

LEONEL AGUILAR
SISTEMAS OPERATIVOS 1
CLASE 10

SISTEMAS DISTRIBUÍDOS

Kubernetes

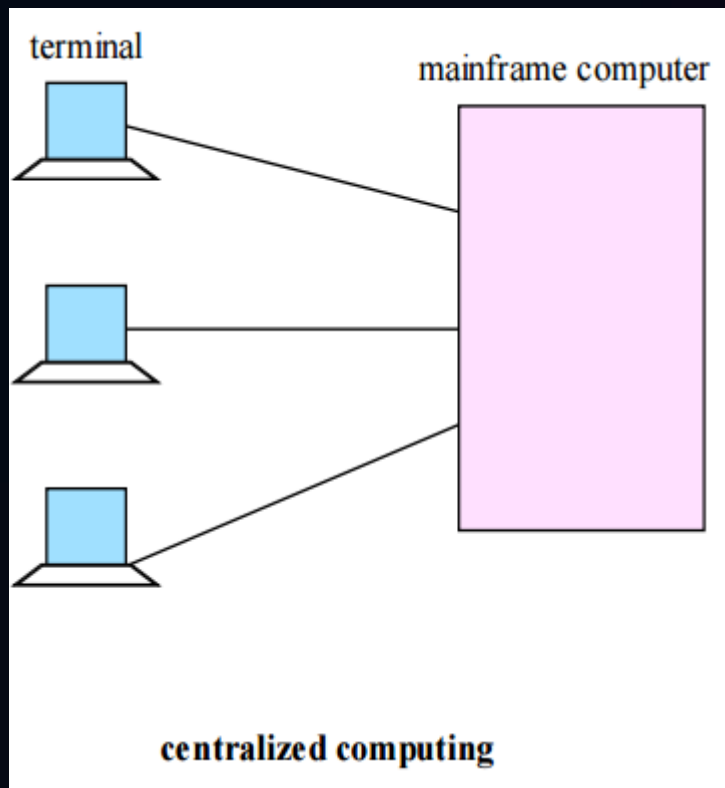
AGENDA

1. Sistemas distribuídos
2. Kubernetes
3. Ejemplo práctico
4. Kahoot

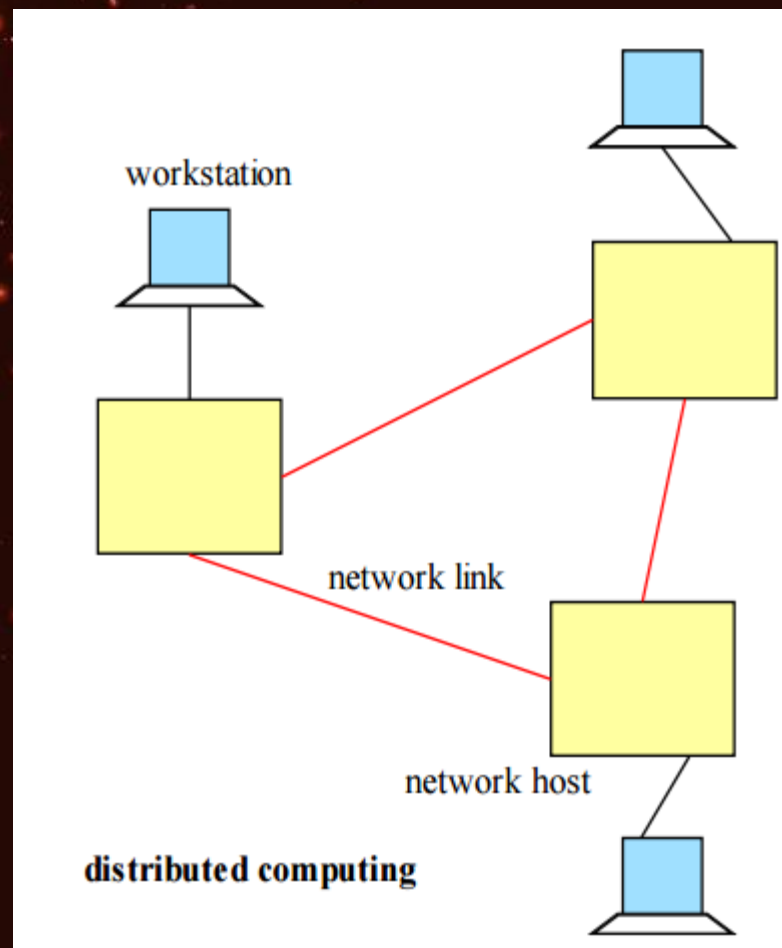


SISTEMA DISTRIBUÍDO

- Conjunto de partes
- Ilusión de ser uno solo
- Independencia de fallos



vs



KUBERNETES



KUBERNETES

Significa Guía

Open Source

Parte del CNCF

Platafor más
amada por
desarrolladores

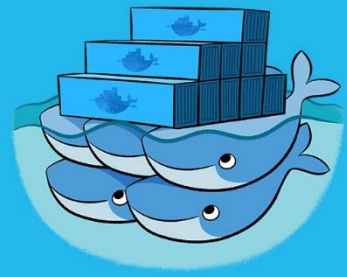
97 de 106 se
basan en ella.



¿QUÉ ES?

