

 **Red Hat**

# The Business Value of Quarkus

April 2020

Red Hat Middleware Product  
Marketing Team

# Quarkus - Kubernetes Native Java



Monolith



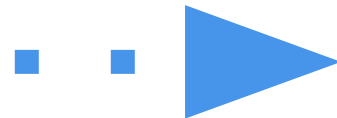
Cloud Native



Microservices



Serverless



Event-Driven  
Architecture



kubernetes



Istio



Knative



# QUARKUS

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Supersonic. Subatomic. Java.

<https://quarkus.io/>

# WHAT IS QUARKUS?

**QUARK:** elementary particle / **US:** hardest thing in computer science

# Quarkus Business Value

*"Supersonic, Subatomic Java"*



## Cost Savings

Cloud efficiency (low memory, fast startup, high density), serverless deployments



## Faster Time to Market

Developer productivity, extensions ecosystem, low learning curve, keep competitive edge



## Reliability

Trusted technology, active community, trusted sponsor, fast release cadence, unnoticed failovers

*"both jvm & native compilation modes"*

*"both jvm & native compilation modes"*

The diagram illustrates the memory footprint of Quarkus compared to a traditional cloud-native stack. It features three stacks of blocks, each representing a different configuration:

- Quarkus + Native:** A stack of 12 red blocks, representing a memory footprint of 12 MB.
- Quarkus + JVM:** A stack of 73 blue blocks, representing a memory footprint of 73 MB.
- Traditional Cloud-Native Stack:** A stack of 136 gray blocks, representing a memory footprint of 136 MB.

The diagram visually demonstrates that Quarkus with Native compilation has a significantly smaller memory footprint (12 MB) compared to Quarkus with JVM (73 MB) and a traditional cloud-native stack (136 MB).

Quarkus  
+ Native  
**12 MB**

Quarkus + JVM  
**73 MB**

Traditional  
Cloud-Native Stack  
**136 MB**

A horizontal bar chart comparing the startup times of three different configurations. The chart is enclosed in a large light gray circle. The bars are arranged vertically, with the shortest bar at the top and the longest at the bottom. Each bar is followed by its corresponding configuration name and startup time in seconds.

Configuration	Startup Time (secs)
Quarkus + Native	.016
Quarkus + JVM	0.943
Traditional Cloud-Native Stack	4.3

Quarkus + Native (.016 secs)

Quarkus + JVM (0.943 secs)

Traditional  
Cloud-Native  
Stack (**4.3 secs**)

The diagram illustrates a container orchestration architecture. At the top, a large circle represents the network or cluster. Inside this circle, five blue rectangular nodes are arranged horizontally. Each node contains a specific application stack:

- Node 1:**
  - Top: IAP WAF, Authn or Spring Boot
  - Middle: IAP WAF, Authn or Spring Boot
  - Bottom: IAP WAF, Authn or Spring Boot
- Node 2:**
  - Top: Quarkus on JVM
  - Middle: Quarkus on JVM
  - Bottom: Quarkus on JVM
- Node 3:**
  - Top: Node JS
  - Middle: Node JS
  - Bottom: Node JS
- Node 4:**
  - Top: Go
  - Middle: Go
  - Bottom: Go
- Node 5:**
  - Top: Go
  - Middle: Go
  - Bottom: Go

Below the nodes is a red horizontal bar with the text "CONTAINER ORCHESTRATION" in white. To the left of this bar is a blue circular icon containing a white gear and a network symbol.

# Cost Savings

*"from the mouths of production users"*

We could run **3x** denser deployments without sacrificing availability and response times of service.

*-Lufthansa Technik*

We went from **1 min** startup times to **400 ms**.

*-Suomen Asiakastieto Oy*

We went from **6-7 sec** startup time with plain Java on AWS Lambda to **10 ms** with Quarkus.

*-Ennovative Solutions*

# Faster Time to Market

*"Platform that feels familiar but new"*

Quarkus allows developers to leverage their existing Java expertise to reduce their time to productivity. It feels familiar and innovative as it unlocks the ability to utilize their Java skills to build modern, cloud-native microservices and serverless applications.



