Knative and the three Dwarfs Introduction to Serverless with Knative



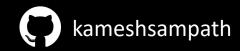
Kamesh Sampath, Director of Developer Experience Red Hat

bit.ly/java-jabba-serverless



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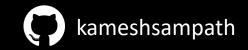


Serverless computing?

"Serverless computing refers to the concept of building and running applications that do not require server management. It describes a finer-grained deployment model where applications, bundled as one or more functions, are uploaded to a platform and then executed, scaled, and billed in response to the exact demand needed at the moment."

https://www.cncf.io/blog/2018/02/14/cncf-takes-first-step-towards-serverless-computing/







Why we need Serverless ??



Agility in any cloud environment



Event driven cloud native applications

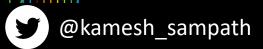


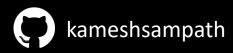
Focus on business differentiation



Consistent and scalable operations

Resource and Cost Optimization

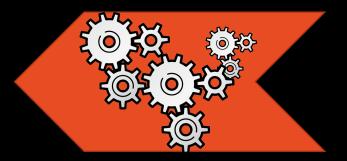






Architectural Styles

Services



- Autonomous
- Loosely Coupled

Microservices



- Single Purpose
- Stateless
- Independently Scalable
- Automated

Functions



- Single Action
- Ephemeral





When to choose what?

Services

- Autonomous
- **Loosely Coupled**

Microservices



- Single Purpose
- Stateless
- Independently Scalable
- Automated

Functions



- Single Action
- **Ephemeral**

Control and High Complexity

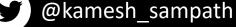
Productivity and Low Control

Portability



kameshsampath

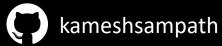












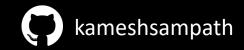


What is Knative?

"Kubernetes-based platform to build, deploy, and manage modern serverless workloads."

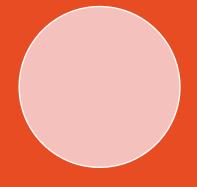
"Essential base primitives for all"

"Knative provides a set of middleware components that are essential to build modern, source-centric, and container-based applications that can run anywhere: on premises, in the cloud, or even in a third-party data center"





Primitives



Vendors

- Dx
- Functions
- Event Sources
- Build Tools



Knative

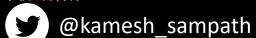
- Build Image
- Auto Scaling
- Routing
- Invokers
- Event Binding
- Observability

SERVERLESS



Kubernetes

- Deployment
- Replicaset
- Pod
- Service

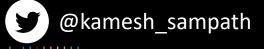






Capabilities

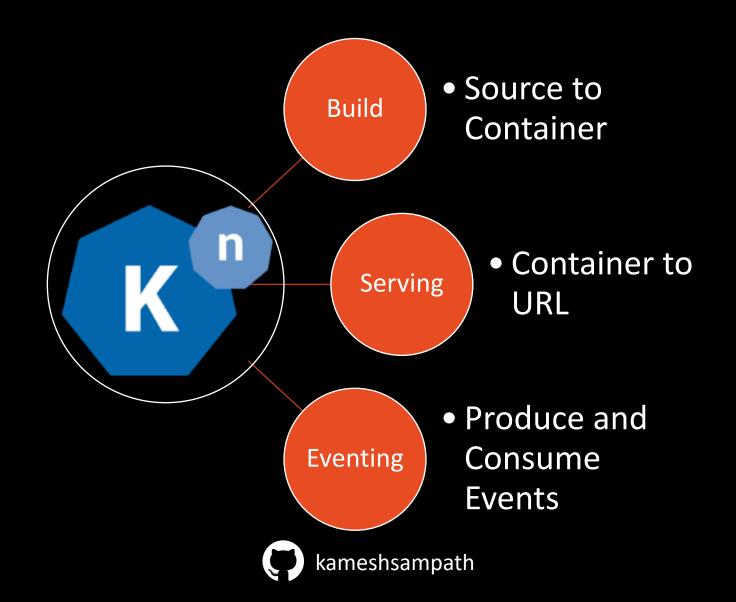
- Scale-to-zero: No pod == no memory
- Scale-from-zero: Traffic spike starts N pods
- Configurations & Revisions built-in Blue/Green
- In-Cluster Image Building
- Traffic splitting
- Eventing System







