

Operadores de Kubernetes



Introducción



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- Embajadora de Cloud Native Computing Foundation
- Capitan de Docker
- Colaborador de código abierto:
Apache Airflow, Kubernetes Website



Edith Puclla



edithpuclla

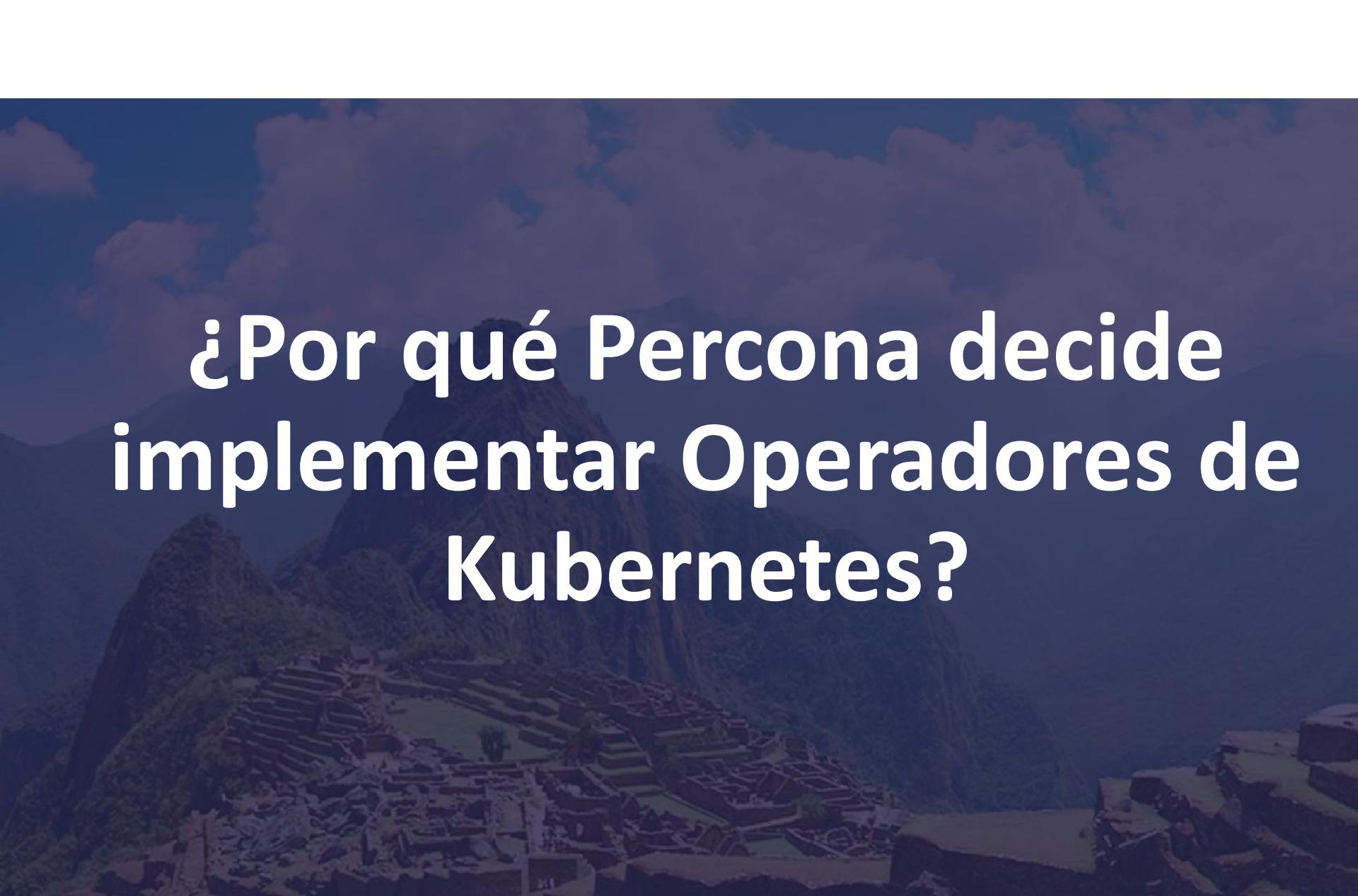


Agenda

- ¿Por qué Percona decide implementar Operadores de Kubernetes?
- Kubernetes
 - Terminología, ejemplo y arquitectura
- Operadores de Kubernetes
 - CRD, Controllers, Con y Sin Operadores, Capability Model
 - Operator Hub, Operator Pattern and SDKs

