The Business Value of Quarkus

April 2020

Red Hat Middleware Product
Marketing Team

Quarkus - Kubernetes Native Java

Monolith

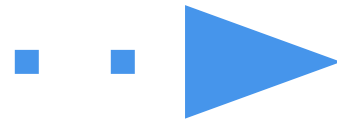Cloud Native

Microservices

Serverless

Event-Driven
Architecture

kubernetes

Istio

Knative

Red Hat

QUARKUS

Supersonic. Subatomic. Java.

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
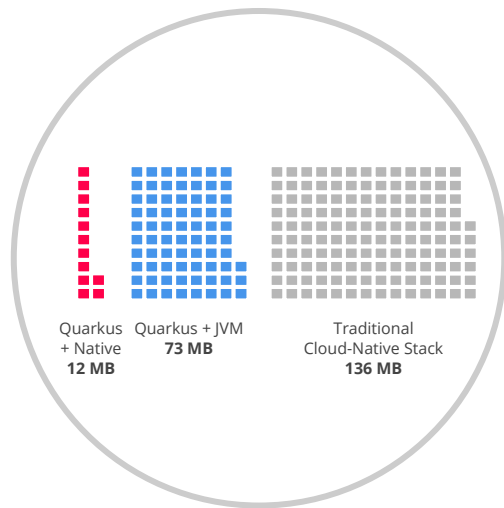
Reliability

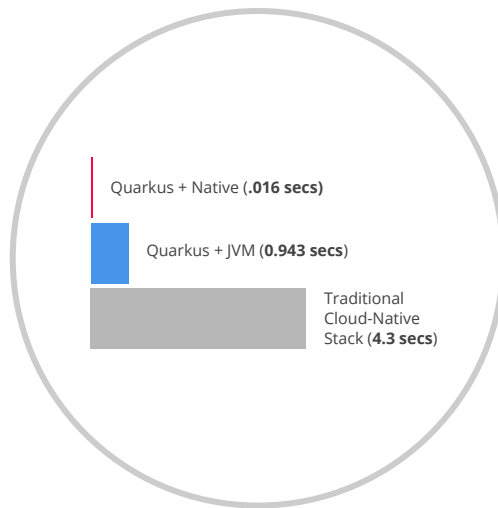Trusted technology, active community, trusted sponsor, fast release cadence, unnoticed failovers

Red Hat

Cost Savings

"both jvm & native compilation modes"

Reduced Memory Footprint

Quarkus + Native
12 MB

Quarkus + JVM
73 MB

Traditional Cloud-Native Stack
136 MB

Fast Startup Time

Quarkus + Native (**.016 secs**)

Quarkus + JVM (**0.943 secs**)

