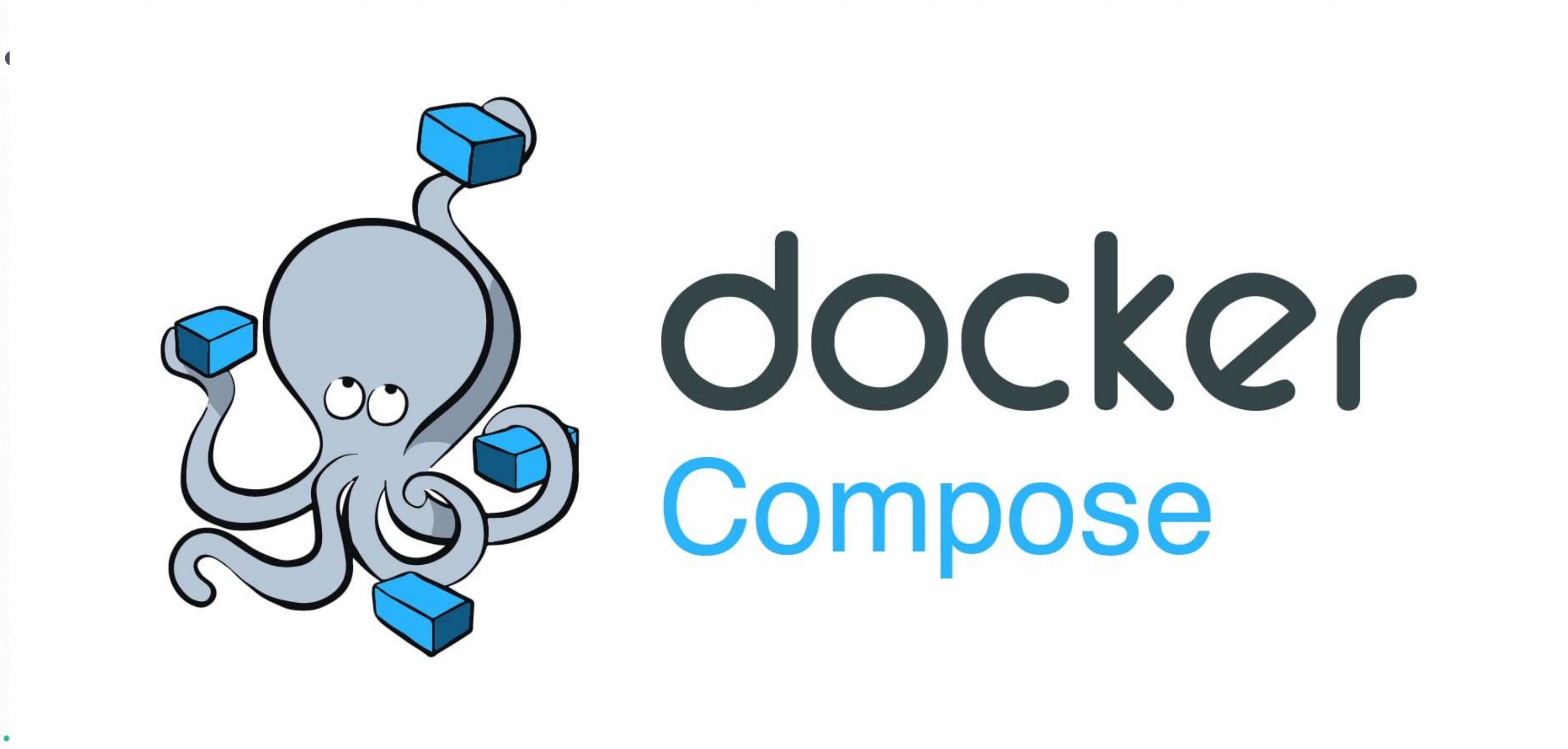
códigofacilito

Orquestadores

Fernando Garcia

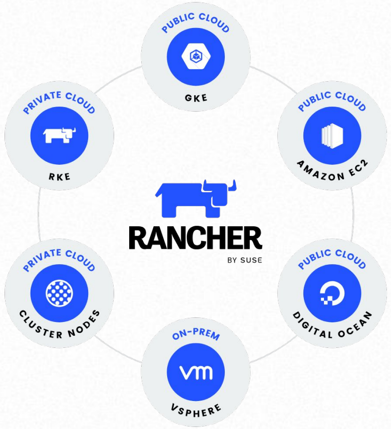
¿ Qué son los orquestadores ?