GO AWAY

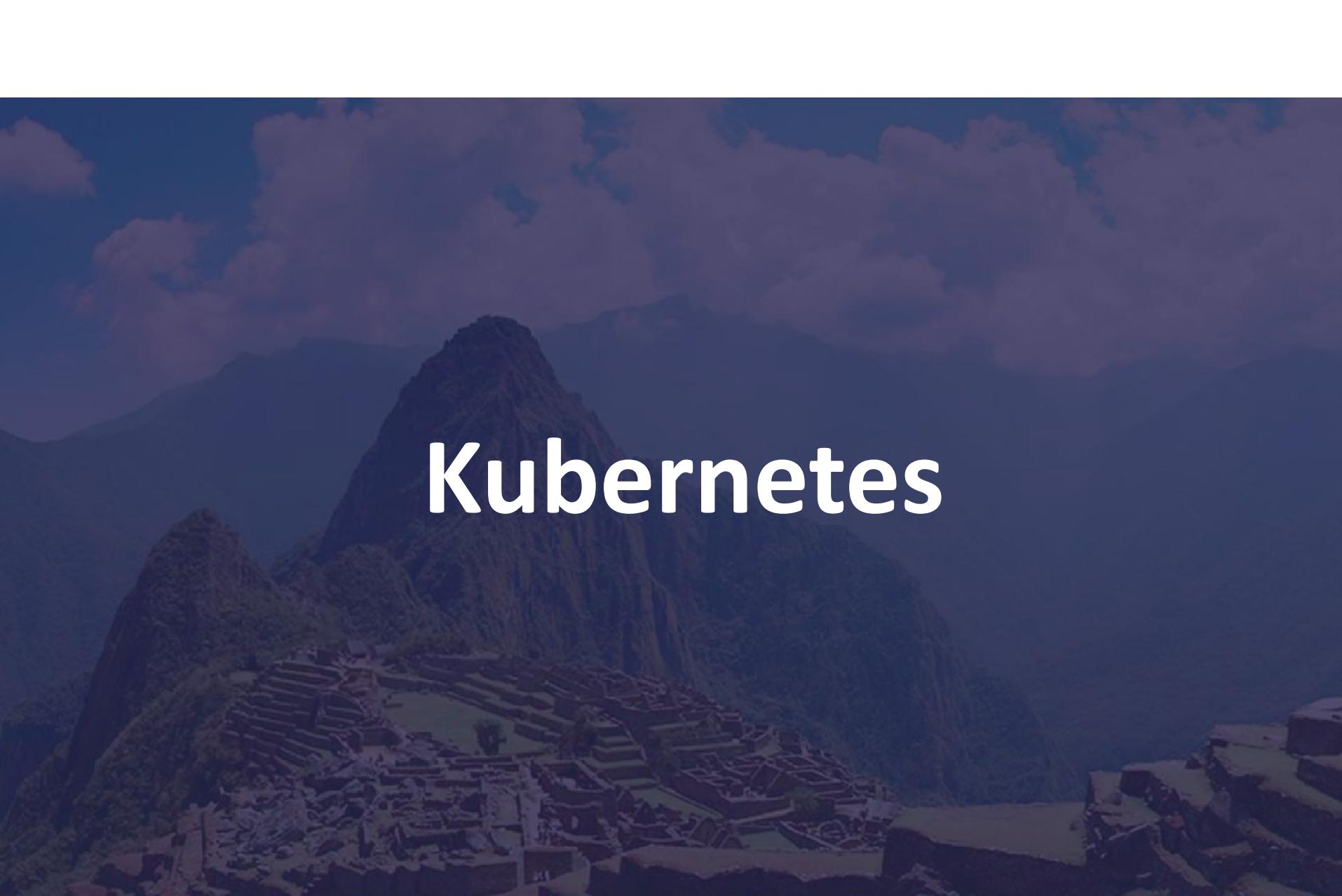




¿Por qué Percona decide implementar Operadores de Kubernetes?



- Decisión impulsada por el cliente/comunidad
- Contenedores -> Kubernetes
- Operadores = Simplificación + Automatización
 - Despliegue
 - Administración
 - Configuración
- Aplicaciones complejas -> base de datos

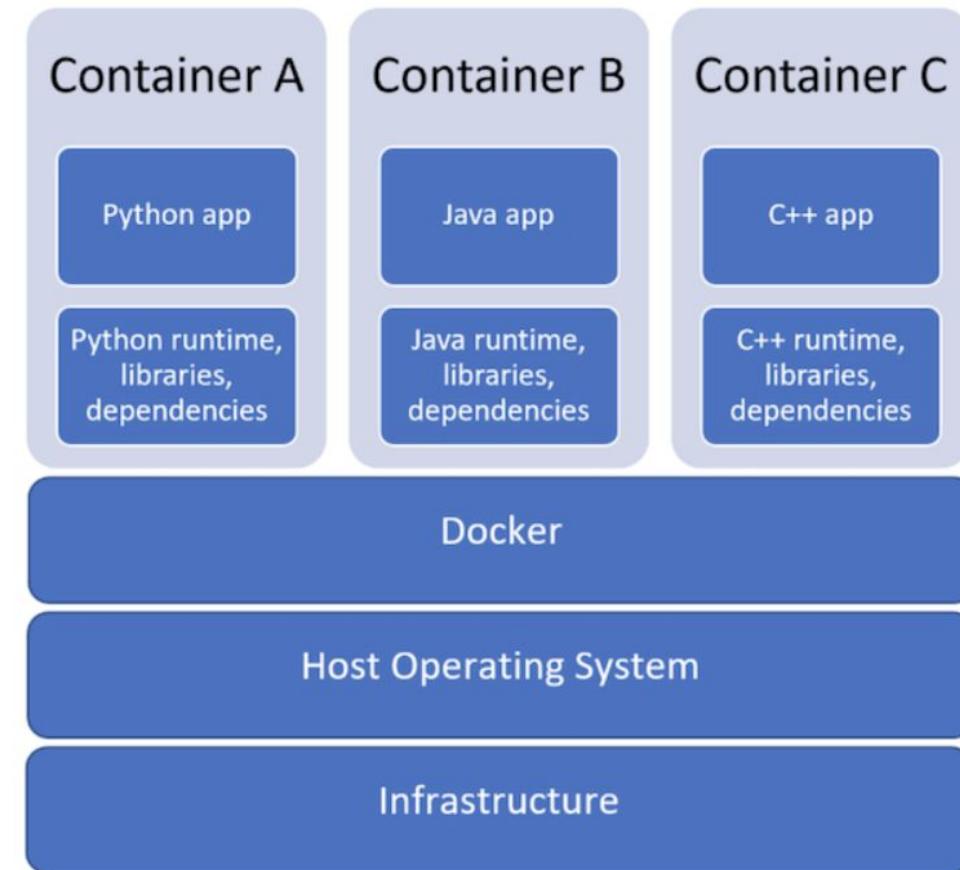
A photograph of the ancient Incan city of Machu Picchu in Peru. The city is built into the side of a mountain, featuring numerous stone terraces and buildings. The sky is filled with large, billowing clouds, and the warm light of sunset or sunrise illuminates the peaks and the city's stone walls.