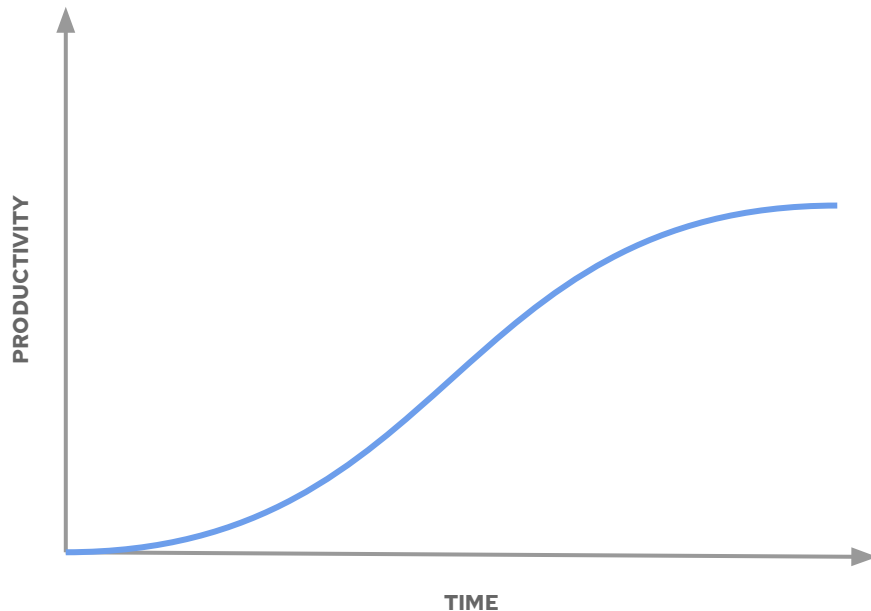
Derived from Java standards like Jakarta EE and Eclipse MicroProfile



Crafted from well known Java libraries such as Hibernate and Spring



Developer tooling and extension library to build applications quicker





# Faster Time to Market

*"from the mouths of production users"*

*Quarkus is an incredible integration project that includes rich functionality, like MicroProfile, Vert.x, Kafka, and Keycloak, and many others.*

*-GoWithFlow*

*When you adopt Quarkus, you will be productive from day one since you don't really need to learn new technologies.*

*-TalkDesk*

*Developers had to wait 2 to 3 mins to see their changes when they deployed their application. Live Coding does away with this and it is one of Quarkus best features if not the best one.*

*-GoWithFlow*

# Reliability

*"modern stack with an active community, backed by Red Hat"*



## Community

Active community  
with fast release  
cadence and timely  
forum replies



## Leadership

Redhat is a leader in  
enterprise Java and  
open source  
communities  
stewardship



## Kubernetes

Modern stack for  
Kubernetes-native  
microservices and  
serverless  
applications

# Reliability

*"from the mouths of production users"*

*As soon as the MongoDB client Quarkus extension became available, they were able to switch the entire service to native mode.*

*-Lufthansa Technik*

*The Quarkus community and Quarkus engineers are very active even on external forums.*

*-Suomen Asiakastieto Oy*

*Our trust of Red Hat combined with its credibility in the software market gave us the assurance that we were making the right choice by selecting Quarkus, whose sponsor is Red Hat.*

*-Vodafone Greece*

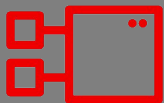
# Why Quarkus?

*"Quarkus is a great fit if you are looking for..."*



## IMPROVED APP PERFORMANCE & COST

- ❑ Reduce memory consumption
- ❑ Increase startup speeds
- ❑ Reduce application size
- ❑ Looking for Spring or Java alternatives



## DIGITAL TRANSFORMATION

- ❑ Modernize or optimize existing applications
- ❑ Move to a cloud-native or microservices architecture
- ❑ Need lightweight connectivity between services
- ❑ Next generation business automation



## SERVERLESS

- ❑ Have seldom used but critical services
- ❑ Interested in serverless or FaaS (function as a service)

# Use Cases

*"Quarkus is an ideal runtime for"*



## NET NEW

Low memory footprint + lightning fast startup time + small disk footprint = an ideal runtime for Kubernetes-native microservices



## MONO 2 MICRO

Quarkus is a great choice to modernize existing monolithic applications by breaking it into smaller, loosely coupled microservices.



## SERVERLESS

Scaling up or down (0) is extremely fast with Quarkus making it an ideal runtime for creating serverless applications.



## EVENT-DRIVEN/REACTIVE

Quarkus utilizes an asynchronous, reactive event loop that makes it easy to create reactive applications.

# Vodafone Ελλάδος

- ▶ DXL Platform for digital subscribers
- ▶ 80 Spring Boot μservices, 2 min startup times, 2Gi memory each
- ▶ Customer experience suffered as subscribers grew





“We became increasingly worried about resource consumption that Spring Boot was having while being deployed on the Kubernetes cluster... It became increasingly cumbersome to find ways to circumvent the methodology we were using just to squeeze every little bit of performance out of Spring Boot”

Christos Sotiriou

DXL Backend Chapter Lead, Vodafone Greece

# Vodafone Greece Chooses Quarkus

- ▶ 60% boot time, 40% CPU savings
- ▶ Using ½ the memory
- ▶ 30% less code required
- ▶ Developer productivity gains
- ▶ 4 seconds → sub-second response time
- ▶ Quarkus for *all* new projects





# And There Are Others...



**Lufthansa  
Technik**

"We could run 3 times denser deployments without sacrificing availability and response times of service."

