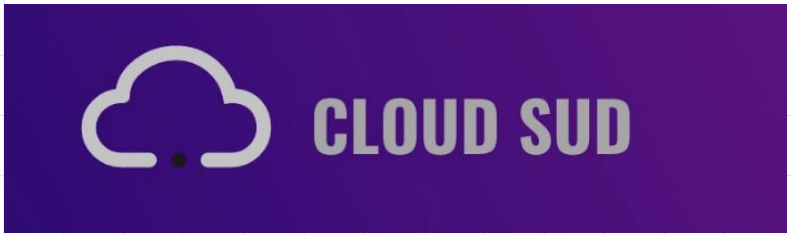
Experts

Cloud Run... everything you need without K8S

Cloud Sud



Google Developers

Experts

Julien Landuré
@jlandure jlandure.dev

Google Developer Expert - Cloud
CTO Group - Zenika
GDG Cloud Nantes & DevFest Organizer
devfest.gdgnantes.com

Back to the future...

App Engine in 2010

Google App Engine

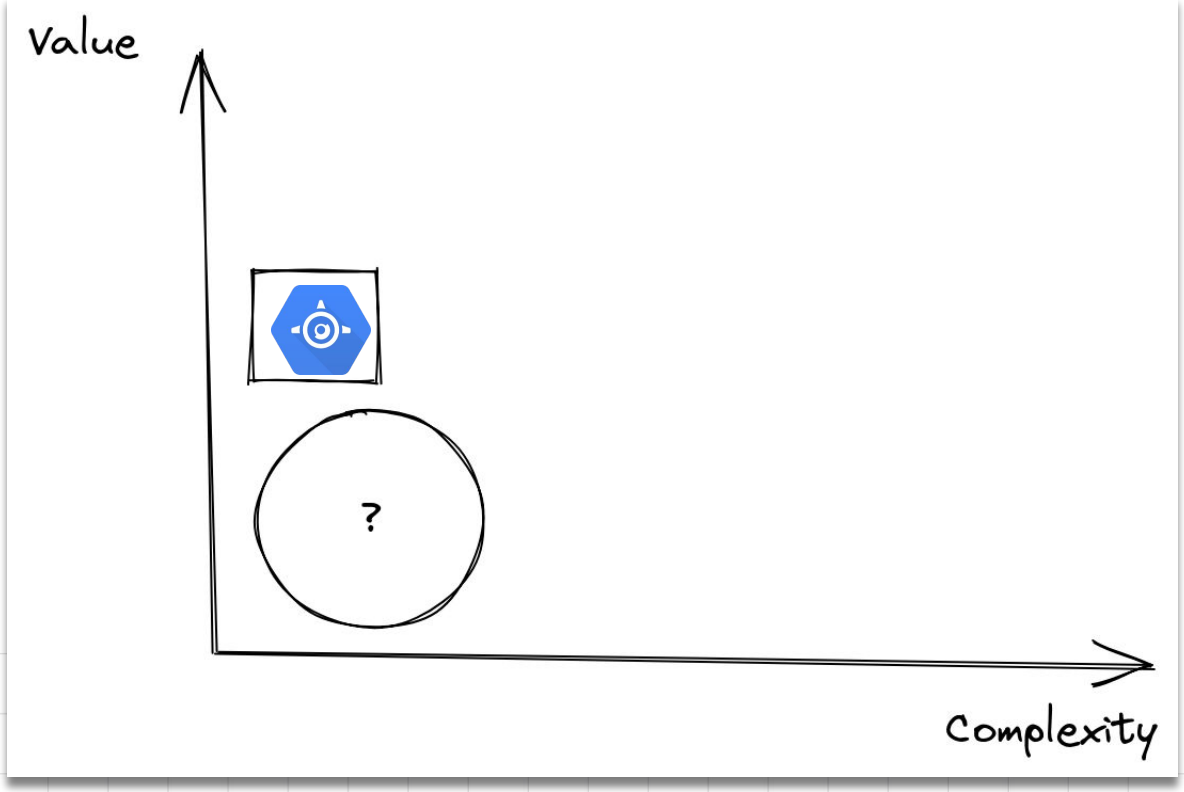
App Engine

One of the first PaaS

Limited runtimes
Need specific libraries
Vendor lock in

Easy deployment
Custom domain name
Traffic splitting between versions
Embed a stateful solution (datastore)
Automatic CDN
Scaling from 0 to N

