



**I WANT TO
BELIEVE**

KUBERNETES

#techtalks 09/2024

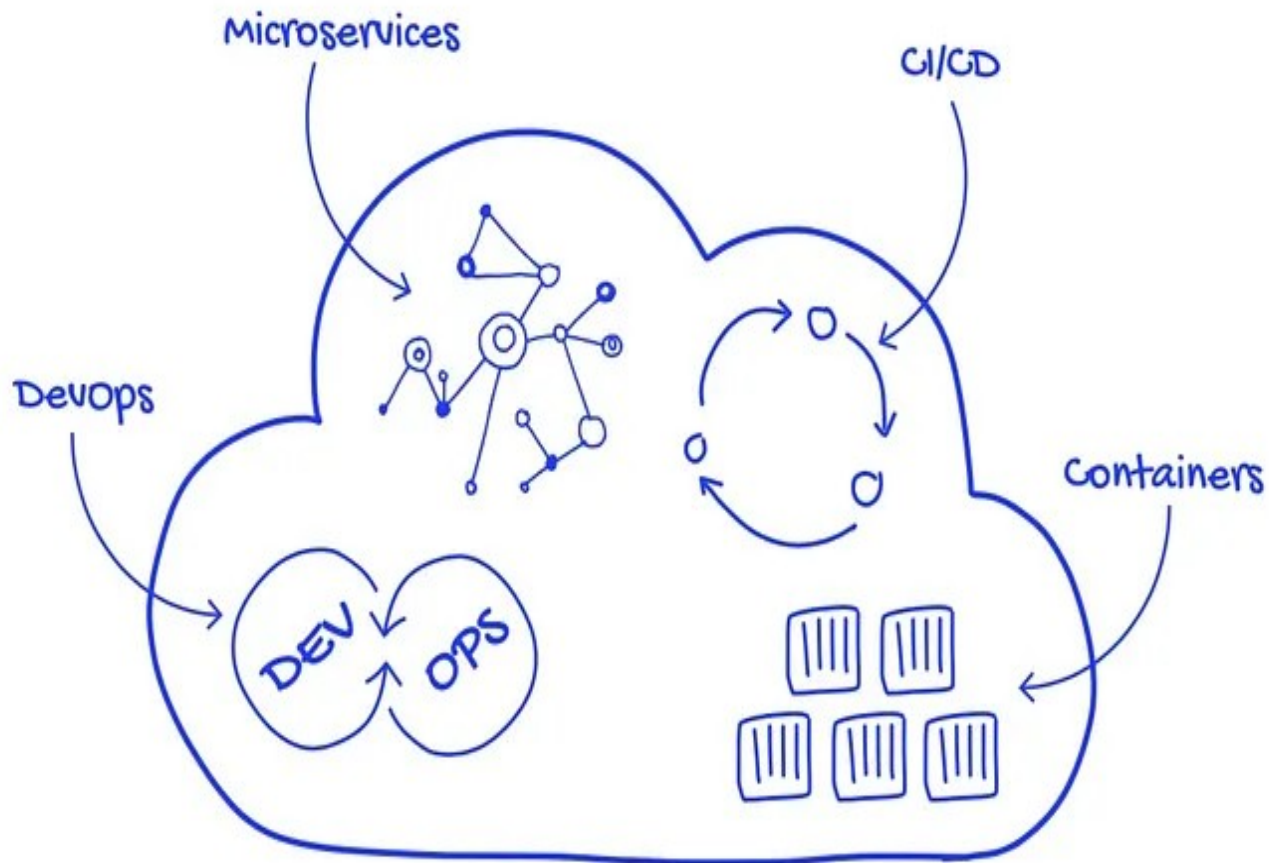


