



**I WANT TO  
BELIEVE**

# KUBERNETES

#techtalks 09/2024



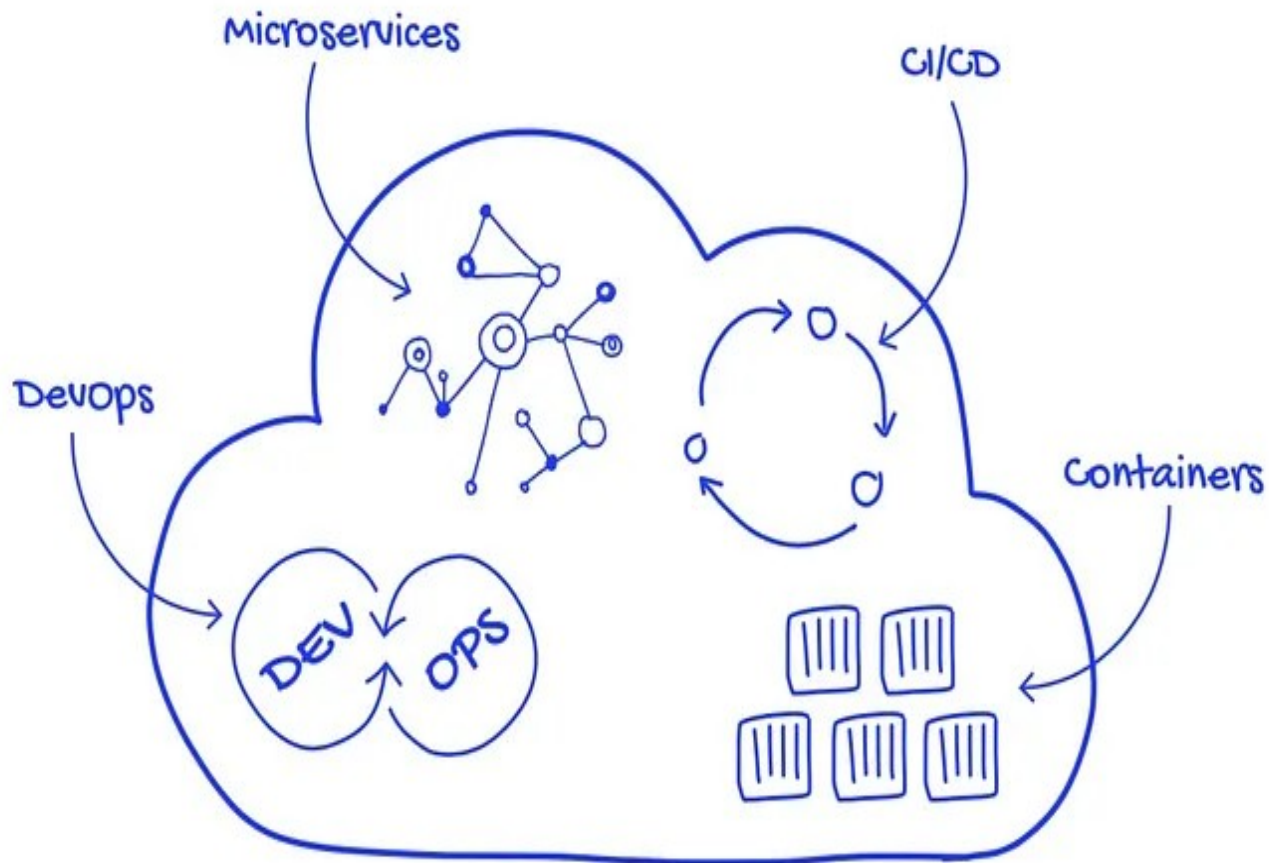
KUBERNETES, PILOTO,  
TIMONEIRO





**É o segundo maior projeto open source do mundo, atrás apenas do Linux.