Camel K

~1 SEC. BUILD AND DEPLOY ON KUBERNETES

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PETER PALAGA

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  - Red Hat Fuse on EAP (WildFly Camel)
  - JBoss EAP (WildFly)
- Author of
  - srcdeps - source dependencies for Maven and Gradle
  - Maven and Gradle plugins for .editorconfig
AGENDA

• Apache Camel intro
• Apache Camel K
WHAT IS APACHE CAMEL?

http://camel.apache.org/

Since 2007
Apache Camel is...

AN INTEGRATION LIBRARY

System A → Transport A → Data → Transport B → System B

“Route”
Apache Camel is based on

ENTERPRISE INTEGRATION PATTERNS (EIP)

Content Based Router
Message Filter
Dynamic Router
Recipient List
Splitter
Aggregator
Resequencer
Content Enricher
Content Filter
Normalizer

https://www.enterpriseintegrationpatterns.com/
Apache Camel can... INTEGRATE ANYTHING through its ~280 COMPONENTS
Routes defined via
**DOMAIN SPECIFIC LANGUAGES (DSL)**

Java

```java
class MyCamelRouter extends RouteBuilder {
    @Override
    public void configure() throws Exception {
        from("twitter-search:" + "word1,word2")
            .log("Got a tweet: ${body}")
            .to("telegram:bots");
    }
}
```

XML

```xml
<routes xmlns="http://camel.apache.org/schema/spring">
    <route id="my-route">
        <from uri="twitter-search:word1,word2"/>
        <log message="Got a tweet: ${body}"/>
        <to uri="telegram:bots"/>
    </route>
</routes>
```

Groovy, Scala, Kotlin, ...
Apache Camel is... 
RUNNABLE ON 

Spring Boot  
Karaf  
WildFly  

Standalone
Apache Camel

DEMO

Twitter -> Telegram forwarding

- Tweets containing **Camel** and **#devconfcz**
- Telegram bot: **camelDemoBot**
TRADITIONAL WAY

of deploying Apache Camel on Kubernetes/OpenShift:

• [fabric8-maven-plugin](#) to build the image
• 1+ min to build and deploy a simple app
Apache Camel

NEW AREAS OF INTEREST
Apache Camel

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• Low code/no code integrations: Syndesis
Apache Camel

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• Low code/no code integrations: Syndesis
• A "glue" for Serverless Functions
Apache Camel

NEW AREAS OF INTEREST

• Low code/no code integrations: Syndesis
• A "glue" for Serverless Functions

↑ characterized by:

• Fast prototyping
• Simple or no business logic
• Low memory and CPU usage esp. during startup
Welcome

APACHE CAMEL K!

For fast development of simple routes
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APACHE CAMEL K!

For fast development of simple routes

Subproject of Apache Camel since Aug. 31st. 2018
CAMEL K DEMO
CAMEL K INTERNALS
CAMEL K INTERNALS

- **kamel** client side binary
  - [github.com/apache/camel-k/releases](https://github.com/apache/camel-k/releases)
CAMEL K INTERNALS

• **kamel** client side binary
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• Camel K Operator
KUBERNETES OPERATORS

• An Application Management concept
• Does what a human operator would have to do
  ▪ Based on declarative input

Since Kubernetes 1.7, https://coreos.com/operators
A Kubernetes Operator

HOW IT WORKS
A Kubernetes Operator

HOW IT WORKS

Via Kubernetes API:
A Kubernetes Operator

HOW IT WORKS

Via Kubernetes API:

• Monitors the cluster
A Kubernetes Operator

HOW IT WORKS

Via Kubernetes API:

• Monitors the cluster
• Reacts:
  ▪ Add/remove/modify resources (pods/services/custom CRDs)
  ▪ Scale up/down
  ▪ Call endpoints of the running applications
A Kubernetes Operator

HOW IT WORKS

Via Kubernetes API:

- Monitors the cluster
- Reacts:
  - Add/remove/modify resources (pods/services/custom CRDs)
  - Scale up/down
  - Call endpoints of the running applications
- Implements custom logic
Kubernetes

CUSTOM RESOURCE DEFINITIONS (CRD)

**Built-in resources**
- pods, services, ...
- `oc create`, `oc get`, `oc delete`

**CRDs**
- Extend the cluster model
- `oc create`, `oc get`, `oc delete`
- Declarative input for operators
from("twitter-search:" + "word1,word2")
.log('Got a tweet: ${body}').to("telegram:bots");

~4 seconds for the simplest routes
Choose **IntegrationRuntime** based on DSL used

- Generic JVM (covers JavaScript)
- Java
- Groovy
- Kotlin
- Spring Boot
- XML
Apache Camel K

IMAGE RESOLUTION (1/2)

Choose **IntegrationRuntime** based on DSL used

- Generic JVM (covers JavaScript)
- Java
- Groovy
- Kotlin
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- XML

Sets of dependencies
Apache Camel K

IMAGE RESOLUTION (2/2)

• Based on the used Camel components
  ▪ Either takes an available Image (buildless deploy)
  ▪ Or builds a new image
Apache Camel K

IMAGE RESOLUTION (2/2)

• Based on the used Camel components
  ▪ Either takes an available Image (buildless deploy)
  ▪ Or builds a new image

• Route definition not a part of the image
  ▪ Either takes an available Image (buildless deploy)
  ▪ Mounted to the container as a ConfigMap
CAMEL K LIMITATIONS
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- Not a 100% replacement for traditional Apache Camel
CAMEL K LIMITATIONS

- Not a 100% replacement for traditional Apache Camel
- No built in means for testing
APACHE CAMEL K WRAP UP
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• Operator based Kubernetes runtime for Camel
APACHE CAMEL K WRAP UP

- Operator based Kubernetes runtime for Camel
- Fast prototyping
APACHE CAMEL K WRAP UP

- Operator based Kubernetes runtime for Camel
- Fast prototyping
- Routes with simple/no business logic
Apache Camel K

PROJECT INFO

- Apache License v2
- https://github.com/apache/camel-k
- Chat: https://gitter.im/apache/camel-k
- Mailing list: dev@camel.apache.org
- Follow @ni_ferraro and @lburgazzoli

Feedback and contributions welcome!