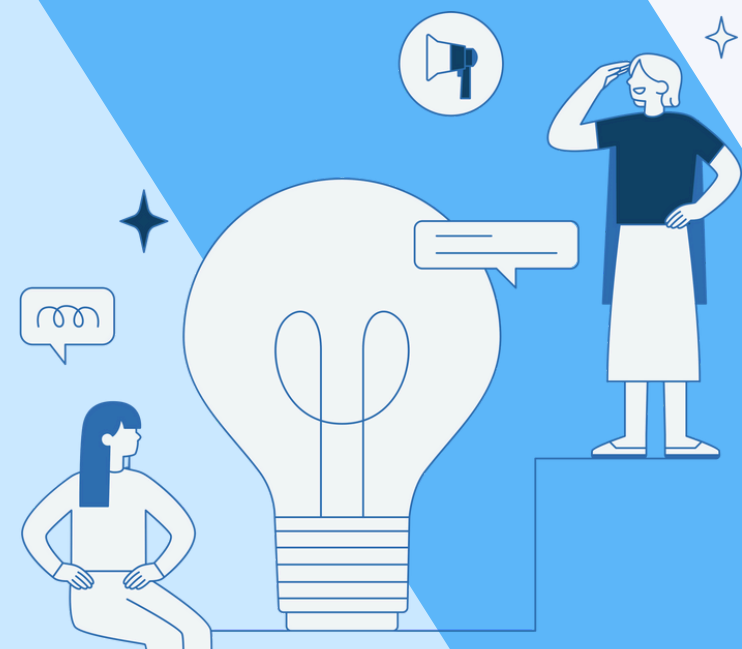




# Despliegue de granja web como orquestación con Kubernetes



Antonio Ramón Sánchez Morales

10 de Mayo de 2024



# Background Laboral

ARSA  
HOSTING

hondball.ai

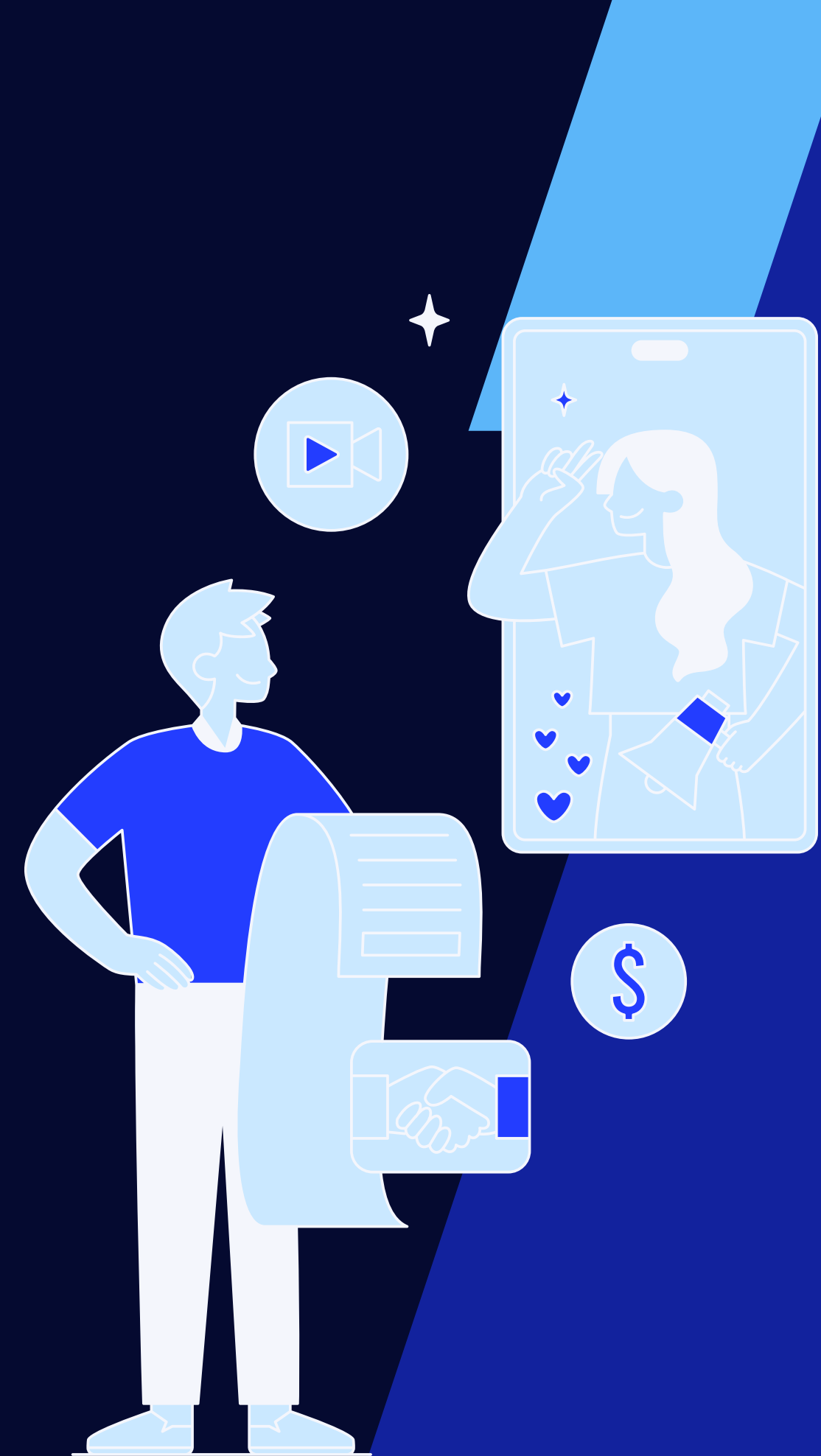
TECHSEQUOIA  
III

</TICsmart  
inspiring software >

detailorg

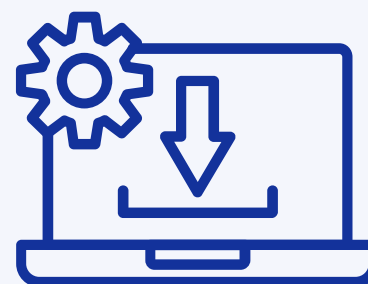
bmsoft

JOOC



# Agenda:

1



## Software demo

¡Descarga lo necesario para seguir la demostración en directo durante la presentación!

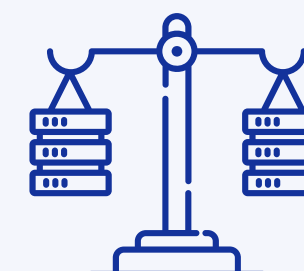
2



## Introducción

Algunos conceptos previos. Docker registries. Cloud vs OnPremise

3

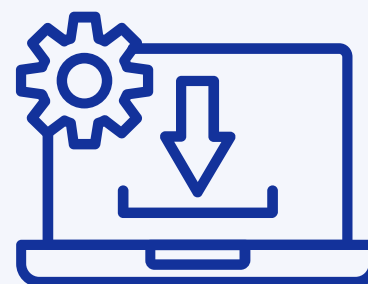


## K8s OnPremise

Tipos de nodos. Opciones elegibles para red y contenedores. ¿OnPremise en producción? Coste de k8s en cloud gestionada.