**

**É a ferramenta de orquestração de containers pra 71% das companhias listadas na Fortune.**



# QUEM AQUI DESENVOLVE APLICAÇÕES CLOUD- NATIVE?

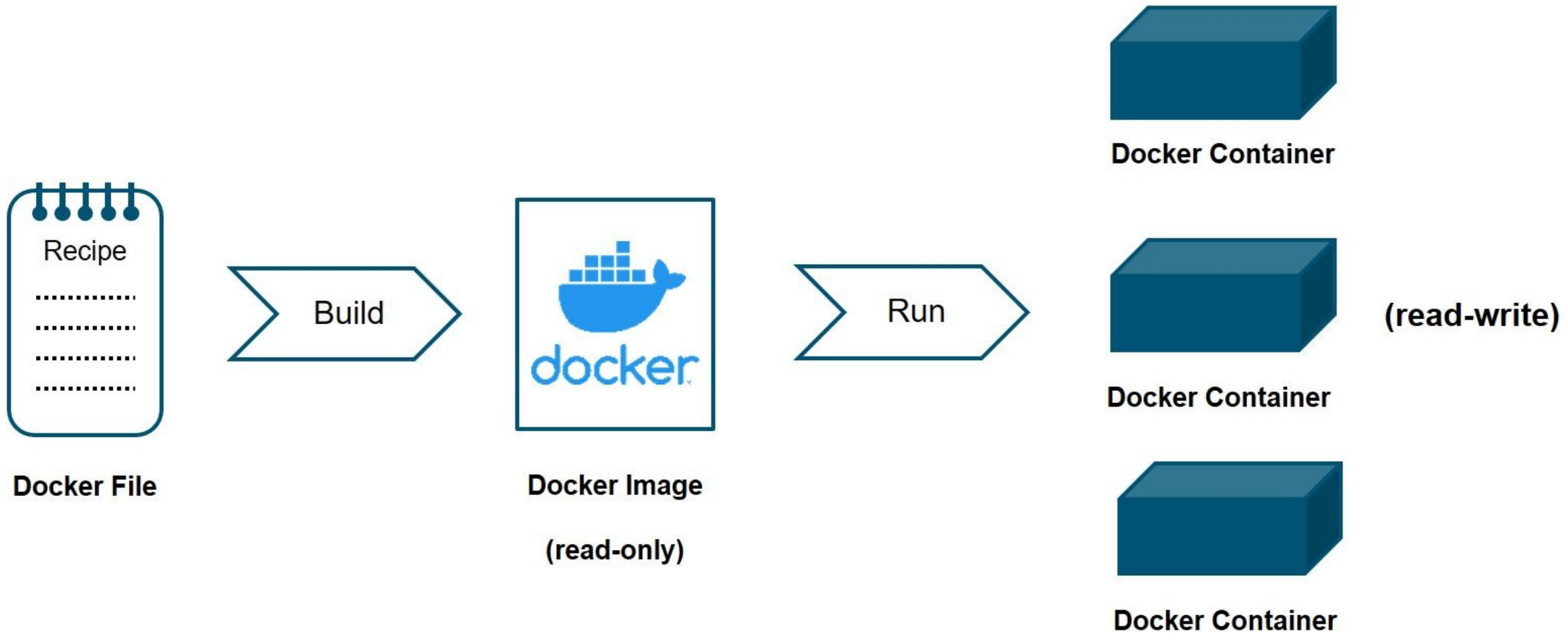
PRA ESTUDO?

PRA PROJETO PARALELO?

AQUI NA PROCERGS?