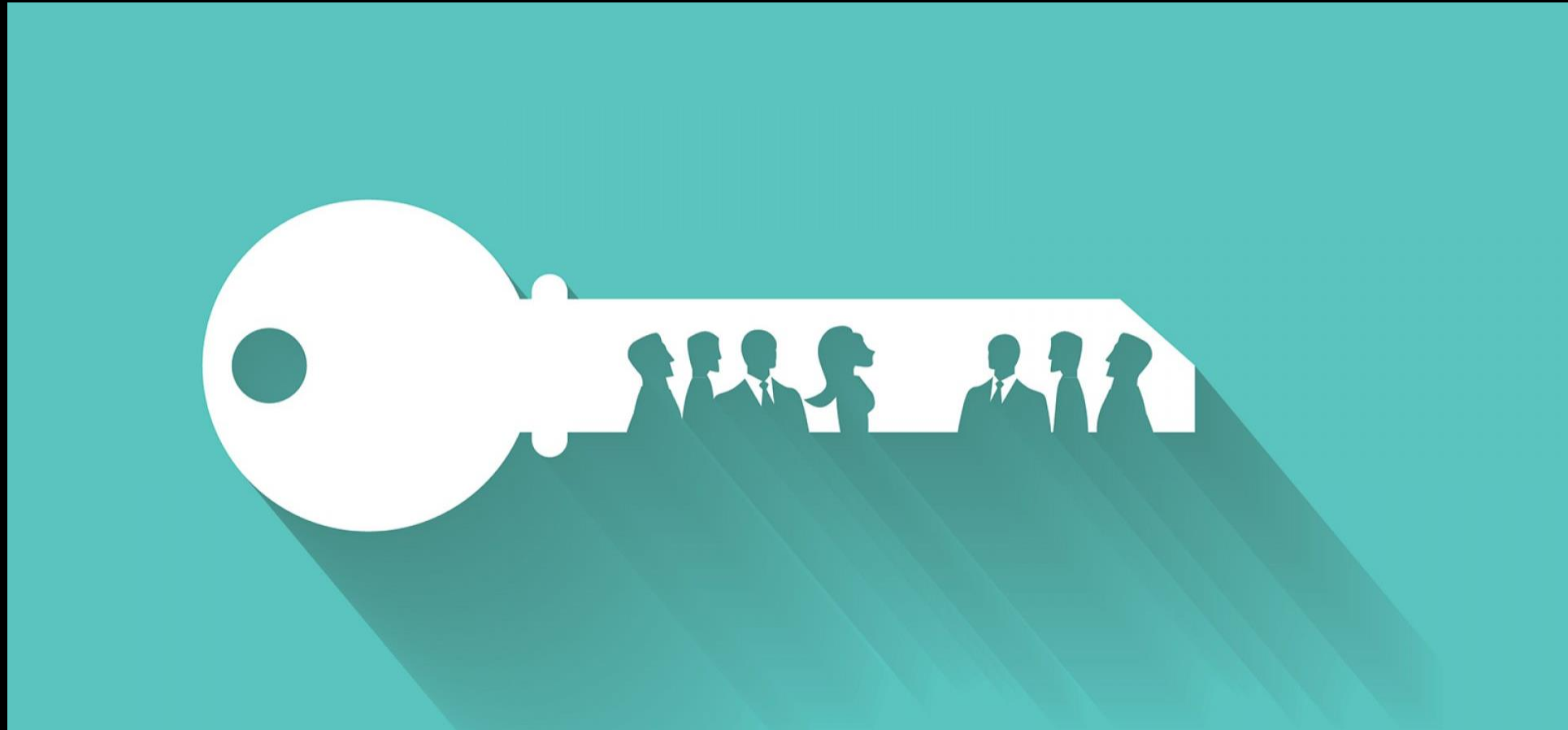
- Planificar contenedores
- Ejecutar múltiples contenedores
- Correr aplicaciones por largos periodos de tiempo
- Administrar el estado de los contenedores