# Agenda:

1



## Software demo

¡Descarga lo necesario  
para seguir la  
demostración en directo  
durante la presentación!

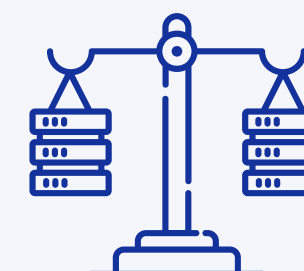
2



## Introducción

Algunos conceptos  
previos. Docker registries.  
Cloud vs OnPremise

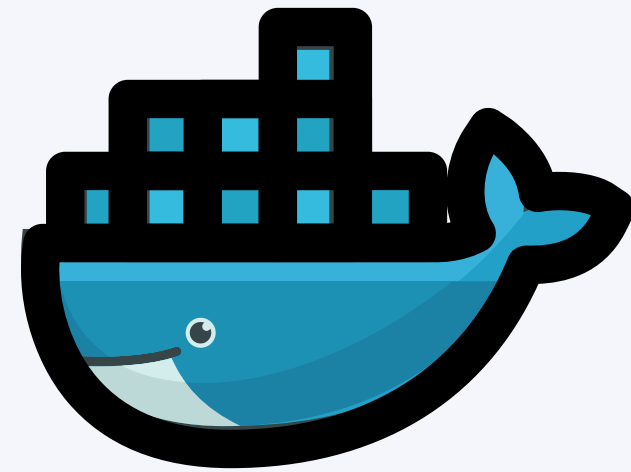
3



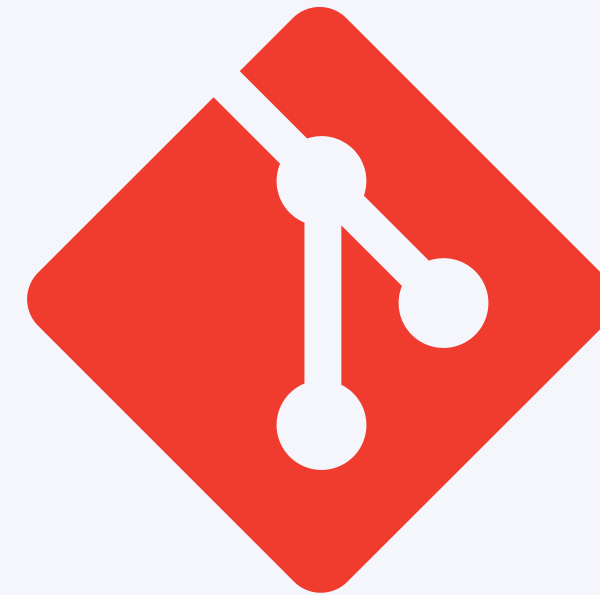
## K8s OnPremise

Tipos de nodos. Opciones  
elegibles para red y  
contenedores. ¿OnPremise  
en producción? Coste de  
k8s en cloud gestionada.

