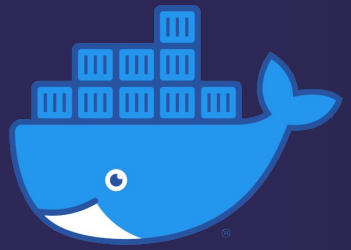
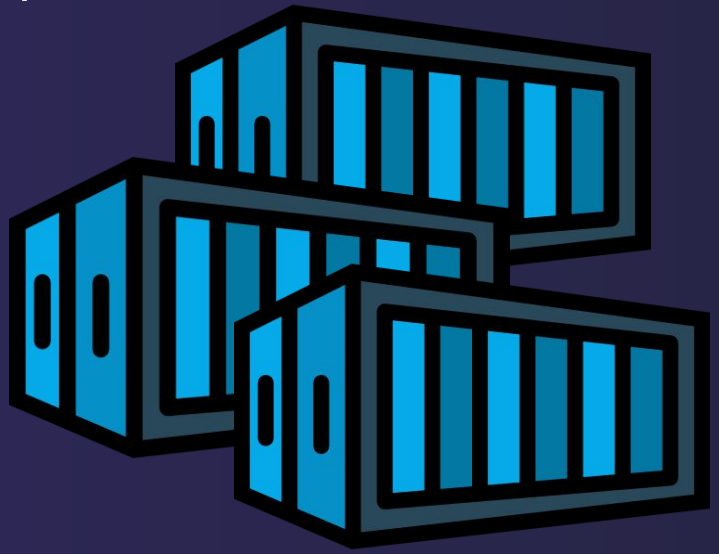
Preamble