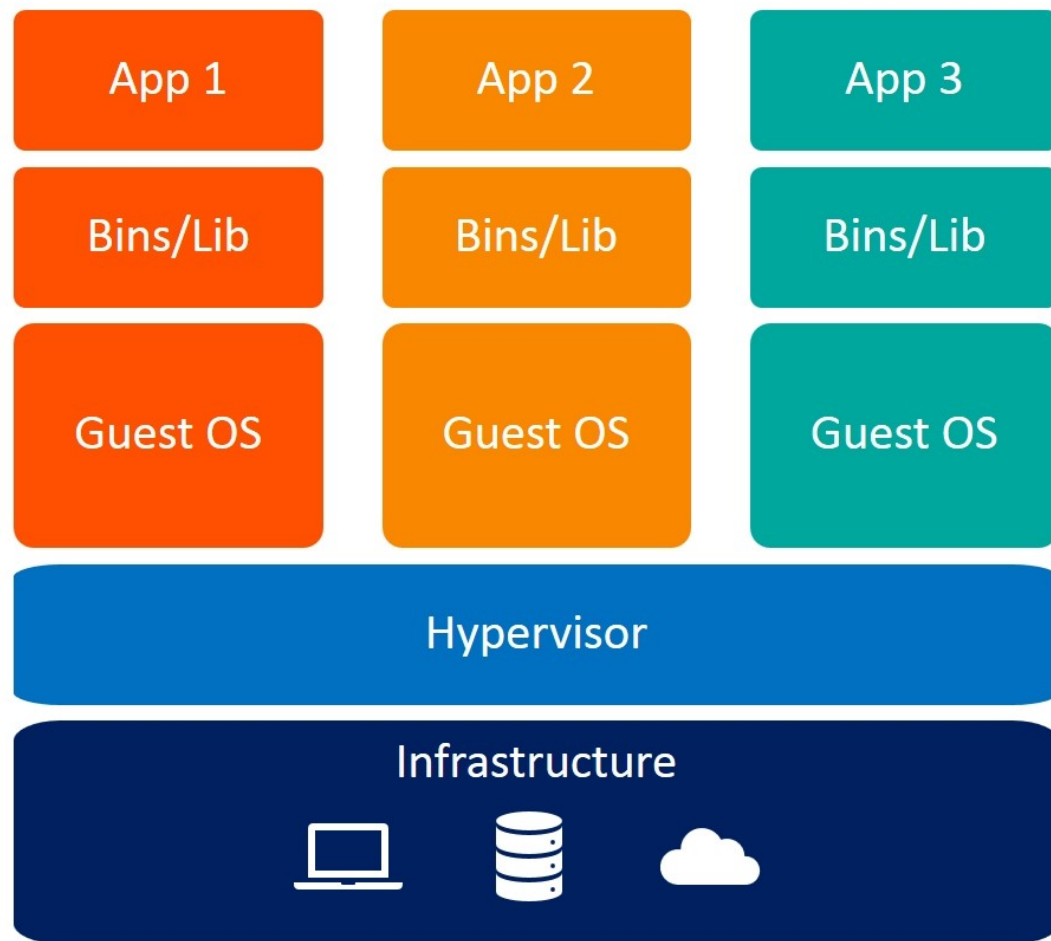


# UMA HISTÓRIA SOBRE CONTAINERS

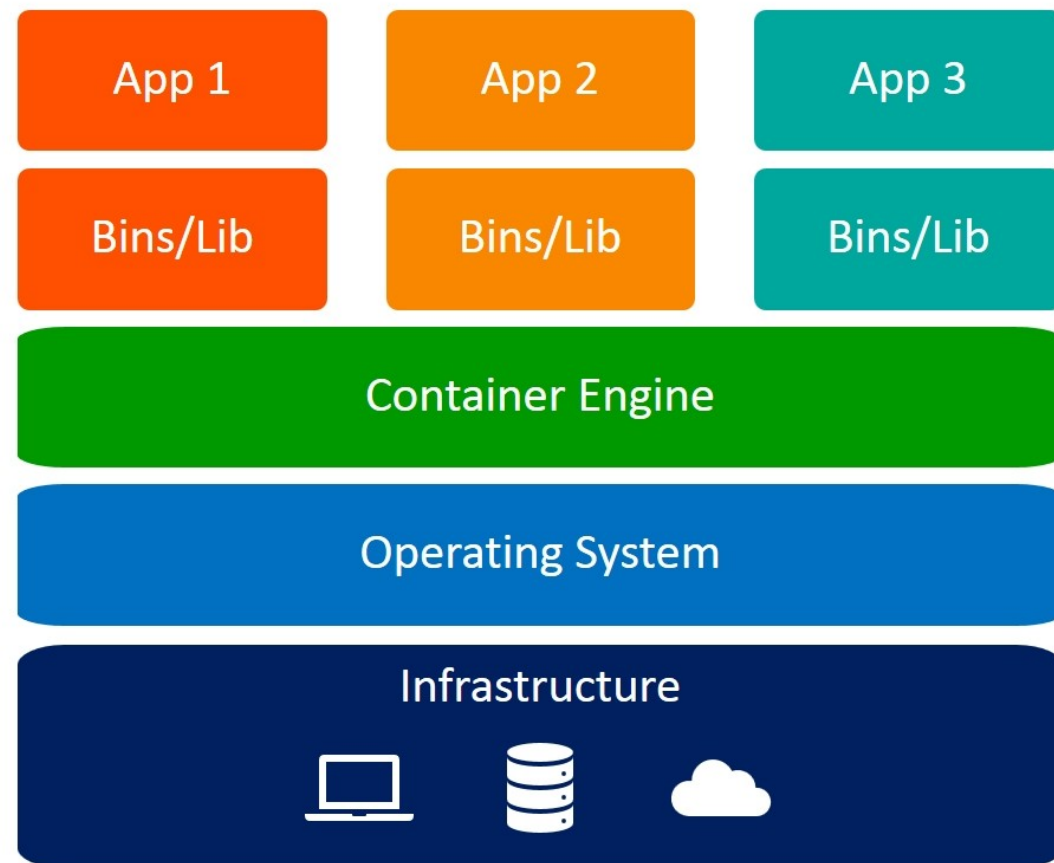


# IMAGE X CONTAINER





Virtual Machines



Containers

# CONTAINER É UMA VM?



# UM ORQUESTRADOR DE CONTAINERS?

POR QUE EU PRECISARIA DE UM REGENTE  
PARA OS MEUS CONTAINERS?