ALTERNATIVAS



Apache
MESOSTM

CONCEPTOS CLAVE

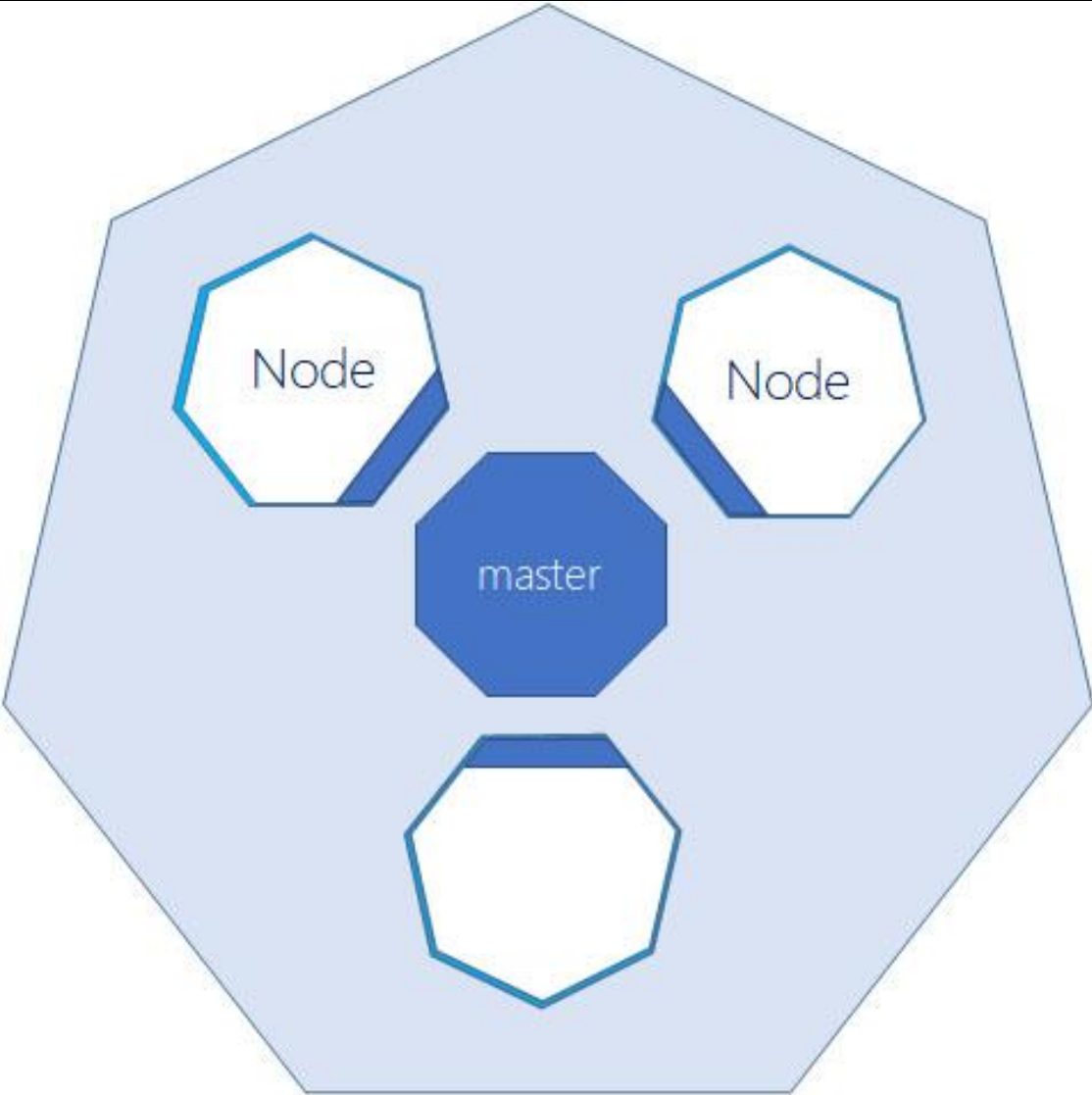


CARACTERÍSTICAS

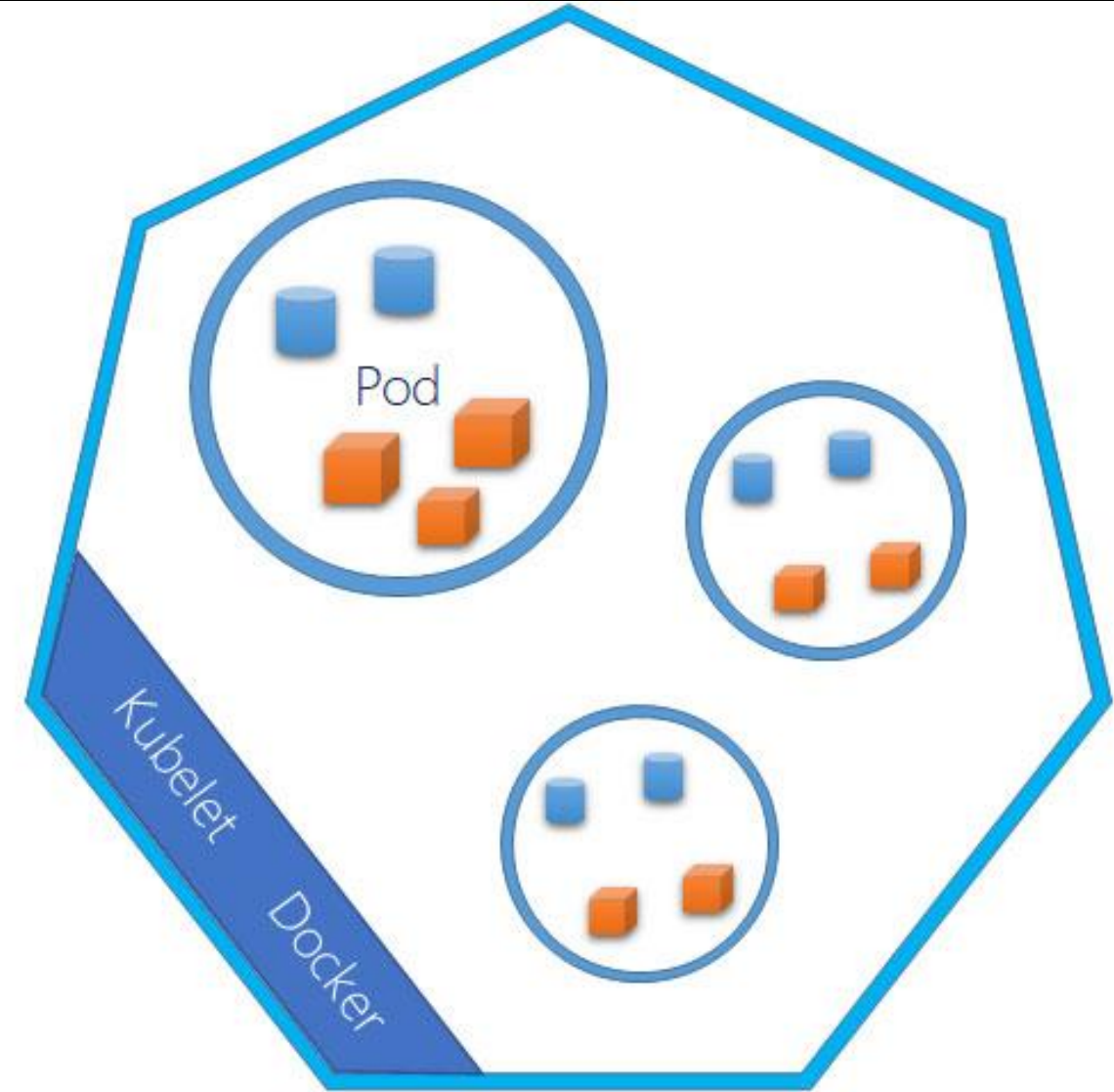
- Tolerancia a fallos
- Escalamiento horizontal
- Recuperación
- Manejo de memoria

ALGUNOS CONCEPTOS CLAVE...