KUBERNETES, PILOTO,
TIMONEIRO



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

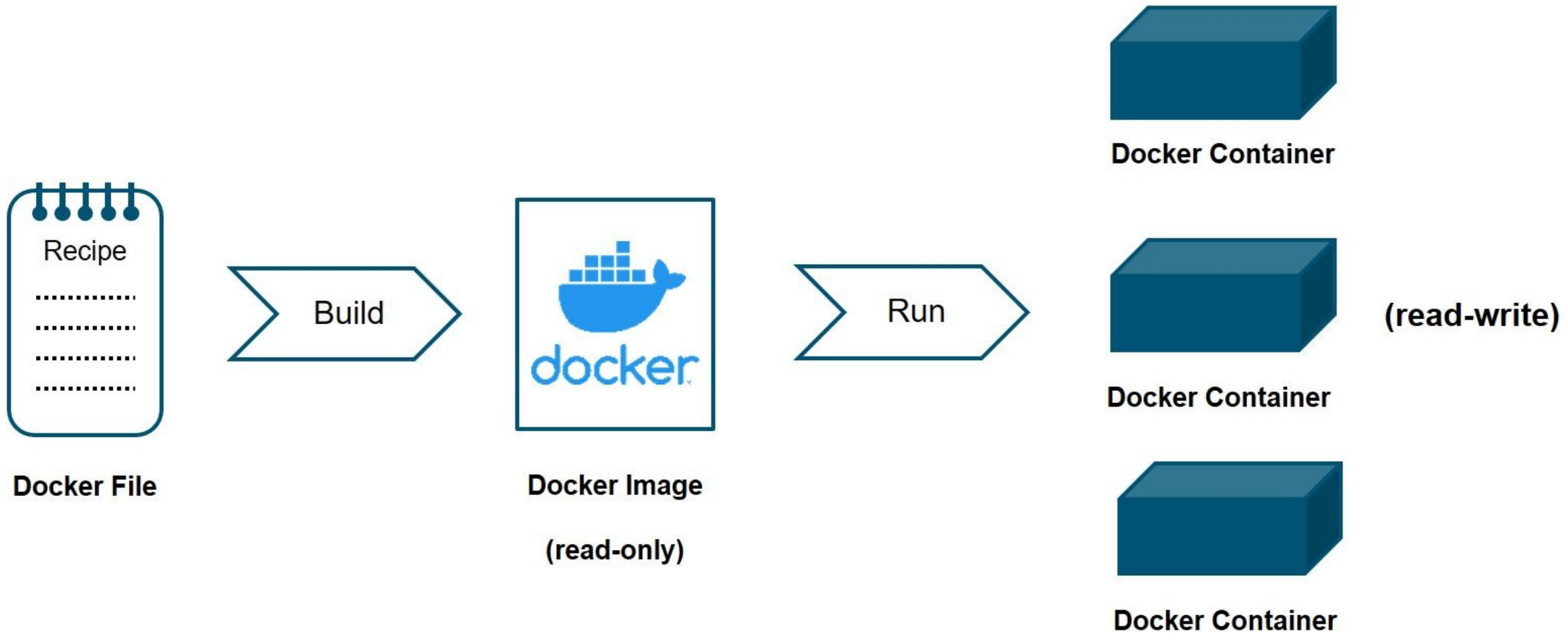
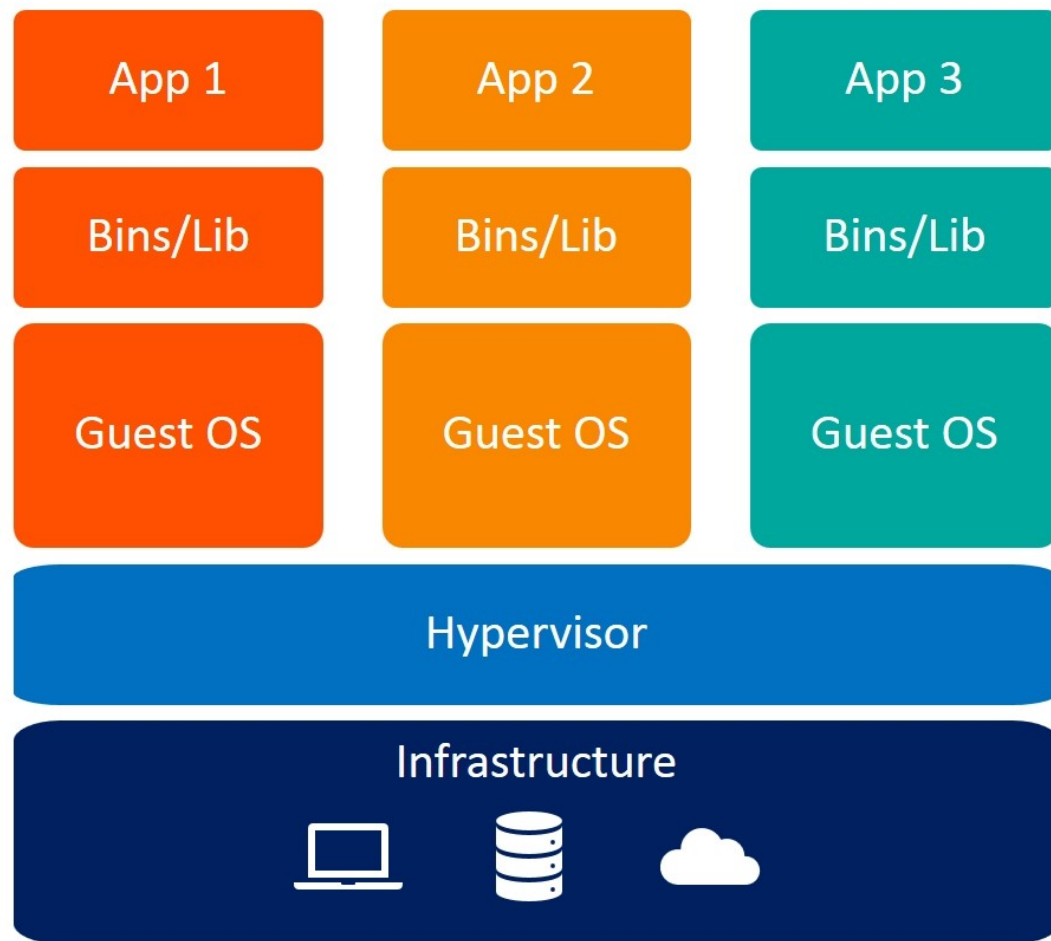
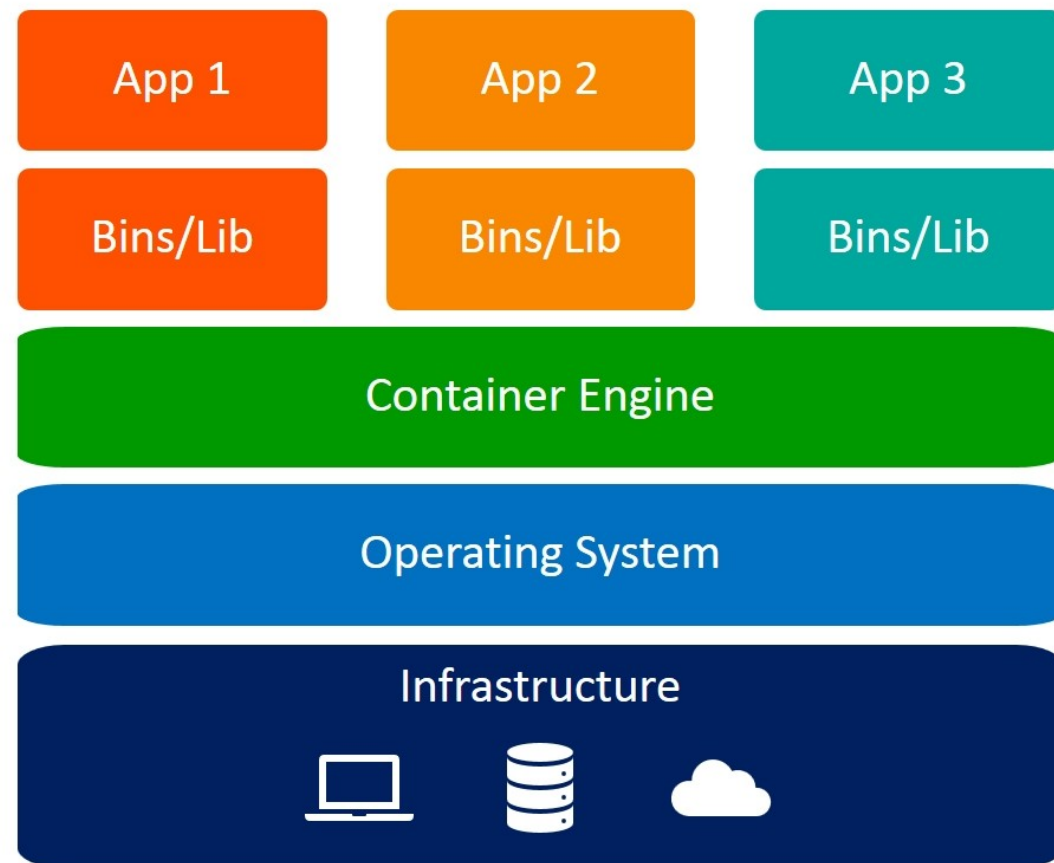