Kubernetes

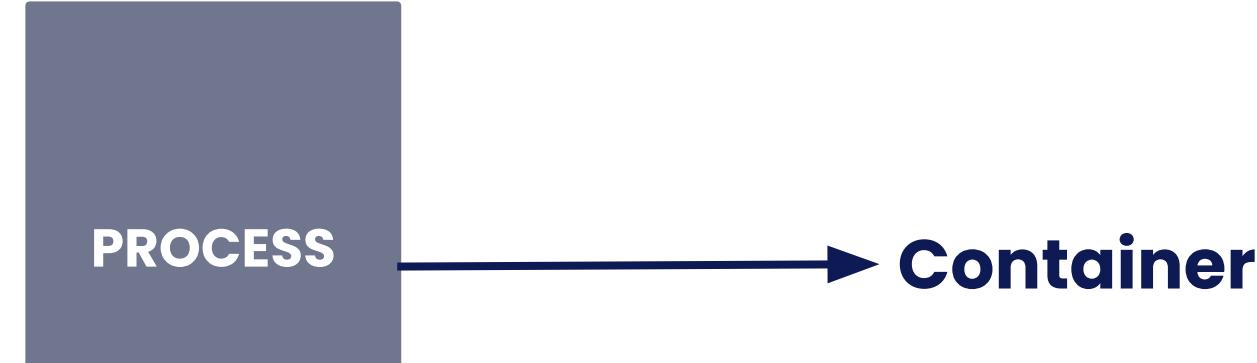


Contenedores

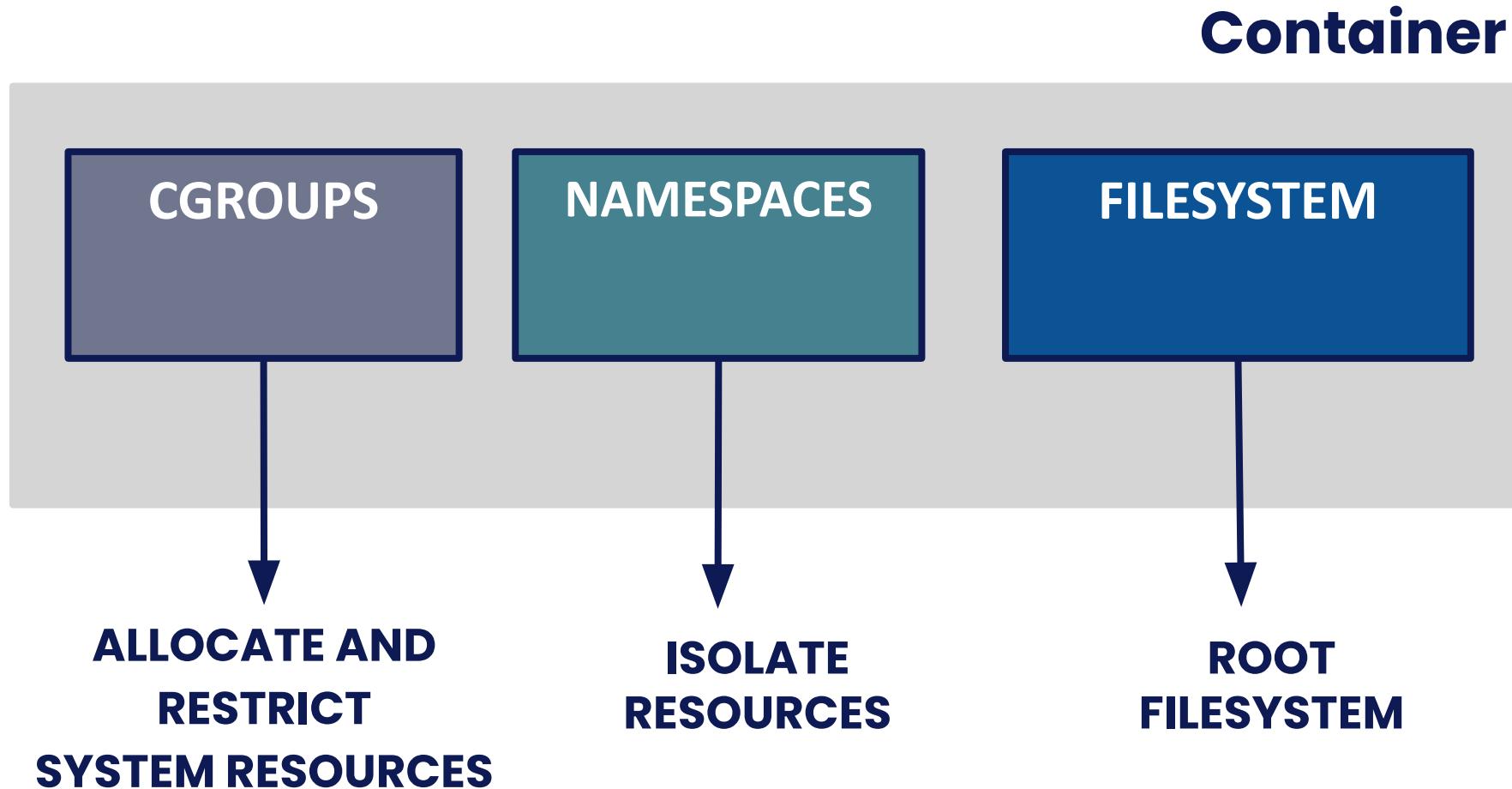
- Application
- Runtime
- Dependencies



Simplificándolo



¿Qué hace un contenedor?



Desafíos con contenedores a escala

- Automatización
- Administrar servicios , Equilibrio de carga