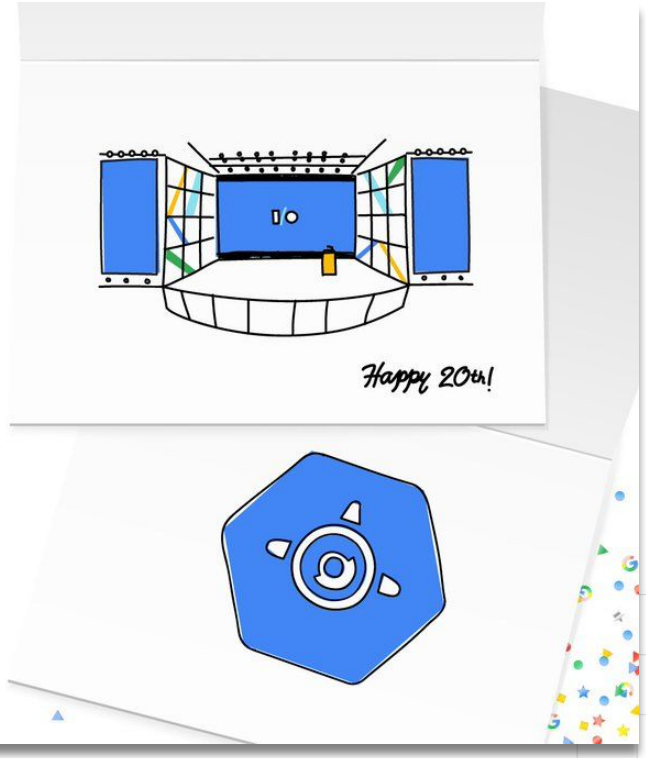
Value x Complexity



App Engine

2008

Introducing Google I/O and Google App Engine



Containerization

Docker in 2016

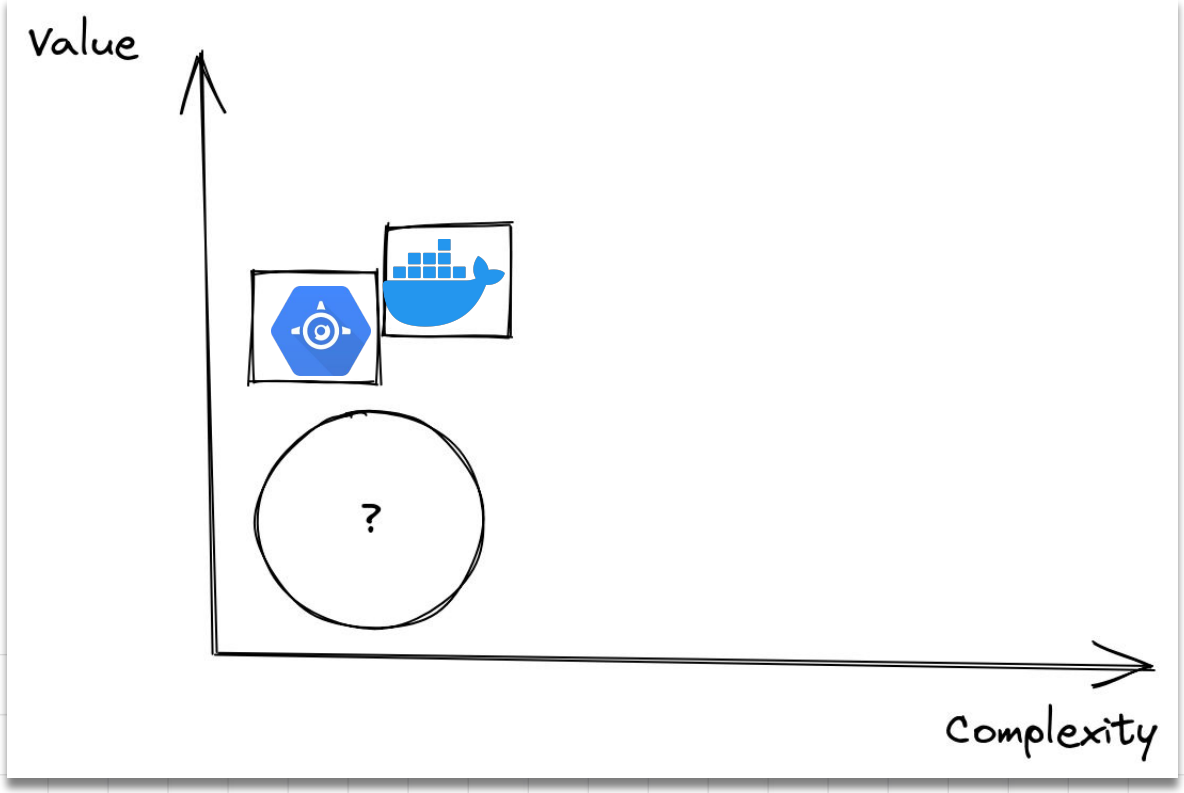
Docker

Universal package manager

Dockerfile syntax
Installation of Docker & CLI
Daemon options & linux concepts
Security

Open Source
Reproductible & ephemeral concepts
Work with any runtime
Start containers quickly
Very Popular: many images & cloud services available

