Quality Assurance In Microservice Architectures

Krishnan Chandran Irina Barykina

Department of Informatics,
Intelligent Adaptive Systems, UHH

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Introduction

Goal: explore strategies of building reliable QA system, that could cope with challenges specific for microservice architectures. Give an examples of existing tools and technologies. Consider different types of testing within key scenarios.

- Challenges of testing in microservice architectures.
- Types of tests (Cohn Test Pyramid), their purposes, scopes and quantities. Ice Cream Cone antipattern.
- Non-functional testing: performance, security.
- Rapid application deployment as a prerequisite for microservices. Deployment pipeline. Continuous integration, deployment and delivery.
- Releasing strategies: blue/green deployment, canary releasing, smoke tests.
- After release quality assurance: monitoring, DevOpsCulture.

Overview of Tools

- xUnit framework
- stubbing and mocking (on the example of Mockito)
- smart stubbing with Mountebank
- testing of data passing between services (on the example of SOAP UI)
- consumer driven testing (on the example of Pact)

Scenarios

<The UML diagram of example architecture>

- Scenario 1: Testing microservices within application.
- Scenario 2: Testing microservices that use third-party service
- Scenario 3: Testing of microservice that will be or is already exposed to public domain

References

Arvind Sundar. An insight into microservices testing strategies, 2016. URL https://www.infosys.com/it-services/validation-solutions/white-papers/documents/microservices-testing-strategies.pdf.

Sam Newman. *Building Microservices*. O'Reilly and Associates, 2015.