- Gestión eficiente de los recursos
- Capacidades de autocuración (Self-healing capabilities)
- Provisión para actualización y reversión(update and rollback)



kubernetes

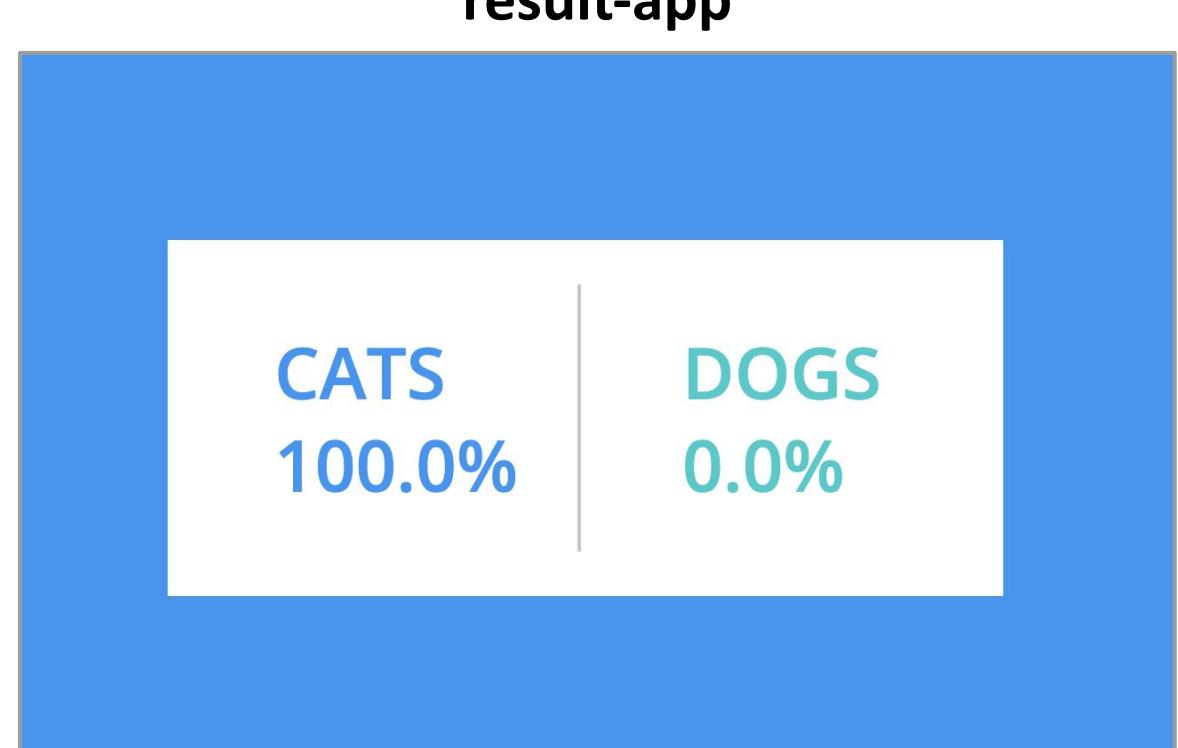
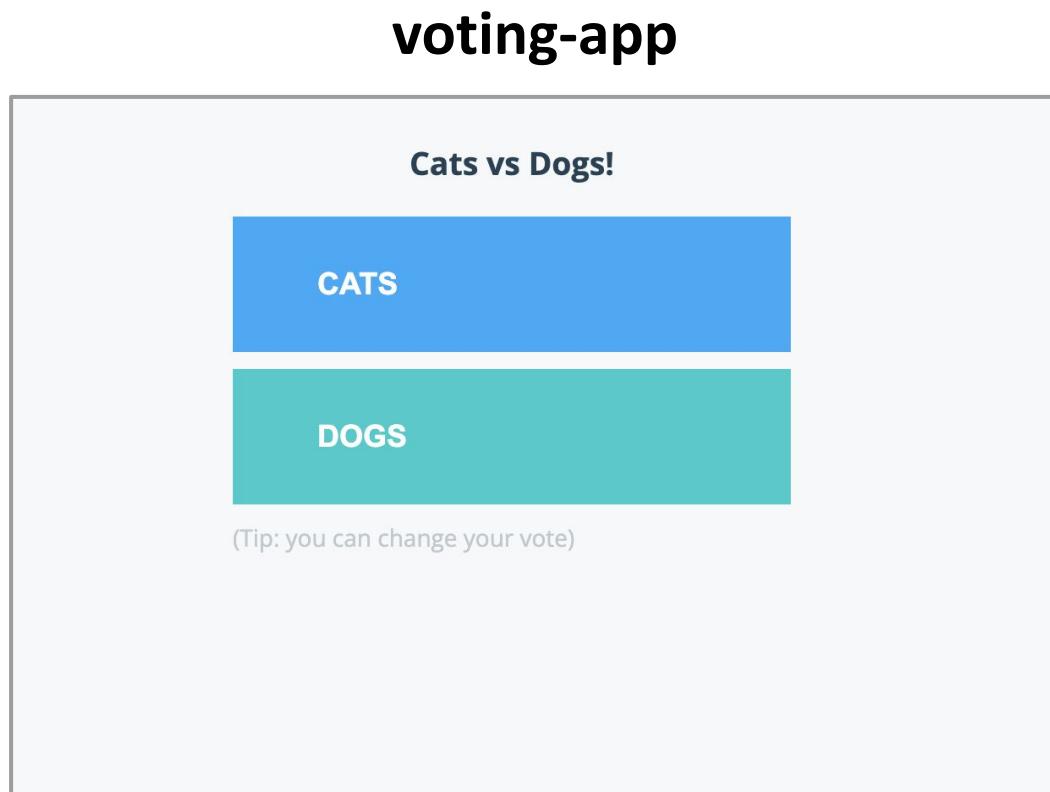
Advantages of Kubernetes