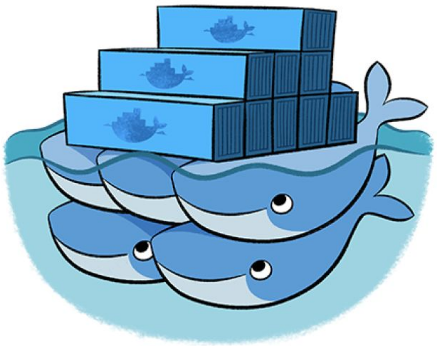


docker
Compose

Orquestadores

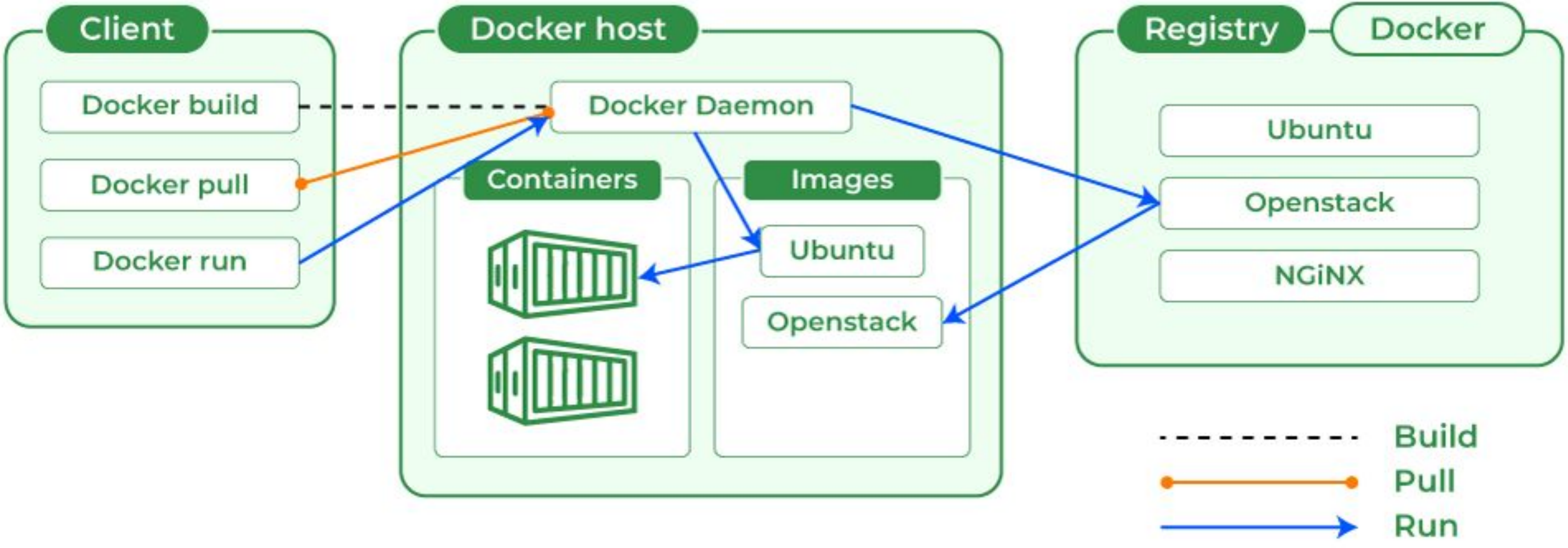
kubernetes

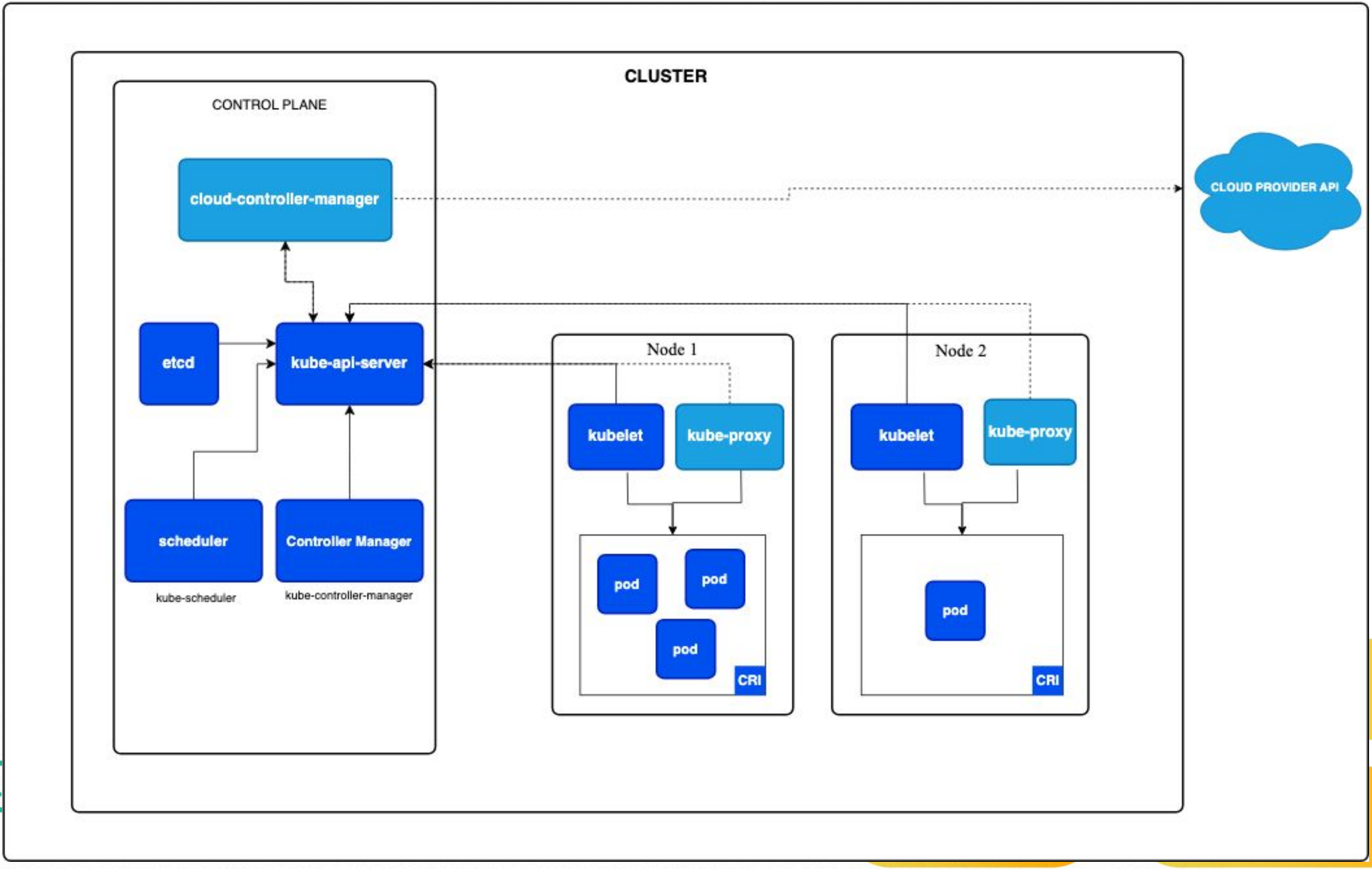




Docker swarm

Apache MESOS™


Client
Docker build
Docker pull
Docker run
Docker host
Docker Daemon
Containers
Images
Ubuntu
Openstack
Registry
Docker
Ubuntu
Openstack
NGiNX
Build
Pull
Run


CLUSTER
CONTROL PLANE
cloud-controller-manager
CLOUD PROVIDER API
etcd
kube-api-server
scheduler
Controller Manager
kube-scheduler
kube-controller-manager
Node 1
kubelet
kube-proxy
pod
pod
pod
CRI
Node 2
kubelet
kube-proxy
pod
CRI

Nodes (Master, Worker)

>_ kube-apiserver

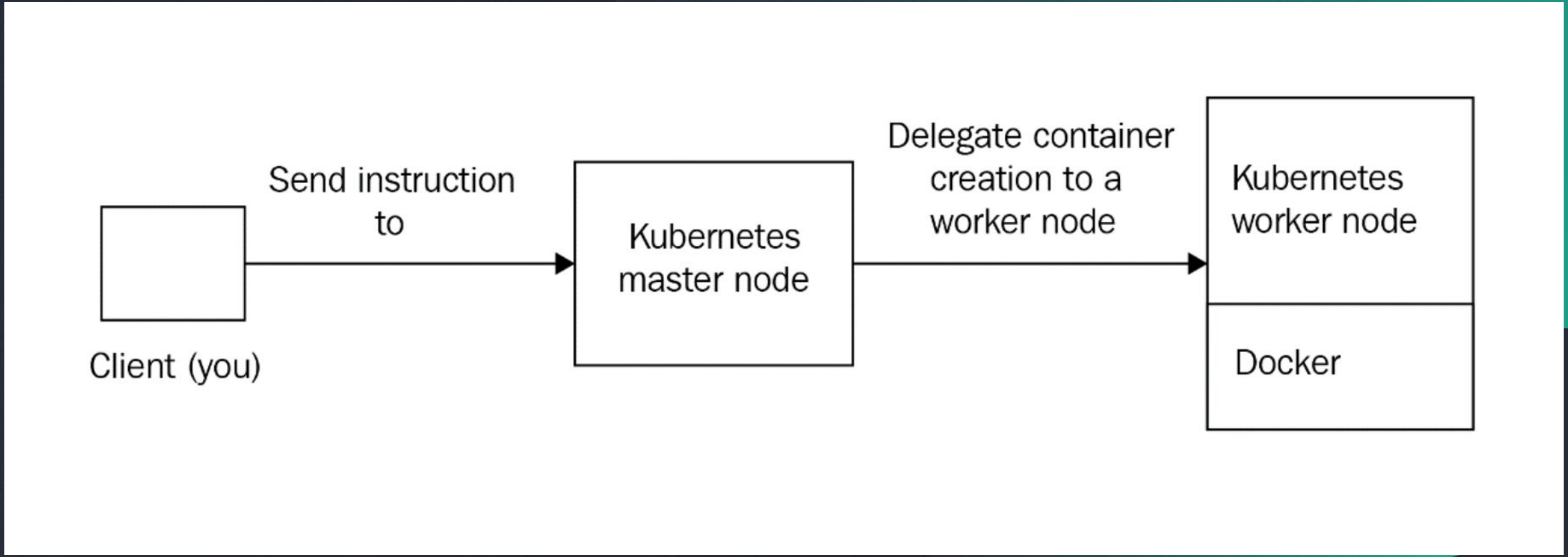
kubectl

Etcd

Kubelet

kube-scheduler

Nodes (Master, Worker)