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

Smaller Disk Footprint

Node — EAP, WAS Liberty or Spring Boot

Node — Quarkus on JVM

Node — Node.JS

Node — Go Go Go

CONTAINER ORCHESTRATION

Red Hat
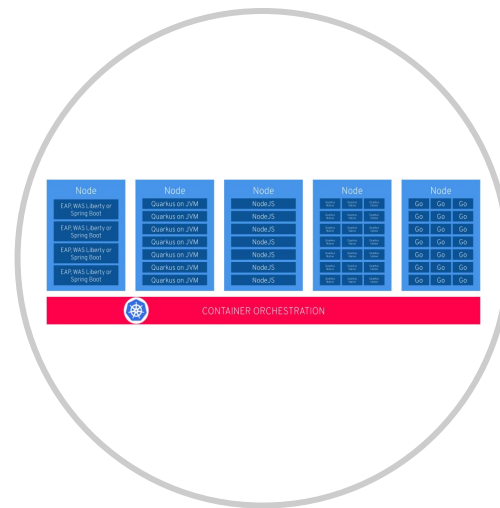
Cost Savings

"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

Red Hat

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.
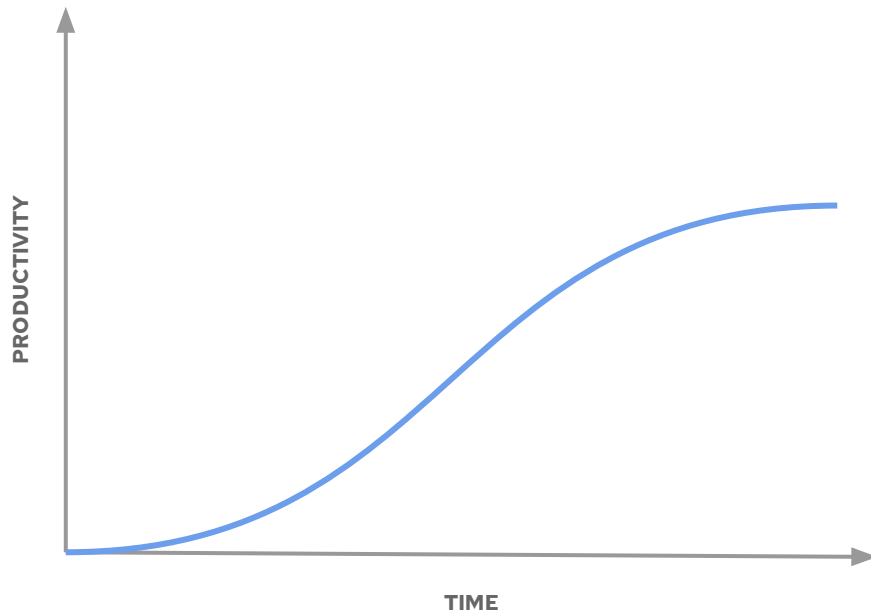
Derived from Java standards like Jakarta EE and Eclipse MicroProfile

Crafted from well known Java libraries such as Hibernate and Spring

Developer tooling and extension library to build applications quicker

PRODUCTIVITY

TIME

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

Red Hat

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.
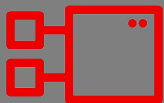
–Vodafone Greece

Red Hat

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)

Red Hat

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.

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Vodafone Ελλάδος

▶ DXL Platform for digital subscribers

▶ 80 Spring Boot μservices, 2 min startup times, 2Gi memory each

▶ Customer experience suffered as subscribers grew

Red Hat

vodafone

"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

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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

January 2020 (refactored MyVodafone App Release)
- Line: Response times (seconds)
- Bars: Number of users

Deployed Quarkus
microservice

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

Red Hat

Quarkus in Production

Lufthansa

talkdesk®

asiakastieto

ENNOVATIVE SOLUTIONS

vodafone
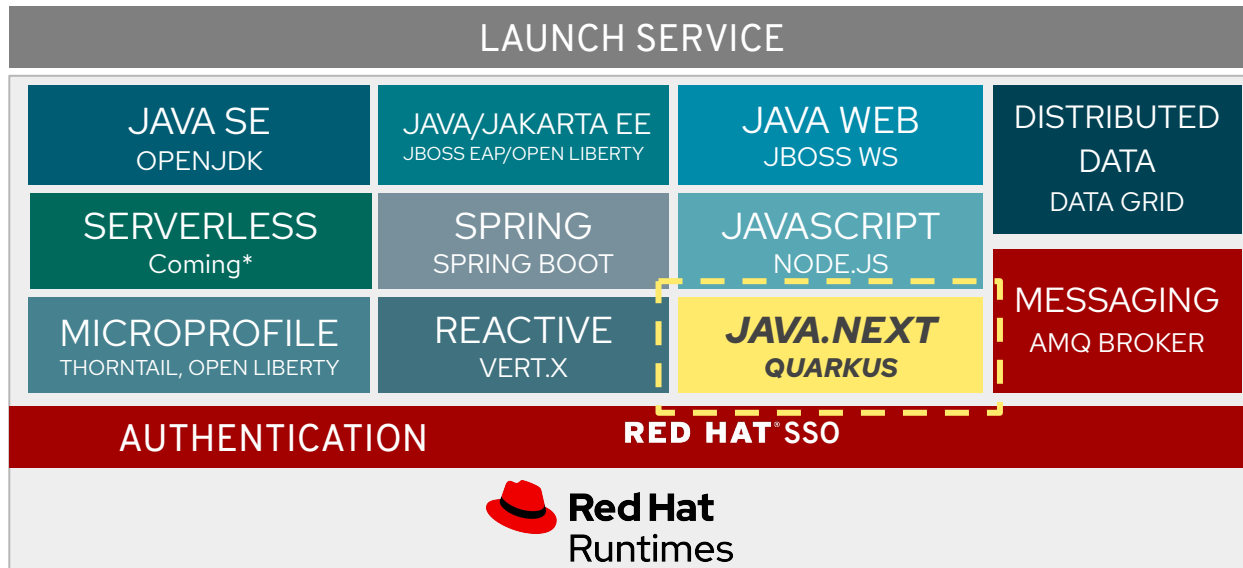(Vodafone Greece)

