



POSEDIO

Your guiding light to innovation



QUARKUS ON K8S

ONUR KASIMLAR

05 June 2023

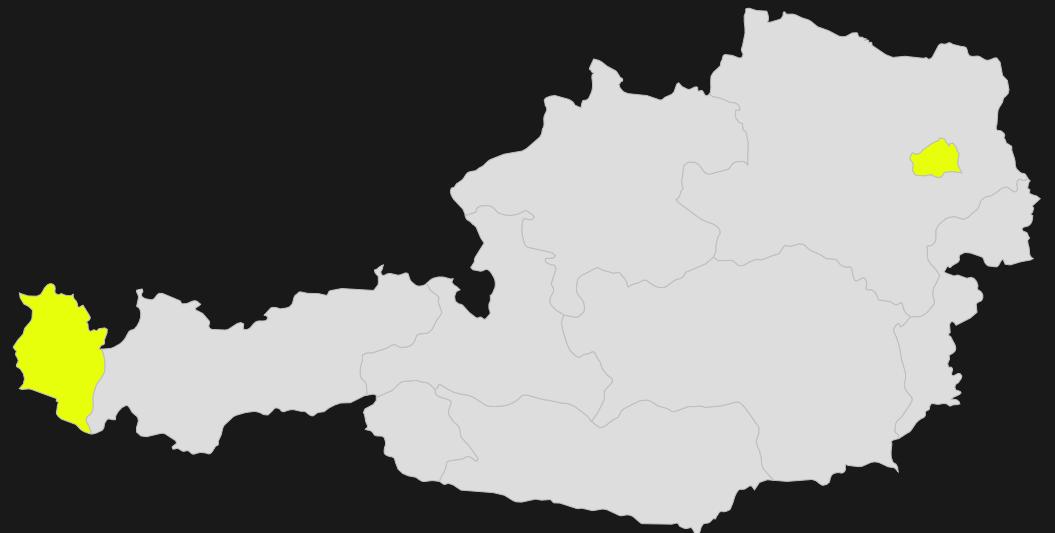
TBT

[flexive.org | \[fleXive\] - The Next-Generation Open Source ...](http://flexive.org)

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www.flexive.org ; Main HTML document and all iframes on the page, 23,464 ; CSS ...

POSEDIO GMBH



Company founded:

- 2020

Locations:

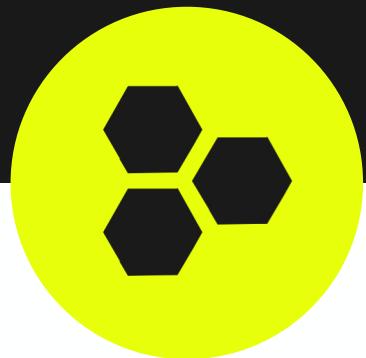
- Vienna
- Vorarlberg

Co-workers:

- 17 Cloud experts



SERVICES



Cloud Platform

Multicloud

FinOps

Automated self-service Platform



Cloud-Native Consulting

Security Review

Cloud readiness Review

Architecture Review

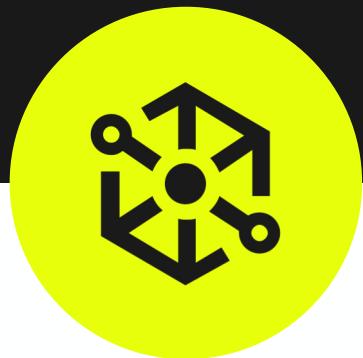


Data Platform

Data Governance

Big Data

Data Accessibility



Application Modernization

Security and Governance

Scalability & Cost optimization

DevOps



AGENDA

1. INTRODUCTION
QUARKUS
2. INTEGRATION WITH
KUBERNETES

1

INTRODUCTION QUARKUS

INTRODUCTION QUARKUS

Homepage: <https://www.quarkus.com>

The image shows the Quarkus homepage banner. At the top, there is a dark navigation bar with the Quarkus logo, a dropdown menu for 'ABOUT', 'LEARN', 'EXTENSIONS', 'COMMUNITY', a 'START CODING' button, and a language selection icon. The main background is a dark blue and red abstract wavy pattern. In the center, the text 'QUARKUS 3.0 has launched.' is displayed in large white font. Below this, a paragraph of text reads: 'Quarkus 3.0 continues the mission of making Java the preferred framework for Kubernetes-native development with new developer tools and improved performance.' At the bottom, there is a red call-to-action button with the text 'LEARN MORE ABOUT 3.0'. Above the button, five small icons represent different Quarkus features: a flame, a stopwatch, a network, a laurel wreath, and a triangle with a circle.