- Portabilidad de aplicaciones
- Sin bloqueo de proveedor (No Vendor lock-in)
- Buena opción para microservicios
- Comunidad activa (03 lanzamientos por año).
- Amplia adopción
- Community

Terminología Kubernetes

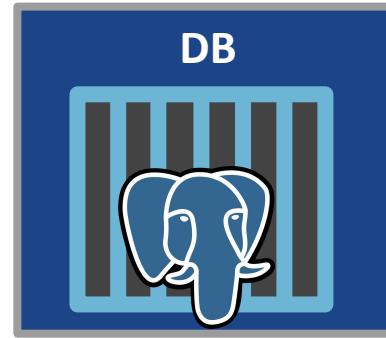
- Pods
- Deployments
- Services

Ejemplo: Application de Voto

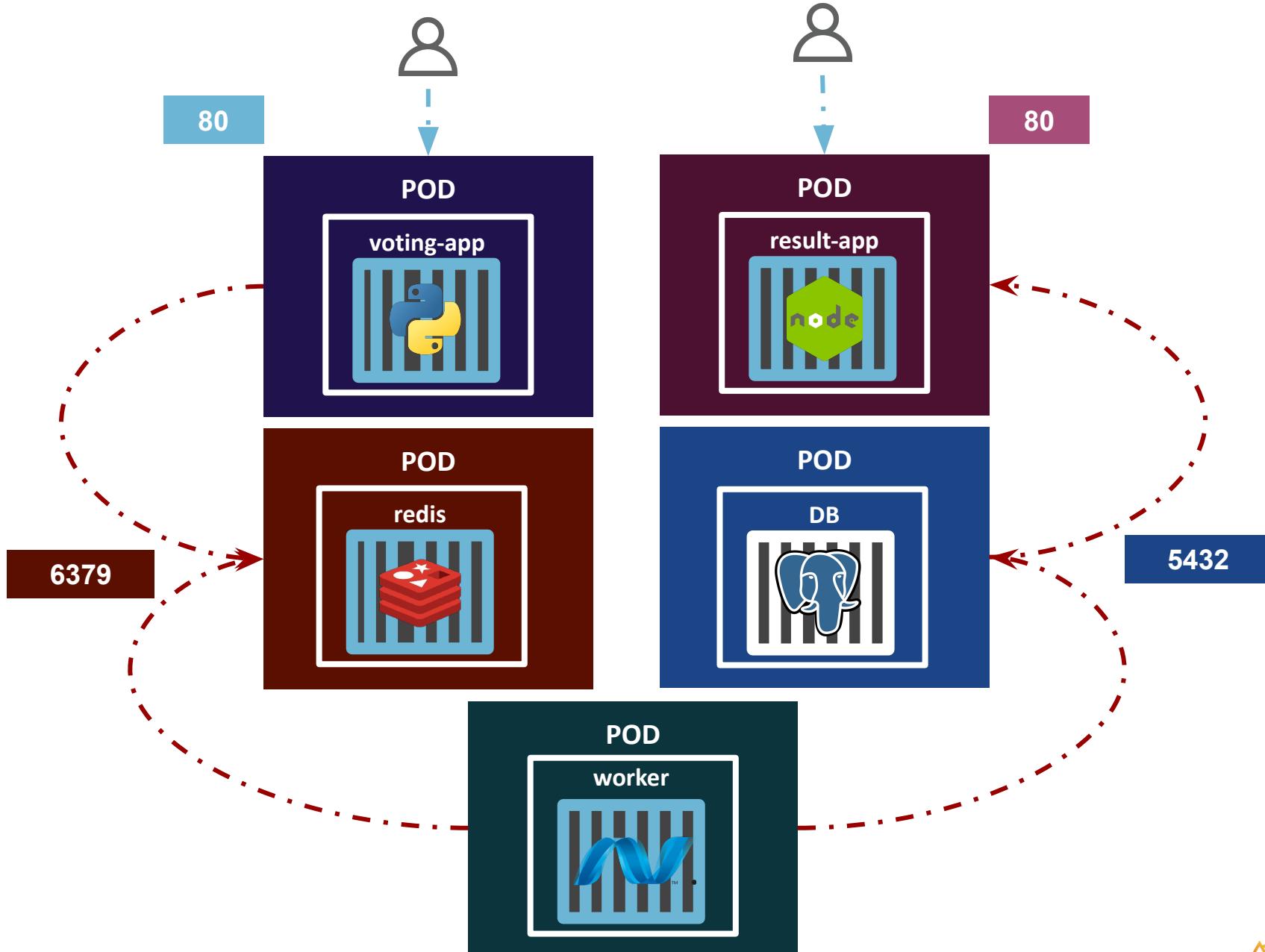


KodeKloud: www.youtube.com/watch?v=XuSQU5Grvlg

Ejemplo: Application de Voto

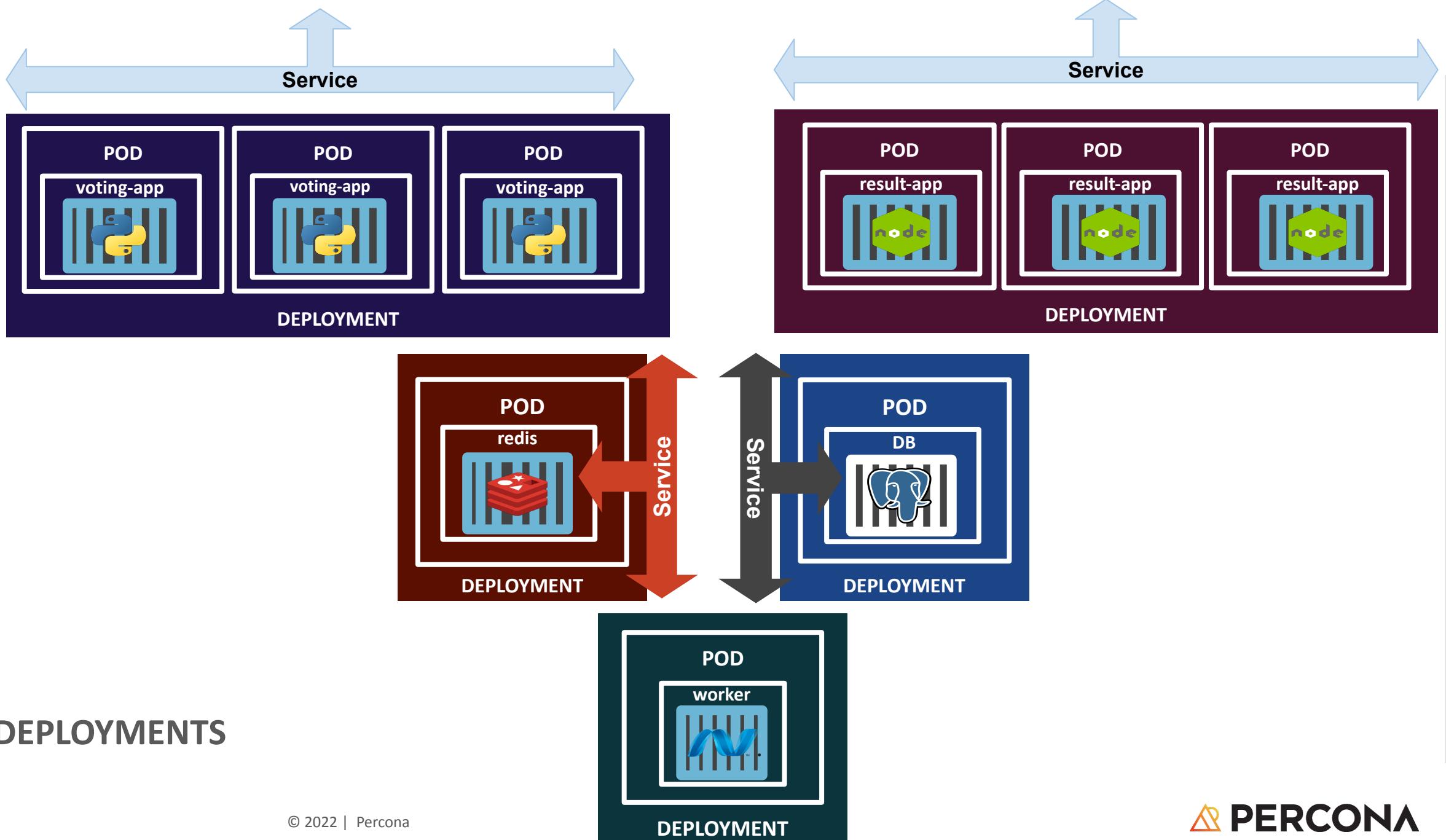


PODS



SERVICES





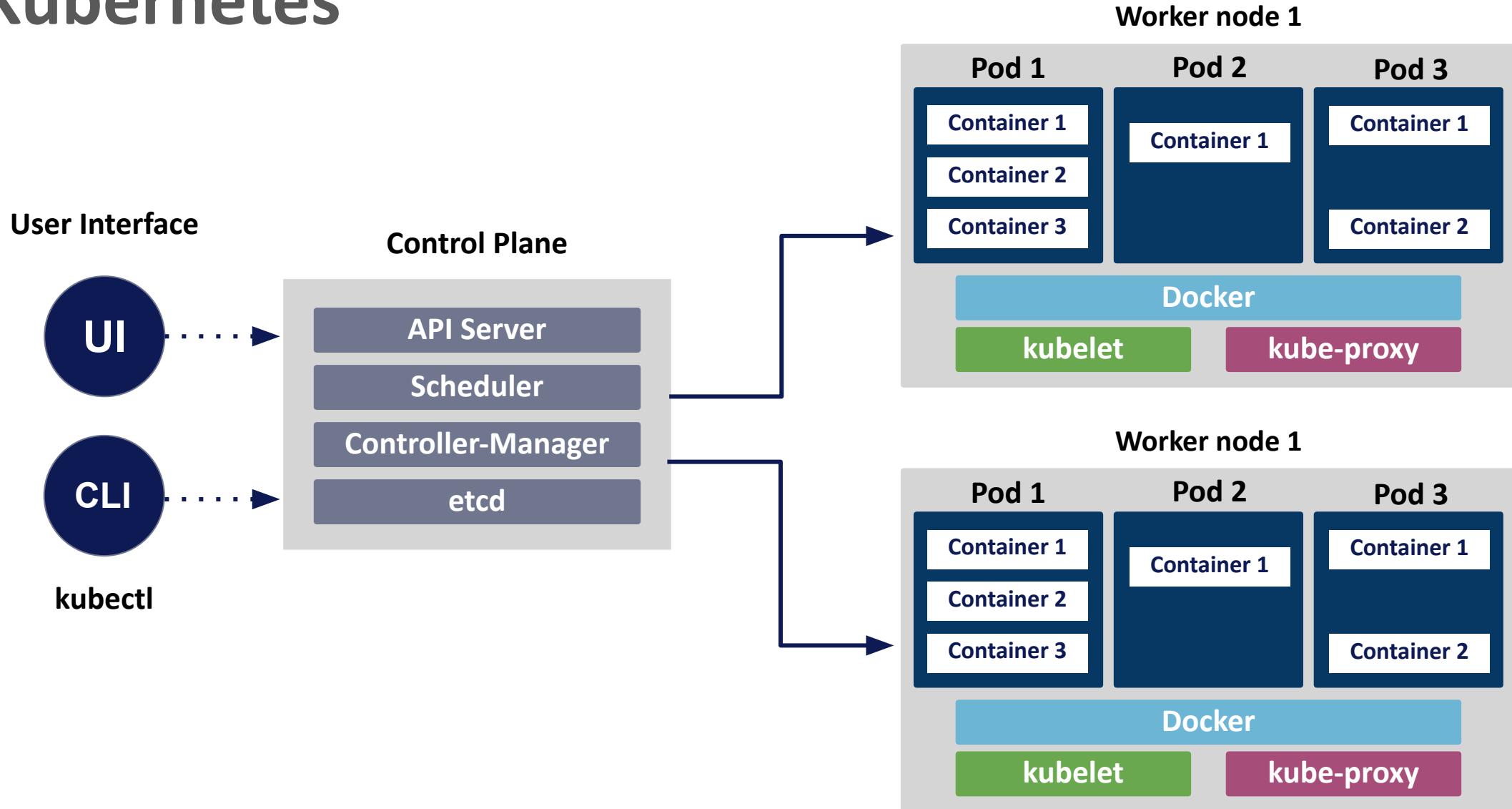
YAML

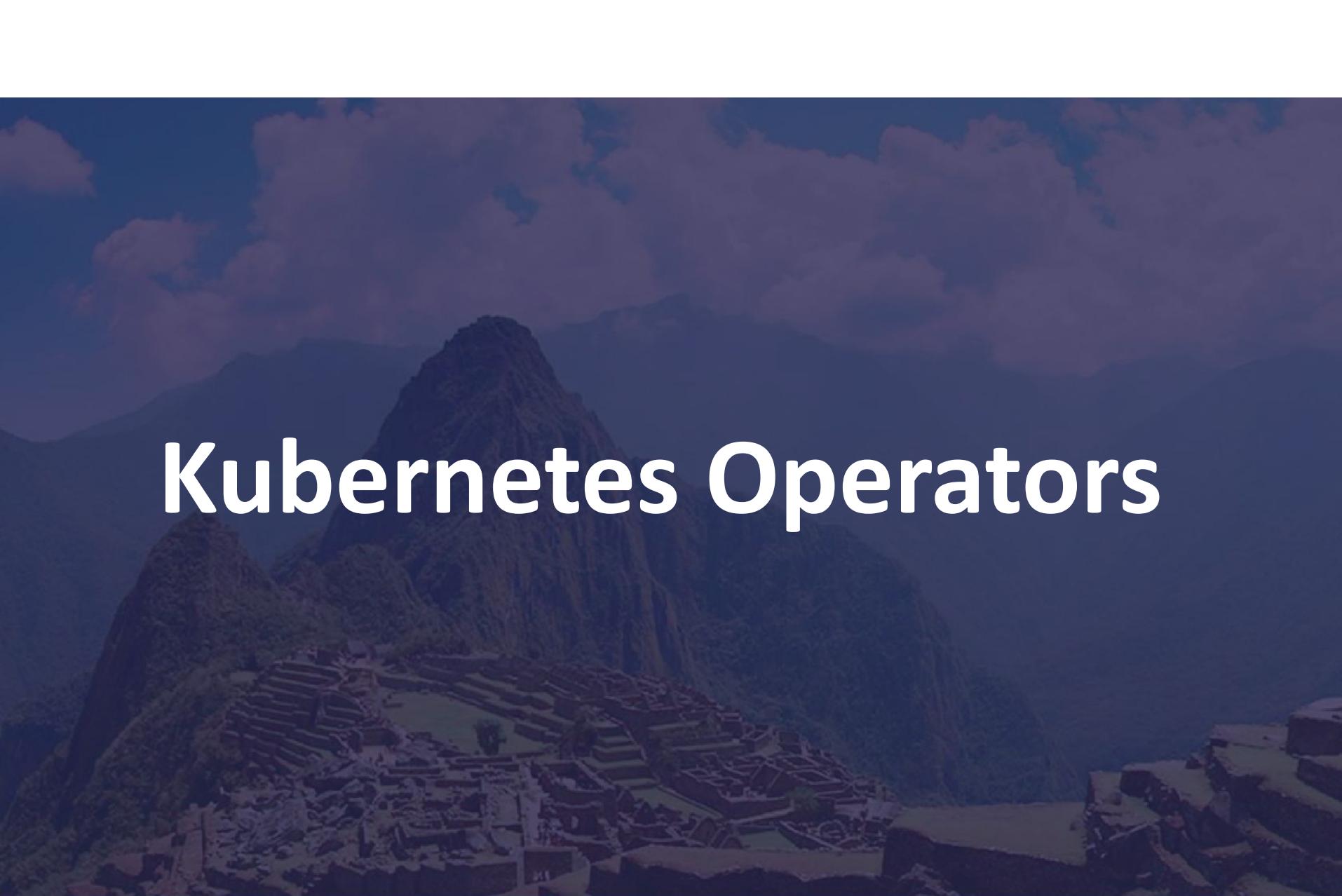
File: voting-app-deploy.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: voting-app-deploy
  labels:
    name: voting-app-deploy
    app: demo-voting-app
spec:
  replicas: 1
  selector:
    matchLabels:
      name: voting-app-pod
      app: demo-voting-app

  template:
    metadata:
      name: voting-app-pod
      labels:
        name: voting-app-pod
        app: demo-voting-app
    spec:
      containers:
        - name: voting-app
          image: kodekloud/examplevotingapp_vote:v1
          ports:
            - containerPort: 80
```

Arquitectura de Kubernetes





Kubernetes Operators



Escalado de aplicaciones sin estado: fácil