Prerequisites before we can start talking about KiND

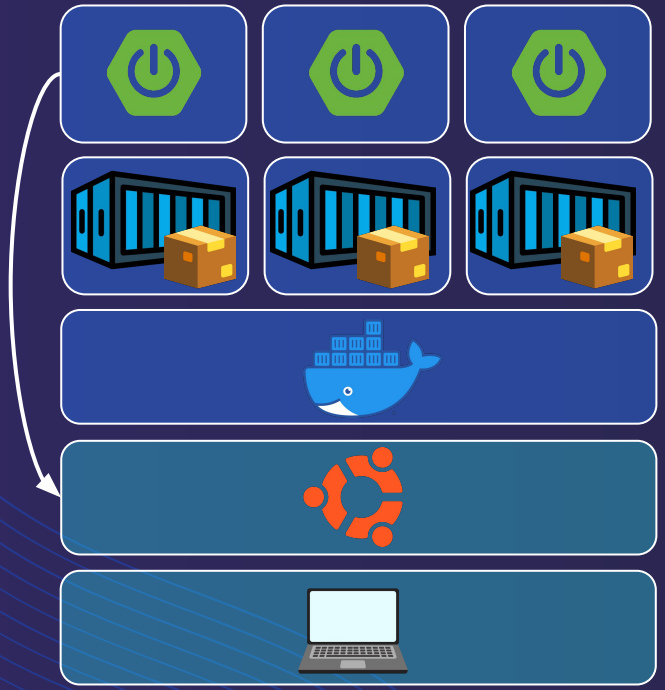


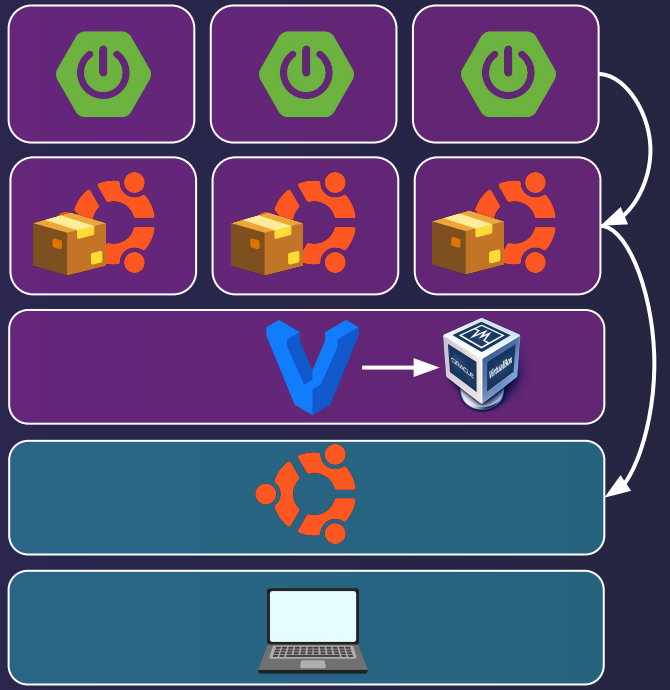
Core concepts overview

