Building Microservices Architecture

Description

During this training, participants will learn in detail the software architecture models and techniques for developing robust and scalable microservices.

We will review the required design patterns and models in enterprise architecture, including the event sourcing model, the saga pattern, the microservices registry, the circuit breaker model, API composition, and two-phase commit.

Classroom Registration Price (CHF)
2300
Virtual Classroom Registration Price (CHF)
2150
Course Content
Module 1: Micro-Services History

- Monolith
- Service-Oriented Architecture

Module 2: Problems with SOA

- Single Technology Platform
- Inflexible Deployment
- Inefficient Computing Resources
- Large and Complex
- Complicated and Expensive ESB
- Lack of Tools

Module 3: Micro-Service Architecture

- History of Micro-Services
- The 9 Attributes of Micro-Services
- Componentization
- Organized around Business Capabilities (Products not Projects)
- Intelligent Endpoints and Dumb Pipes
- Decentralized Governance
- Infrastructure Automation
- Failure-Driven Design
- Evolutionary Design

Module 4: Best Practices for Micro-Services Security

- Defense-in-Depth Mechanism
- Tokens
- API Gateways

Module 5: Problems Solved by Micro-Services

- Single Technology Platform
- Inflexible Deployment
- Inefficient Computing Resources
- Large and Complex
- Complicated and Expensive ESB
- Lack of Tools

Module 6: Designing a Micro-Service Architecture

- Mapping Components
- Defining Communication Models
- Technology Stack Selection
- Architecture Design

Module 7: Testing Micro-Services

- Introduction
- Challenges of Micro-Services Testing
- Unit Tests
- Integration Tests
- End-to-End Tests

Module 8: Service Mesh

- Introduction
- Problems Solved by Service Mesh (Mesh)
- Service Mesh Architecture
- Types of Service Mesh
- Products and Implementations
- Should You Use Service Mesh?

Module 9: Logging and Monitoring

- Introduction
- Logging vs Monitoring
- Implementing Logging
- Implementing Monitoring

Module 10: When Not to Use Micro-Services

- Small Systems
- Intertwined Functionality or Data
- Performance-Sensitive Systems
- Fast and Dirty Systems
- No Scheduled Upgrades

Module 11: Micro-Services and the Organization

- Conway's Law
- Problem with Traditional Teams
- The Ideal Team
- Changing Mindset

Module 12: Anti-patterns and Common Mistakes

- Introduction
- Undefined Services
- Undefined APIs
- Last Transverse Implementation
- Extending Service Limits

Module 13: Deploying Micro-Services

- Introduction to CI/CD
- Containers
- Docker Overview
- Container Management
- Kubernetes Overview

Module 14: Introduction to CI/CD

- Introduction to DevOps
- What is a CI/CD Pipeline?
- What is Jenkins?

Module 15: Creating a CI/CD Pipeline with Jenkins

- Creating a CI/CD Pipeline with Jenkins

Module 16: Continuous Delivery vs Continuous Deployment

- Continuous Delivery vs Continuous Deployment

Documentation

- Digital Courseware included

Participant profiles

- Software developers who are developing or considering developing microservices
- Software architects who want to improve their skills in designing microservices
- Anyone interested in learning more about microservices and gaining in-depth technical knowledge on the design, structuring, and development of microservice-based systems

Prerequisites

- Basic knowledge of software development
- Experience in software development in the industry would be a plus as it would help you better appreciate certain technical challenges, but is completely optional

Objectives

- Understand what microservices architecture is and when to use it
- Know the predecessors of microservices and their problems
- Understand the microservices architecture process
- Design a robust and reliable Microservice
- Understand the deployment and testing techniques of microservices
- Know Service Mesh - what it is, its purpose, how and when to use it
- Understand when NOT to use microservices
- Know the 3 strategies to break Monolith into Microservices

Niveau
Intermédiaire
Duration (in Days)
3
Reference
RAMS