# Requisitos previos para la demo



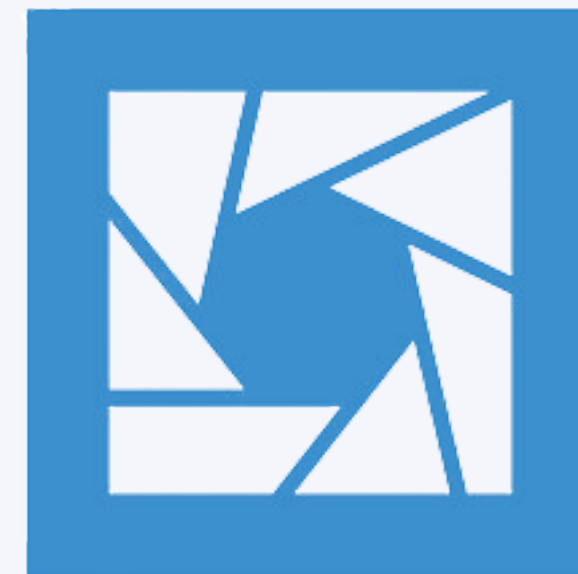
DOCKER



GIT



HELM.SH



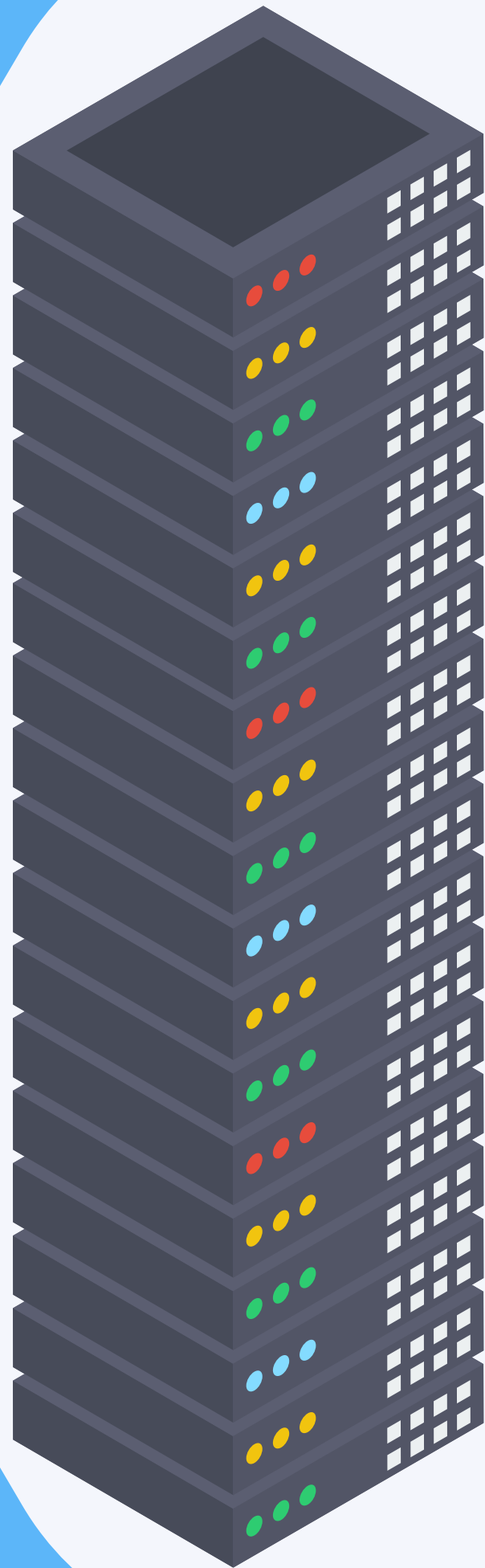
LENS

# Introducción



# Introducción

## Escalado Vertical





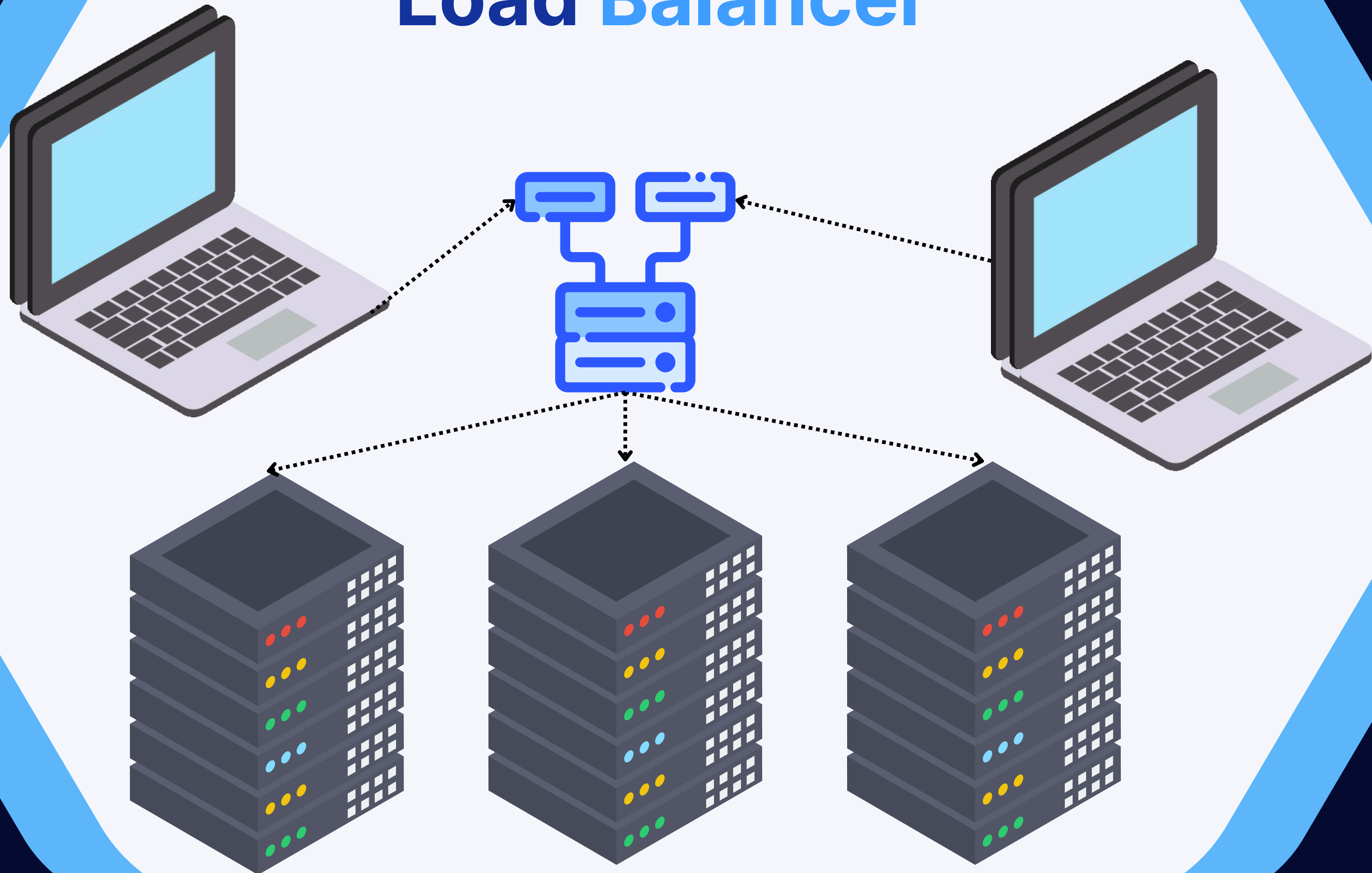
# Introducción

## Escalado Horizontal



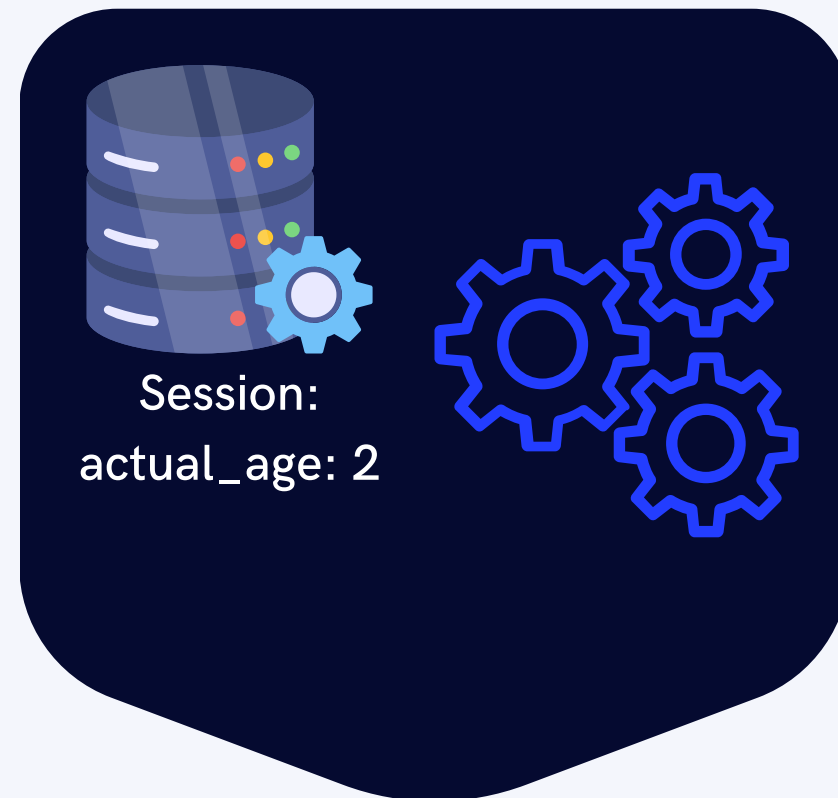


# Load Balancer



# Stateful

`add(num_years:3)`



# Stateless

`add(num_years:3, actual_age:2)`