Docker



Containers

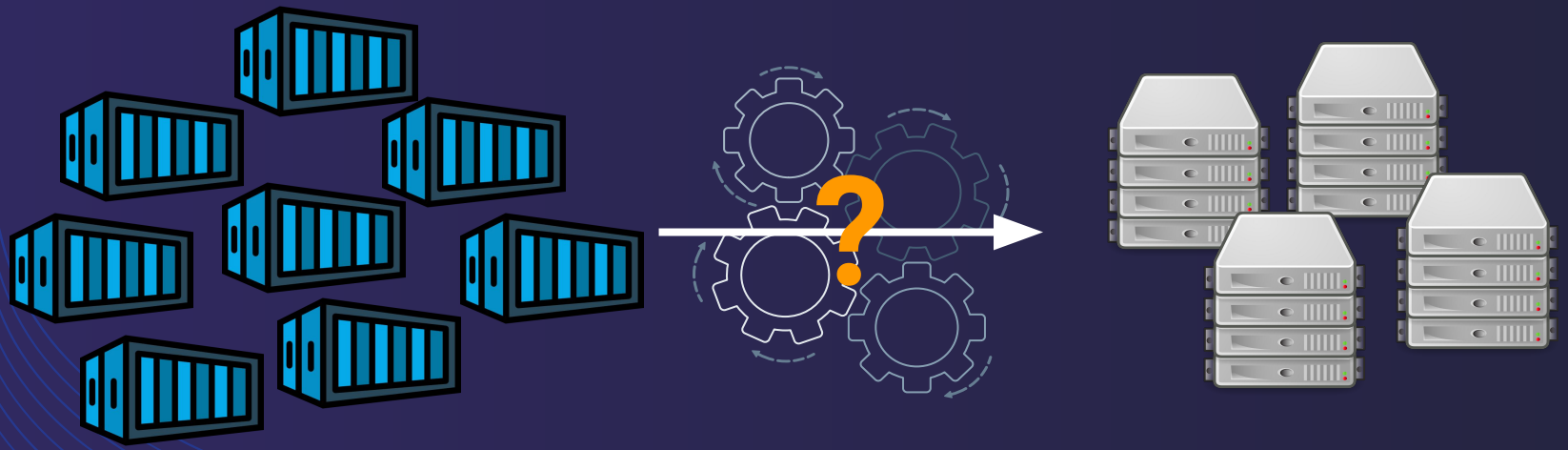




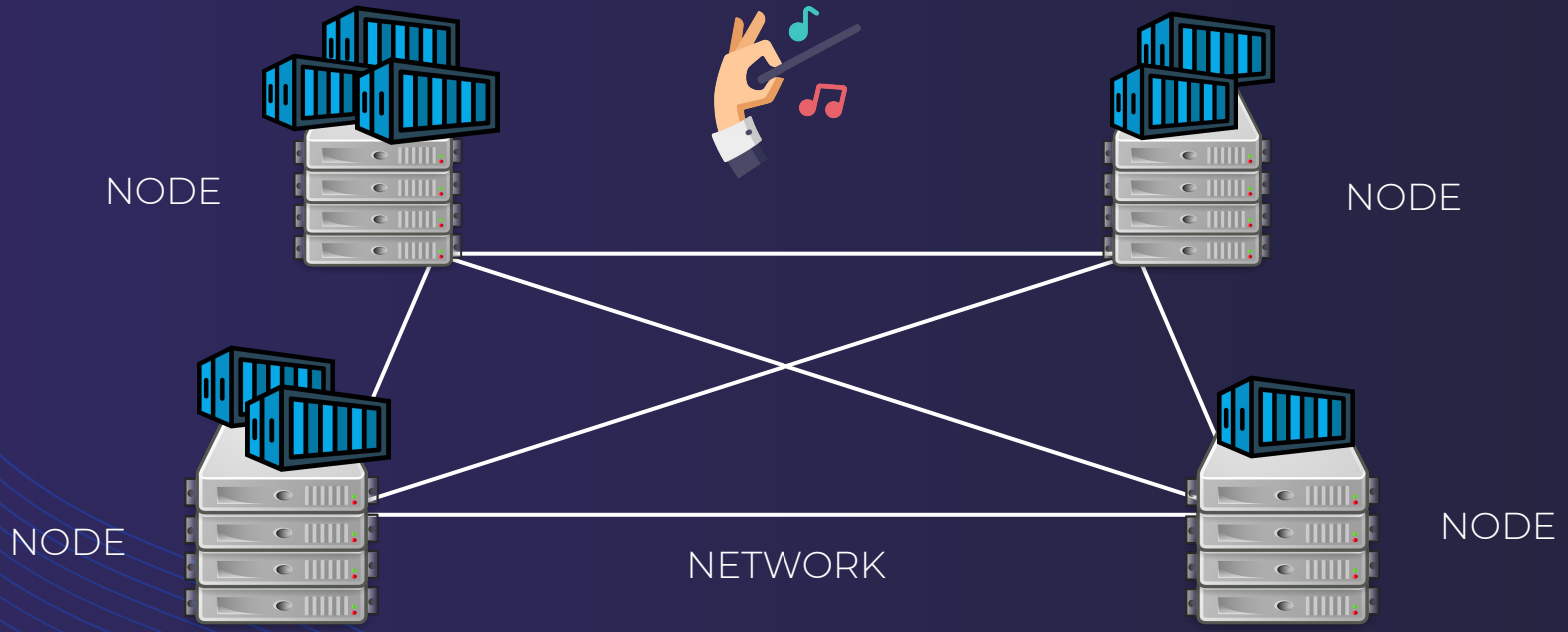
Kubernetes (K8S)

The “Captain”