INTRODUCTION QUARKUS

What is Quarkus?

- Open-source framework for developing cloud-native Java applications
- Improve performance of Java applications
- Enhance the productivity of Java developers

INTRODUCTION QUARKUS

Improve performance of Java applications

- Low startup times, low memory usage
- AOT (ahead-of-time) compilation

INTRODUCTION QUARKUS

Everything new?

- Builds on top of proven standards:
 - Eclipse MicroProfile
 - Vert.x
 - JAX-RS

INTRODUCTION QUARKUS

Enhance the productivity of Java developers

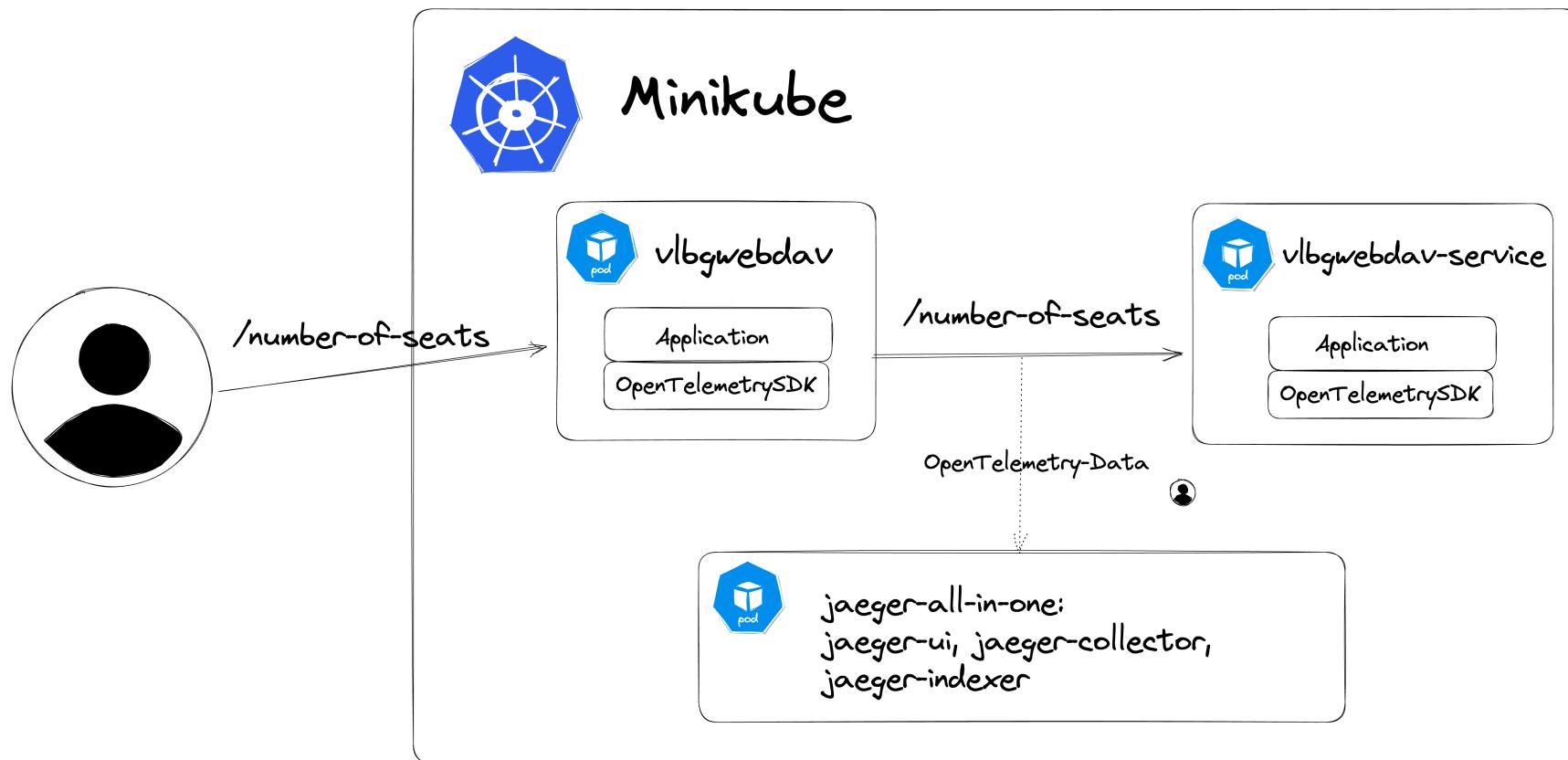
- Wide range of features and extensions
 - Reactive programming
 - Microservice support
 - REST messaging frameworks
 - Database access
 - Integration with Kubernetes
- <https://code.quarkus.io/>

2

INTEGRATION WITH KUBERNETES

INTEGRATION WITH KUBERNETES

Example with 2 Microservices



INTEGRATION WITH KUBERNETES

What is Kubernetes

- Open-source platform for
 - automating,
 - deploying,
 - scaling,
 - and managing containerized applications.

