

MICROSERVICES ARCHITECTURE ADVANCED PART 1

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Day 1

Breaking Up Monoliths – Pros and Cons

Traditional Monolithic Applications and Their Place Disadvantages of

Monoliths Developer's Woes

Architecture Modernization

Architecture Modernization Challenges Microservices Architecture is Not a Silver Bullet! What May Help?

In-Class Discussion Summary

Microservice Development What are Microservices?

Microservices vs Classic SOA

Principles of Microservices Architecture Design Domain-Driven Design

Domain-Driven Design – Benefits Microservices and Domain-Driven Design

Designing for failure

Microservices Architecture – Pros Microservices Architecture – Cons

Docker and Microservices

Microservice Deployment with Docker – Workflow Writing Dockerfile

Kubernetes

Microservices and Various Applications Web Applications

Web Applications – Reference Architecture Web Applications – When to use?

Single Page Applications

Single Page Applications – Benefits Traditional Enterprise Application

Architecture Sample Microservices Architecture

Serverless & Event-driven Microservice

Twelve-factor Applications Twelve-factor Applications

Twelve Factors, Microservices, and App Modernization The Twelve Factors

Categorizing the 12 Factors

12-Factor Microservice Codebase

12-Factor Microservice Dependencies 12-Factor Microservice Config
12-Factor Microservice Backing Services 12-Factor Microservice Build,
Release,

Day 2

Run 12-Factor Microservice Processes 12-Factor Microservice Port Binding
12-Factor Microservice Concurrency 12-Factor Microservice Disposability 12-
Factor Microservice Dev/Prod Parity 12-Factor Microservice Logs
12-Factor Microservice Admin Processes

REST Services

Many Flavors of Services Understanding REST Principles of RESTful Services
REST Example – Create
REST Example – Retrieve REST Example – Update REST Example – Delete
REST Example – Client Generated ID

SOAP Equivalent Examples REST Example – JSON Famous RESTful Services
Additional Resources

What is gRPC? Protocol Buffers REST vs. gRPC
Protobuf vs. JSONHTTP/2 vs. HTTP 1.1 HTTP/2 vs. HTTP 1.1 (Contd.)
Messages vs. Resources and Verbs Streaming vs. Request-Response Strong
Typing vs. Serialization Web Browser Support
REST vs. gRPC – In a Nutshell

SPRING BOOT

Spring Boot Starters
Spring Boot Auto-configuration Spring Boot Actuators
Spring Boot MVC Spring Boot Test

Day 3

SPRING MICRO SERVICES

Introduction

Evaluation of Micro Services Principles Of Micro Services Characteristics of
Micro Services Micro services Benefits Relationship with SOA

Twelve Factor Apps Micro Services use cases
Micro Services early adopters Building micro services with boot Micro
Services Capability model Micro Services Use case

SPRING JPA

Application Managed Container Entity Managed Container Application

SPRING DATA SPRING MESSAGING

JMS / AMQP

ActiveMQ / RabbitMQ Server