Client (you)

Send instruction to

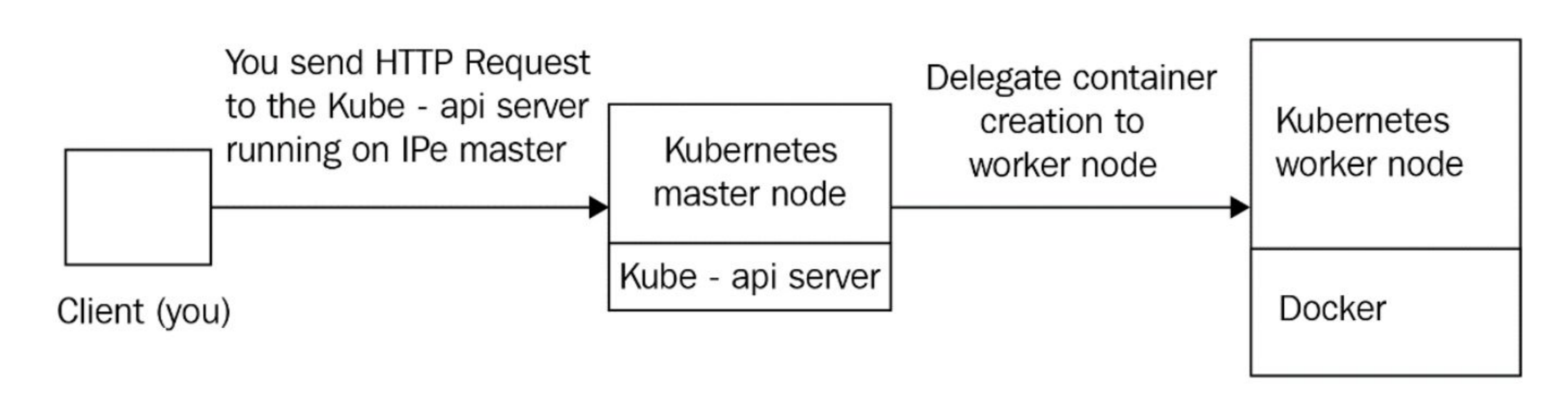
Kubernetes master node

Delegate container creation to a worker node

Kubernetes worker node

Docker

kube-apiserver



kubectl

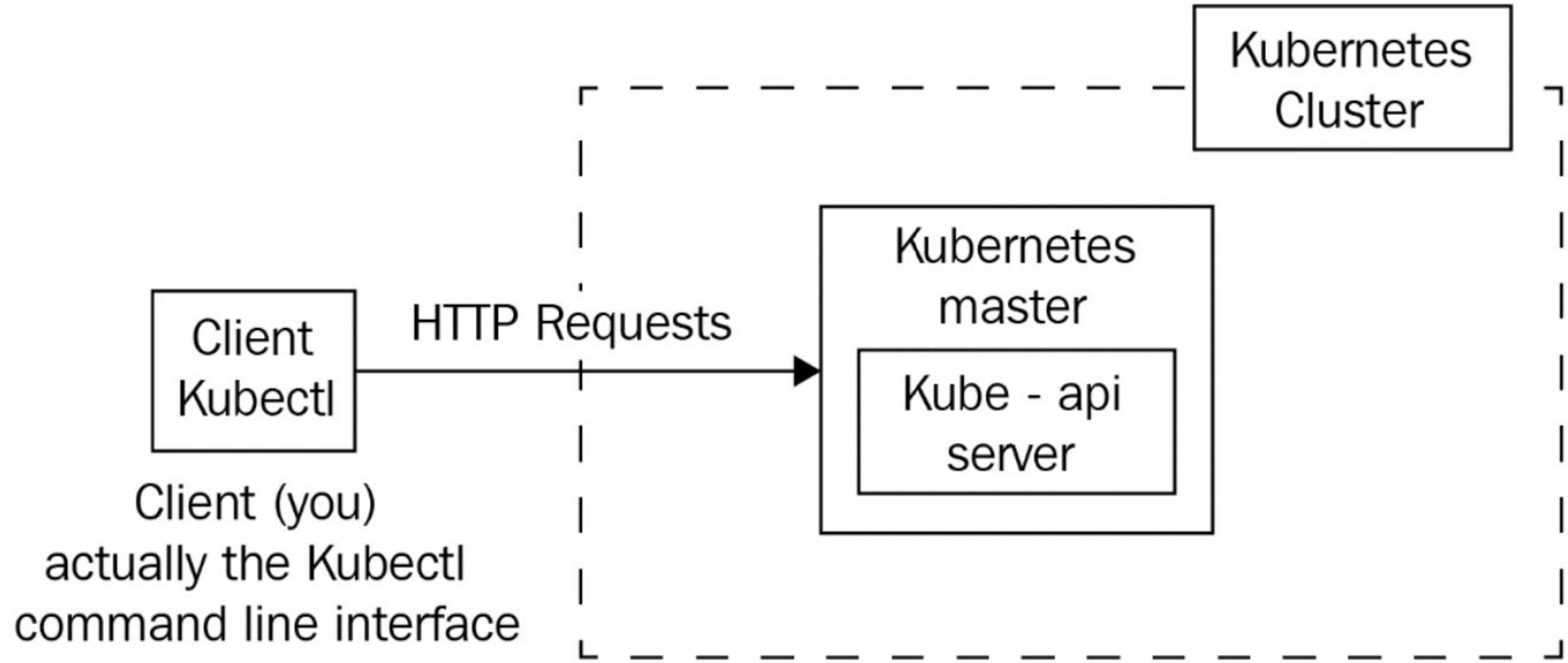


Figure 2.5 – The kubectl command line will call kube-apiserver with the HTTP protocol; you'll interact with your Kubernetes cluster through kubectl all of the time

