Cloud-native Java microservices with MicroProfile

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Good morning! Guten Morgen!
Setting Context

• Building Cloud Native Microservices
• A Cloud Native App Server
• A Better JVM for Cloud
• Time to Code!
Building Microservices
Why are you here?

“Be like NetFlix”  --  \_\_(ツ)_/\ ?
Why are you here?

• Benefits of Microservices
  o Scalability
  o Independent Deploy-ability
  o Agile
  o DevOps
  o etc
Transformation
Cloud Native?

- 12 Factor Apps
  - Benefits
  - Concerns
  - Complications
Microservices?

- Secure, fault tolerant, configurable, monitorable, etc
  - Benefits
  - Concerns
  - Complications
Transformation = Culture!

- Tools & Practices
- Processes & Procedures
- Remember the Agile Manifesto? :)
An Evolution
Eclipse MicroProfile
Optimizing Enterprise Java for a Microservices Architecture
How MicroProfile Helps You

• Industry standard, vendor agnostic

• Best practice patterns & solutions

• Multi-vendor support
Eclipse MicroProfile
A Cloud Native App Server
Open Liberty
An IBM Open Source Project

Jump on board and work at lightspeed
Build cloud-native apps and microservices while running only what you need. Open Liberty is the most flexible server runtime available to Java™ developers in this solar system. Here's why.

Download (120 MB)
View more downloads

Launch a sample app
Open Liberty is fast and composable, but don't take our word for it - try it out!

git clone https://github.com/OpenLiberty/sample-getting-started.git
cd sample-getting-started
Design Goals

• Efficient
• Simple to use
• Consistency
• Just enough Application Server
• Very good for virtualized environments
• End of migration
• Agile Ready
Open Liberty
A lightweight open source server runtime ideal for building Java™ microservices and cloud-native apps

- Easy to consume
- Deploy on any cloud for Java™
- Seamlessly transition to WebSphere

https://openliberty.io/
A Better JVM For Cloud
Cloud Costs

- In The Cloud…
  More Resources = More $$$

- Small Footprint & Faster Start-up
  = Less $$$

- More Throughput
  = Less $$$

- OpenJDK with **Eclipse OpenJ9** – perfect for cloud
Adopt Eclipse OpenJ9

**Startup** time is **30% faster** with OpenJ9 -Xshareclasses -Xquickstart

**Footprint** is **60% smaller** with OpenJ9

**Achieve peak throughput 70% faster** with OpenJ9

http://www.eclipse.org/openj9

https://adoptopenjdk.net/?variant=openjdk8-openj9
Summary

- **MicroProfile** - Java APIs for cloud-native applications
  - Produce and consume REST services
  - Handle faults, security, configuration, APIs
  - Monitor health, metrics and trace request flows

- **Open Liberty** - Java platform for cloud-native applications
  - Open Source, Simple, Lightweight, Fast
  - Supports latest MicroProfile and Java EE API
  - Flexible package to suit your Microservices

- **Eclipse OpenJ9 Liberty** – Java virtual machine for OpenJDK
  - Smallest memory footprint, fastest startup & highest throughput
Time to Code!
Guides

MicroProfile Guides

The quickest way to learn all things Open Liberty, and beyond!

Open Liberty Basics - Let’s get started

4 essentials

Deploying and packaging applications
Learn how to deploy and update an application on Open Liberty with Maven and Docker.

Building a web application with Gradle
Learn how to build and test a simple web application using Gradle and Open Liberty.

Building a web application with Maven
Learn how to build and test a simple web application using Maven and Open Liberty.

Using Docker containers to develop microservices
Learn how to containerize a microservice with Docker for iterative development.

MicroProfile - Developing microservices with ease

4 essentials

New to MicroProfile? Get an introduction here

Creating a RESTful web service
Learn how to create a REST service with JAX-RS, JSON-P, and Open Liberty.

Injecting dependencies into microservices
Learn how to use Contexts and Dependency Injection to manage and inject dependencies into microservices.

Consuming RESTful services with template interfaces
Learn how to use MicroProfile Rest Client to invoke RESTful services over HTTP in a type-safe way.

Separating configuration from code in microservices
Learn how to perform static configuration injection using MicroProfile Config.
Useful links

• The tutorial - https://github.com/OpenLiberty/tutorial-microprofile
• Home - https://microprofile.io/
• Eclipse Home - https://eclipse.org/microprofile
• Forum - https://groups.google.com/forum/#!forum/microprofile
• Guides - https://openliberty.io/guides/?search=MicroProfile
• Java - http://www.eclipse.org/openj9/
Thank You!
&
Enjoy the lab!

https://github.com/OpenLiberty/tutorial-microprofile