Knative: Kubernetes, serverless and you

Cloud Computing Day with Kubernetes - 1 Oct 2018

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The incredible Kubernetes ecosystem

442 Years of effort* 5,000+ Contributors 30k+ GitHub stars

*Sources: COCOMO Model, CNCF.io Certified Providers
Smooth surfaces ahead

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Serverless is more than snippets of code
Serverless on Google Cloud

- BigQuery
- Cloud Dataflow
- Cloud Functions
- App Engine
- Cloud Storage
- Cloud Datastore
- Cloud Machine Learning
- Cloud PubSub
Promise of serverless

- No servers
- Idiomatic
- Event-driven
- Free of lock-in
Hello Knative

Kubernetes-based building blocks for serverless workloads

- Set of primitives (Build, Events, Serving)
- Solves for modern development patterns
- Implements learnings from Google, partners
- Ingredient or platform for OSS FaaS frameworks

github.com/knative
Knative collaborators
Demo: Getting Started
Serverless on Kubernetes

Abstracts operational complexity, smooth infrastructure surface

Universal supported by all major Cloud providers, enables portability

Extendable platform with clear separation of concerns between operator and developer
Serverless on Kubernetes

Want to:
Write code

Don’t have to:
Build docker image
Upload image to registry
Deploy service
Expose to the internet
Setup logging & monitoring
Scale workload...
Knative: for the developer

1-step deploy
Build & deploy with less config/code
Source to container safely in your cluster

Auto-scale
Auto-scale your stateless container based workloads
Scale down to zero

Run serverless workloads
Automatically deploys containers and provision ingress
Go from source to URL
Demo:
Build & Serving
**Knative: on-cluster build**

**Benefits**
- No cross-compiling toil
- No need for Docker locally
- Cloud caching, faster image push
- Tooling ecosystem for Enterprise Policy to audit Builds

**Loosely coupled**
- Use it to get started, and graduate to decoupled CI
- Keep your existing CI/CD to get started, and graduate to audited Builds
**Knative: serving**

**Benefits**
- Seamlessly scale up and down
- Built-in traffic splitting between revisions
- Integrates networking and service mesh automatically
- Easy to reason about object model

**Pluggable**
- Connect to your own logging and monitoring platform, or use the built-in system
- Auto-scaler can be tuned or swapped out for custom code
Knative: events (very early days)

Benefits

- Declaratively bind between event producers and your services
- Scales from just few events to live streams
- Custom event pipelines to connect with your own existing systems
Knative principles

01 Idiomatic
- Feel native on Kubernetes
- Meet the developer

02 Extensible
- Loose coupling at the top
- Pluggable at the bottom

03 Organic
- Codify the commonalities
- Build a stable platform
Sign up for GKE serverless add-on early access: g.co/serverlessaddon

Learn more about Knative: github.com/knative/docs
Thank you