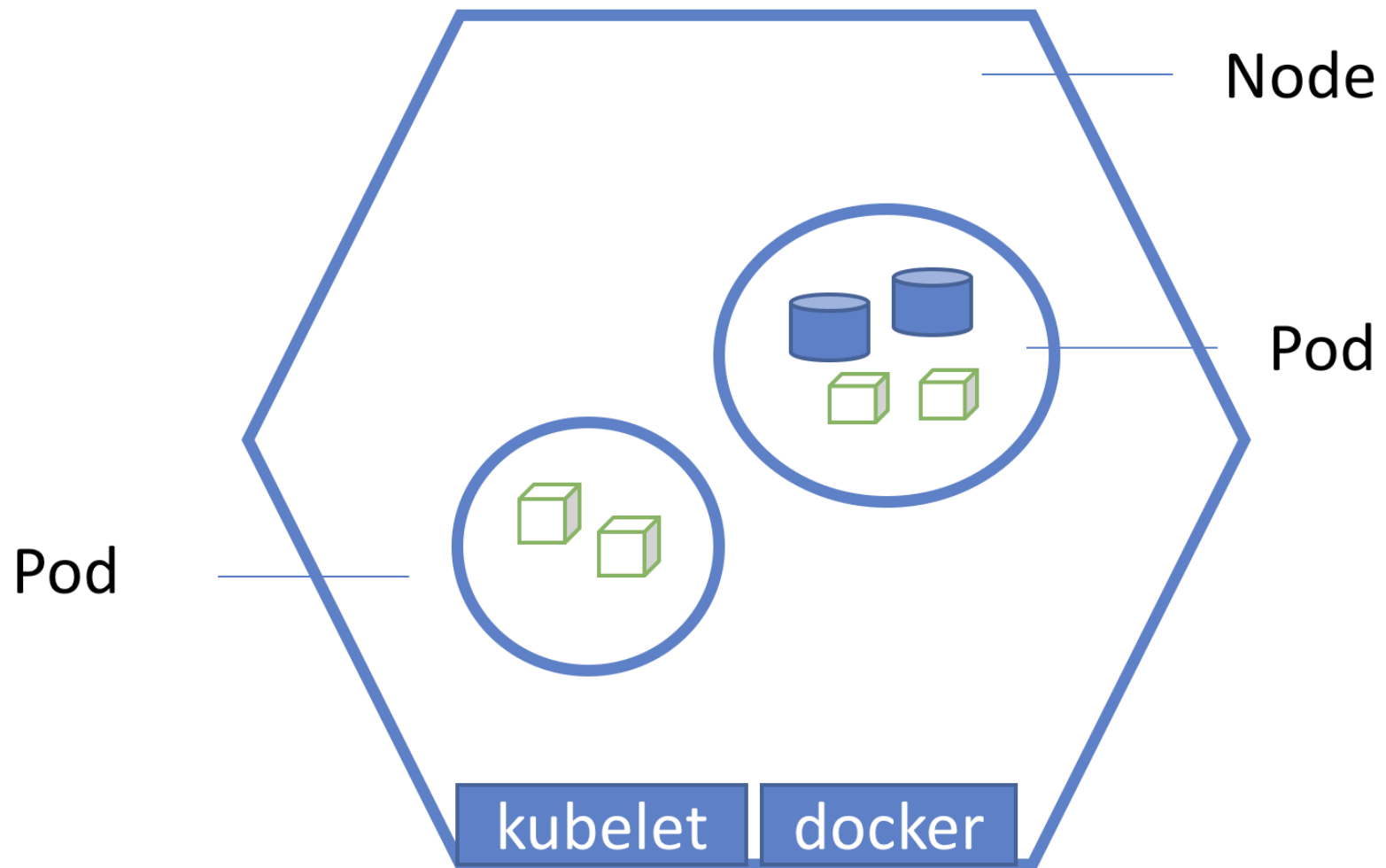
- Container: Imagen ligera y portable que contiene software.
- Pod: objeto simple y pequeño. Contenedores ejecutándose.
- Nodo: Máquina virtual o física que ejecuta un trabajo de kubernetes.
- Clúster: Grupo de máquinas o nodos, corren aplicaciones.

