

# Spring Cloud and Microservices

Hands-on training on how to implement Microservices using Spring Cloud and Spring Boot. This course covers practical parts of microservices theory. Attendees will learn how to implement proper communication between services, as well as gotchas and pitfalls of incorrect implementation. This course is designed for developers from the mid-level to team leads and architects.

**Audience:** Mid/Senior Developers, Team Leads, Architects

**Duration:** 3-4 days

- 1 day: Introduction to Microservices, Introduction to Spring Cloud
- 2 day: Spring Cloud in practice
- 3 day: Communication between Microservices
- 4 day: Testing Spring Cloud, Continuous integration and Continuous deployment, Monitoring Microservices

**Format:** 50% workshop / 50% lecture

## Training program

1. Introduction to Microservices
  - a. Monolith and Microservices
  - b. Path from monolith to Microservices
  - c. Challenges with Microservices
    - i. Sizing Microservices
    - ii. Data management
    - iii. Sharing common code
    - iv. Avoiding Anti-patterns
    - v. etc.
  - d. Patterns applied to Microservices
2. Introduction to Spring Cloud
  - a. Overview of Spring Cloud components
  - b. Deployment options for Spring Cloud: Kubernetes, Azure, AWS, etc.
  - c. Local development options
3. Spring Cloud in practice
  - a. Implementing Microservices
    - i. Service Registry
    - ii. Spring Cloud Config
    - iii. Spring Cloud Gateway
  - b. Implementing security

- c. Microservices containerization
    - i. Building Docker images (Dockerfile, Spring, Jib, Buildpack)
    - ii. Optimizing size of Docker images
- 4. Communication between Microservices
  - a. Designing communication, patterns and anti-patterns
  - b. Orchestration and Choreography
  - c. Synchronous communication
    - i. Spring Cloud OpenFeign
    - ii. Spring Cloud Circuit Breaker
  - d. Asynchronous communication
    - i. Point-to-Point and Publish-Subscribe models
    - ii. Spring Cloud Stream
- 5. Testing Spring Cloud
  - a. Integration tests
  - b. Contract tests
- 6. Continuous integration and Continuous deployment
  - a. Monorepo vs polyrepo
  - b. Versioning and branching
  - c. Automation
- 7. Monitoring Microservices
  - a. Spring Boot Actuator
  - b. Spring Boot Admin
  - c. Distributed Tracing
  - d. Cloud solutions