

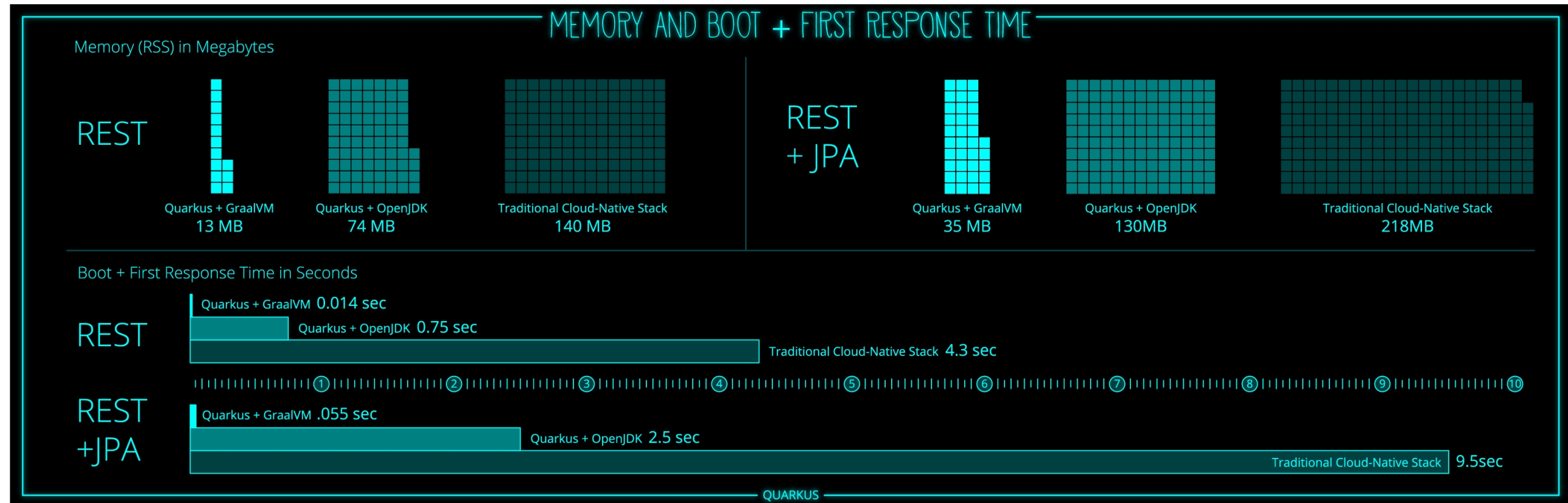
Hands on

Quarkus

Quarkus is the New yService Framework on the Block

- Spark, Javalin, Helidon, Micronaut. Quarkus.
- Supersonic, Subatomic Java. Kubernetes Native Java stack tailored for GraalVM.
- Best of breed libraries and standards: CDI, JPA, JAX-RS, MicroProfile, Netty, Kafka, Infinispan, ...
- Developer Experience: 12-factors, easy configuration, live reload, build tool integration, testing, docs, ...
- Apache v2, Frequent Releases, 39 Bugs, IBM (Red Hat), Known Contributors

Container and Microservice First



Low Memory requirements, especially when used with Graal Native.
Good performance. Fast boot and startup. But lower overall throughput!

Good Developer Experience

```
$ mvn io.quarkus:quarkus-maven-plugin:0.12.0:create \
  -DprojectId=cloud.native.quarkus \
  -DprojectId=hands-on-quarkus \
  -DclassName="cloud.native.quarkus.LibraryResource" \
  -Dpath="/library"
```

```
$ mvn compile quarkus:dev
```

The Maven Plugin is pretty complete. Gradle plugin still needs work.

Micronaut provides a CLI, Helidon uses Maven Archetype.

Dev Mode performs live-reload of changes. Well, it's actually a live-restart!

```
$ mvn quarkus:list-extensions
```

```
[INFO] --- quarkus-maven-plugin:0.12.0:list-extensions (default-cli) @ hands-on-quarkus ---
[INFO] Available extensions:
[INFO] * Agroal - Database connection pool (io.quarkus:quarkus-agroal)
[INFO] * Arc (io.quarkus:quarkus-arc)
[INFO] * AWS Lambda (io.quarkus:quarkus-amazon-lambda)
[INFO] * Camel Core (io.quarkus:quarkus-camel-core)
[INFO] * Camel Infinispan (io.quarkus:quarkus-camel-infinispan)
[INFO] * Camel Netty4 HTTP (io.quarkus:quarkus-camel-netty4-http)
[INFO] * Camel Salesforce (io.quarkus:quarkus-camel-salesforce)
[INFO] * Eclipse Vert.x (io.quarkus:quarkus-vertx)
[INFO] * Hibernate ORM (io.quarkus:quarkus-hibernate-orm)
[INFO] * Hibernate ORM with Panache (io.quarkus:quarkus-hibernate-orm-panache)
[INFO] * Hibernate Validator (io.quarkus:quarkus-hibernate-validator)
[INFO] * Infinispan Client (io.quarkus:quarkus-infinispan-client)
[INFO] * JDBC Driver - ***** (io.quarkus:quarkus-jdbc-*****) (H2, MariaDB, PostgreSQL)
[INFO] * JSON-B (io.quarkus:quarkus-jsonb)
[INFO] * JSON-P (io.quarkus:quarkus-jsonp)
[INFO] * Kotlin (io.quarkus:quarkus-kotlin)
[INFO] * Narayana JTA - Transaction manager (io.quarkus:quarkus-narayana-jta)
[INFO] * RESTEasy (io.quarkus:quarkus-resteasy)
[INFO] * RESTEasy - JSON-B (io.quarkus:quarkus-resteasy-jsonb)
[INFO] * Scheduler (io.quarkus:quarkus-scheduler)
[INFO] * Security (io.quarkus:quarkus-elytron-security)
[INFO] * SmallRye ***** (io.quarkus:quarkus-smallrye-*****)
[INFO] * Spring DI compatibility layer (io.quarkus:quarkus-spring-di)
[INFO] * Undertow (io.quarkus:quarkus-undertow)
[INFO] * Undertow WebSockets (io.quarkus:quarkus-undertow-websockets)
```

```
$ mvn quarkus:add-extension -Dextensions="io.quarkus:quarkus-jsonb"
```

Building the native image takes a long time!

```
$ mvn package -Pnative -Dnative-image.docker-build=true
```

```
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] classlist: 56,163.93 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6]    (cap): 2,531.05 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6]    setup: 6,214.21 ms
...
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (typeflow): 170,341.22 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (objects): 61,226.10 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (features): 2,895.15 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] analysis: 245,153.93 ms
...
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] universe: 13,229.29 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (parse): 93,961.45 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (inline): 109,248.12 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] (compile): 254,735.79 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] compile: 471,609.18 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] image: 22,405.24 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] write: 6,450.14 ms
[hands-on-quarkus-1.0-SNAPSHOT-runner:6] [total]: 930,591.13 ms
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 15:52 min
[INFO] Finished at: 2019-04-06T15:56:39+02:00
[INFO] -----
```

Quarkus has limitations

- Not every feature of CDI is supported.
 - simplified, only one bean archive with annotated bean discovery
 - private members and field level injection are not encouraged
 - decorators and specialization are not supported
 - no support for portable extensions
- using an open source library not available as Quarkus extension may prove difficult

Demo