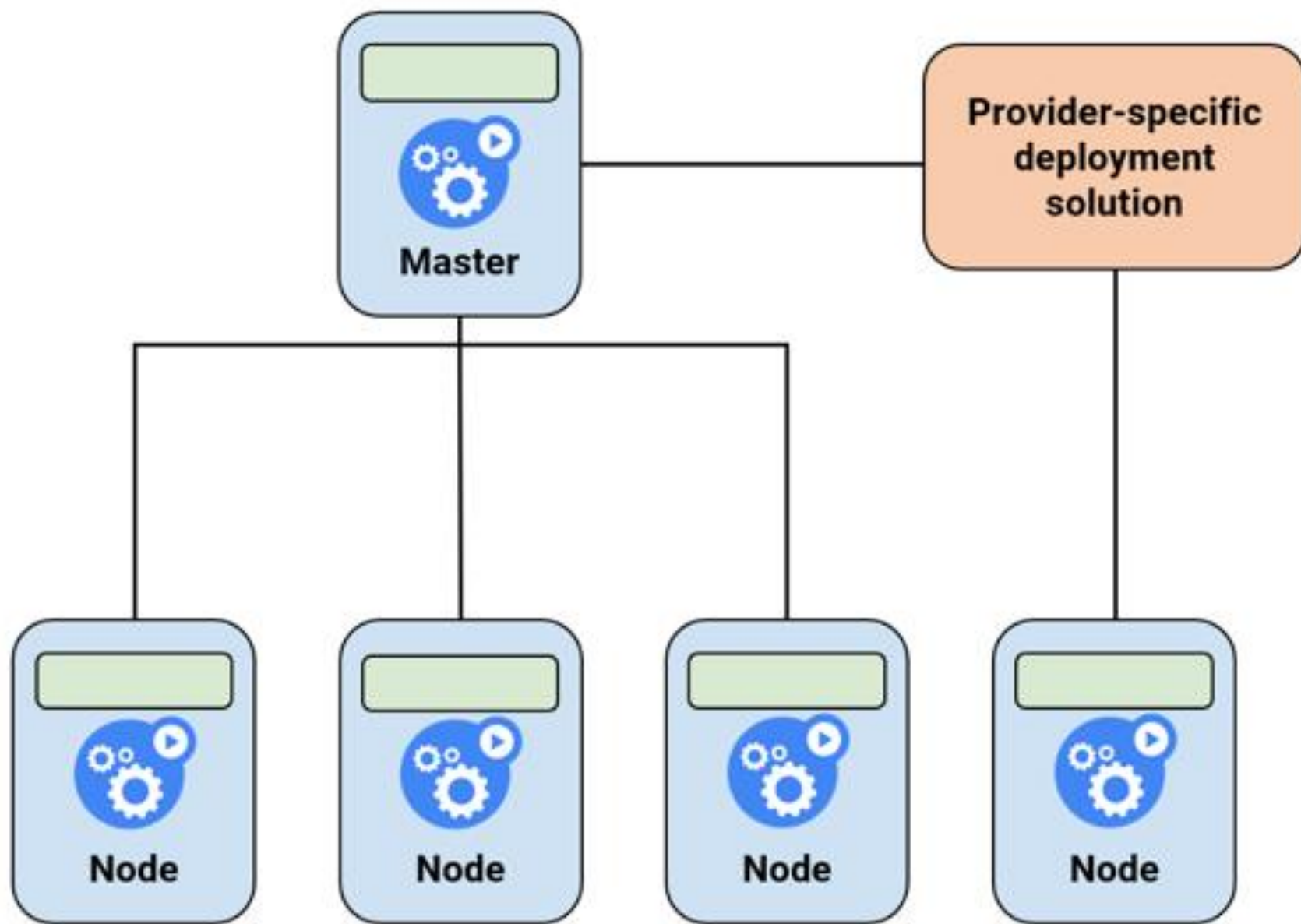


Kubernetes Cluster

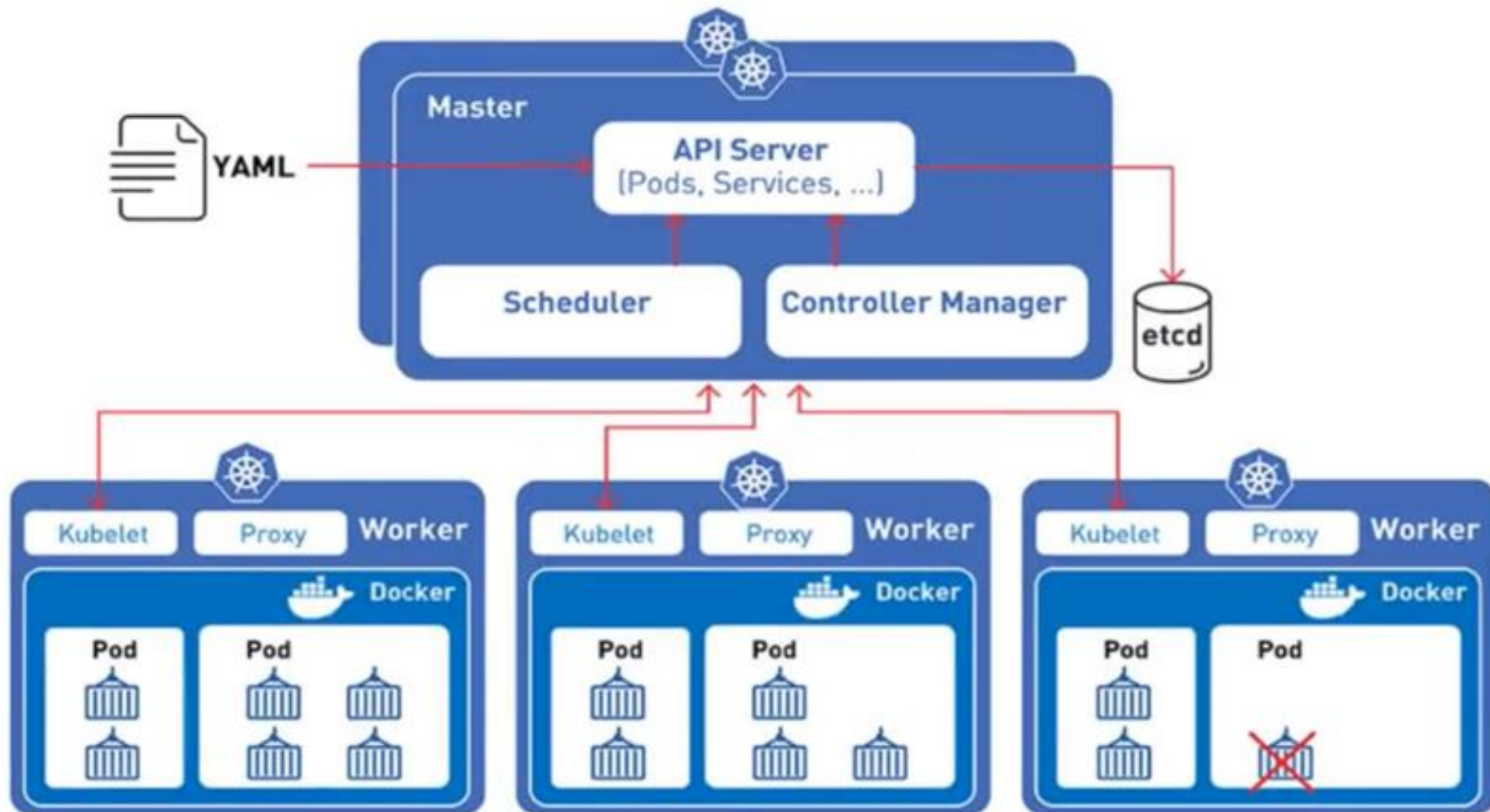


Kubernetes Node

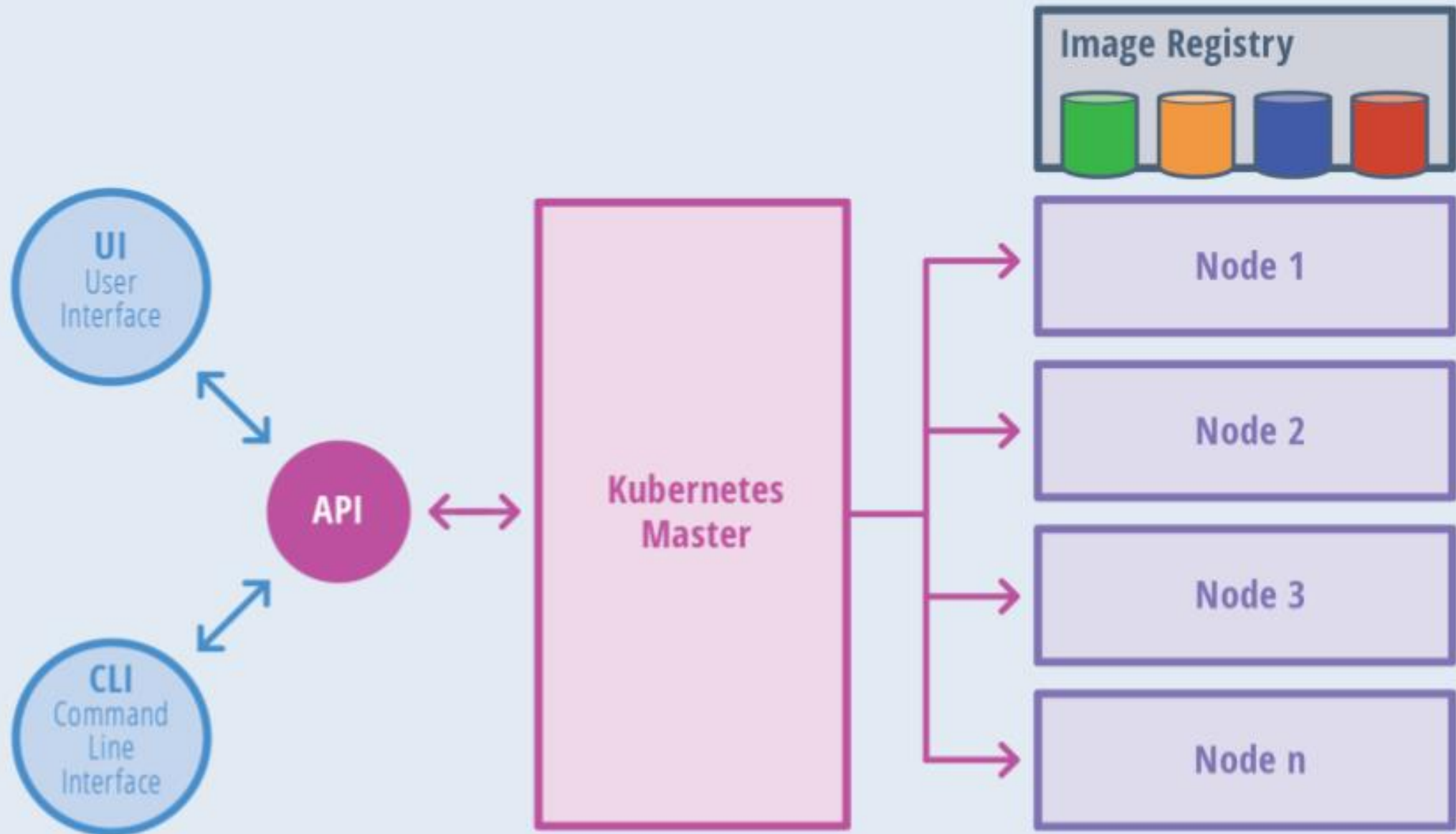




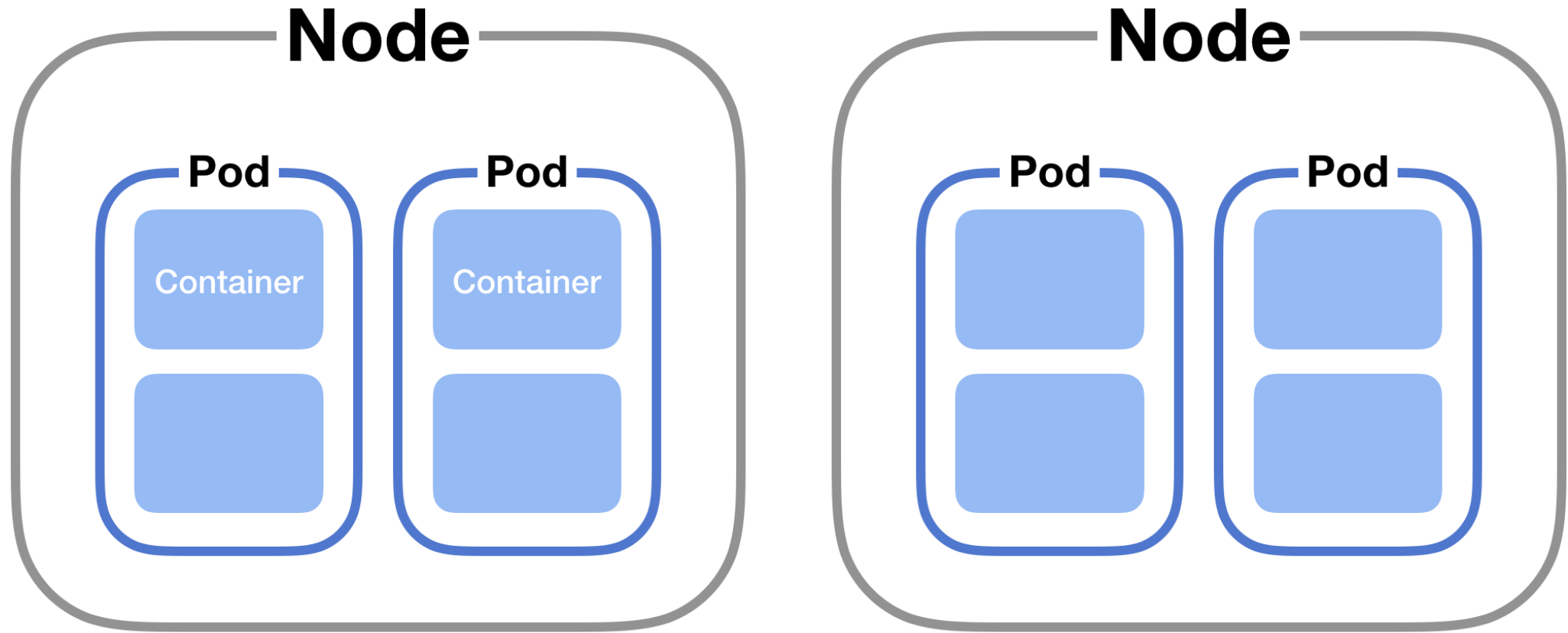
Kubernetes Architecture



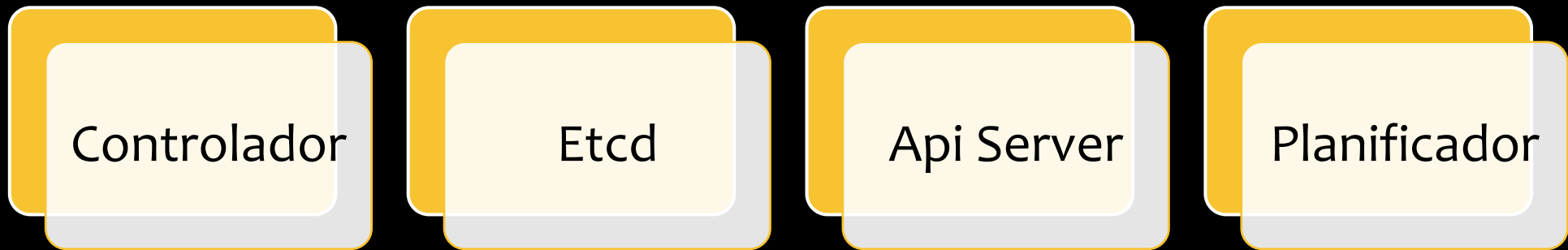
Kubernetes Architecture



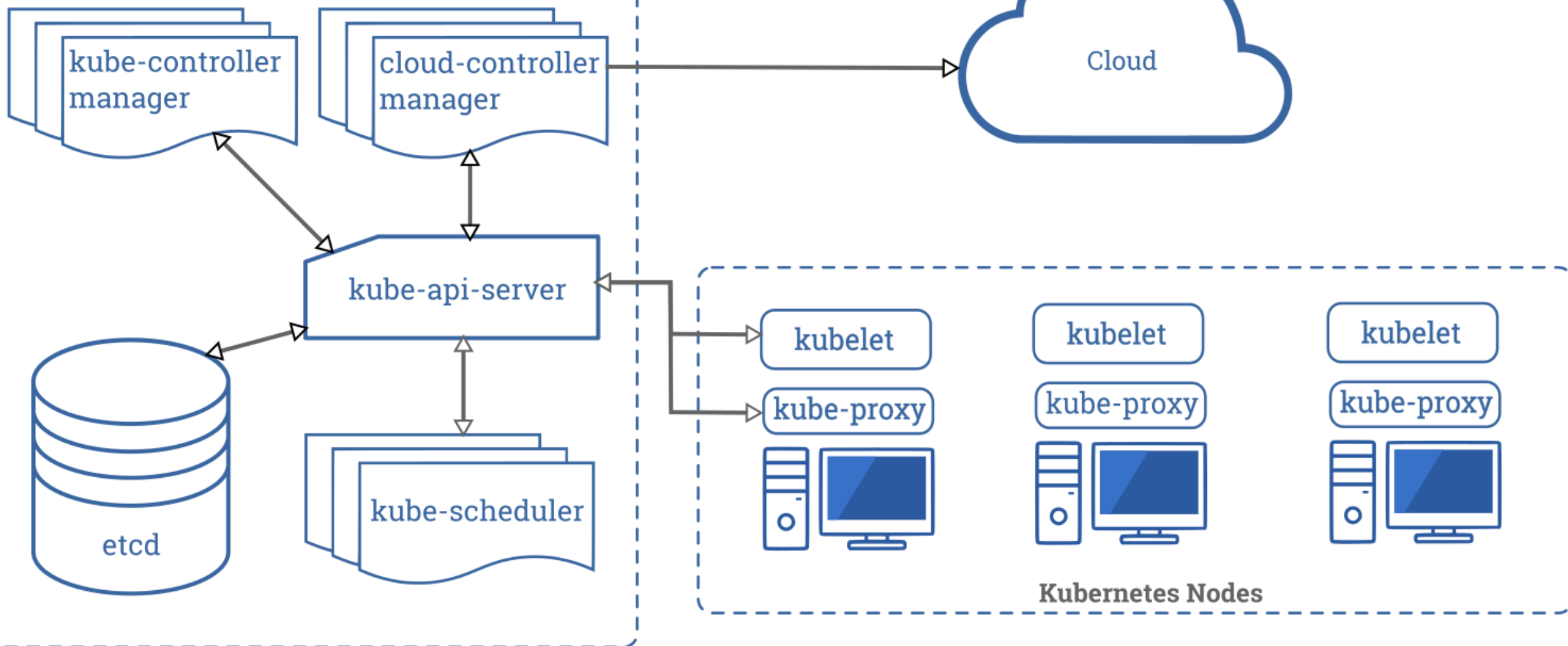
Cluster



Máster Node

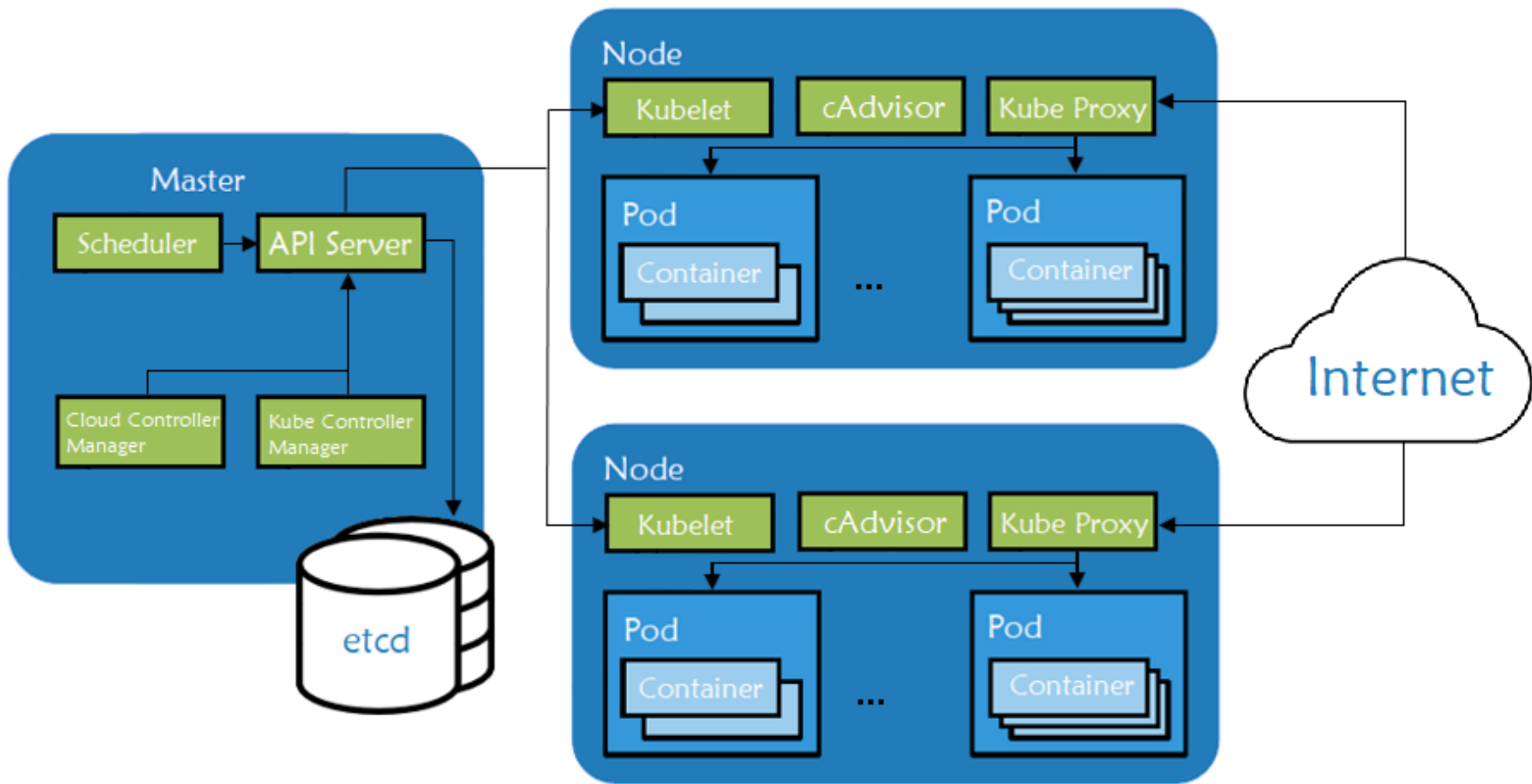


Kubernetes Control Plane



Worker Nodes

- Container Runtime
- Kubelet
- Kube-proxy
- Plugins





Manifiesto

Incluye instrucciones en un archivo yml

Cómo desplegar el servicio

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hello-world-deployment
  labels:
    app: hello-world
spec:
  selector:
    matchLabels:
      app: hello-world
  replicas: 2
  template:
