

Updated 05/17/2024

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## Istio training

3 days (21 hours)

### Presentation

Istio is an open source, independent service mesh that provides you with the foundation you need to successfully run a distributed microservices architecture. Istio reduces the complexity of managing microservice deployments by providing a uniform way to secure, connect and monitor microservices.

Istio makes it easy to create a network of deployed services with load balancing, service-to-service authentication, monitoring and more, with little or no code changes in the service code.

You add Istio support to services by deploying a special sidecar proxy in your environment that intercepts all network communications between microservices, then configure and manage Istio using its control plane functionality.

Istio training will use the latest stable versions of the project, [istio 1.22](#).

### Objectives

- Automatic load balancing for HTTP, gRPC, WebSocket and TCP traffic.
- Precise control of traffic behavior with rich routing rules, retries, failover and fault injection.
- Pluggable policy layer and configuration API supporting controls access, throughput limits and quotas.
- Automatic metrics, logs and traces for all traffic within a cluster, including ingress and egress.
- Secure service-to-service communication in a cluster with authentication and authorization based on a strong identity.
- Istio is designed for scalability and meets a variety of deployment needs.

### Target audience

- Web developers
- Project managers
- IT specialists

## Prerequisites

- Our [Kubernetes training course](#)
- Our [Kubernetes Advanced training course](#)
- Basic knowledge of a Unix system and how containers work

## Technical requirements

Docker installed.

## Istio training program

### Concepts

- Definitions
- Kubernetes reminders
- Helm
- The GitOps model
- Microservices - 12 factors
- Service Mesh
- Anthos (if using GCP)

### Commissioning

- Installation, prerequisites (LAB)
- Configuration (LAB)
- Kiali (LAB)
- Istioctl

### Traffic Management (LABS)

- A/B Routing
- Blue/Green Deployment
- Chaos Engineering
- Circuit Breaking
- Timeouts
- Mirroring

### Safety (LABS)

- Certificates
- Authentication
- Authorization
- TLS configuration
- Rate Limiting

## Observability (LABS)

- Metric
- Logs
- Distributed tracks

## Advanced Istio

- Ingress/EgressGateways
- TLS Originating
- TLS Originating through an egress gateway
- Injection of public certificates
- Integration into a Proxy architecture
- Multi-cluster Mesh
- Service mesh federation

## Complementary module: Preparing for ICA certification (+1 day)

- Review
- Tips and strategies
- Mock exam
- Exam voucher (+390€)

## Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

## Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

## Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

## Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

## Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

## Sanction

A certificate will be issued to each trainee who completes the course.