**Thorsten Pohl**

Lufthansa Technik AVIATAR Product  
Owner Automation & Platform  
Architect



**talkdesk**

"When you adopt Quarkus, you will be productive from day one since you don't really need to learn new technologies."

**Roberto Cortez**

Talkdesk Principal Architect



**LogicMonitor**

"After deploying, we found that Quarkus used about 15% of the CPU, 12% of the memory from before (Spring Boot). So far, we are sticking with Quarkus!"

**Sam Dacanay**

Lead Software Engineer at LogicMonitor

# Quarkus in Production



**Lufthansa**

**talkdesk®**



**asiakastieto**



**vodafone**  
(Vodafone Greece)



[GoWithFlow.io](https://GoWithFlow.io)



**ENNOVATIVE**  
SOLUTIONS

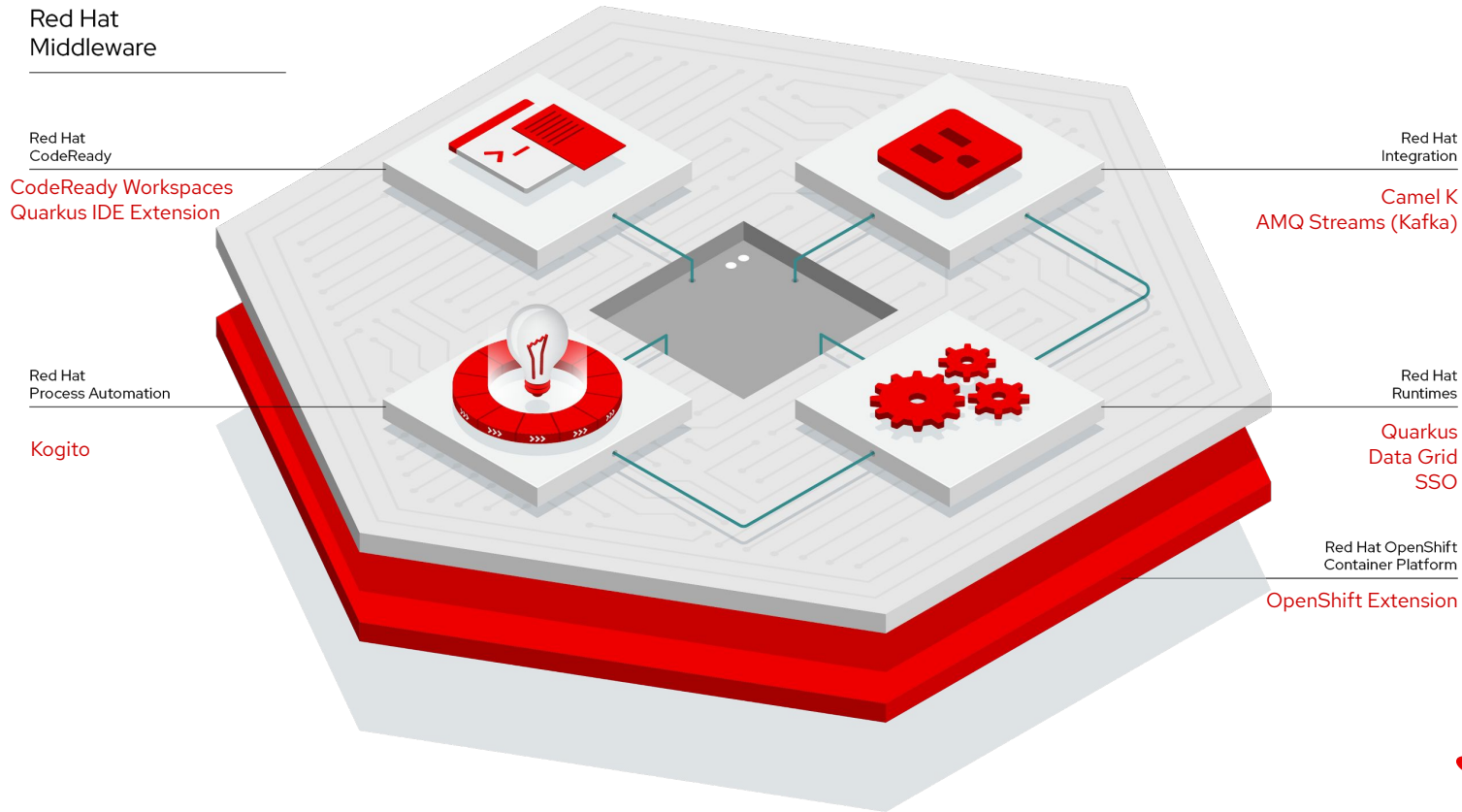
 **Payair**



A European-based telco  
company

# Application Environment with Red Hat

"Quarkus powers the next-gen Red Hat stack for hybrid-cloud apps"





<https://www.youtube.com/watch?v=hhHgurtl674>



# Thank You

Red Hat is the world's leading provider of enterprise open source software solutions. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500.



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