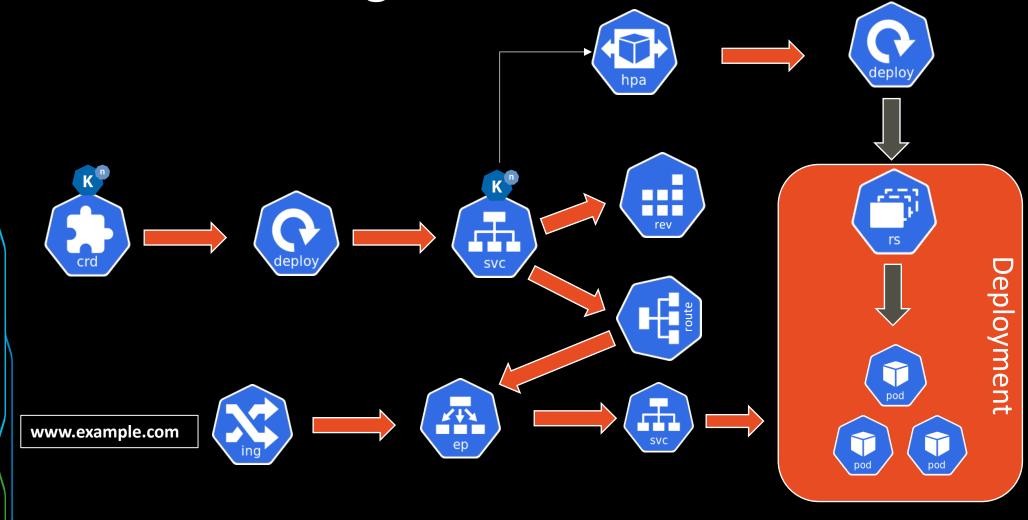
Knative Building Blocks







Knative Serving Demo





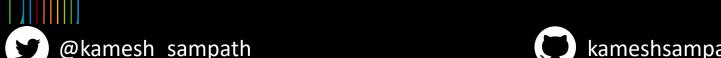




Why Java fails in linux containers? Java does not understand cgroups

Why Java was a Alien in serverless world?

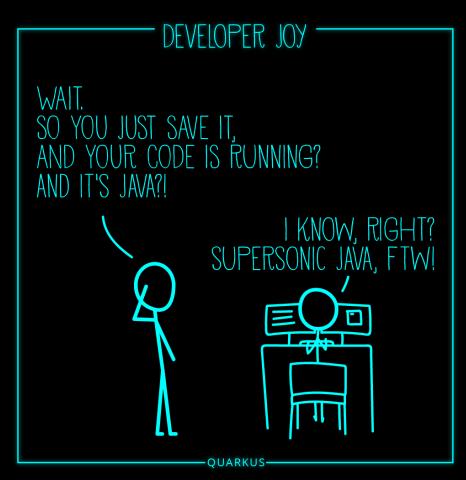
Java containers boot slow





Quarkus - Supersonic Subatomic Java

- Container First Java
 - Optimized for containers
- Super fast boot time
- Natural fit for Serverless
- Has both
 - JVM mode
 - Native Image mode



#Java #NoAlien #ServerlessWorld







DEMO





https://github.com/knative/build **Knative Build Container Registry** Pull Image Push Image **Pull Sources** Step - 1 Service Step - 2 Build Creates Step - 3 Rollout new Revision Refer Uses BuildTemplate < Revison 00001 **RED HAT**° DEVELOPER @kamesh_sampath kameshsampath