# OnPremise



**BARE METAL**

**OS & PACKAGES**

**K8S INTERNALS**

# Cloud Gestionado



**K8S USAGE**

# ¿Cuál es la mejor opción en producción?

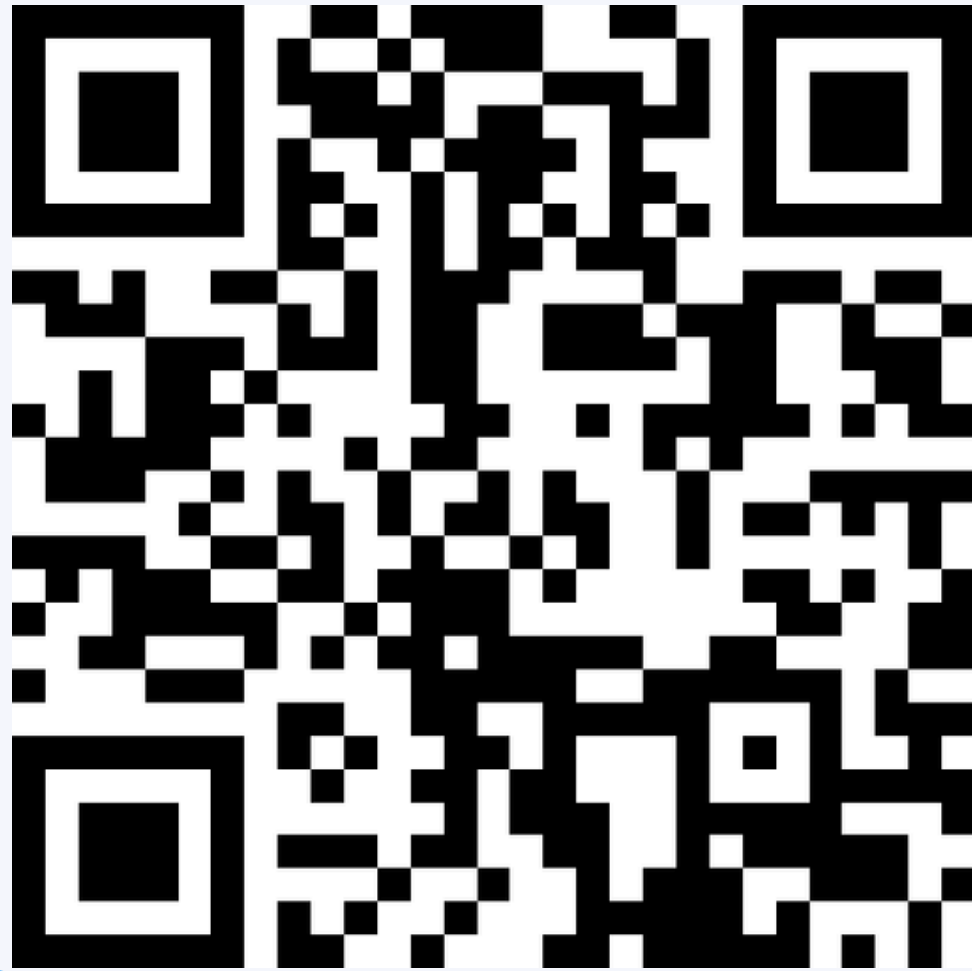
## OnPremise



## Cloud Gestionado



# ¿Cuánto cuesta k8s en Cloud Gestionado?



**[https://learnk8s.io/  
kubernetes-instance-calculator](https://learnk8s.io/kubernetes-instance-calculator)**

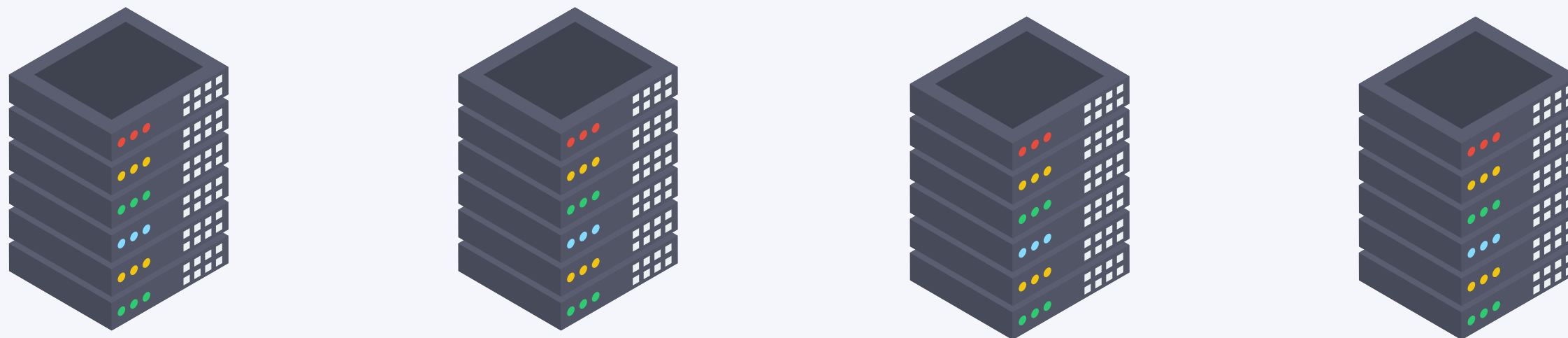
# OnPremise



# Master Nodes y Worker Nodes



MASTER NODES