INTEGRATION WITH KUBERNETES

Quarkus basics

- Configuration
 - src/main/application.properties
 - ConfigMap
 - Environment variables
- Staging
 - With %[stage].[property-name]

INTEGRATION WITH KUBERNETES

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INTEGRATION WITH KUBERNETES

Quarkus Kubernetes Features

- One-step Kubernetes deployment
- Direct Secret and ConfigMap access
- Health endpoints
- OpenTracing
- OpenMetrics
- Kubernetes Client Api
-

INTEGRATION WITH KUBERNETES

One-step Kubernetes deployment

```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-kubernetes</artifactId>
</dependency>
```

```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-container-image-docker</artifactId>
</dependency>
```

INTEGRATION WITH KUBERNETES

One-step Kubernetes deployment

- Generate deployment YAML for Kubernetes Evn.
 - Service Account, RoleBinding,...

```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-kubernetes-minikube</artifactId>
</dependency>
```

INTEGRATION WITH KUBERNETES

Direct Secret and ConfigMap access

- Read properties from a ConfigMap / Secret
- Override application.properties

```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-kubernetes-config</artifactId>
</dependency>
```

INTEGRATION WITH KUBERNETES

Health Endpoints

- Expose application availability and status
- Custom application health checks
- Built-in health checks
 - Kafka, JDBC Datasources, Elasticsearch, ...

```
<dependency>
  <groupId>io.quarkus</groupId>
  <artifactId>quarkus-smallrye-health</artifactId>
</dependency>
```