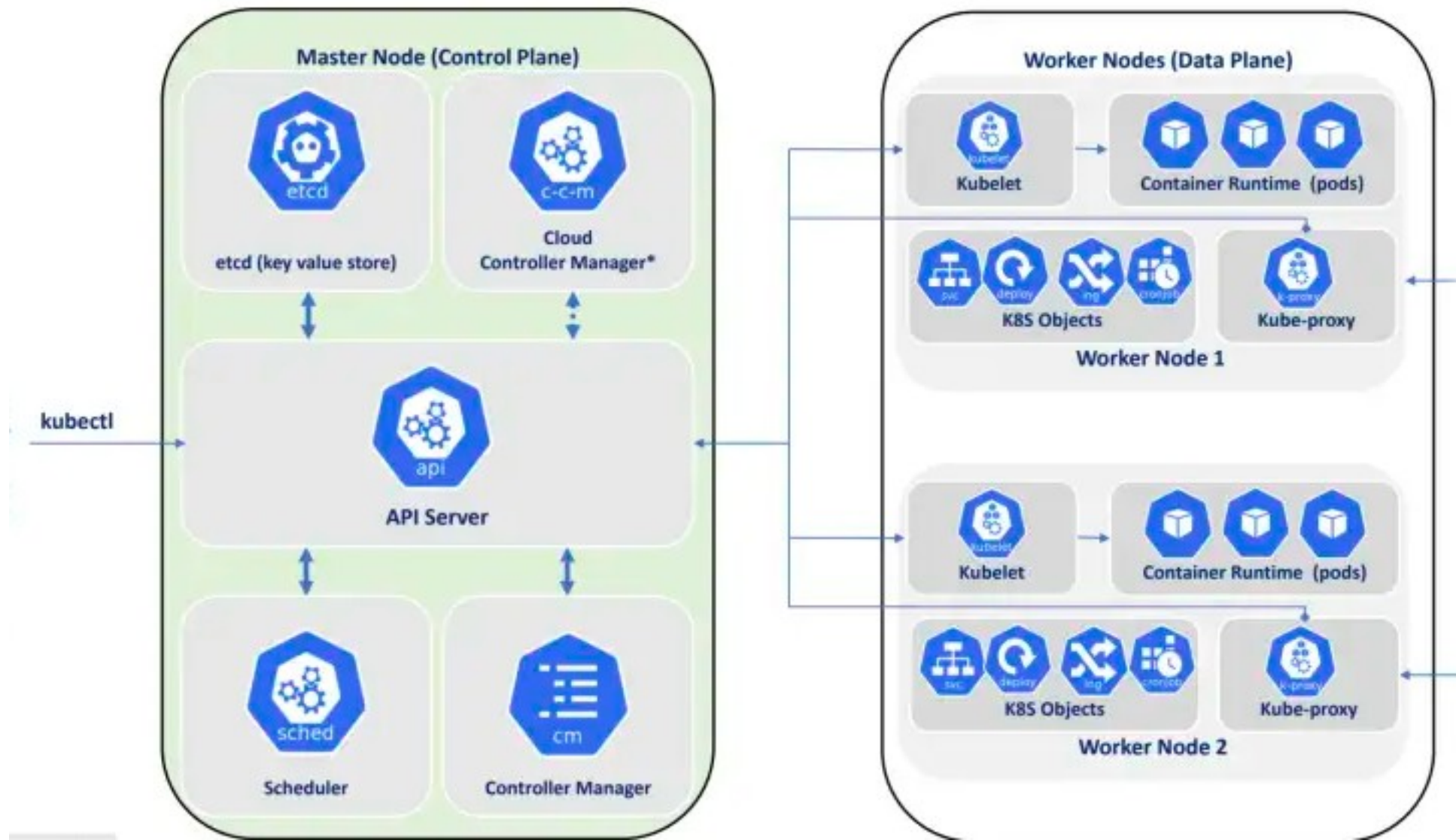


# NASCE O KUBERNETES, 2015

Por que você precisa do Kubernetes e o que ele pode fazer?

1. Descoberta de serviço e balanceamento de carga
2. Orquestração de armazenamento
3. Deploy automatizados
4. Gerenciamento de recursos automático
5. Autocorreção
6. Gerenciamento de configuração e de segredos