IMAGE X CONTAINER



Virtual Machines



Containers

CONTAINER É UMA VM?



UM ORQUESTRADOR DE CONTAINERS?

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

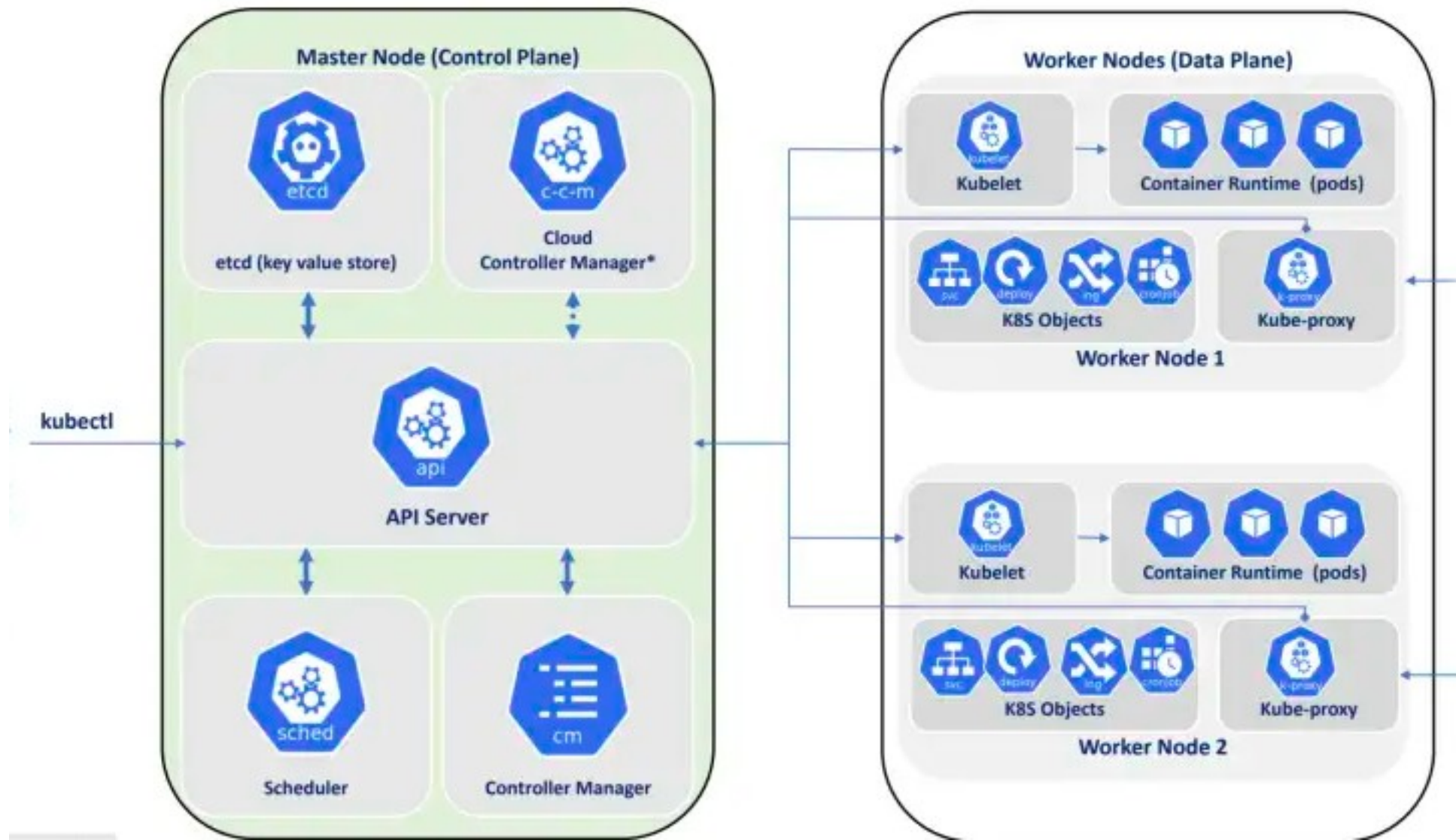


NASCE O KUBERNETES, 2015

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

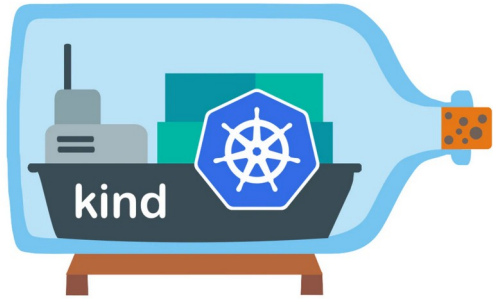
**SIMPLIFICA O DEPLOY, GERENCIAMENTO E A
ESCALABILIDADE DAS APLICAÇÕES CONTAINERIZADAS!**