CNCF, CloudEvents and Serverless



https://www.cncf.io/



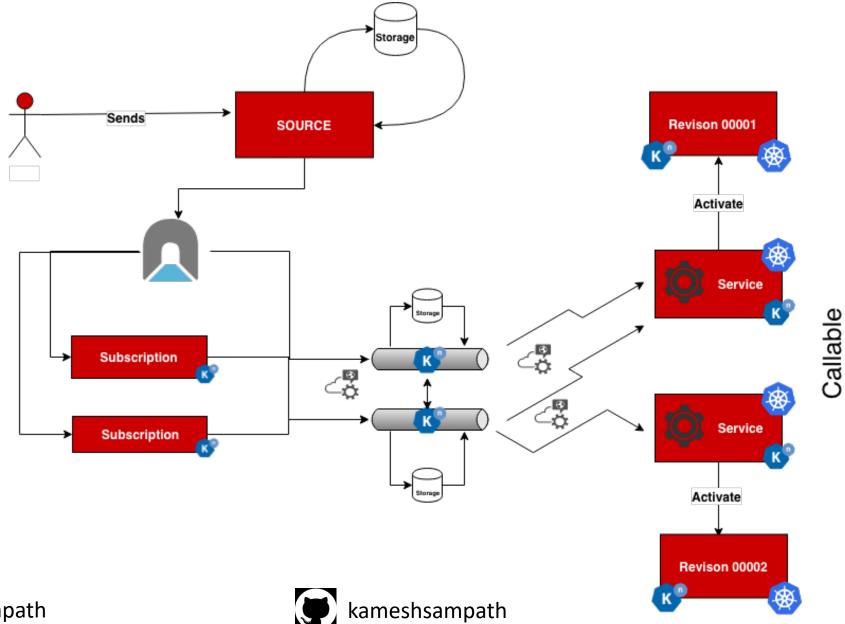
https://cloudevents.io/







Knative Eventing

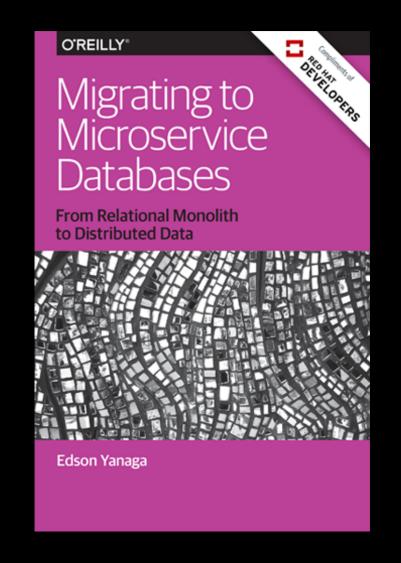




DEMO





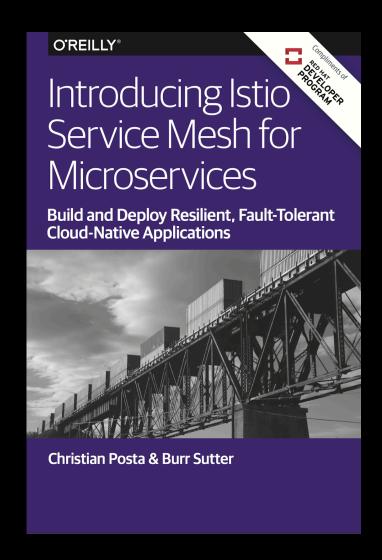


bit.ly/mono2microdb







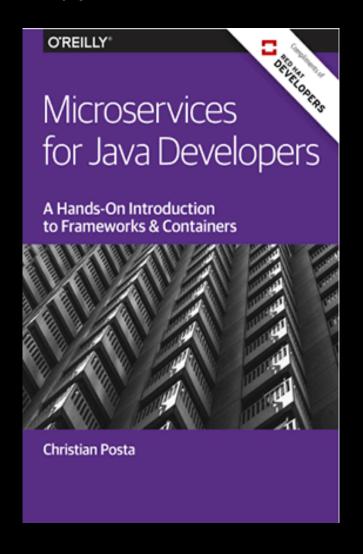


bit.ly/istiobook

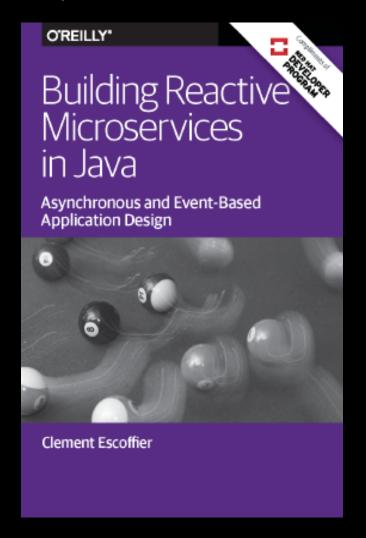




bit.ly/javamicroservicesbook



bit.ly/reactivemicroservicesbook







Resources



- Java and Docker
 - https://developers.redhat.com/blog/ 2017/03/14/java-inside-docker/
- Knative Build
 - https://blog.openshift.com/knative- building-your-serverless-service/
- Knative Serving
 - https://blog.openshift.com/knative- serving-your-serverless-services/
 - https://blog.openshift.com/knativeconfigurations-routes-and-revisions/



- https://github.com/redhatdeveloper-demos/knative-tutorial
- https://github.com/workspace7/kn ative-serving-blogs
- https://github.com/workspace7/kn ative-build-blogs





Resources

- Slides -- bit.ly/java-jabba-serverless
- Tutorials
 - Knative Tutorial bit.ly/knative-tutorial
 - Istio Tutorial bit.ly/istio-tutorial
 - Demo: bit.ly/msa-instructions
 - Slides: bit.ly/microservicesdeepdive
- Video Training:
 - bit.ly/microservicesvideo
 - Kubernetes for Java Developers
 - 9 Steps to Awesome with Kubernetes