Value x Complexity



#TuxTurns30

Join us in celebrating **30 years of Linux** 1991 - 2021

THE LINUX FOUNDATION

2017: AKS & EKS

2016: Kubernetes adoption by CNCF

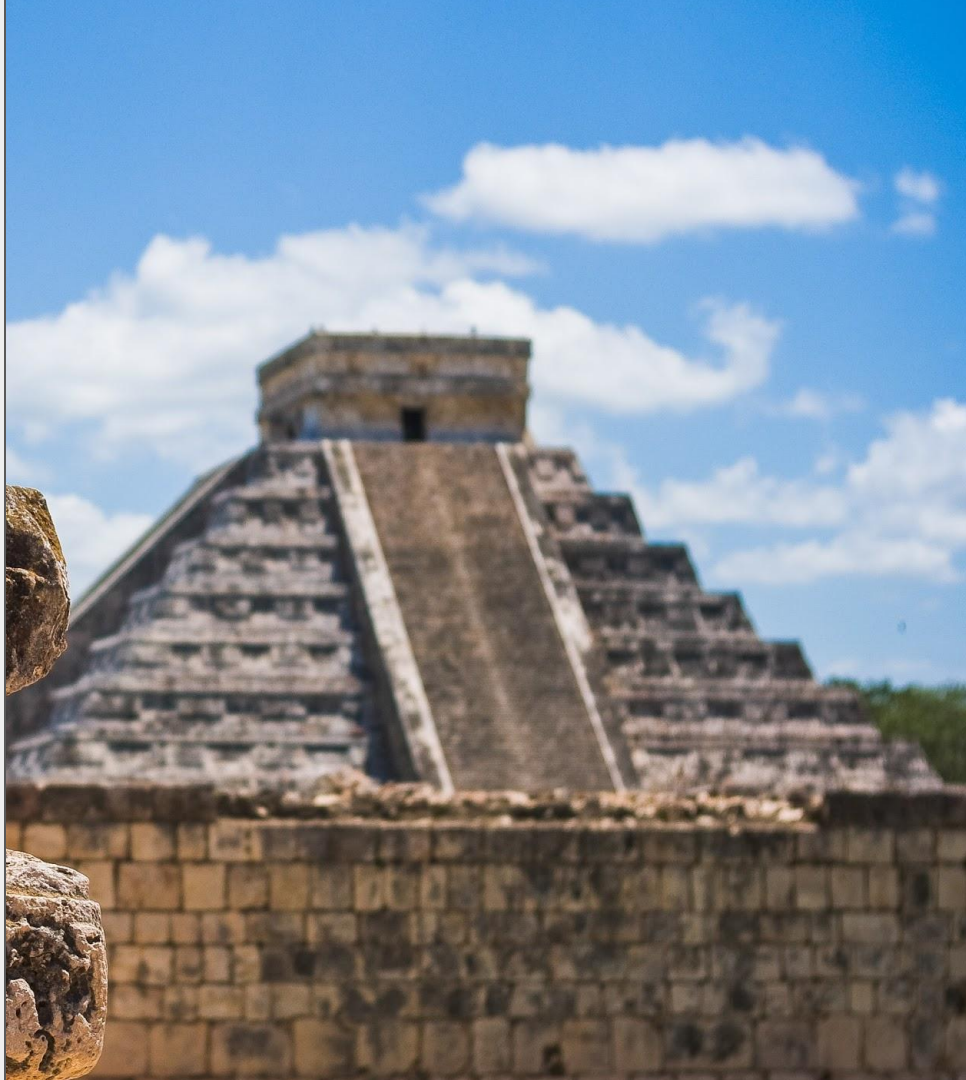
2015: GKE

2014: Kubernetes

2013: Docker

2008: LXC

2007: cgroups



Orchestration

Kubernetes in 2018

kubernetes

Kubernetes

Container orchestration at scale

New concepts: pods, services etc.

