

Building Microservices Architecture

Description

Companies today are looking for agile and sustainable solutions. Microservices meet these expectations by enabling the design of independent, scalable applications adapted to complex environments. The training provides a practical perspective on the challenges of traditional monolithic models and demonstrates how microservices offer relevant solutions. This understanding allows participants to evaluate when and how to adopt this type of architecture.

Understanding the challenges of modern architectures

Beyond theory, learners will experiment with different methods to design, deploy, and test their own microservices. They will discover how to integrate modern tools, implement CI/CD pipelines, and understand the role of a service mesh. With this knowledge, they will be able to effectively structure a distributed architecture, while also identifying situations where this model should not be applied. This course provides a solid foundation for anyone looking to strengthen their expertise in software architecture and advance toward ambitious technical projects.

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

Lab / Exercises

- This course provides you with exclusive access to the official Microsoft lab, enabling you to practice your skills in a professional environment.

Documentation

- Digital Courseware included

Participant profiles

- Software developers
- Software architects
- Technical project managers
- DevOps engineers

Prerequisites

- Basic knowledge of software development

- Understanding of service-oriented architectures
- Practical experience with a programming language

Objectives

- Understand microservices architecture and its use cases
- Identify the limitations of monolithic and SOA architectures
- Design robust and reliable microservices
- Apply best practices for security
- Implement an appropriate service mesh
- Deploy and test microservices effectively
- Automate with CI/CD and Jenkins
- Avoid common mistakes and anti-patterns

Description

Building Microservices Architecture Training

Niveau

Intermédiaire

Classroom Registration Price (CHF)

2300

Virtual Classroom Registration Price (CHF)

2150

Duration (in Days)

3

Reference

RAMS