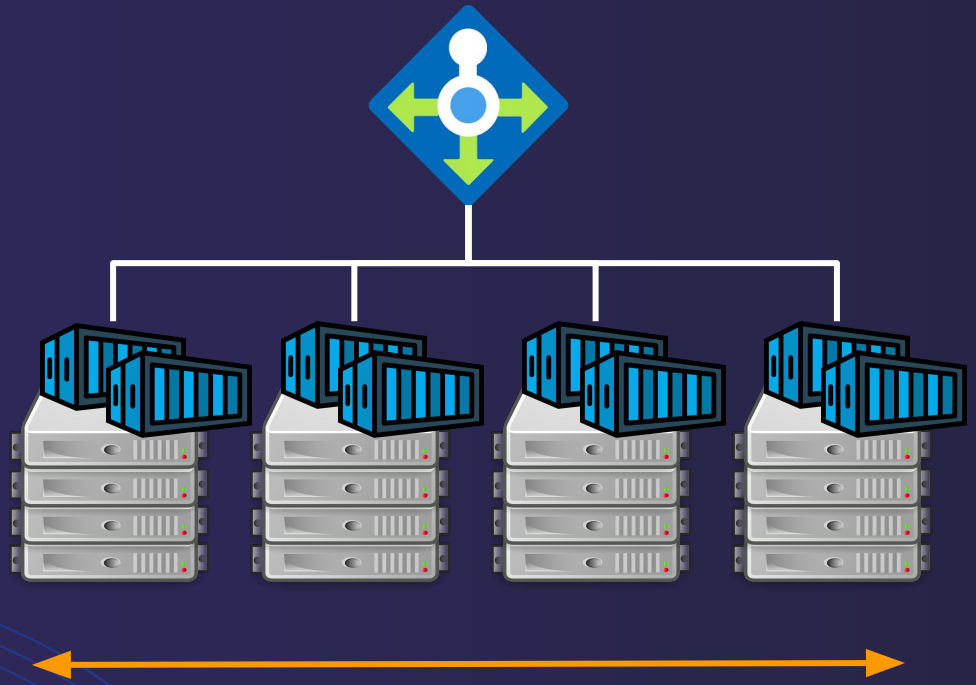
Containers across machines



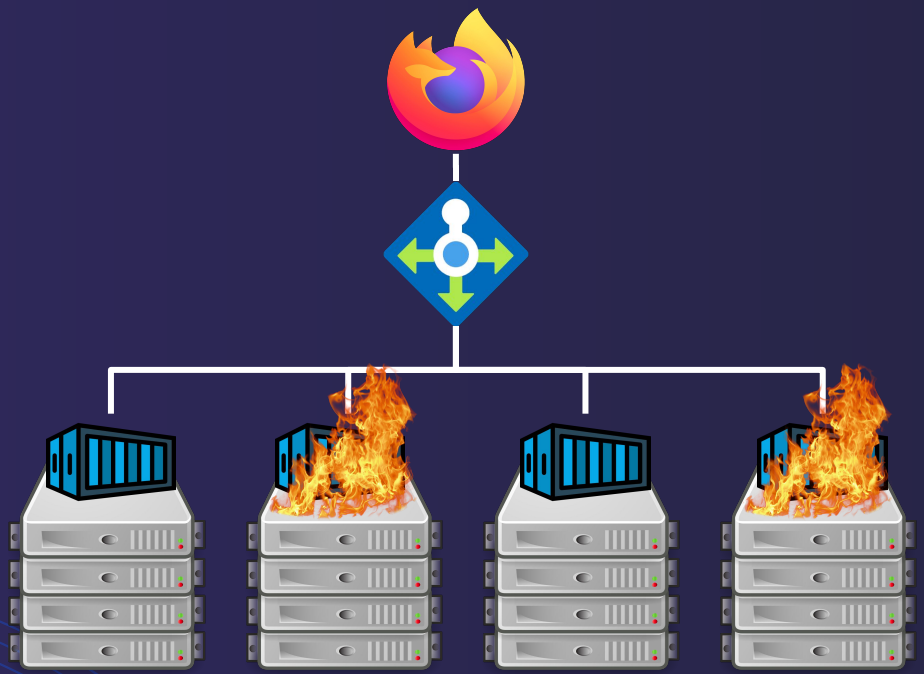
Container orchestrator