Yaml syntax

Popular: well documented

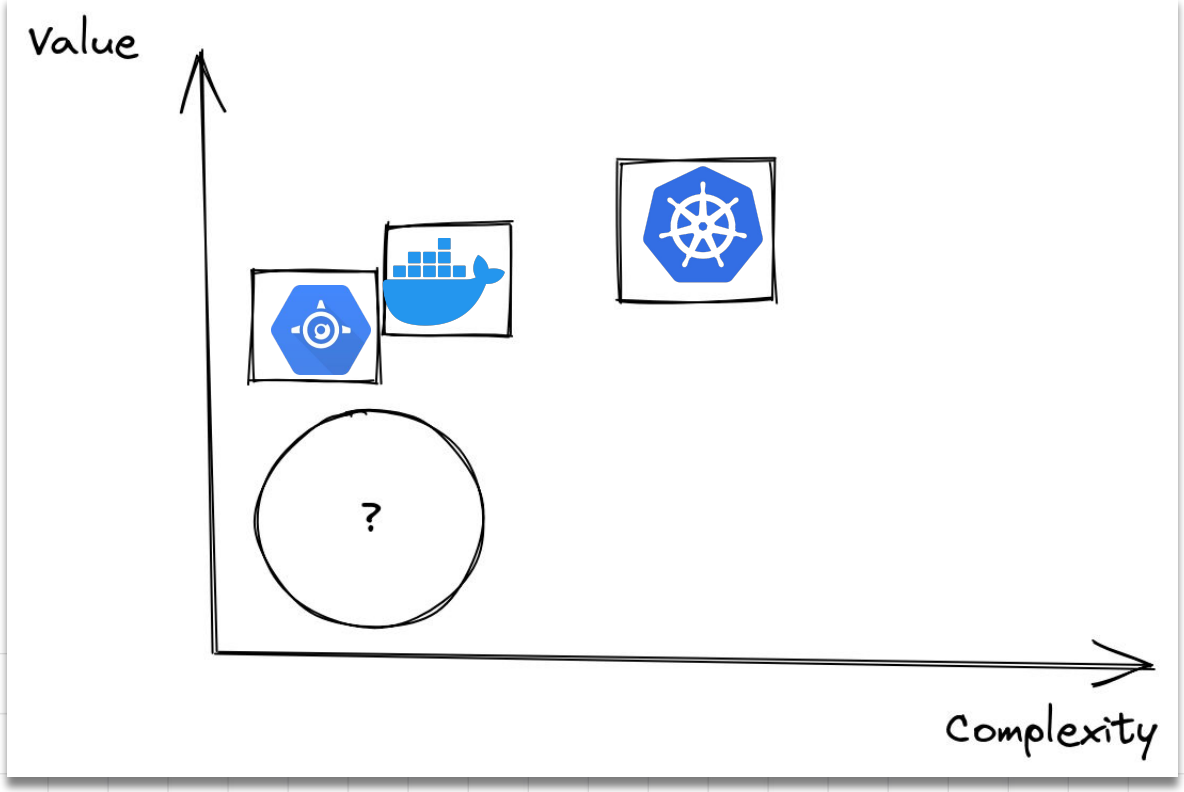
Supported by all cloud providers

Made to solve scaling issues

Pet vs Cattle

Desired State vs Actual State

Value x Complexity



Wait!
Kubernetes can do so much...

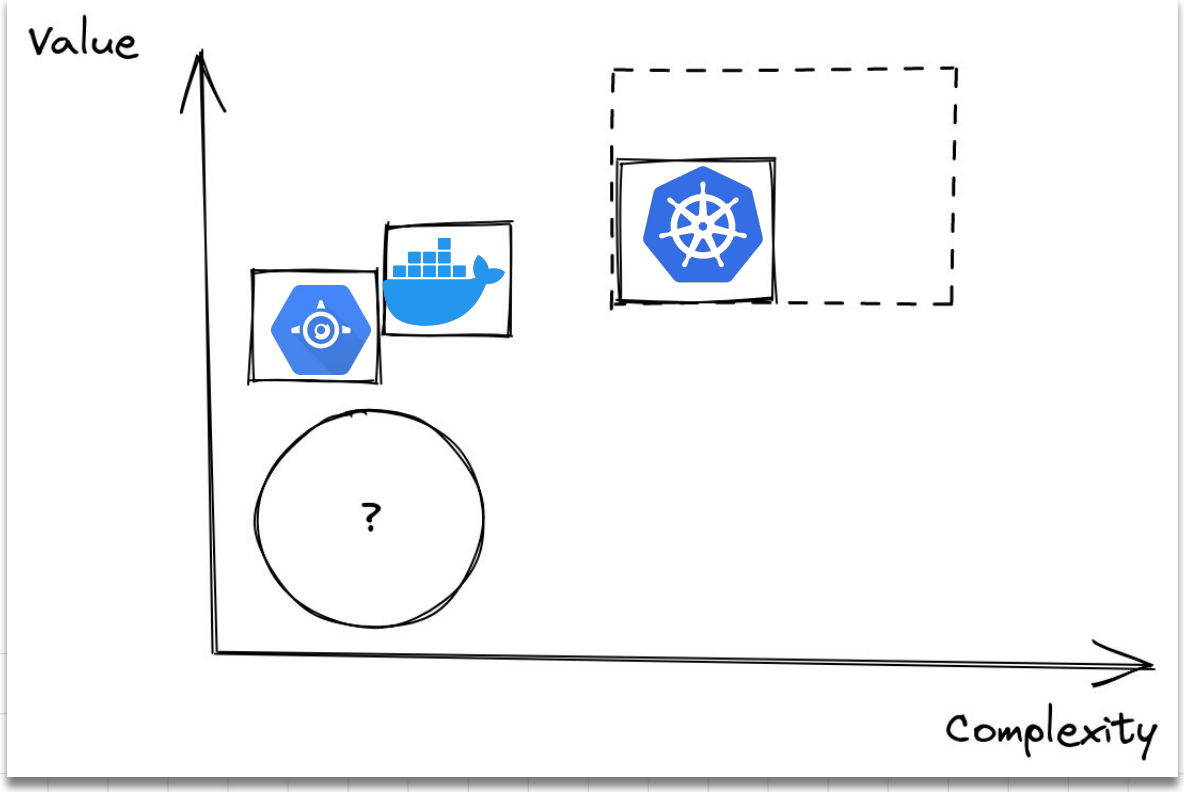
Kubernetes... again

Container orchestration at scale

Automated rollouts and rollbacks
Health checking
Load Balancing
Custom domain & traffic splitting *with Traefik*
Service Mesh *with Istio*
Scale from 0 *with Knative or KEDA*
Runtime security *with Falco*