Floy Urban Solutions
GoWithFlow.io

Payair

A European-based telco company

Red Hat

Red Hat Runtimes*

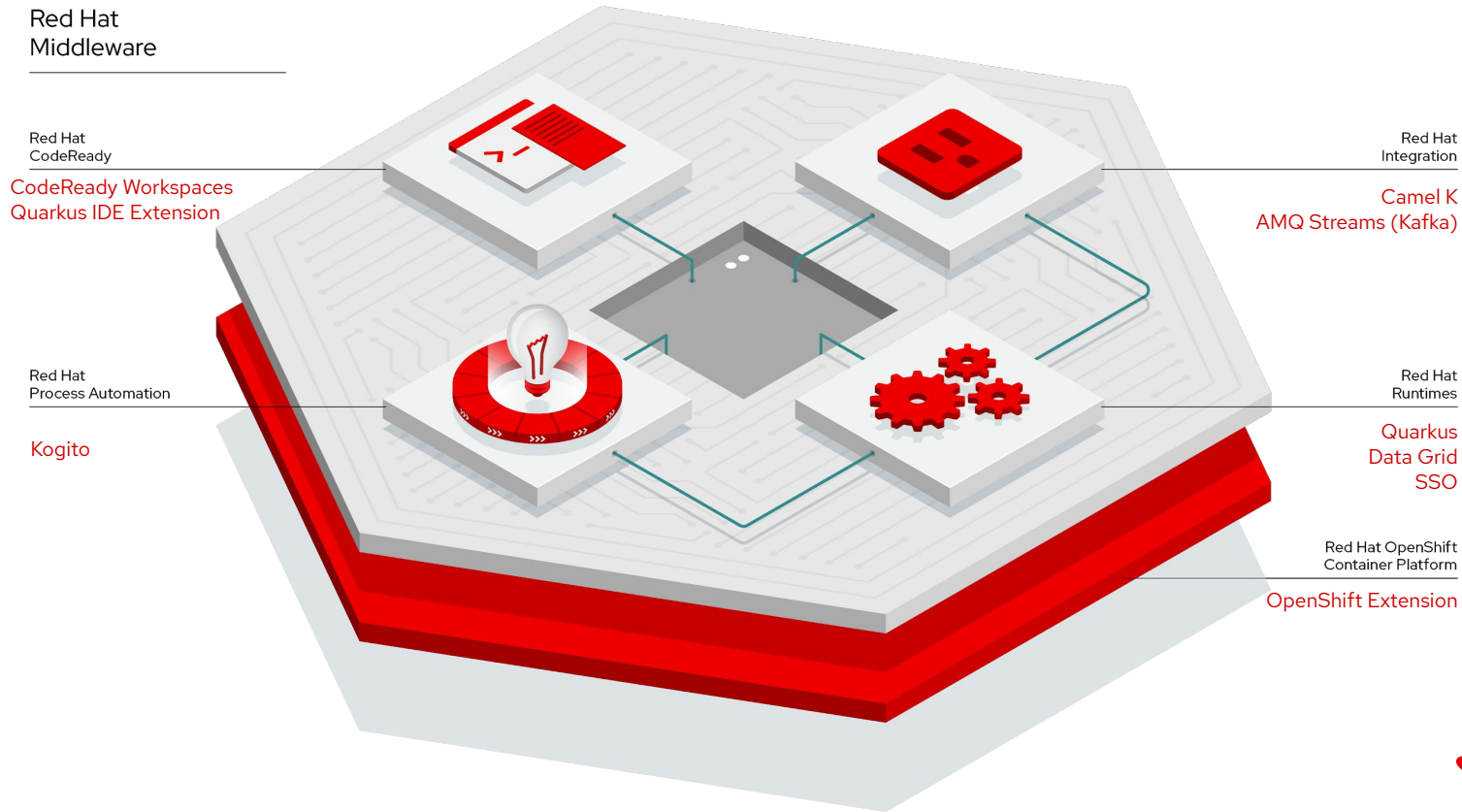*"support your existing apps, your future apps, and the transformation in between."*