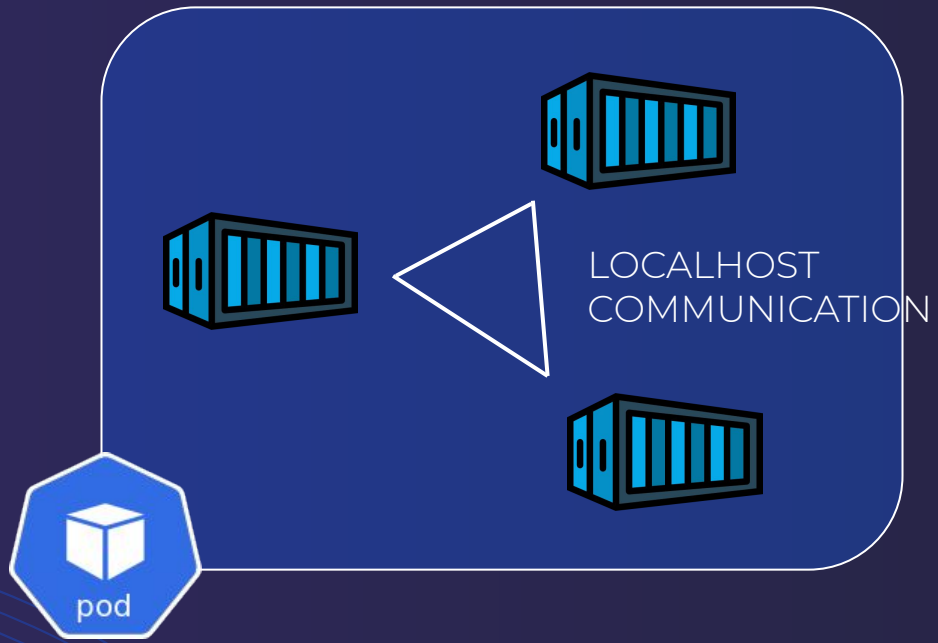
Horizontal scaling & Balancing



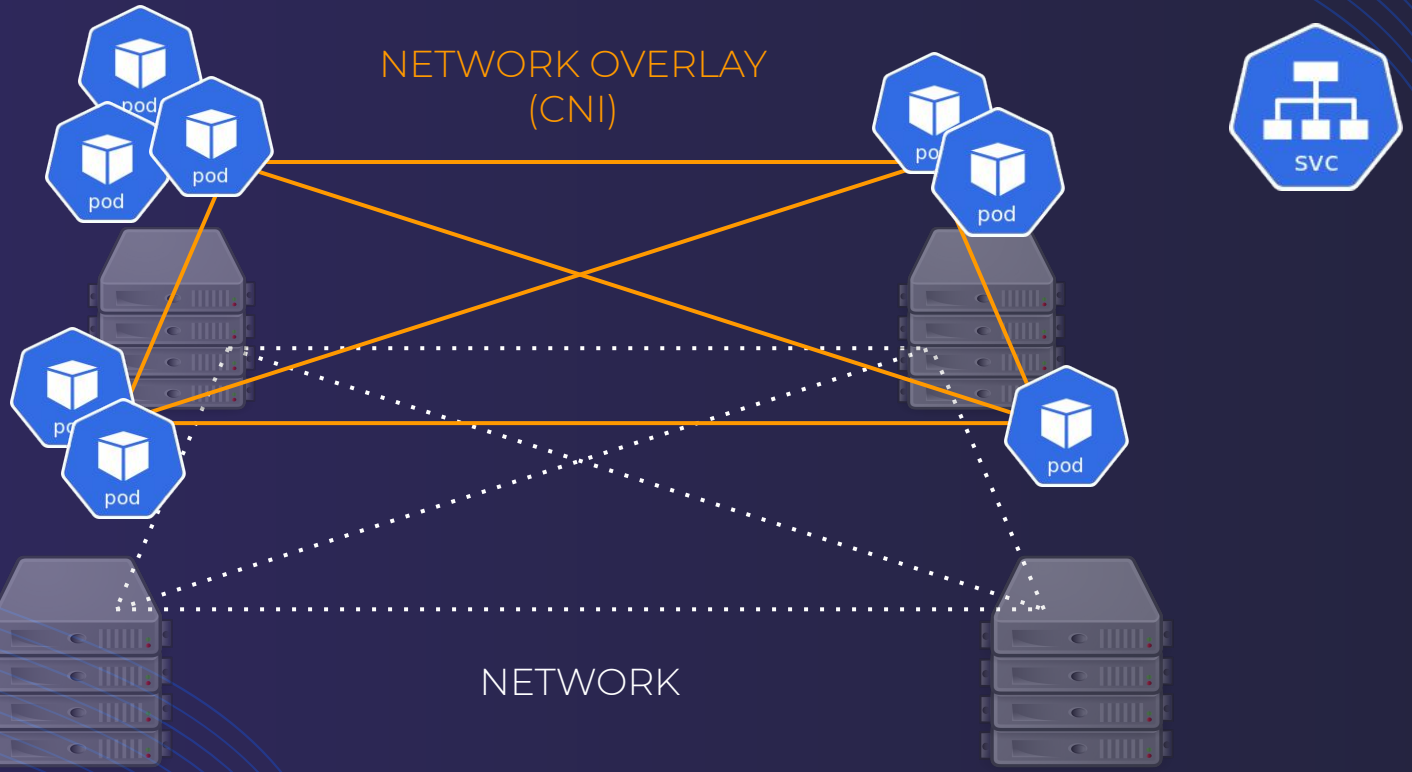
Self-healing



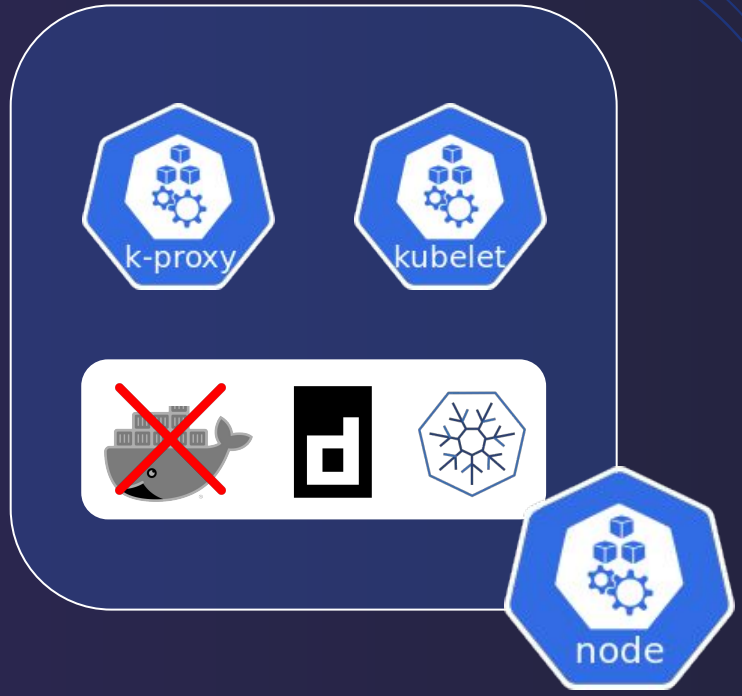