Upgrade components
Stateful objects
Backup
Security
IAM
Pricing

Value x Complexity



Kubernetes

Serverless

Cloud Run in 2019

Cloud Functions

App Engine

Cloud Run

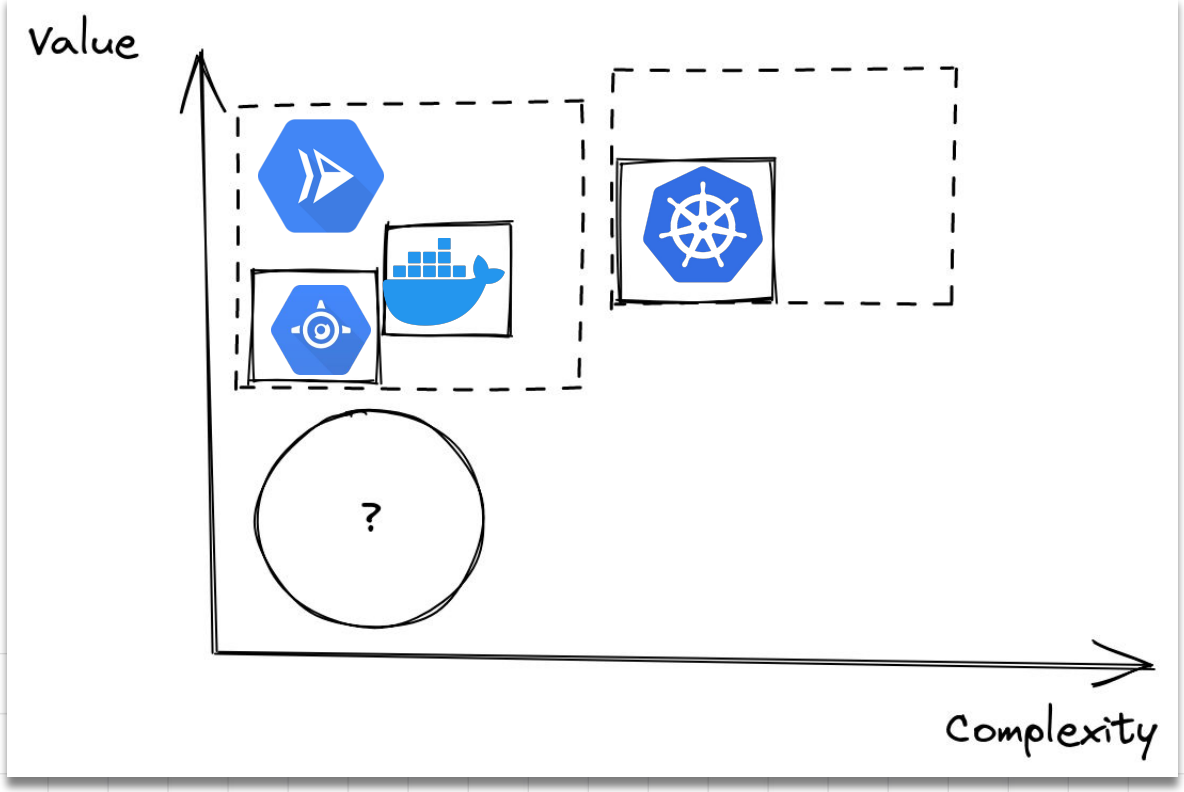
Cloud Run

One of the first serverless container solution

HTTP only (gRPC)
Need IaC to deploy a complete infra
Container contract
- Listen on 0.0.0.0
- HTTP server must start < 4 min
- Request time < 60 min
- Stateless
- No background activity

Pricing Model
Easy deployment
Custom domain name
Traffic splitting between versions
Portability of containers
Buildpacks available
Scaling from 0 to N
No vendor lock in with Knative