```
$ kubectl scale deploy/staticweb --replicas=4
```

¿Qué pasa con las aplicaciones que **almacenan** **datos?**

“Deployar” una base de datos: fácil

Ejecutar una base de datos **a lo largo del tiempo** es lo más difícil

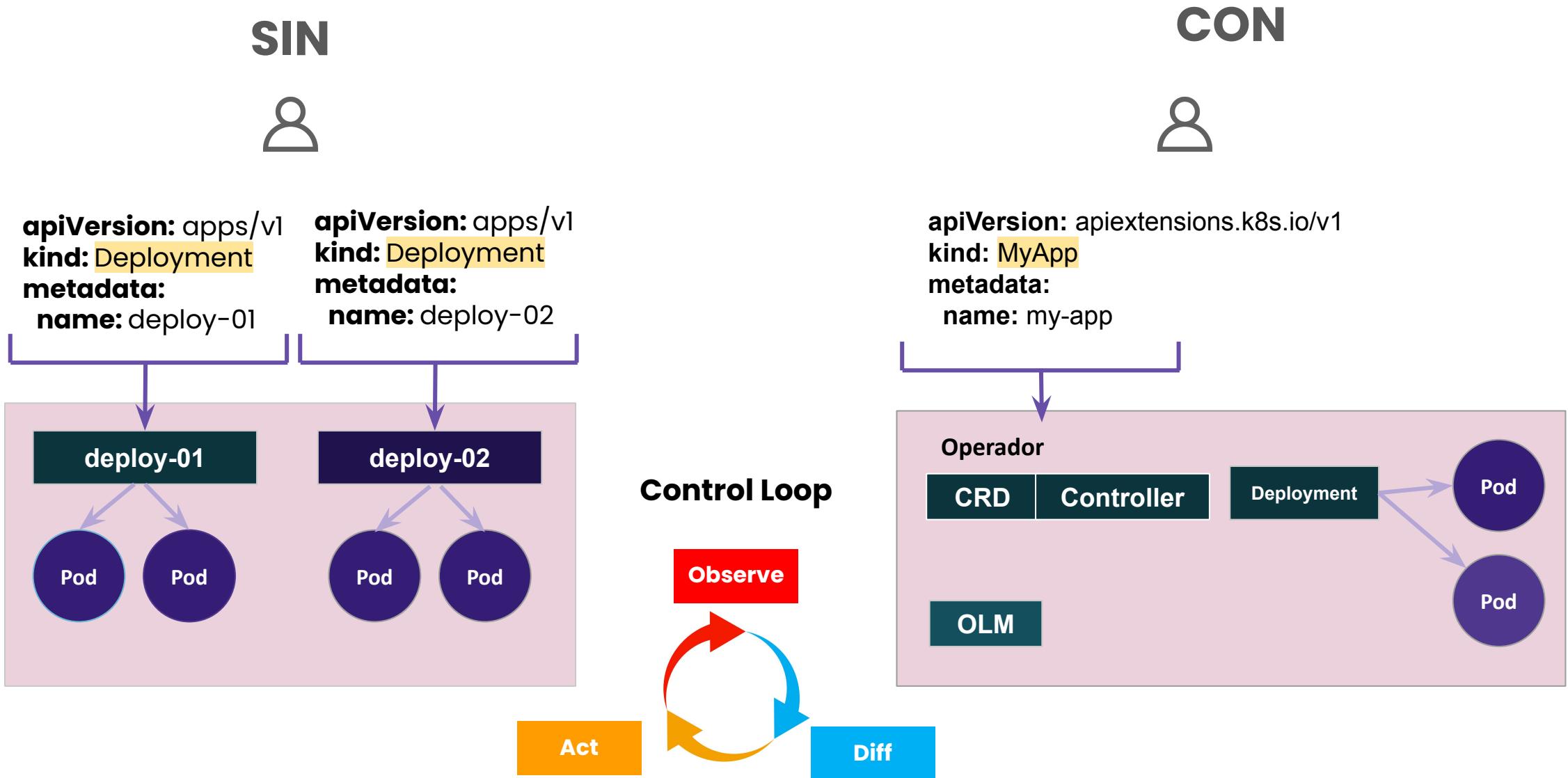


Operators: Extienden la API de Kubernetes

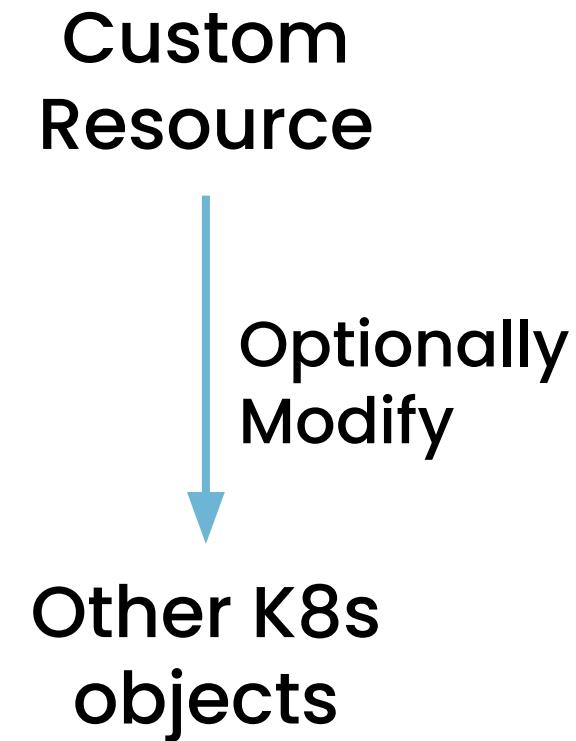
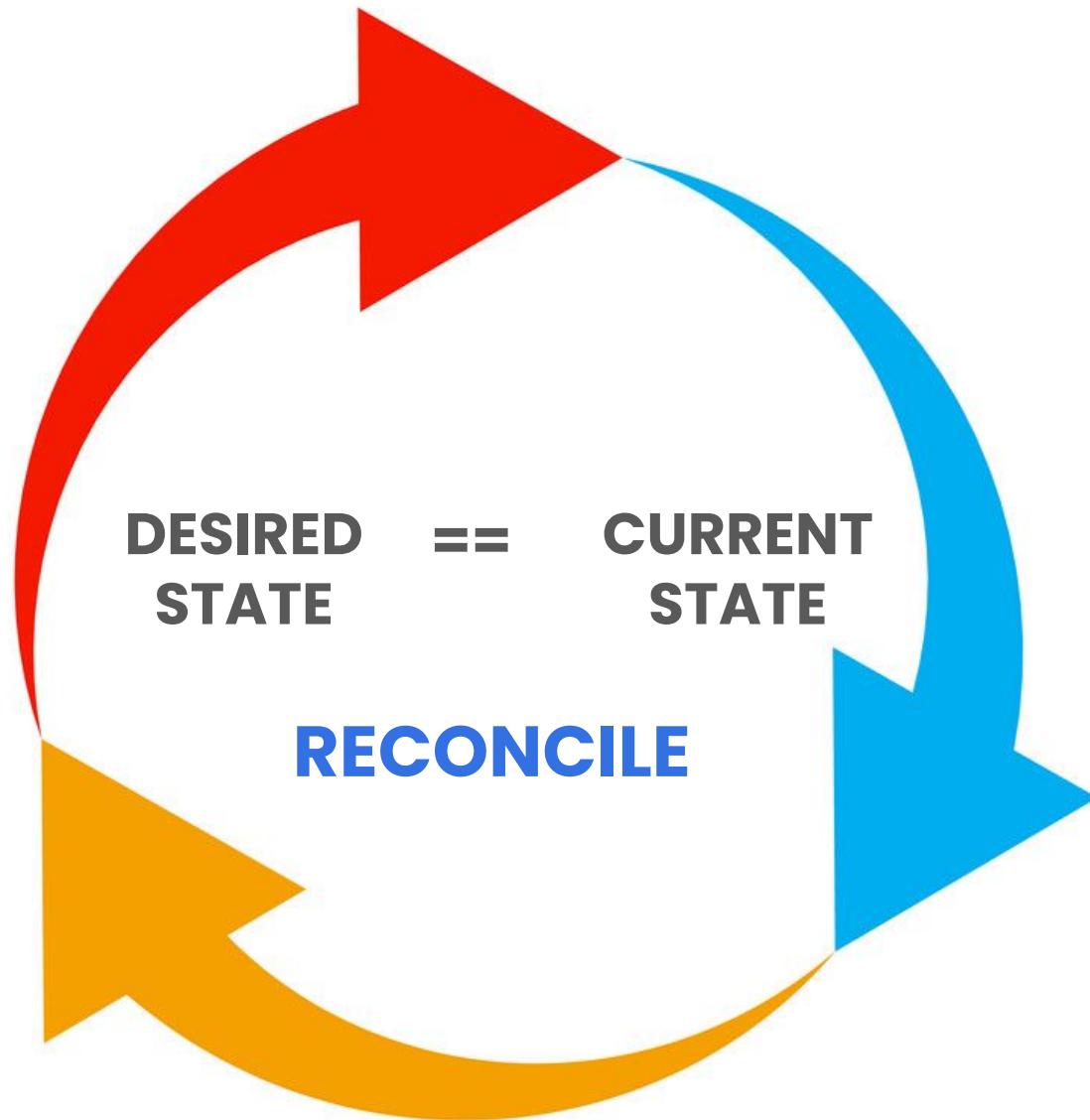
1. Application-specific custom **controllers**
2. Custom Resource Definitions (**CRD**)

Los operadores siguen los principios de Kubernetes, en particular el **ciclo de control** (control loop).

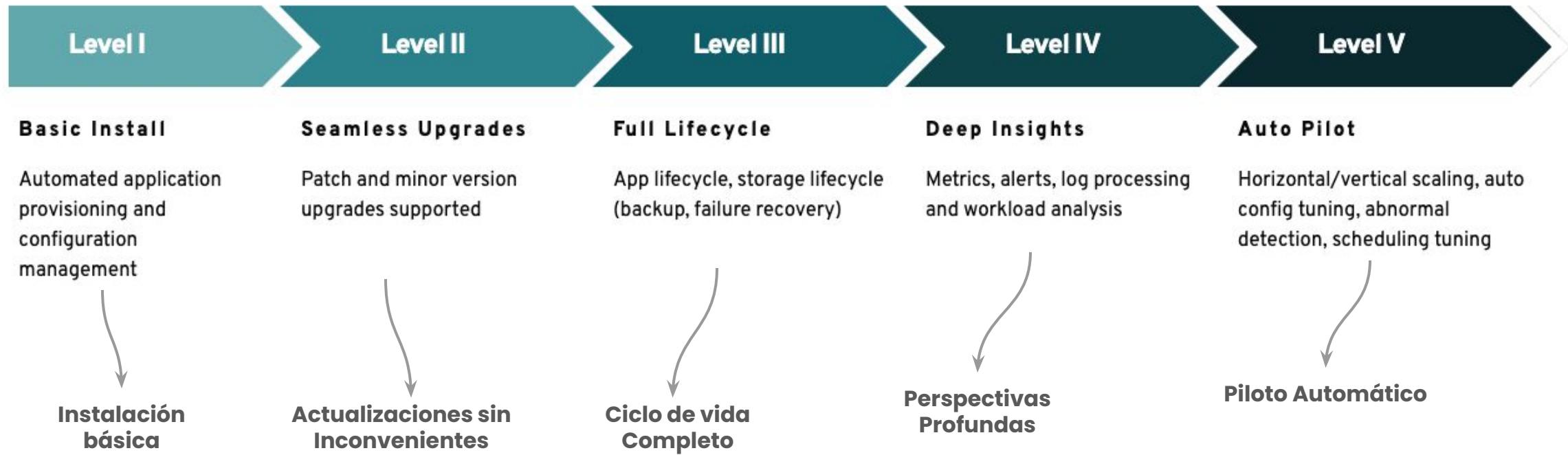
Kubernetes Operators

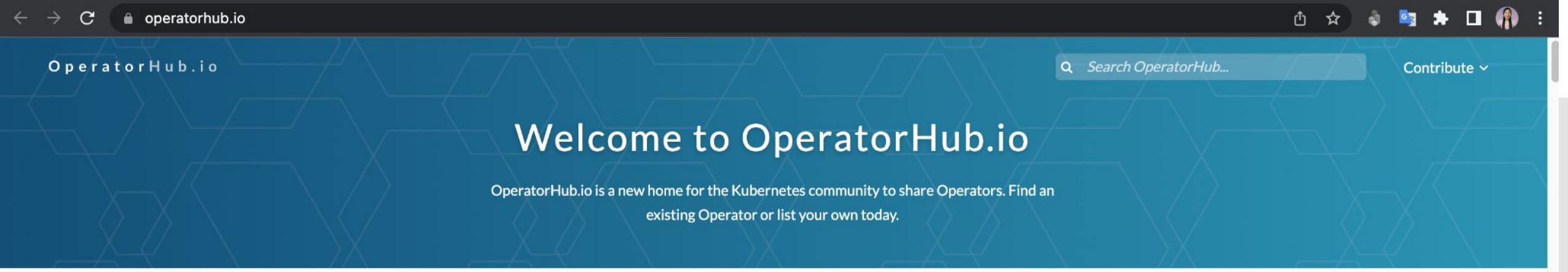


Custom Controller



Capability Model (Modelo de Capacidad)





OperatorHub.io

Search OperatorHub...

Contribute

Welcome to OperatorHub.io

OperatorHub.io is a new home for the Kubernetes community to share Operators. Find an existing Operator or list your own today.

CATEGORIES

312 ITEMS

VIEW SORT A-Z

AI/Machine Learning

Application Runtime

Big Data

Cloud Provider

Database

Developer Tools

Drivers and plugins

Integration & Delivery

Logging & Tracing

Modernization & Migration

Monitoring

Networking

OpenShift Optional

Security

Storage

Streaming & Messaging

PROVIDER

Aerospike (1)



Aerospike Kubernetes

Operator

provided by Aerospike

The Aerospike Kubernetes

Operator automates the



Aiven Operator

provided by aiven

Manage your https://aiven.io

resources with Kubernetes.



Akka Cluster Operator

provided by Lightbend, Inc.

Run Akka Cluster applications

on Kubernetes.



Altinity Operator for

ClickHouse

provided by Altinity

ClickHouse Operator manages

full lifecycle of ClickHouse



Alvearie Imaging Ingestion

Operator

provided by Alvearie

The Alvearie Imaging Ingestion

provides a collection of



Anchore Engine Operator

provided by Anchore Inc.

Anchore Engine - container

image scanning service for
policy-based security, best



Ansible Galaxy

provided by Galaxy

Community

Ansible Galaxy is Ansible's
official hub for sharing Ans



Apache Spark Operator

provided by radianalytics.io

An operator for managing the

Apache Spark clusters and
