services and communication pathways grows.
**Red Hat OpenShift Service Mesh** simplifies this by providing a **unified platform for traffic control, service observability, security, and resilience** across distributed systems.

The {*training} teaches developers and engineers how to implement, monitor, and secure microservices within an **enterprise-grade OpenShift environment**.

> *This course is based on Red Hat OpenShift Service Mesh 3.1 and OpenShift 4.18.*

## Prerequisites

- Completion of *Red Hat OpenShift Developer II: Building and Deploying Cloud-native Applications (DO288)* or equivalent OpenShift experience.
- Knowledge of **microservice development** (such as *DO378: Cloud-native Microservices with Quarkus*) is recommended but not mandatory.

## Who Should Attend

This course is designed for:

- **Developers** and **platform engineers** responsible for building, managing, and securing microservice communication on **Red Hat OpenShift**.

## What You Will Learn

By the end of this {*training}, you will have gained knowledge and skills in the following areas:

- **Introducing OpenShift Service Mesh**
  Learn the fundamentals of microservice communication, observability, and security in distributed environments.
- **Observing OpenShift Service Mesh**
  Trace, monitor, and visualize service interactions with OpenShift's observability tools.
- **Managing Traffic**

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Apply routing strategies, resilience policies, and fault-injection techniques to build reliable systems.

- **Securing OpenShift Service Mesh**
  Implement zero-trust principles and secure traffic between services.
- **Comprehensive Review**
  Reinforce your understanding through review and practical exercises.

## Impact on the Organization

Organizations adopting **microservices, AI integration, and hybrid architectures** face new operational challenges.
**Red Hat OpenShift Service Mesh** empowers teams to manage these complex environments by offering:

- Centralized **traffic control** and routing.
- Real-time **observability and tracing**.
- Integrated **security and encryption** for all communications.
- Improved **resilience** through intelligent policies.

By implementing this course's practices, enterprises can**reduce downtime, increase reliability**, and **streamline DevOps operations** in microservice-based systems.

## Impact on the Individual

After completing this course, participants will be able to:

- Understand the **architecture and components** of OpenShift Service Mesh.
- **Trace and visualize** application traffic across services.
- Apply **routing rules**, **resiliency techniques**, and **traffic control** policies.
- Design and enforce **zero-trust security** for microservice communications.
- Confidently manage and monitor distributed applications in**OpenShift** environments.

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## Outline

**1. Introducing OpenShift Service Mesh**
Understand microservice architecture and how OpenShift Service Mesh enhances visibility, security, and traffic management.

**2. Observing the Service Mesh**
Use OpenShift observability tools to trace and visualize application traffic flow.

**3. Managing Application Traffic**
Configure routing, retries, and fault-injection techniques to improve system resilience and reliability.

**4. Securing the Service Mesh**
Apply **zero-trust security principles** — ensuring all service-to-service communication is encrypted, authenticated, and authorized.

**5. Comprehensive Review**
Review course concepts and validate practical understanding through guided labs.