WORKER NODES

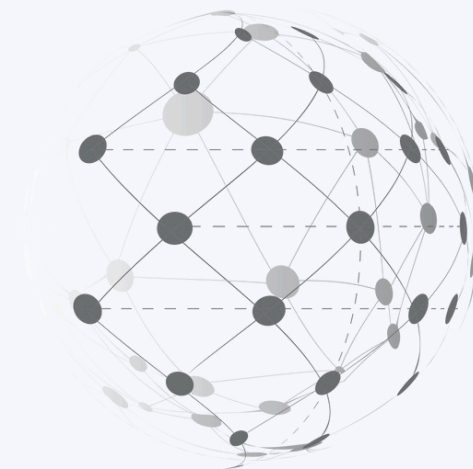


# Customizable Interfaces



**CRI**

Container Runtime  
Interface



**CNI**

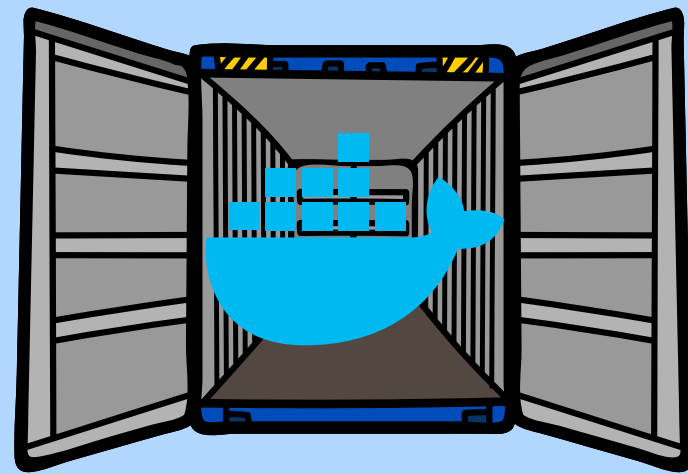
Container Network  
Interface

# Conceptos en kubernetes

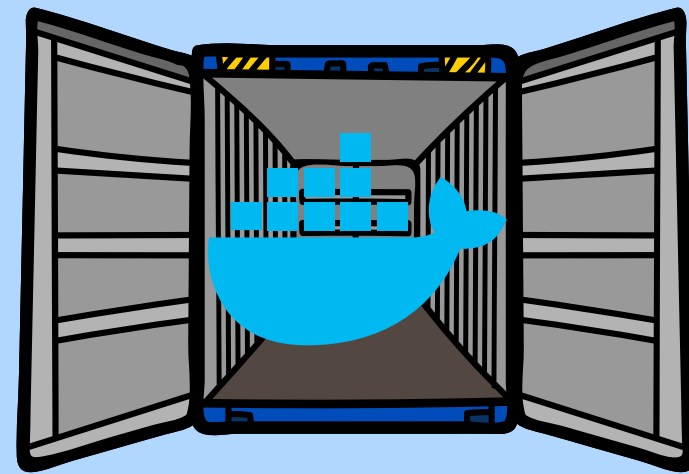


# Conceptos en kubernetes

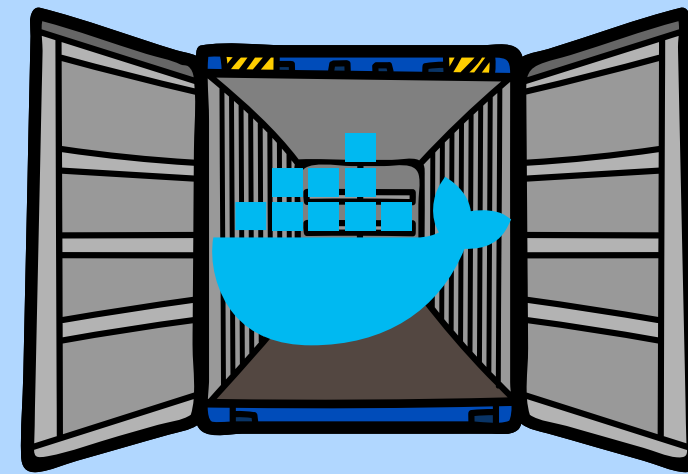
## PODS



WEB APP



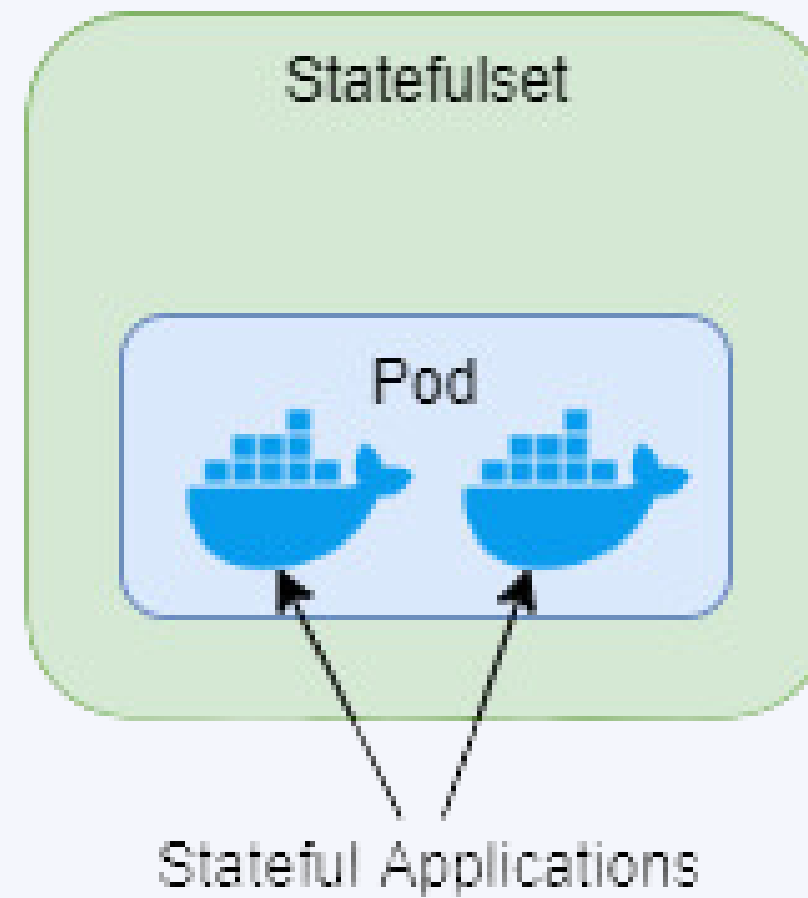
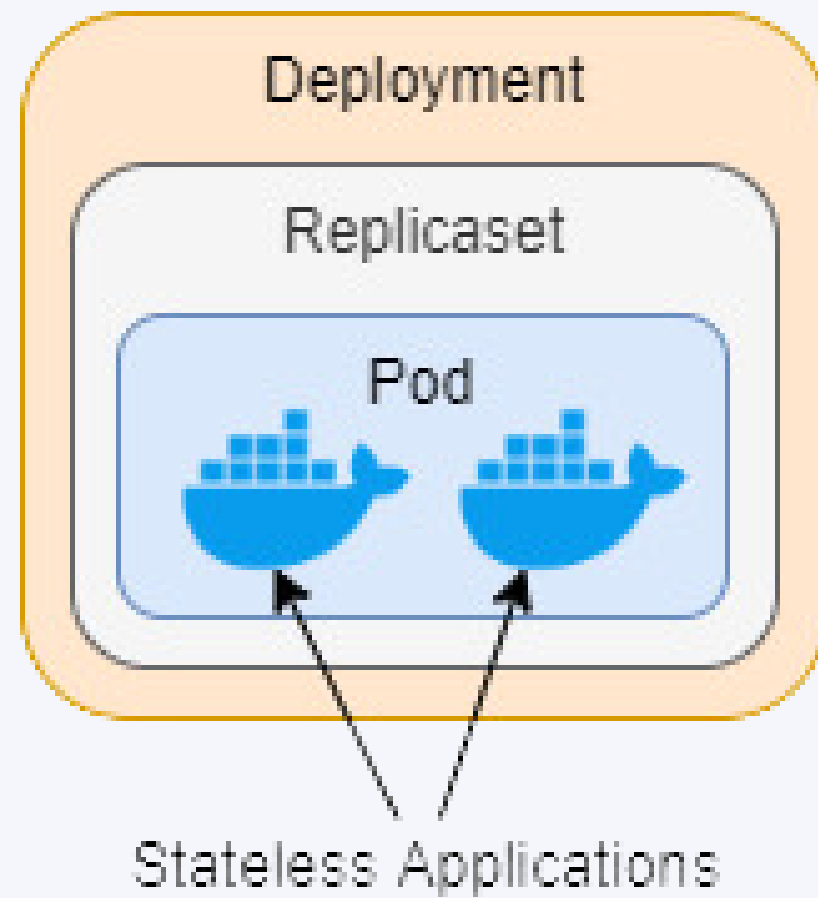
METRICS