Etcd

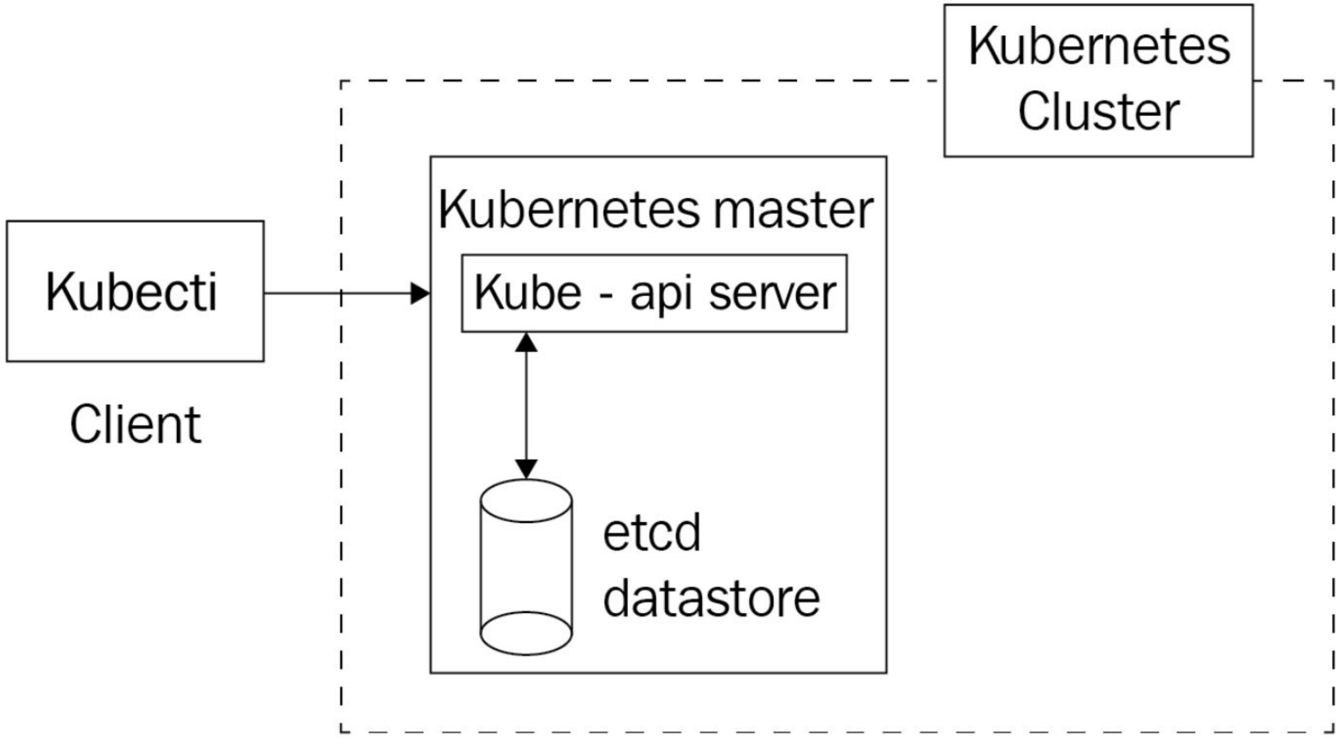
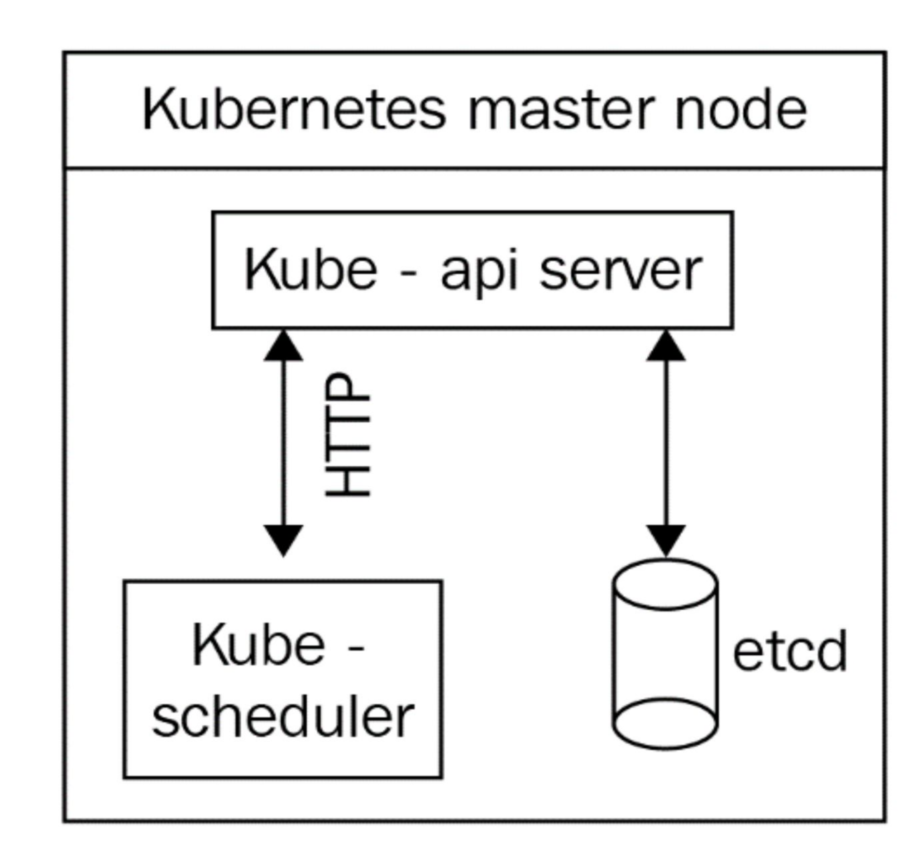


Figure 2.6 – The kube-apiserver component is in front of the etcd datasore and acts as a proxy in front of it;kube-apiserver is the only component that can read or write from and to etcd

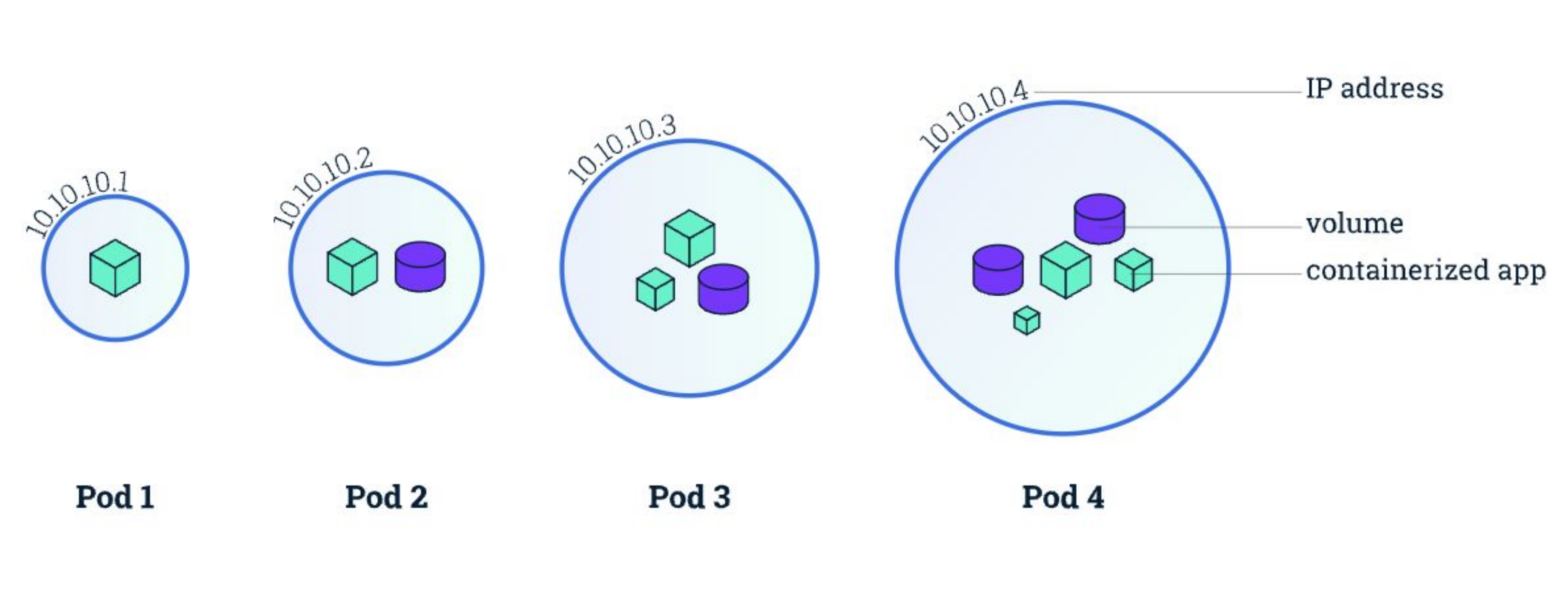
kube-scheduler



Objetos de Kubernetes

- Pods
- Deployment
- Replica Sets
- Service
- Namespaces
- Jobs
- Configmaps/Secrets

¿Qué es un POD ?