Value x Complexity

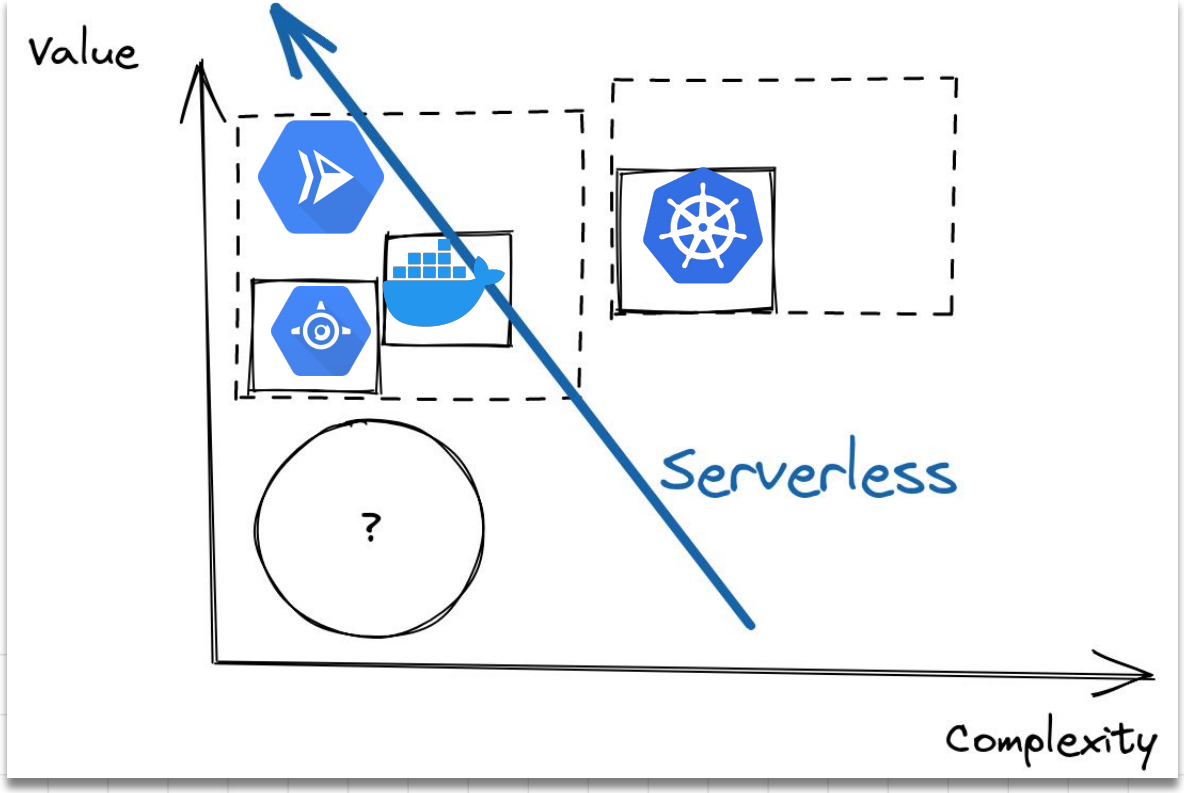


Serverless definition

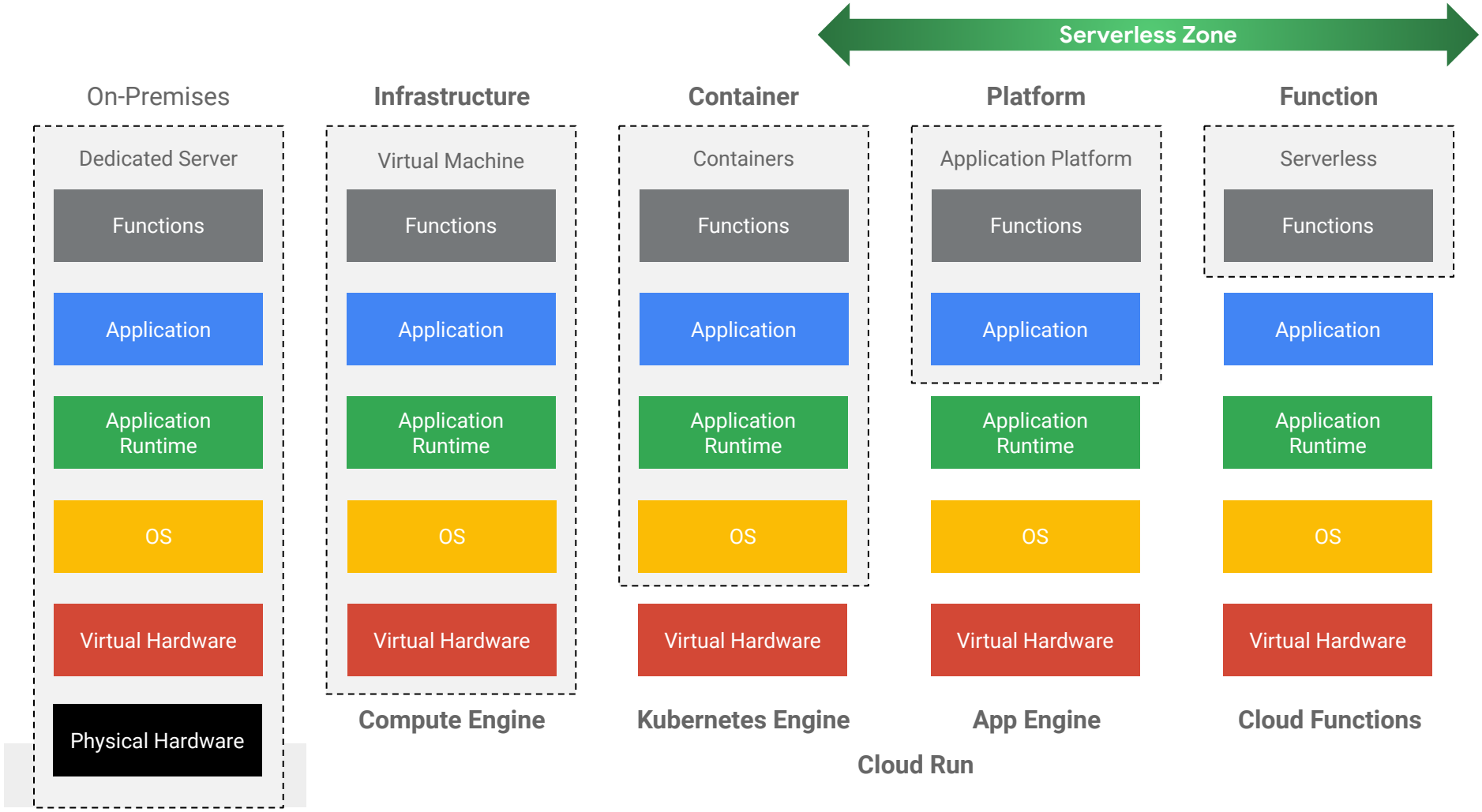
Serverless computing refers to the concept of building and running applications that **do not require server management**. It describes a finer-grained deployment model where **applications, bundled as one or more functions**, are uploaded to a platform and then **executed, scaled, and billed in response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