INIT CONTAINER

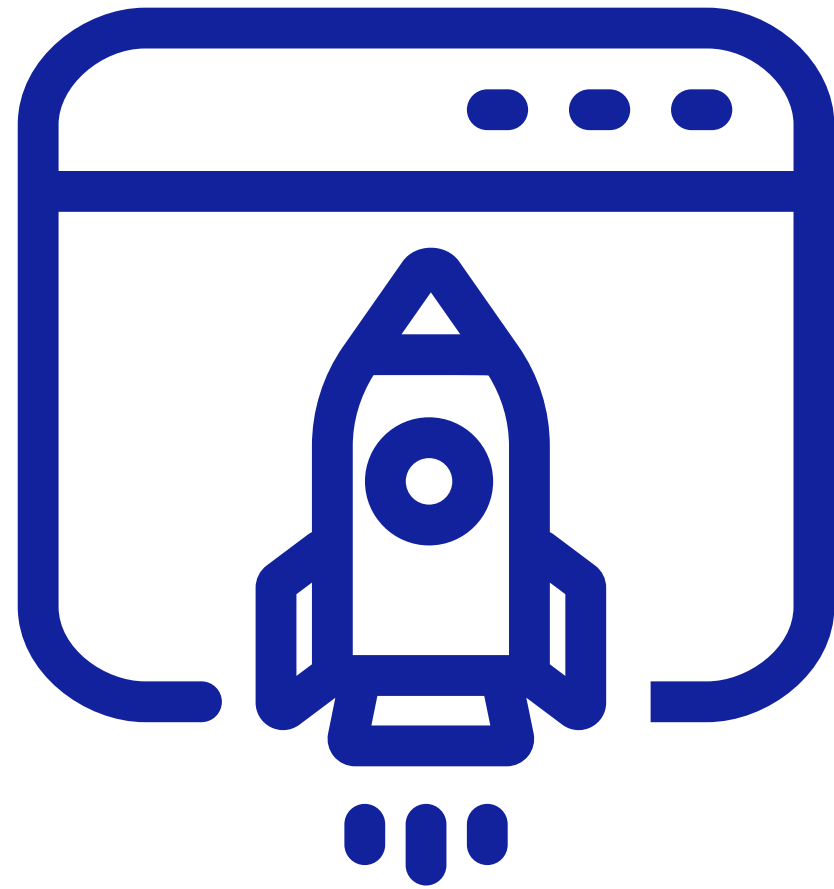
# Conceptos en kubernetes

## ReplicaSet y StatefulSet



# Conceptos en kubernetes

## Deployment



```
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: base-helloworld
5    namespace: apps-base
6  spec:
7    revisionHistoryLimit: 2
8    replicas: 4
9    selector:
10     matchLabels:
11       app: base-helloworld
12   template:
13     metadata:
14       labels:
15         app: base-helloworld
16     spec:
17       containers:
18       - name: base-helloworld
19         image: base-helloworld-image
20         livenessProbe:
21           httpGet:
22             path: /healthz
23             port: 80
24           initialDelaySeconds: 3
25           periodSeconds: 3
```

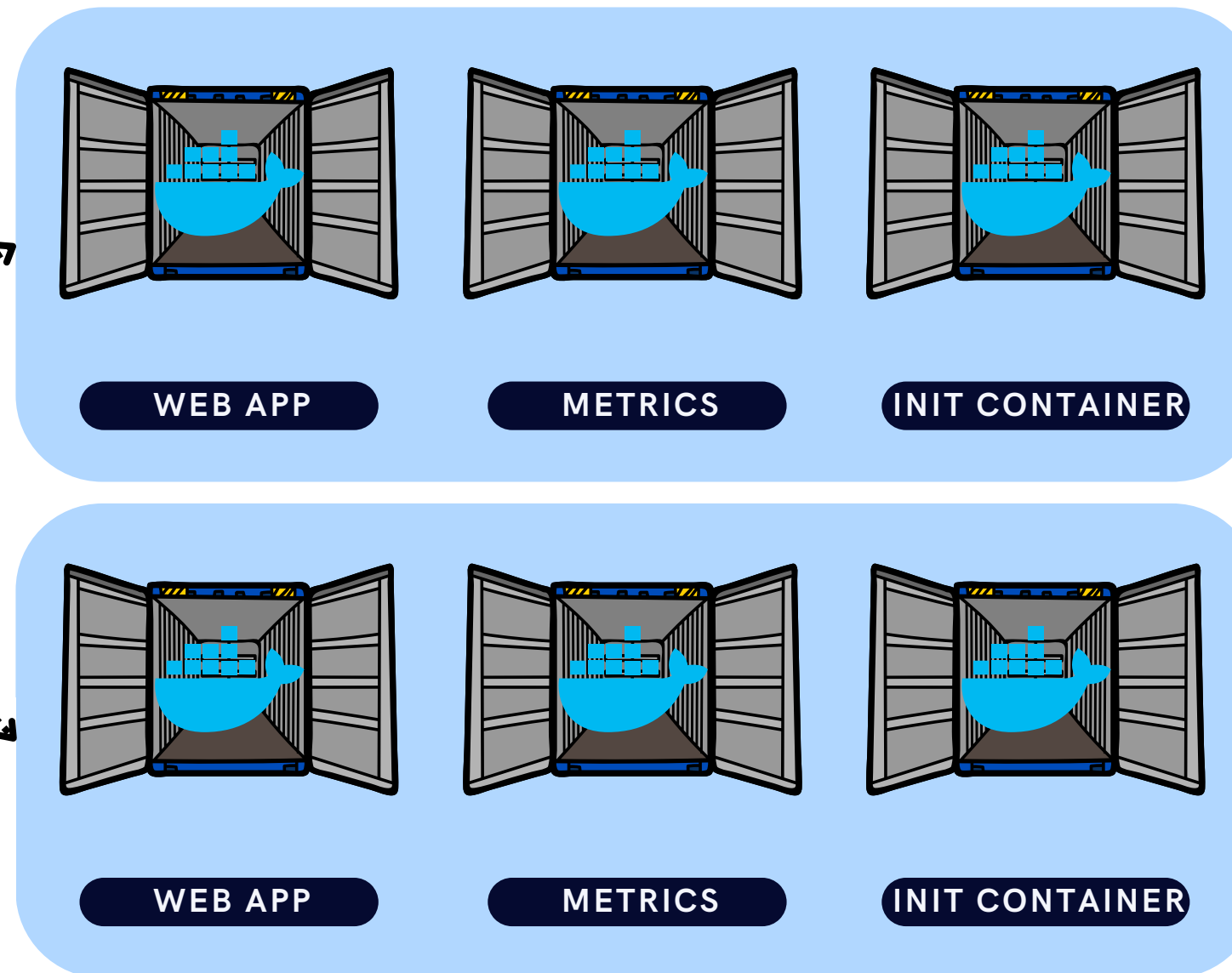


# Conceptos en kubernetes

## Service



```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    name: base-helloworld-service
5    namespace: apps-base
6  spec:
7    selector:
8      app: base-helloworld
9    type: ClusterIP
10   ports:
11     - port: 80
12       name: web
13       targetPort: 80
```