intelligent applications tha



API Operator for

Kubernetes

provided by WSO2

API Operator provides a fully

automated experience for



APIcast

provided by Red Hat

APIcast is an API gateway built

on top of NGINX. It is part of
the Red Hat 3scale API



Percona Operator for MySQL based on Percona XtraDB Cluster

Percona Operator for MySQL based on Percona XtraDB Cluster manages the lifecycle of Percona XtraDB cluster instances.

[Home](#) > Percona Operator for MySQL based on Percona XtraDB Cluster

Percona Operator for MySQL based on Percona XtraDB Cluster

Install

Percona is Cloud Native

Percona Operator for MySQL based on Percona XtraDB Cluster is an open-source drop in replacement for MySQL Enterprise with synchronous replication running on Kubernetes. It automates the deployment and management of the members in your Percona XtraDB Cluster environment. It can be used to instantiate a new Percona XtraDB Cluster, or to scale an existing environment.

Consult the [documentation](#) on the Percona Operator for MySQL based on Percona XtraDB Cluster for complete details on capabilities and options.

Supported Features

- **Scale Your Cluster** change the `size` parameter to [add or remove members](#) of the cluster. Three is the minimum recommended size for a functioning cluster.
- **Manage Your Users** [add, remove, or change](#) the privileges of database users
- **Automate Your Backups** [configure cluster backups](#) to run on a scheduled basis. Backups can be stored on a persistent volume or S3-compatible storage. Leverage [Point-in-time recovery](#) to reduce RPO/RTO.
- **Proxy integration** choose HAProxy or ProxySQL as a proxy in front of the Percona XtraDB Cluster. Proxies are deployed and configured automatically with the

CHANNEL

stable

VERSION

1.12.0 (Current)

CAPABILITY LEVEL

- Basic Install
- Seamless Upgrades
- Full Lifecycle
- Deep Insights
- Auto Pilot

PROVIDER

Percona

LINKS

¿Interesado en contribuir?

Join us on Slack at **DoK.community**, and then join the **#sig-operator** channel!

dok.community slack:

shorturl.at/rsyK0



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LinkedIn: Percona





Thank You :)