**SIMPLIFICA O DEPLOY, GERENCIAMENTO E A  
ESCALABILIDADE DAS APLICAÇÕES CONTAINERIZADAS!**

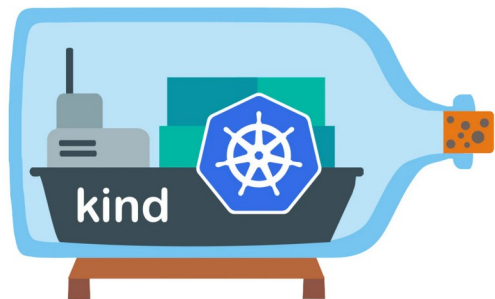


# ARQUITETURA DE UM CLUSTER K8S





minikube



podman

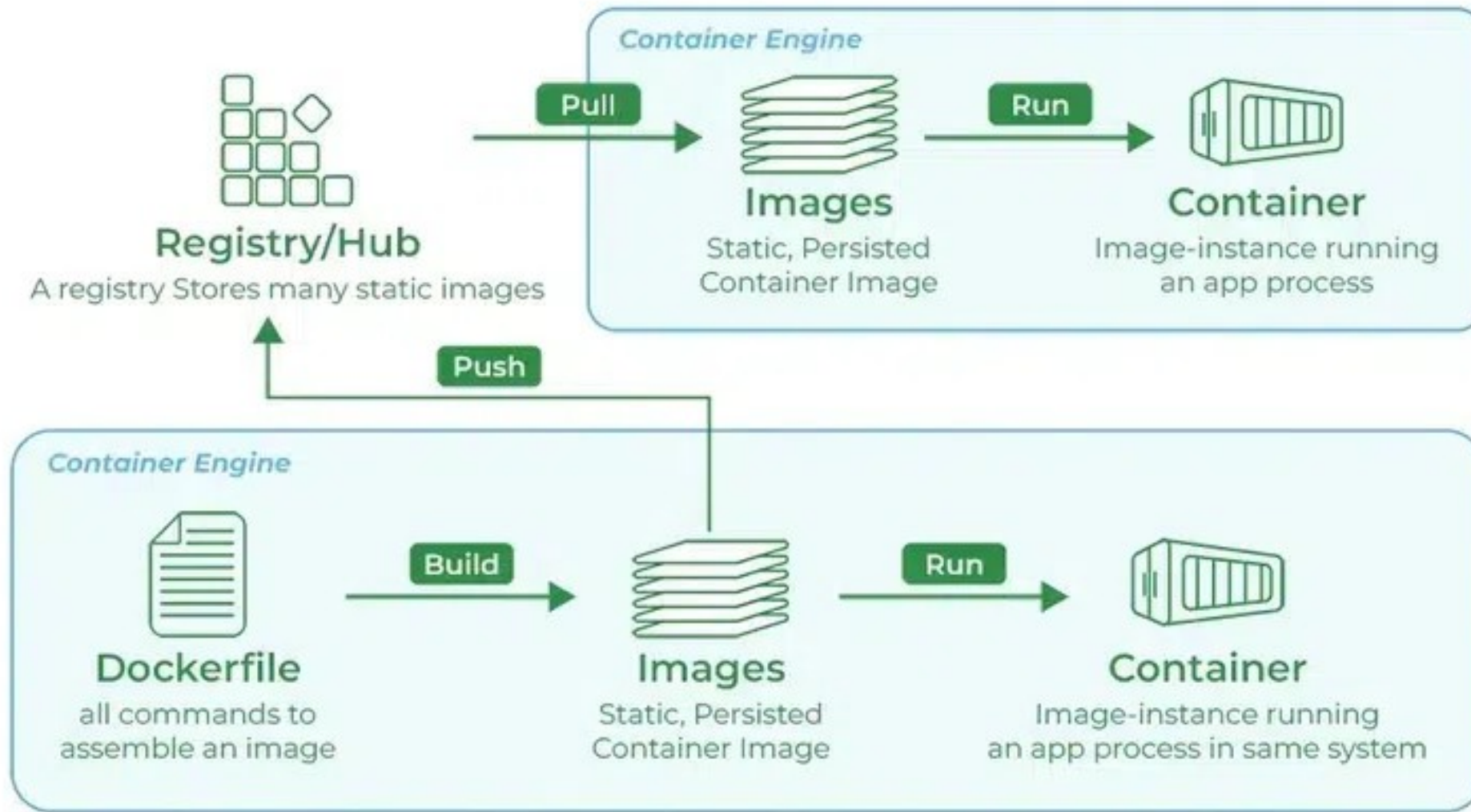


Rancher Desktop

COMO CRIAR  
UM CLUSTER K8S  
LOCAL  
PARA ESTUDAR

**AZURE AKS  
AMAZON EKS  
ORACLE OKE  
DIGITAL OCEAN  
DOCKS**

**COMO CRIAR  
UM CLUSTER K8S  
NOS CLOUD  
PROVIDERS  
PARA ESTUDAR**





← ↻ <https://quay.io/repository/>

 **RED HAT** Quay.io   EXPLORE   **REPOSITORIES**   TUTORIAL














## Repositories

1 - 14 of 14

REPOSITORY NAME	LAST MODIFIED	QUOTA CONSUMED
 rockchico2 / <a href="#">techtalks-app</a>	Today at 12:09 PM	79.44 MiB