# Conceptos en kubernetes

## Ingresses + Ingress Classes

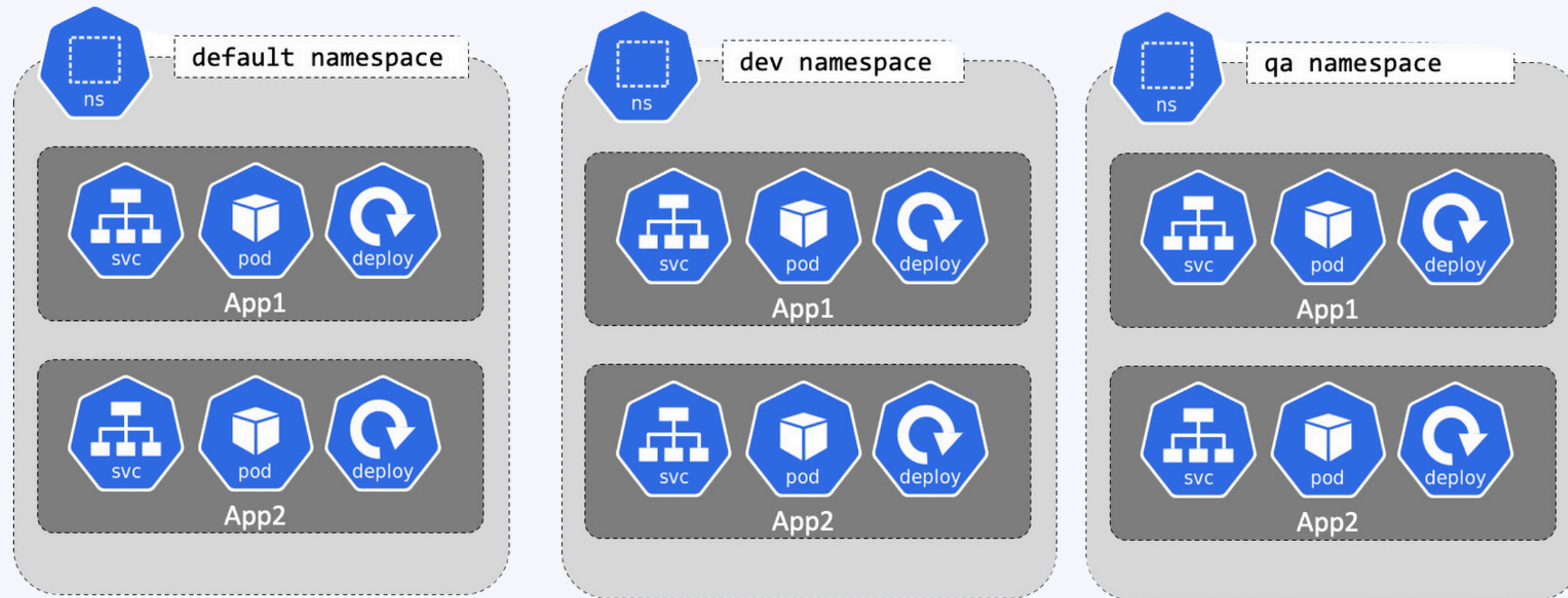
```
1  apiVersion: traefik.io/v1alpha1
2  kind: IngressRoute
3  metadata:
4    name: base-masterapp-ingress
5    namespace: apps-base
6  spec:
7    entryPoints:
8      - websecure
9    routes:
10     - kind: Rule
11       match: Host('helloworld.sem-ugr-k8s.arsahosting.com')
12       services:
13         - name: base-helloworld-service
14           port: 80
15     tls:
16       secretName: tls.sem-ugr-k8s.arsahosting.com
17
```