ARQUITETURA DE UM CLUSTER K8S



minikube



podman



Rancher Desktop

COMO CRIAR
UM CLUSTER K8S
LOCAL
PARA ESTUDAR

AZURE AKS

AMAZON EKS

ORACLE OKE

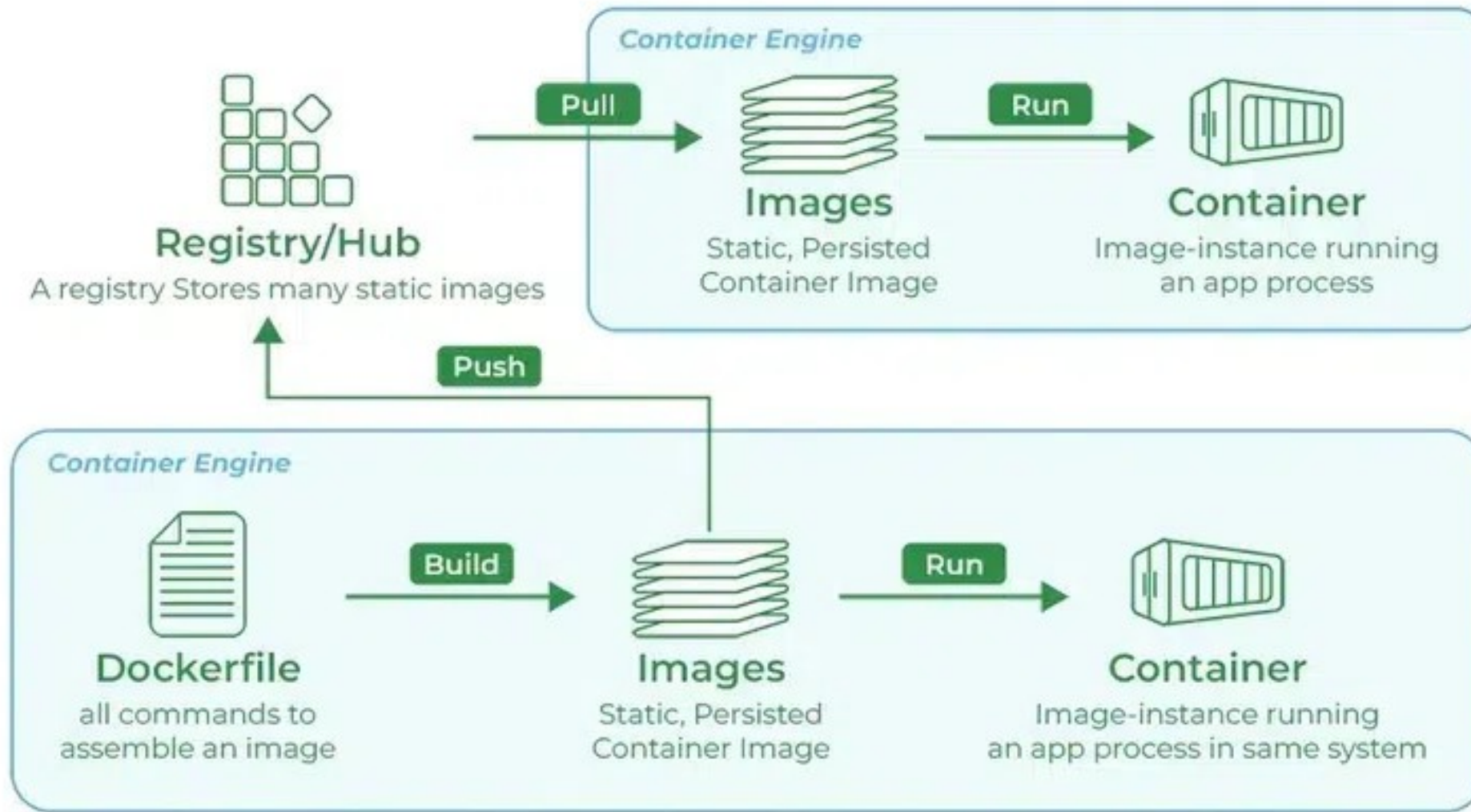
DIGITAL OCEAN DOCKS

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 / techtalks-app | 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

github.com/rockchico/techtalks-k8s