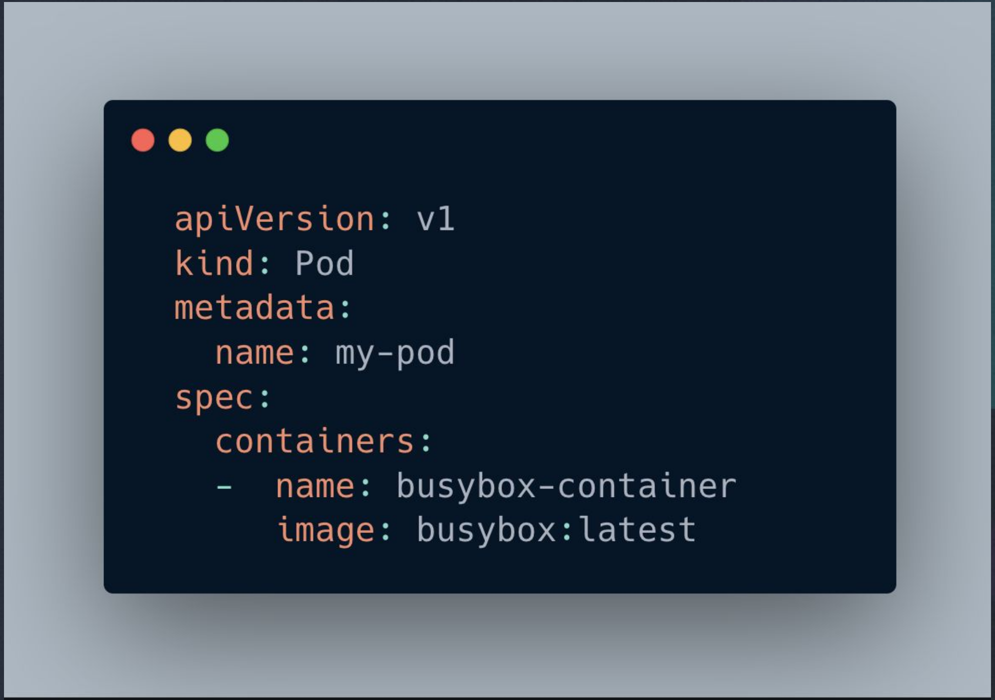

10.10.10.1
10.10.10.2
10.10.10.3
10.10.10.4
IP address
volume
containerized app
Pod 1
Pod 2
Pod 3
Pod 4

La sintaxis YAML

>_ Sintaxis imperativa

Sintaxis declarativa

Sintaxis declarativa



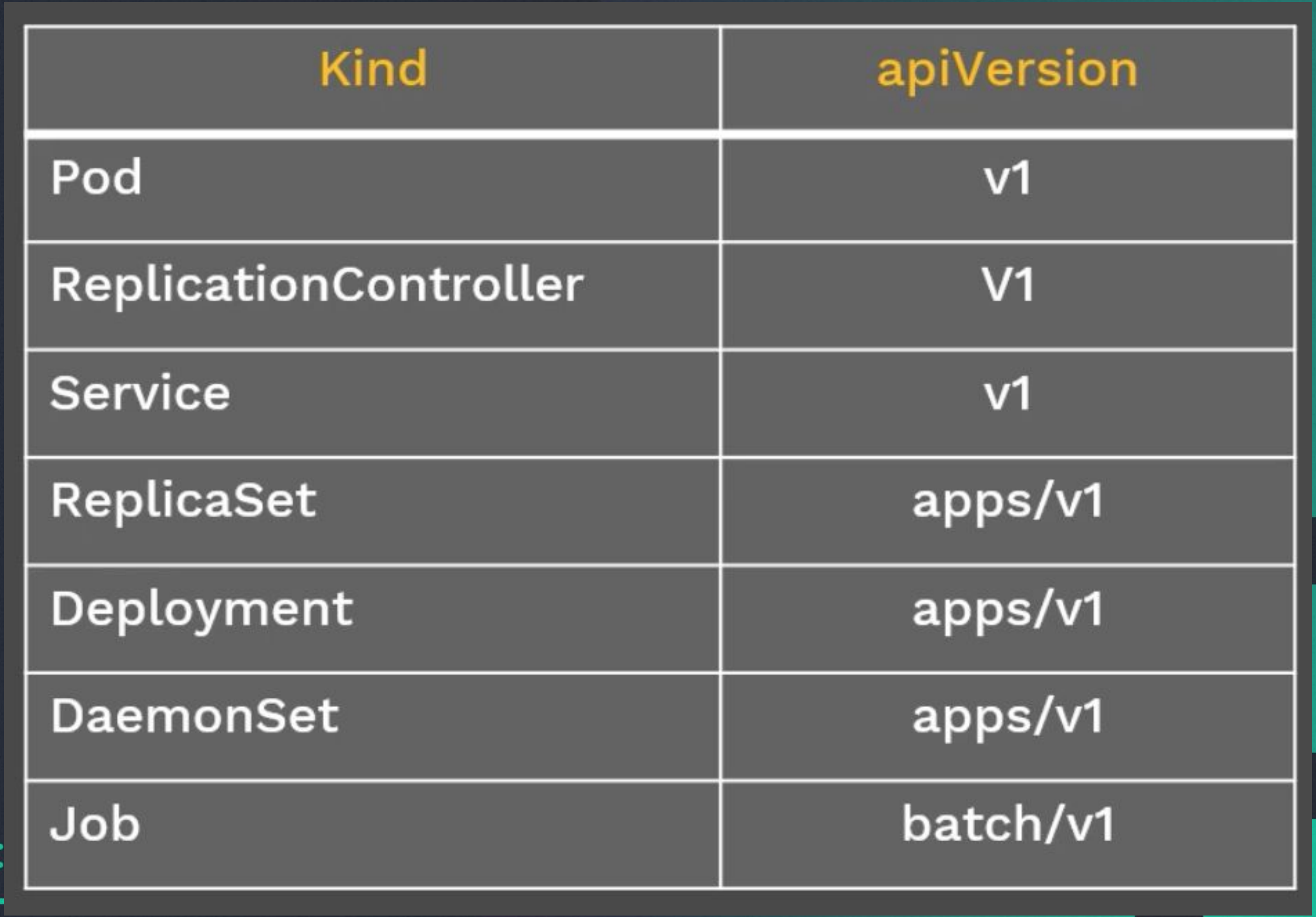
```yaml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
spec:
  containers:
  - name: busybox-container
    image: busybox:latest
```

apiVersion

Kind

Medadata

Spec



Kind	apiVersion
Pod	v1
ReplicationController	V1
Service	v1
ReplicaSet	apps/v1
Deployment	apps/v1
DaemonSet	apps/v1
Job	batch/v1