    metadata:
      labels:
        app: hello-world
    spec:
      containers:
        - name: hello-world
          image: bhargavshah86/kube-test:v0.1
          ports:
            - containerPort: 80
          resources:
            limits:
              memory: 256Mi
              cpu: "250m"
            requests:
              memory: 128Mi
              cpu: "80m"
```

```
---
apiVersion: v1
kind: Service
metadata:
  name: hello-world
spec:
  selector:
    app: hello-world
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
      nodePort: 30081
  type: NodePort
```

KUBECTL



KUBERNETES API

KUBERNETES



Kubectl

Gestionar apps en kubernetes

LENS // THE KUBERNETES IDE

The screenshot displays the Lens Kubernetes IDE interface. On the left is a sidebar with navigation icons and a menu. The main area is divided into three sections: a list of pods, a detailed view of the selected pod, and a terminal.

Pod List:

Name	Namespace	Containers
cattle-node-agent-gfplw	cattle-system	1
cattle-node-agent-h8skm	cattle-system	1
coredns-6987776bbd-47zsz	kube-system	1
coredns-6987776bbd-rkask	kube-system	1
kube-proxy-lmhtp	kube-system	1
kube-proxy-lmxxf	kube-system	1
kube-state-metrics-6ff8665f98-twxf	lens-metrics	1
nginx-deployment-5c559d5697-2kpxc	default	1
nginx-deployment-5c559d5697-b5hzz	default	1
node-exporter-5crrt	lens-metrics	1
node-exporter-bcgrt	lens-metrics	1
prometheus-0	lens-metrics	1
redis-master-0	default	1
redis-slave-0	default	1
redis-slave-1	default	1

Pod: redis-master-0 Details:

- Created:** 6w 6h 50m ago (2020-09-16T13:47:01Z)
- Name:** redis-master-0
- Namespace:** default
- Labels:** app=redis, chart=redis-10.9.0, controller-revision-hash=redis-master-59cfb8fd68, release=redis, role=master, statefulset.kubernetes.io/pod-name=redis-master-0
- Annotations:** checksum/configmap=bacd30596d23c0efb2dedeb452175363f069d1ae929eb3206b..., checksum/health=5bec0a81458d12b9297b43fddcf7cd4c93e4822afd7027afc10454..., checksum/secret=35ce351b8d7fc2d681272e3baf13a5b5c9f373371e985abc9e3d070..., kubernetes.io/psp=eks.privileged
- Controlled By:** StatefulSet [redis-master](#)
- Status:** Running
- Node:** [ip-192-168-20-43.eu-west-1.compute.internal](#)
- Pod IP:** 192.168.8.78

Terminal:

```
I have no name!@redis-master-0:/$
```



minikube



EJEMPLO PRÁCTICO

HELLO-WORLD CON KUBERNETES