Network model



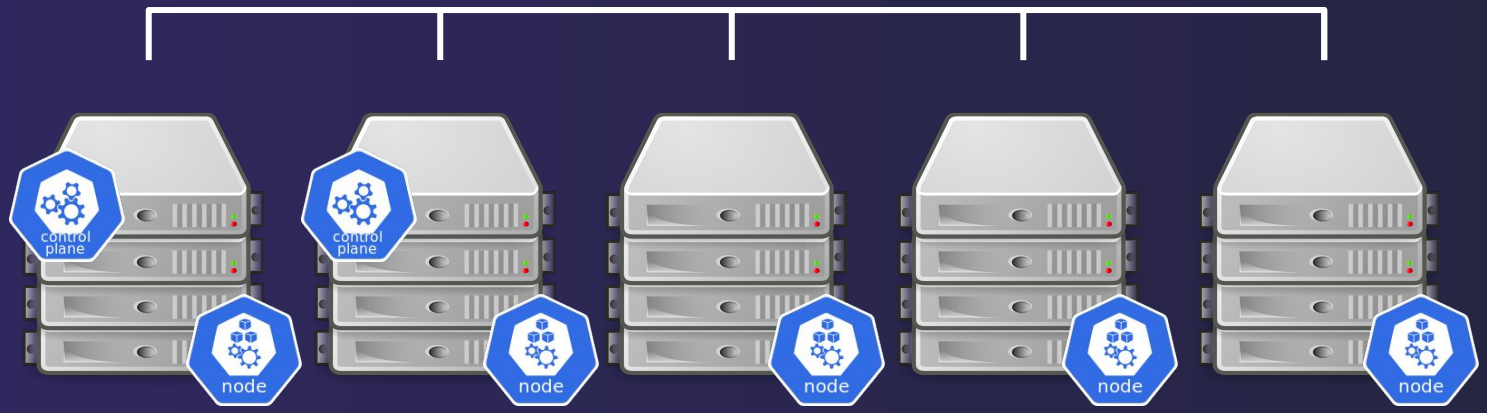
Network model



For microservices, by microservices

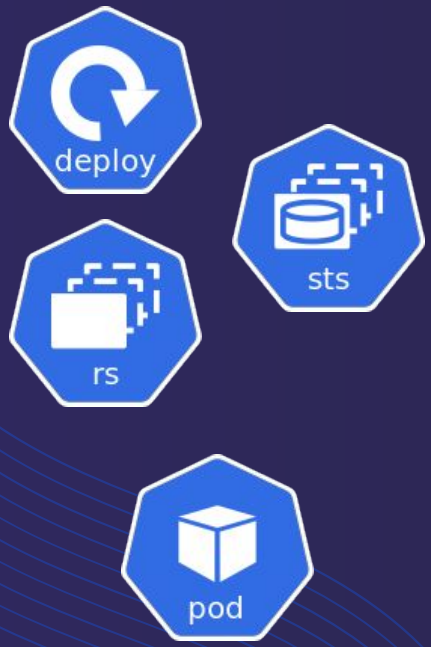