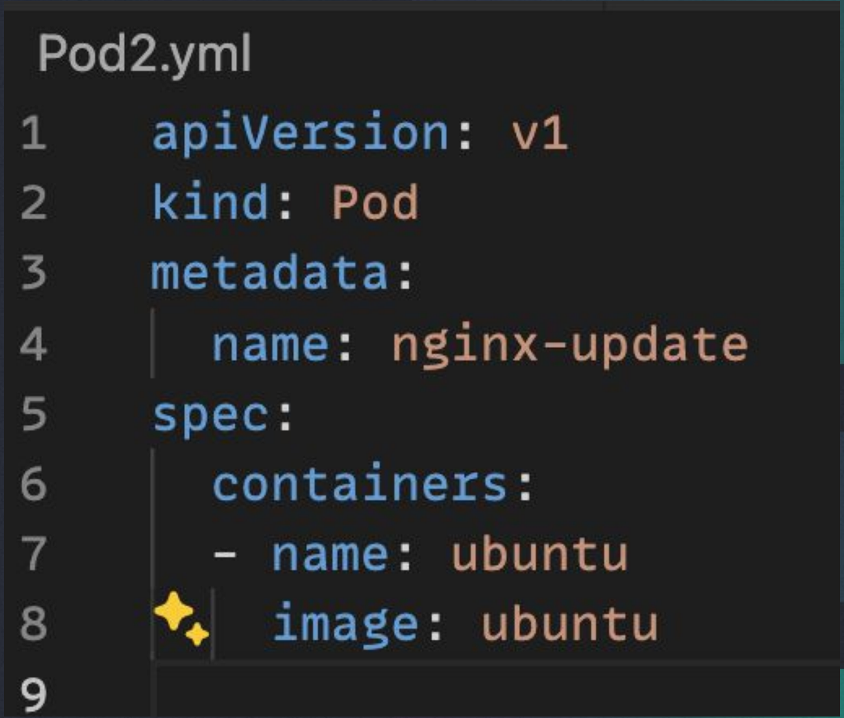
Instalación

- https://kind.sigs.k8s.io/docs/user/quick-start/

  https://docs.docker.com/desktop/install/mac-install/

  https://multipass.run/

¿Por qué no funciona este contenedor ?



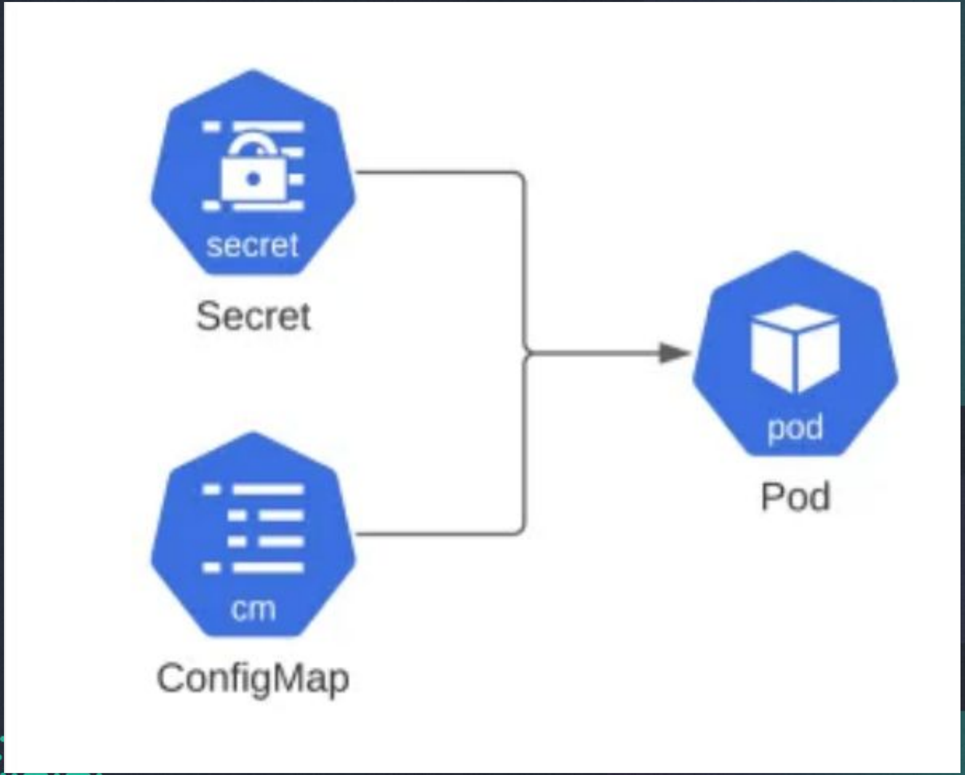
Pod2.yml

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-update
spec:
  containers:
  - name: ubuntu
    image: ubuntu
```

Volumes

- https://kubernetes.io/docs/concepts/storage/volumes/

ConfigMaps / Secrets



Se inyectan como variables de entorno o volúmenes

También pueden servir para definir scripts o configuraciones

Tipos de Secret

- Opaque
- kubernetes.io/basic-auth
- kubernetes.io/tls
- kubernetes.io/dockercfg
- kubernetes.io/ssh-auth

Repositorios privados

