

# Knative: Kubernetes, serverless and you

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Google Cloud

# The incredible **Kubernetes** ecosystem



**442** Years of effort\*

**5,000+** Contributors

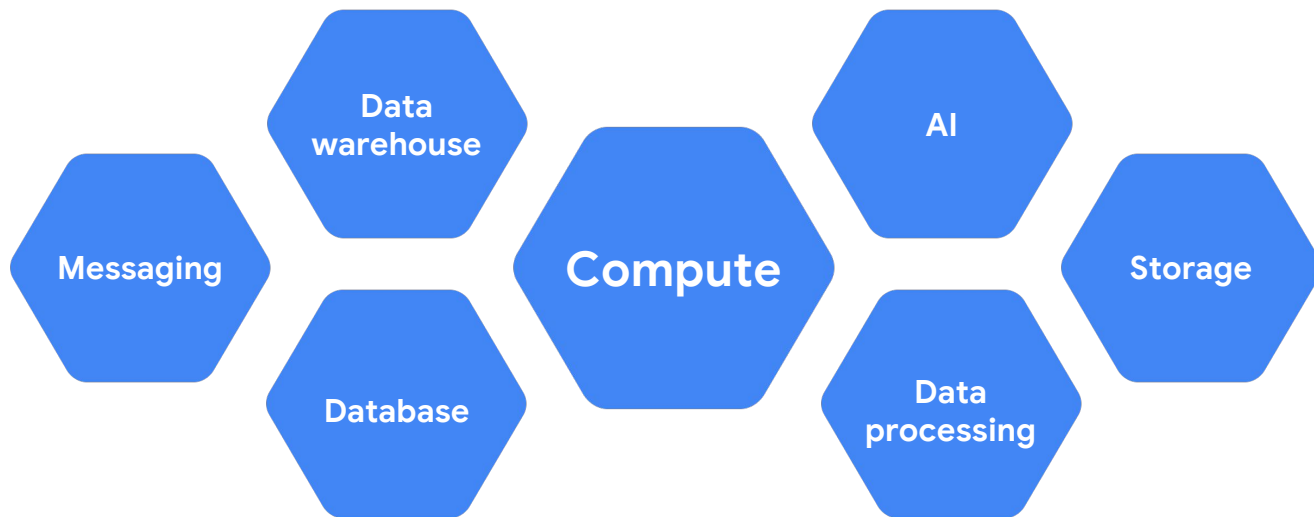
**30k+** GitHub stars

A paved road with a white center line and shoulder lines winds through a dark, rocky volcanic landscape. The road leads towards a large, rugged mountain range in the background, which is partially obscured by a thick layer of white clouds. The sky is clear and blue. The foreground shows the rough, dark texture of the volcanic rocks.

**Smooth** surfaces ahead

Photo by [Erik Wilde](#), Licensed under CC BY-SA 2.0

# Serverless is more than snippets of code





# Serverless on Google Cloud



Cloud Dataflow



BigQuery



Cloud Datastore



Cloud Functions



App Engine



Cloud Storage



Cloud PubSub



Cloud Machine Learning

# Promise of serverless



No servers



Idiomatic



Event-driven



Free of lock-in



Kubernetes



Serverless

# 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](https://github.com/knative)



# Knative collaborators

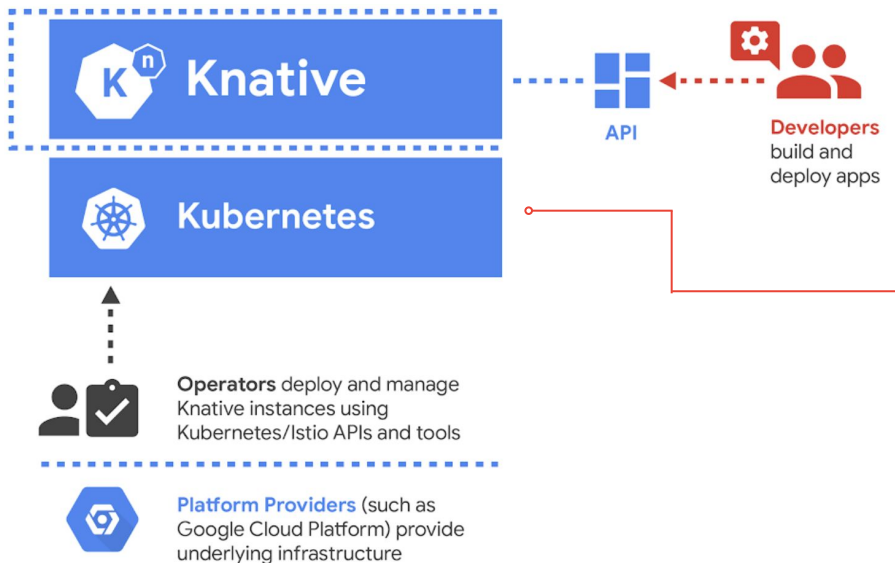


Pivotal®



# Demo: Getting Started

# Serverless on Kubernetes

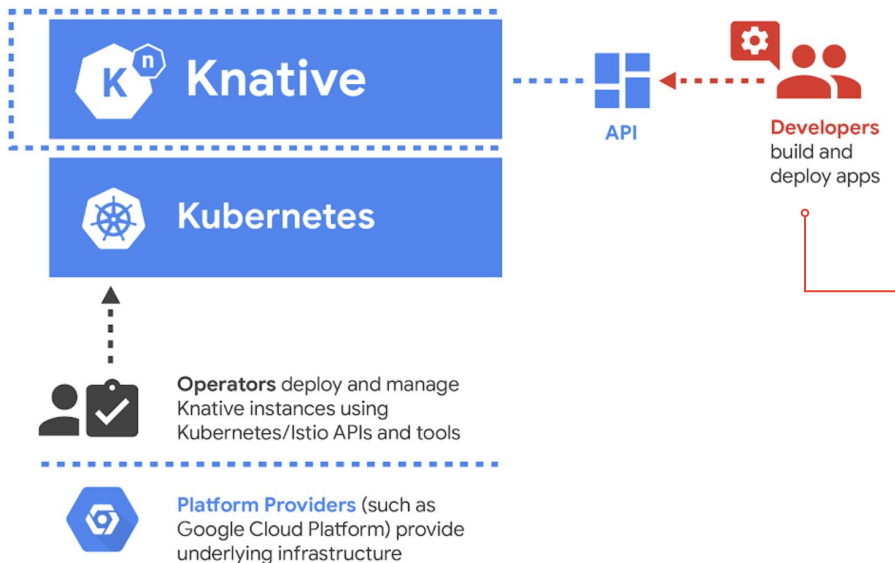


**Abstracts** operational complexity,  
smooth infrastructure surface

**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

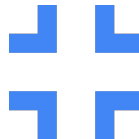
Source to container  
safely in your cluster



## 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	<ul style="list-style-type: none"><li>• Feel native on Kubernetes</li><li>• Meet the developer</li></ul>
02	Extensible	<ul style="list-style-type: none"><li>• Loose coupling at the top</li><li>• Pluggable at the bottom</li></ul>
03	Organic	<ul style="list-style-type: none"><li>• Codify the commonalities</li><li>• Build a stable platform</li></ul>



Sign up for GKE serverless add-on early access:

[g.co/serverlessaddon](https://g.co/serverlessaddon)



Learn more about Knative:

[github.com/knative/docs](https://github.com/knative/docs)

# Thank you



Google Cloud