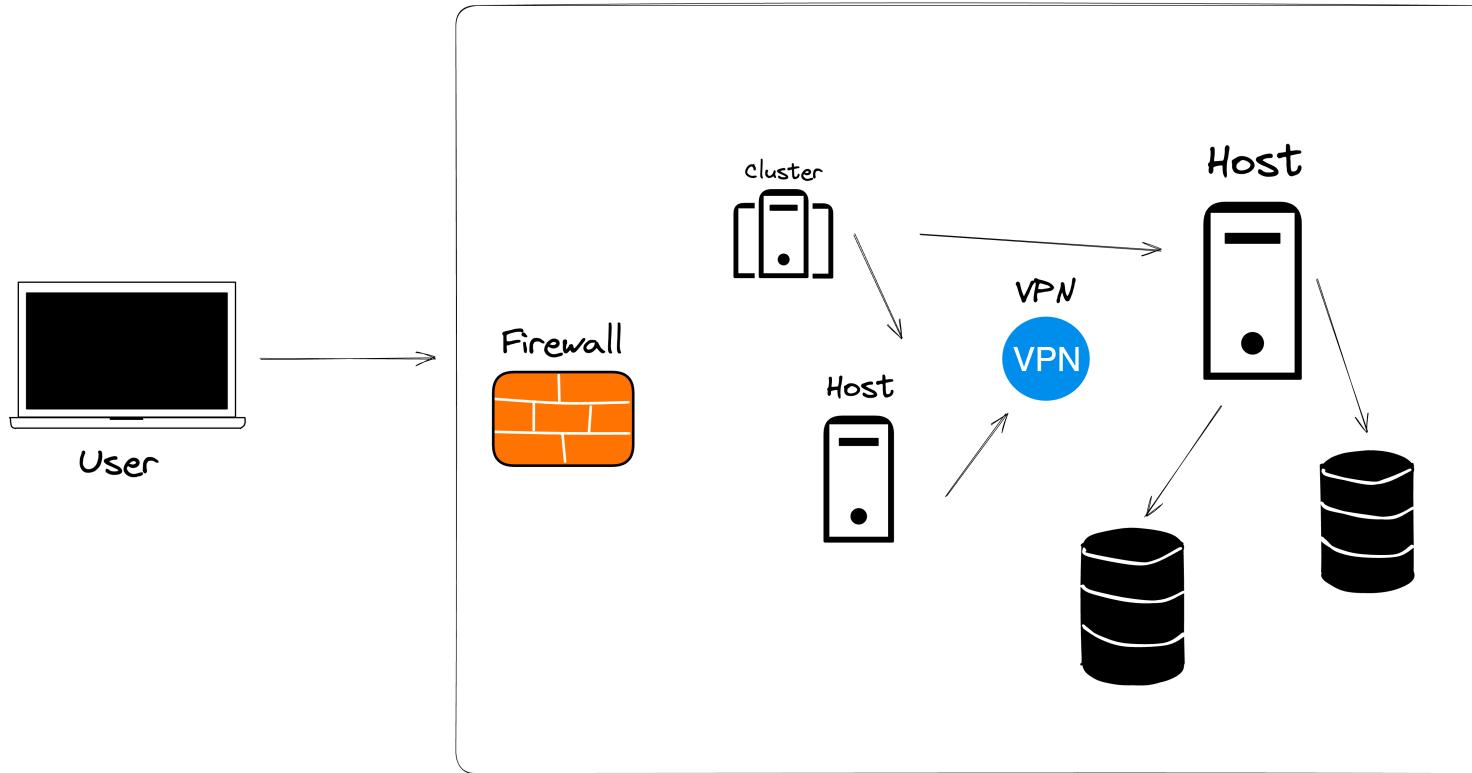
INTEGRATION WITH KUBERNETES

OpenTracing Support

- Distributed Tracing across microservices

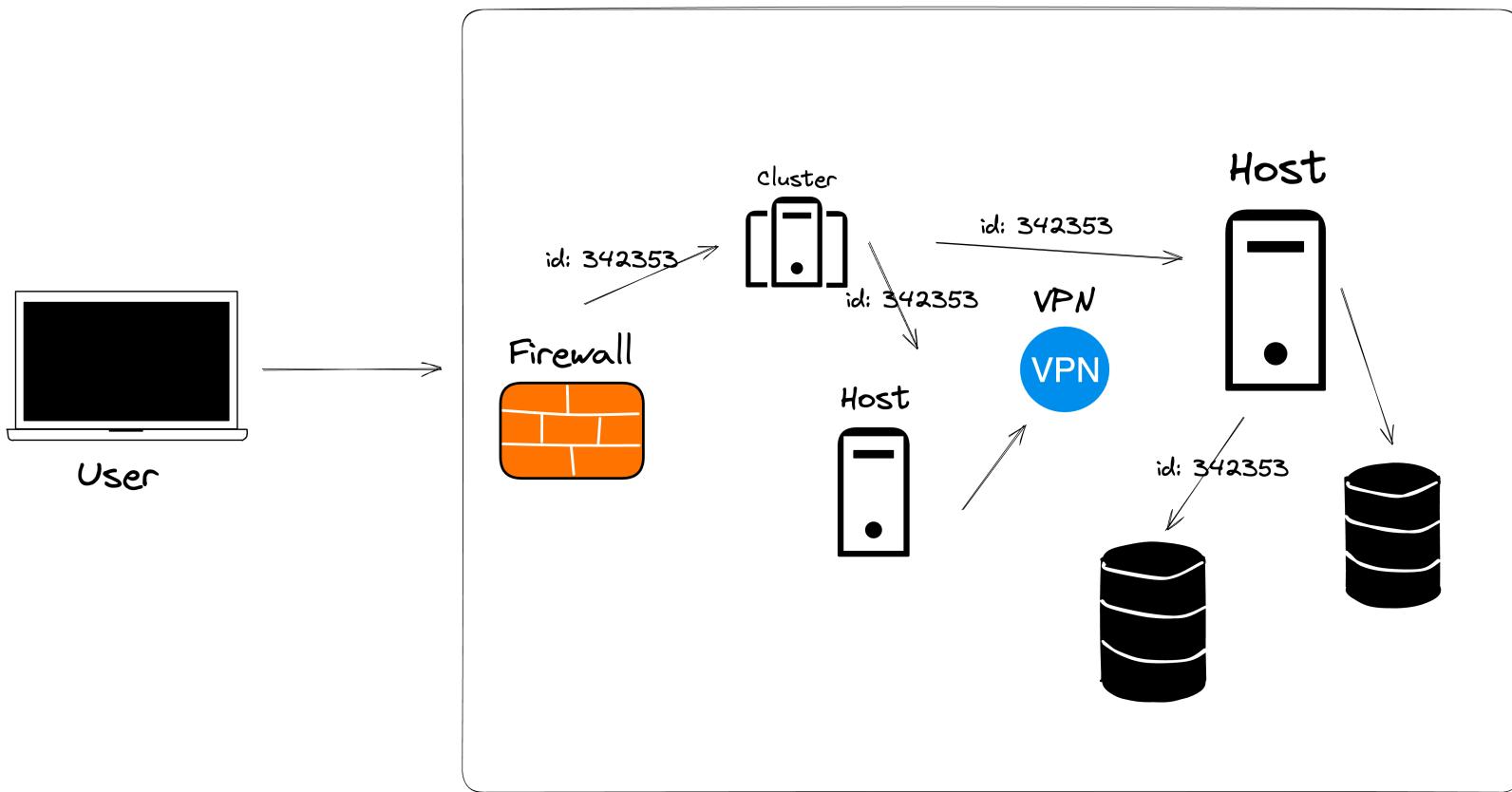
CHALLENGE DISTRIBUTED TRACING

Example Architecture



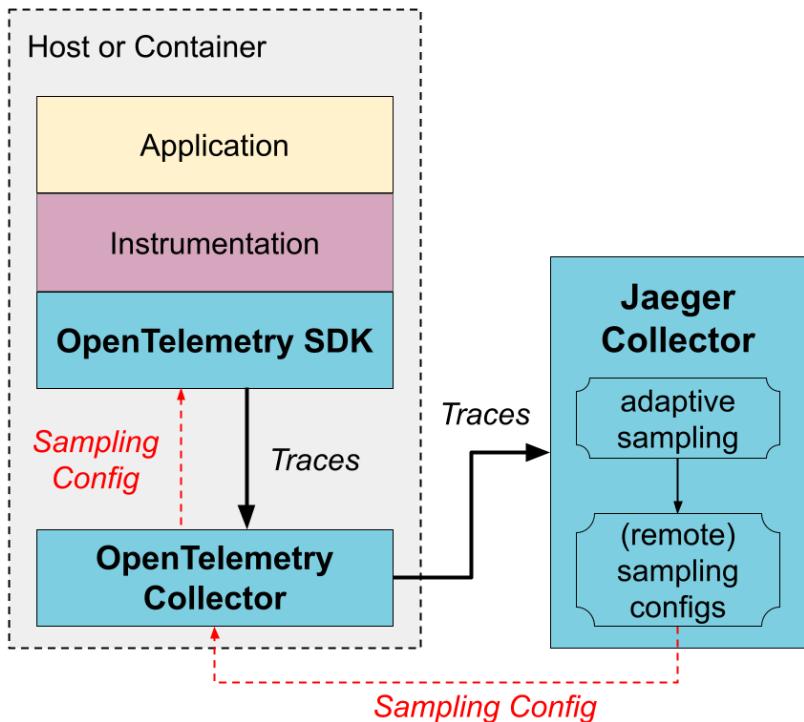
CHALLENGE DISTRIBUTED TRACING

Example Architecture

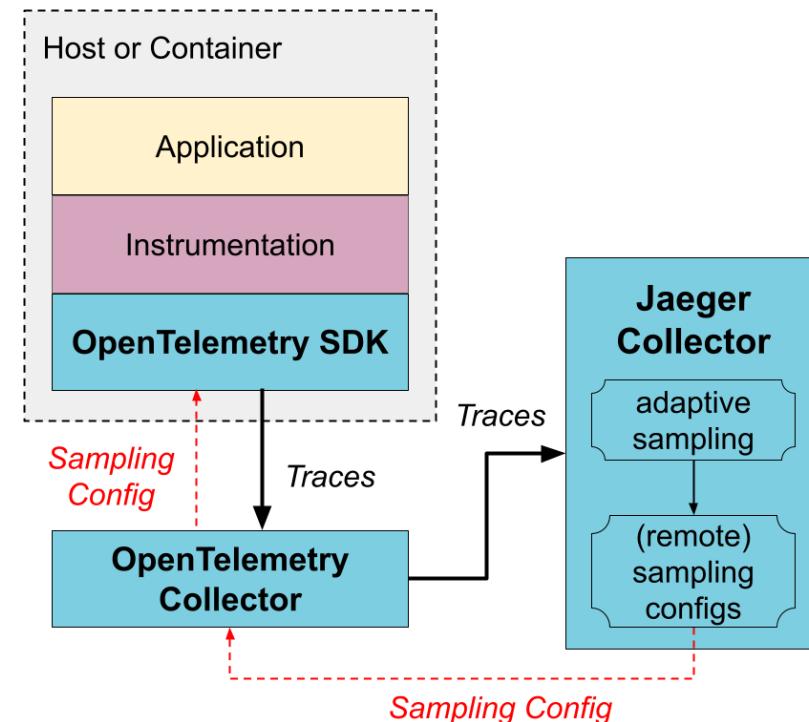


SOLUTION

Architecture



(a) OpenTelemetry Collector as a sidecar or host agent



(b) OpenTelemetry Collector as a central cluster

SUMMARY

Quarkus @ K8S

- Built for developing cloud-native applications
- Improves development performance
- Improves memory usage and speed



THANK YOU!

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