QoS Simulation of Microservice Architectures

Description

Recently, the microservice architectural style is gaining more and more attraction when (re)developing enterprise applications. As opposed to monolithic architectures, microservice architectures comprise an assembly of services loosely coupled via APIs (e.g., REST). One of their design principles is “design for failure”. That means that these architectures/services should be designed to cope with failures (e.g., unavailability, poor QoS) of hardware and services.

A number of approaches for evaluating performance and reliability by simulation have been proposed [1, 2]. However, so far, no approach dedicated for microservices exists.

The goal of this topic is to evaluate possibilities to efficiently simulate microservice architectures, for instance, to predict their QoS properties w.r.t. performance and resilience. A starting point could be simianviz (aka Spigo) [3].

In addition to studying and summarizing the research literature, it is a mandatory part of this seminar to gather and share hands-on experience with the available tooling infrastructure. The provided references are to be considered a starting point and it is expected to extend the literature.

References


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