LAUNCH SERVICE			
JAVA SE OPENJDK	JAVA/JAKARTA EE JBOSS EAP/OPEN LIBERTY	JAVA WEB JBOSS WS	DISTRIBUTED DATA DATA GRID
SERVERLESS Coming*	SPRING SPRING BOOT	JAVASCRIPT NODE.JS	
MICROPROFILE THORNTAIL, OPEN LIBERTY	REACTIVE VERT.X	JAVA.NEXT QUARKUS	MESSAGING AMQ BROKER
AUTHENTICATION		RED HAT® SSO	
Red Hat Runtimes			

Facilitate cloud-native app development ON THE CLOUD:

✓ **Faster getting started**

✓ **Simplify container dev**

✓ **Automate DevOps**

✓ **Standardize tools & processes**

✓ **Fully supported JDK**

*Red Hat build of Quarkus is included and now available via the Red Hat Runtimes bundle.

Red Hat

Application Environment with Red Hat

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

Red Hat
Middleware

Red Hat
CodeReady

CodeReady Workspaces
Quarkus IDE Extension

Red Hat
Integration

Camel K
AMQ Streams (Kafka)

Red Hat
Process Automation

Kogito

Red Hat
Runtimes

Quarkus
Data Grid
SSO

Red Hat OpenShift
Container Platform

OpenShift Extension

Additional Resources

REDHAT.COM
Red Hat build of Quarkus
Red Hat Runtimes
Red Hat Middleware Portfolio

LEARN MORE
IDC Quarkus Report (Coming Soon!)
Four Reasons To Try Quarkus
What is a Java Framework?

DEVELOPERS
Documentation
Interactive Tutorials
Start Coding

QUARKUS COMMUNITY
Quarkus.io
Blogs
User Stories

Additional Information

EAP vs Quarkus

EAP Benefits

- Optimized for high performance on bare metal or virtualized
- Long term support by providing stable and backward compatible APIs
- Powerful management capabilities
- Focus on established standards like Jakarta EE and MicroProfile core
- Modular at the core - great for modularized monolithic applications
- Awesome management experience
- Compliancy
  - Common criteria, etc

Quarkus benefits

- Optimized for Kubernetes, Serverless & FaaS
- Very low resource utilization with native compilations
- Great for event-based architecture and reactive programming
- Great for microservices and distributed architectures
- Latest and greatest frameworks and standards, like MicroProfile core + extra, Spring APIs, Mutiny, Kafka streams
- Awesome developer experience

Red Hat