https://github.com/cncf/wg-serverless/tree/master/whitepapers/serverless-overview

Value x Complexity



Cloud Run


Serverless Zone
On-Premises
Infrastructure
Container
Platform
Function
Dedicated Server
Virtual Machine
Containers
Application Platform
Serverless
Functions
Application
Application Runtime
OS
Virtual Hardware
Physical Hardware
Compute Engine
Kubernetes Engine
App Engine
Cloud Functions
Cloud Run

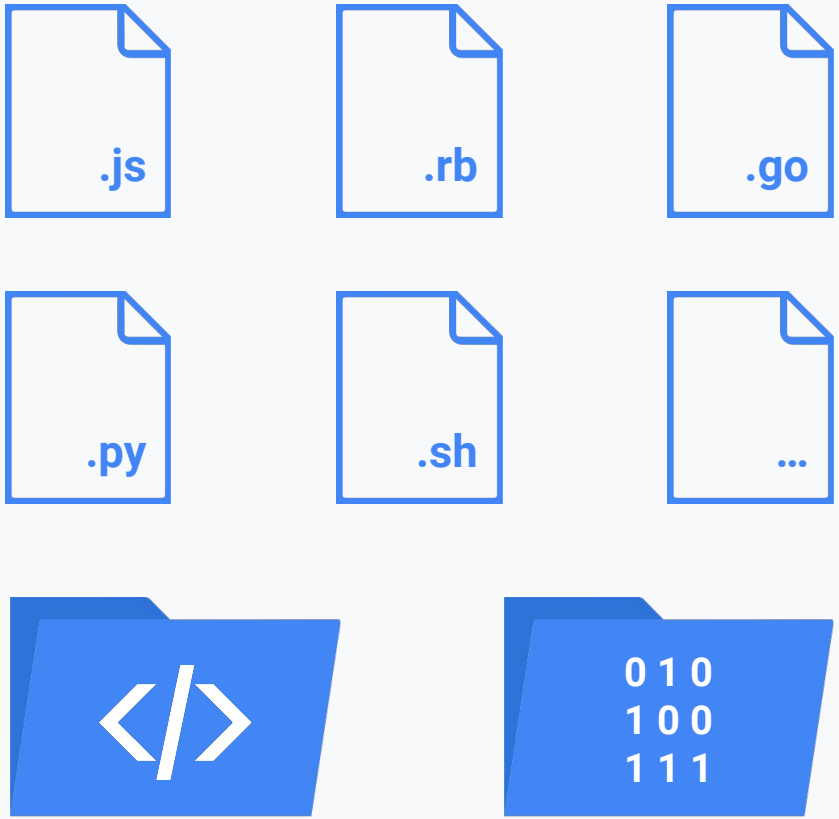
Containers

Any language

Any library

Any binary

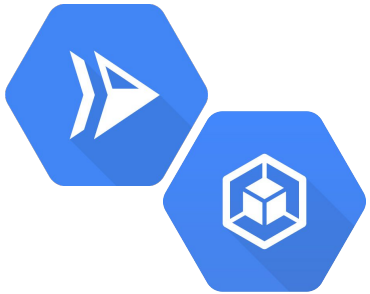
Ecosystem of base images



Serverless containers with Knative & Cloud Run

Cloud Run

Fully managed, deploy your workloads and don't see the cluster.



Cloud Run on Anthos

Deploy into Anthos, run serverless side-by-side with your existing workloads.

Knative Everywhere

Use the same APIs and tooling anywhere you run Kubernetes with Knative.