```
kubectl create secret docker-registry regcred
--docker-server=https://index.docker.io/v1/
--docker-username=username
--docker-password=
--docker-email=username@gmail.com
```

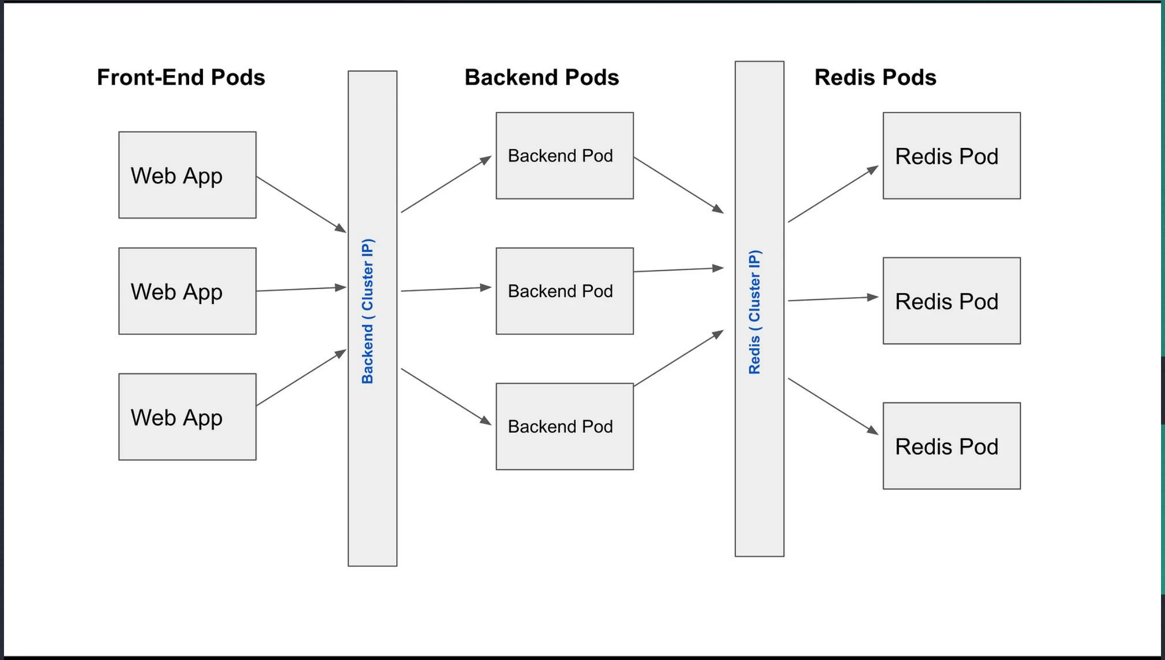
Services

ClusterIP

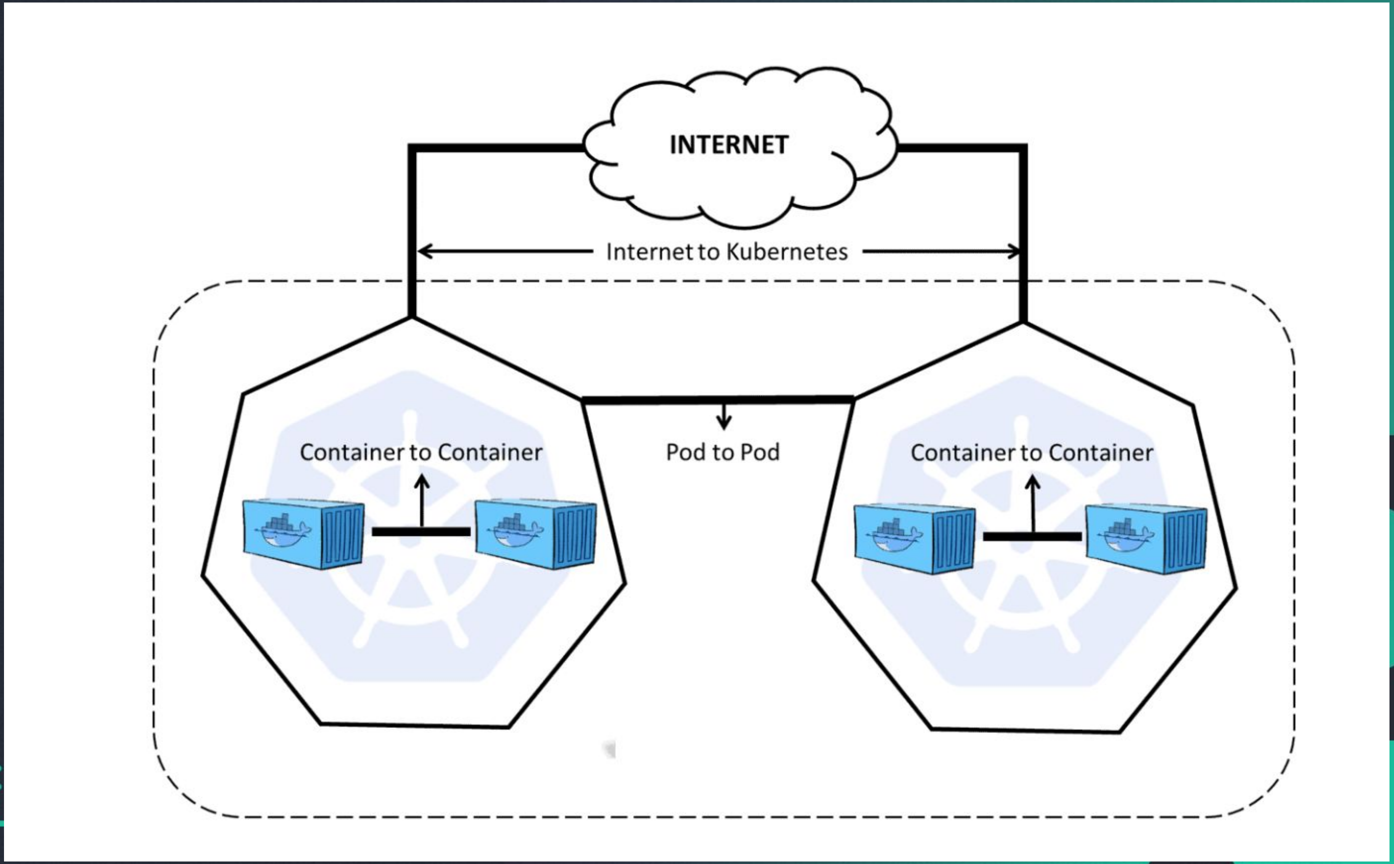
NodePort

LoadBalancer

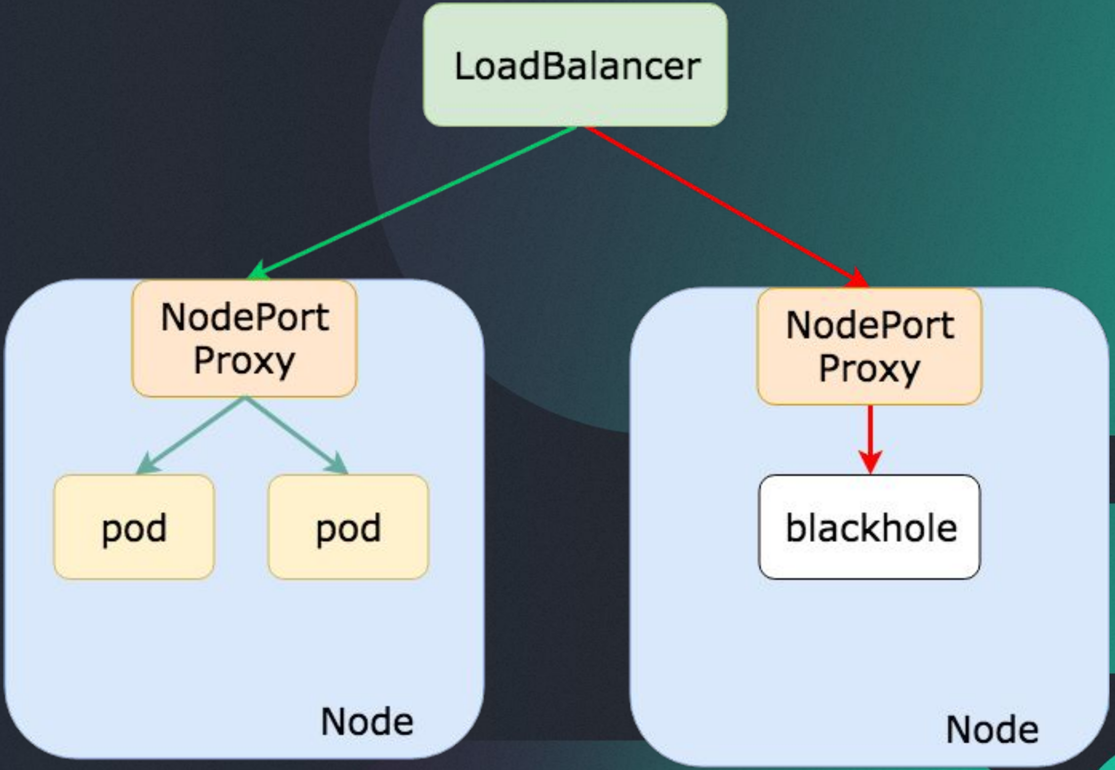
ClusterIP


Front-End Pods
Backend Pods
Redis Pods
Web App
Web App
Web App
Backend (Cluster IP)
Backend Pod
Backend Pod
Backend Pod
Redis (Cluster IP)
Redis Pod
Redis Pod
Redis Pod

ClusterIP


INTERNET
Internet to Kubernetes
Container to Container
Pod to Pod
Container to Container

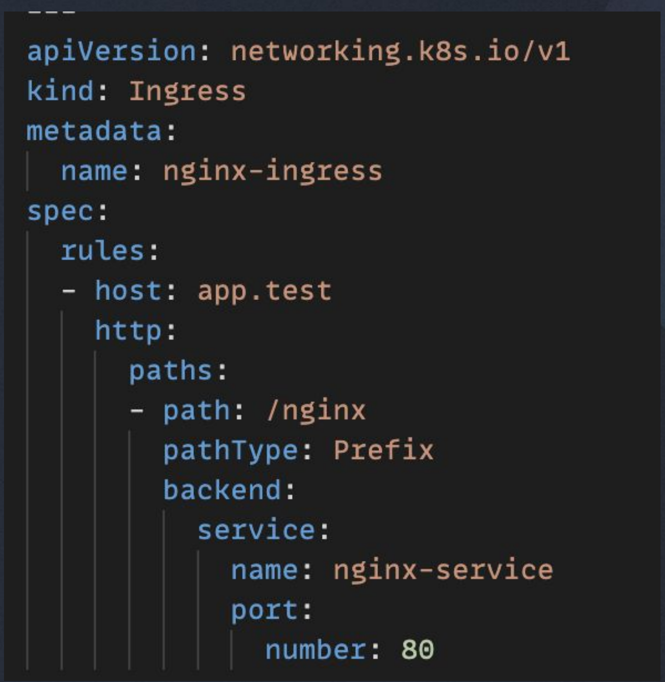
LoadBalancer



Load Balancer en local

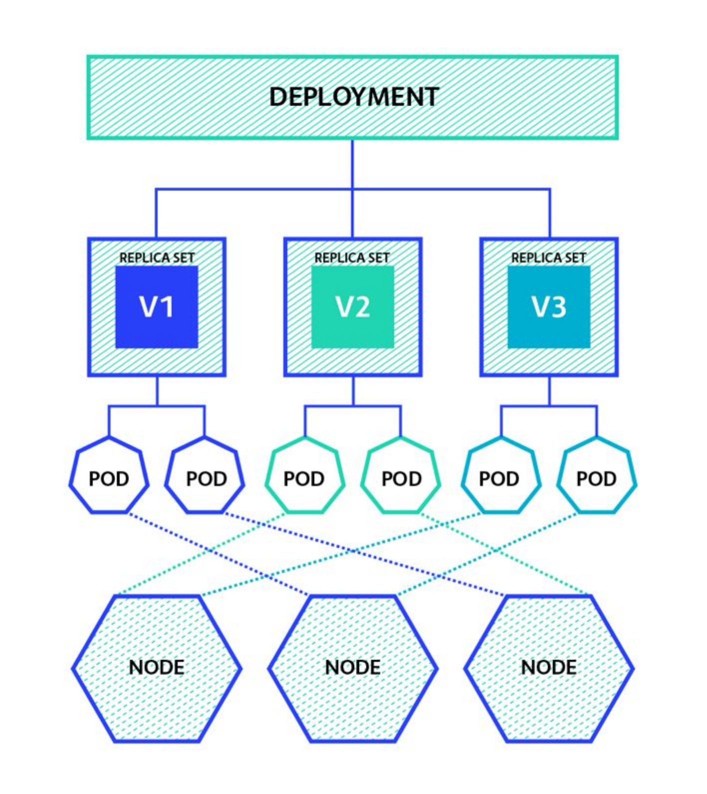
https://kind.sigs.k8s.io/docs/user/loadbalancer/

Ingress