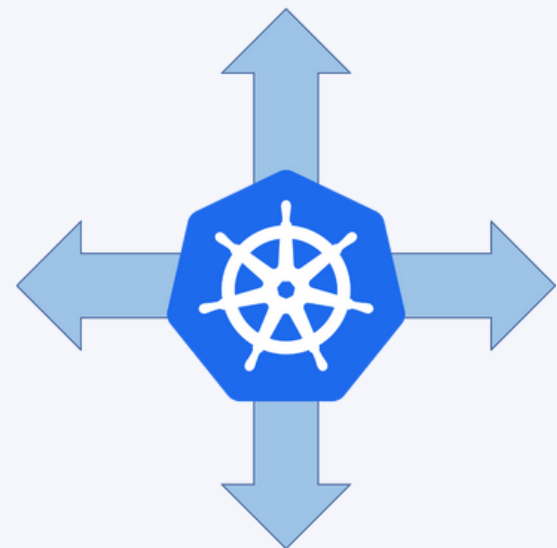
# Conceptos en kubernetes

## Namespaces



# Conceptos en kubernetes

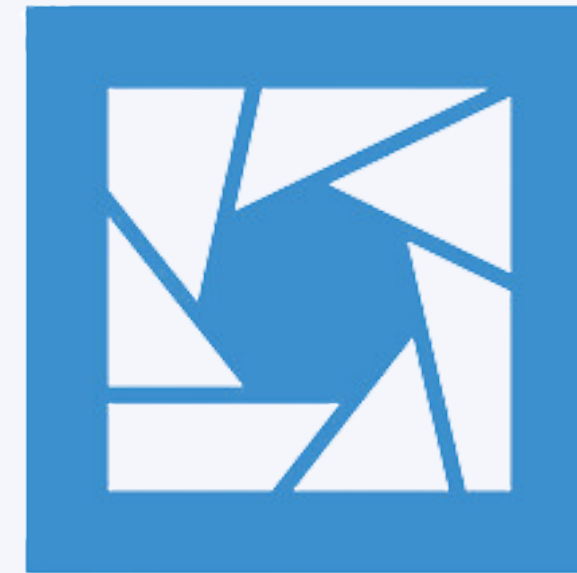
## Muchos más y CRD's



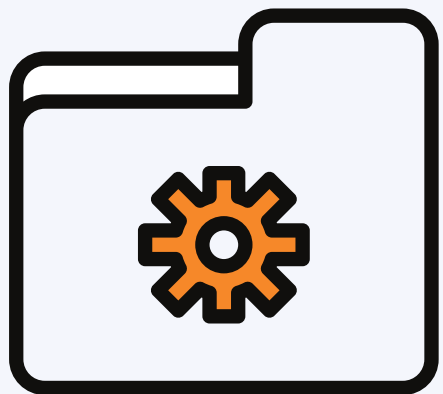
AUTOSCALERS



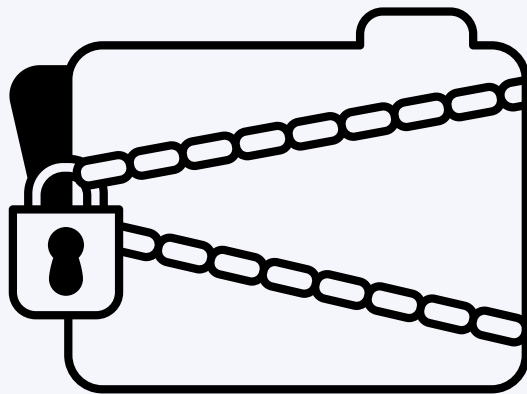
PVC Y PV



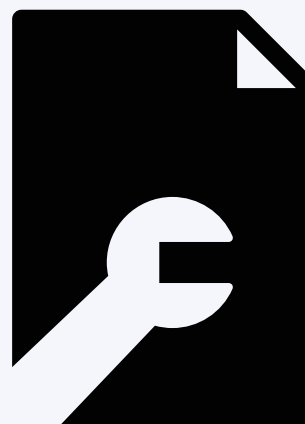
LENS



CONFIG MAPS



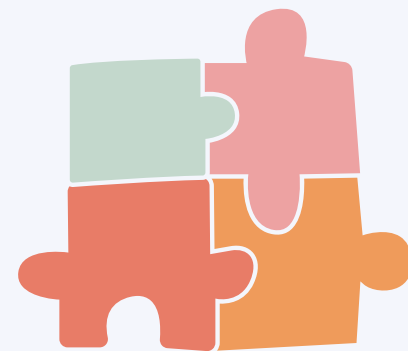
SECRETS



CRD'S

# Helm

El gestor de paquetes de k8s



CHARTS

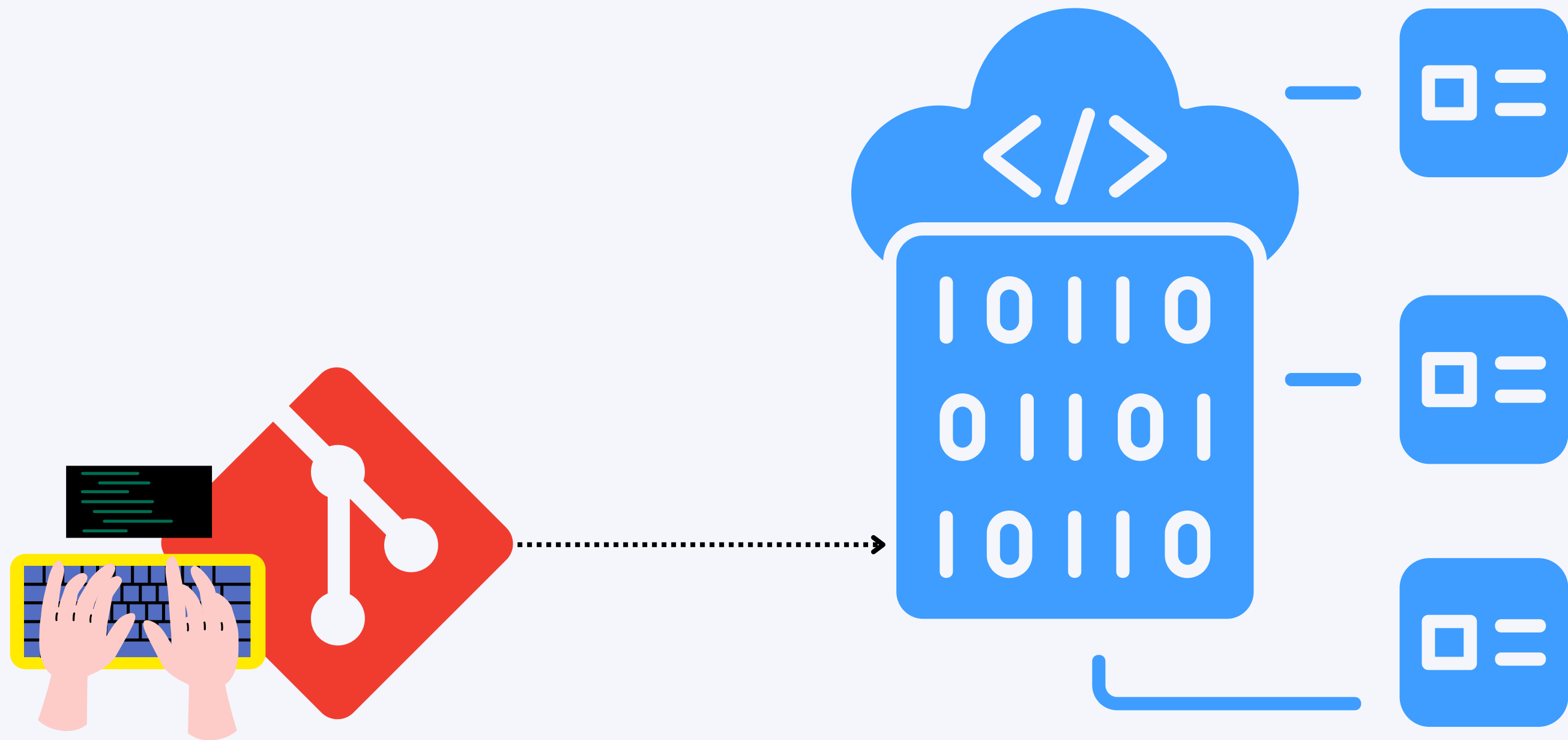


RELEASE

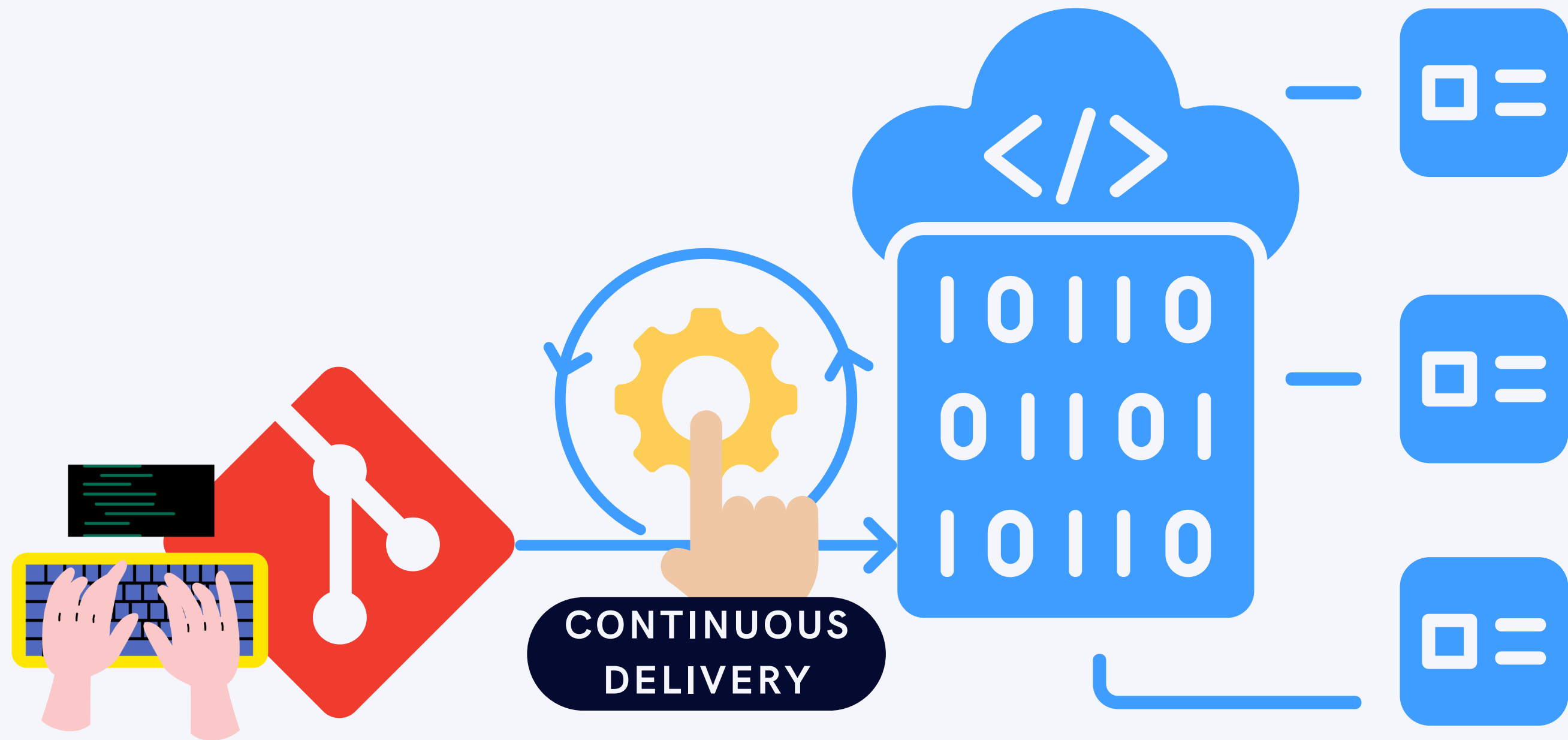
**Prácticas recomendadas**



# Prácticas recomendadas Infraestructure as Code (IaC)



# Prácticas recomendadas Continuous Delivery (CD)



# Prácticas recomendadas

## ArgoCD







**¿Preguntas?**

The background is a solid dark blue color. It features several diagonal white stripes that run from the bottom-left towards the top-right. These stripes are of varying widths and are positioned to create a dynamic, geometric pattern across the entire frame.

# Demo