# REPOSITÓRIO DE IMAGENS

# APLICAÇÃO CONTAINERIZADA

- > src
- > test
-  .dockerignore
-  .env
-  .env.example
-  .eslintrc.js
-  .gitignore
-  .prettierrc
-  Dockerfile
-  nest-cli.json
-  package.json
-  README.md
-  tsconfig.build.json
-  tsconfig.json
-  yarn.lock

```
1 ARG NODE_VERSION=18.15.0
2 FROM node:${NODE_VERSION}-bullseye-slim AS builder
3 WORKDIR /app
4 ENV NODE_ENV=production
5 # Instalar as dependências
6 COPY package.json yarn.lock ./
7 RUN yarn install --frozen-lockfile --silent
8 # Faz o build do projeto
9 COPY . .
10 RUN yarn global add @nestjs/cli
11 RUN yarn run build
12
13 FROM node:${NODE_VERSION}-bullseye-slim AS runner
14 WORKDIR /app
15 ENV NODE_ENV=production
16 RUN apt-get update && apt-get install -y --no-install-recommends dumb-init
17 # Não executar o processo como root
18 RUN addgroup --system --gid 1001 expressjs
19 RUN adduser --system --uid 1001 expressjs
20 USER expressjs
21 COPY --from=builder /app/package*.json /app/
22 COPY --from=builder /app/yarn.lock /app/
23 COPY --from=builder /app/dist/ /app/dist/
24 COPY --from=builder /app/node_modules/ /app/node_modules/
25
26 EXPOSE 3000
27 CMD ["dumb-init", "node", "dist/main.js"]
```



# BUILD DA IMAGEM DO CONTAINER

```
techtalks-k8s on ↗ main [!?] took 2s  
> docker build -f ./ci/Dockerfile ./ci -t quay.io/rockchico2/techtalks-app:0.1.0
```

## LOGIN NO CONTAINER REGISTRY

```
techtalks-k8s on ↗ main [!?]  
> docker login quay.io  
Username: rockchico2  
Password:  
WARNING! Your password will be stored in plaintext  
Configure a credential helper  
https://docs.docker.com/engine  
  
Login Succeeded
```

# RODAR O CONTAINER LOCALMENTE

```
techtalks-k8s on ↗ main [!?] took 20s
> docker run -it -p 3000:3000 quay.io/rockchico2/techtalks-app:0.1.0
[Nest] 8    - 09/20/2024, 4:27:56 PM      LOG [NestFactory] Starting Nes
[Nest] 8    - 09/20/2024, 4:27:56 PM      LOG [InstanceLoader] ConfigHos
ed +9ms
```

# PUSH DA IMAGEM PRO CONTAINER REGISTRY

```
techtalks-k8s on ↗ main [!?] took 39s
> docker push quay.io/rockchico2/techtalks-app:0.1.0
The push refers to repository [quay.io/rockchico2/techtalks-app]
0cc6fd9f70a5: Layer already exists
dd27a6d7781a: Layer already exists
a4361cab7464: Layer already exists
122c2c8124e2: Layer already exists
```



```
cd > manifests > ! deploy.yml
```

```
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: techtalks-app
5  spec:
6    replicas: 3
7    selector:
8      matchLabels:
9        app: app-nestjs
10   template:
11     metadata:
12       labels:
13         app: app-nestjs
14     spec:
15       containers:
16       - name: nest
17         image: quay.io/rockchico2/techtalks-app:0.1.0
```

# DEPLOY

techtalks-k8s on ↗ main [!?]

> k apply -f cd/manifests/deploy.yml

# SERVICE

```
cd > manifests > ! service.yml
1  apiVersion: v1
2  kind: Service
3  metadata:
4  |   name: techtalks-app
5  spec:
6  |   ports:
7  |     - protocol: TCP
8  |       port: 3000
9  |       targetPort: 3000
10 |   selector:
11 |     app: app-nestjs
```

```
techtalks-k8s on ↗ main [!?]
> k apply -f cd/manifests/service.yml
```

# INGRESS

```
cd > manifests > ! ingress.yml
1  apiVersion: networking.k8s.io/v1
2  kind: Ingress
3  metadata:
4    name: techtalks-app
5    annotations:
6      ingress.kubernetes.io/ssl-redirect: "false"
7  spec:
8    ingressClassName: traefik
9    rules:
10     - host: techtalks-app.rockchico.dev
11       http:
12         paths:
13           - path: /
14             pathType: Prefix
15             backend:
16               service:
17                 name: techtalks-app
18                 port:
19                   number: 3000
```



```
techtalks-k8s on ↗ main [!?]
> k apply -f cd/manifests/ingress.yml
```

```
techtalks-k8s on ↗ main [!?]
> curl techtalks-app.rockchico.dev
Bem-vindo ao teste! minhaEnvVar = Bazinga!%
```

*OBRIGADO PELA ATENÇÃO!*



francisco-schwertner