Container contract

Listen on 0.0.0.0 on port $PORT *(default **8080**)*

HTTP server must start < 4 min *(timeout → 504)*

Request time < 60 min *(default → 5 min)*

Stateless *(in-memory file system, doesn't persist)*

Computation only within request *(No background activity)*

Container resources

1 vCPU per container instance *(configurable to 4vCPU)*

512 MiB of memory up to a max of 8 GiB *(configurable)*

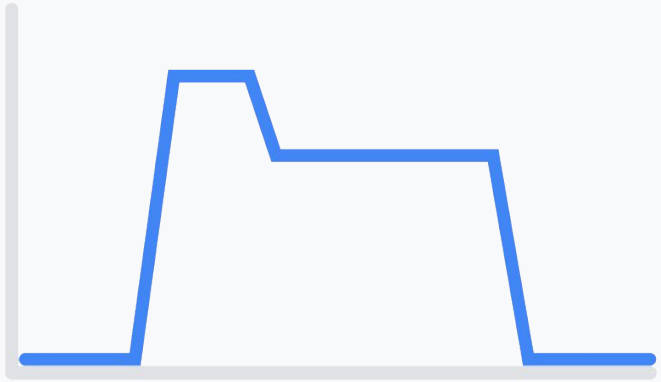
80 concurrent requests per container *(configurable 1-1000)*

1000 max containers by default *(configurable 1-1000)*

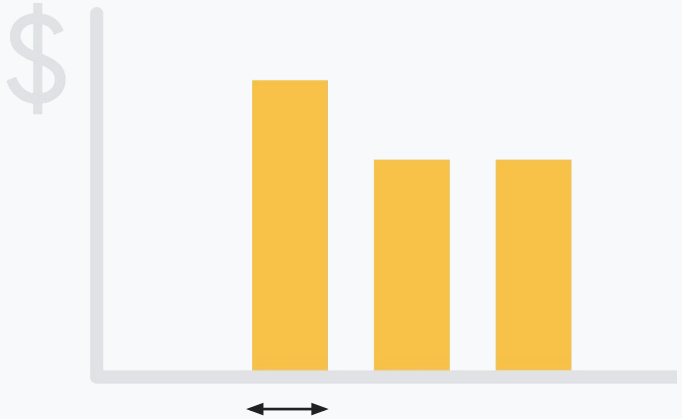
Access to a Metadata Server

Sandboxed by **gVisor**

Pay per use



CPU / Memory / Requests



100ms

Good fit? Constraints?

Good fit

Stateless

HTTP request-response workloads

Scale: way up, down to zero, bursty

Any runtime: any language, any dependencies, etc

Constraints

Must use containers

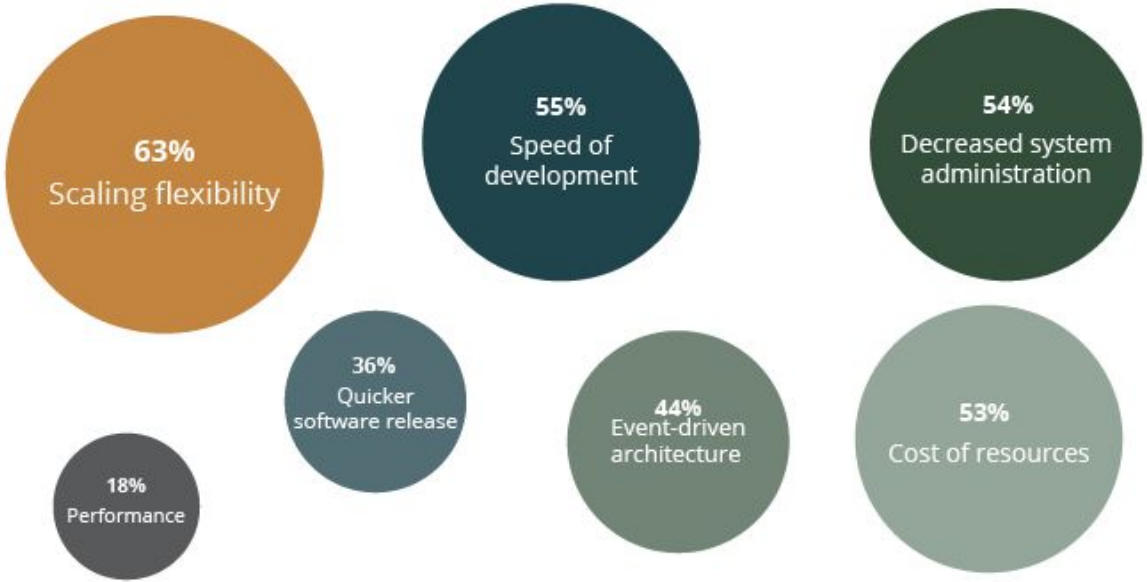
No background tasks

Demo 🤞

My point of view

- Cloud Run covers the majority of app use cases
- One of the TOP project Google Cloud
- Replacement of my beloved App Engine
- Interoperable (supported by Knative/eventing)
- Superior Dev Experience (local emulator & buildpacks)

Serverless trends



State of Serverless 2020 report

To sum up

- 👍 Kubernetes and Serverless can support each other

- 😱 Serverless container solutions are the future

  Cloud Run is one of the TOP project Google Cloud

  Release of AWS App Runner & Preview of Azure Container Instance

- 💪 The right tool to do the right thing

- 🤔 Find your way: more a Dev (Serverless World) or an Admin (K8S World)

Experts

Thank You!

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@jlandure
jlandure.dev

CLOUD SUD