```yaml
---
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: nginx-ingress
spec:
  rules:
  - host: app.test
    http:
      paths:
      - path: /nginx
        pathType: Prefix
        backend:
          service:
            name: nginx-service
            port:
              number: 80
```

Deployments



Estrategias deployment

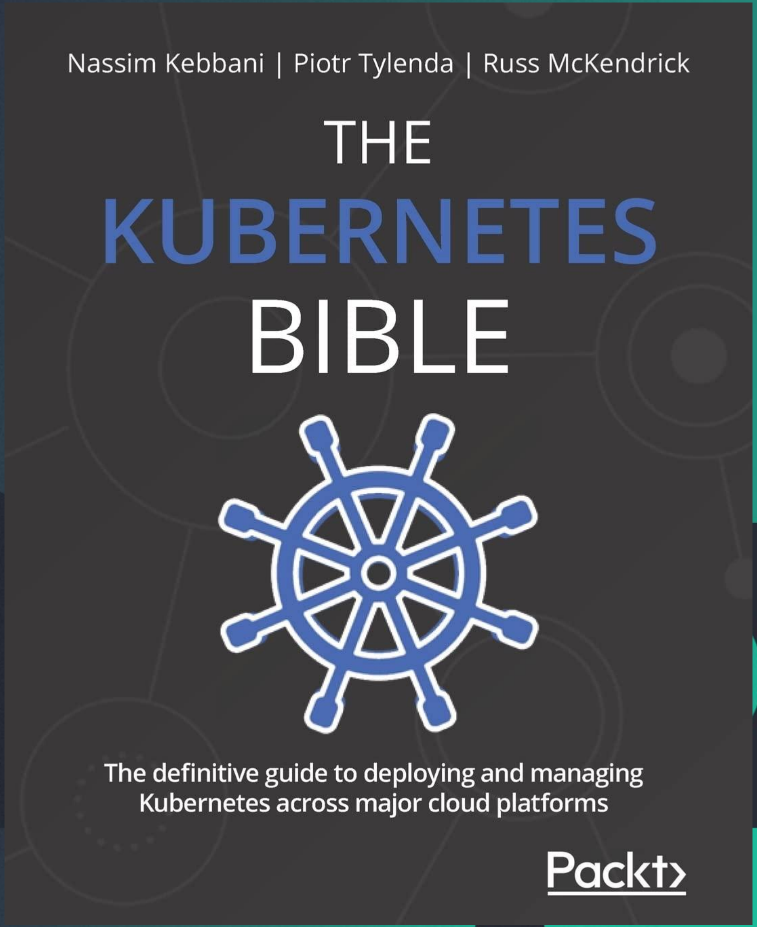
- Recreate
- RollingUpdate
- Blue/Green Deployment
- Canary Deployment

Base de datos

https://cloud.google.com/blog/products/databases/to-run-or-not-to-run-a-database-on-kubernetes-what-to-consider

Recomendaciones

>_ Cloud Guru



Nassim Kebbani | Piotr Tylenda | Russ McKendrick

THE KUBERNETES BIBLE

The definitive guide to deploying and managing Kubernetes across major cloud platforms

Packt>