Cluster organization



Main K8S objects overview

Workloads

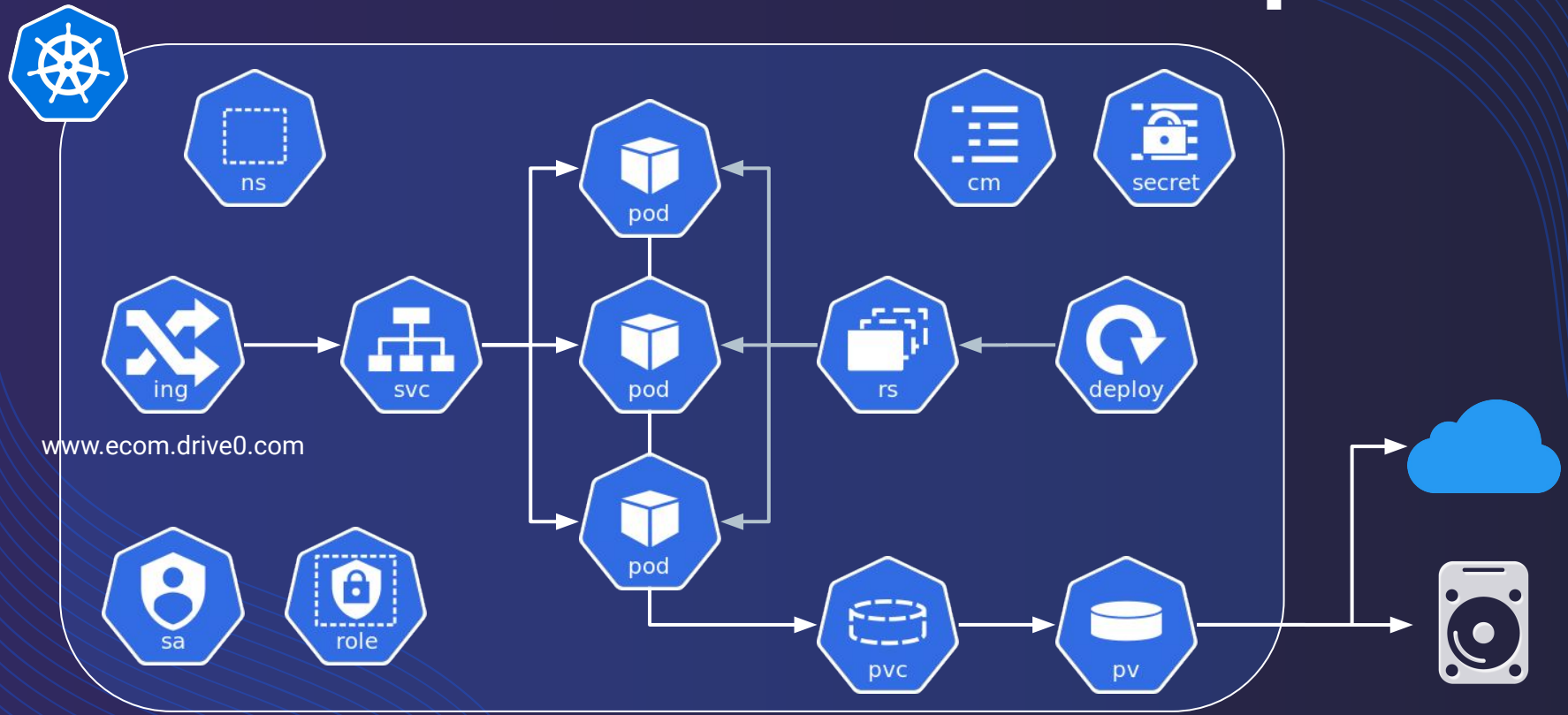


Storage

Config

Services

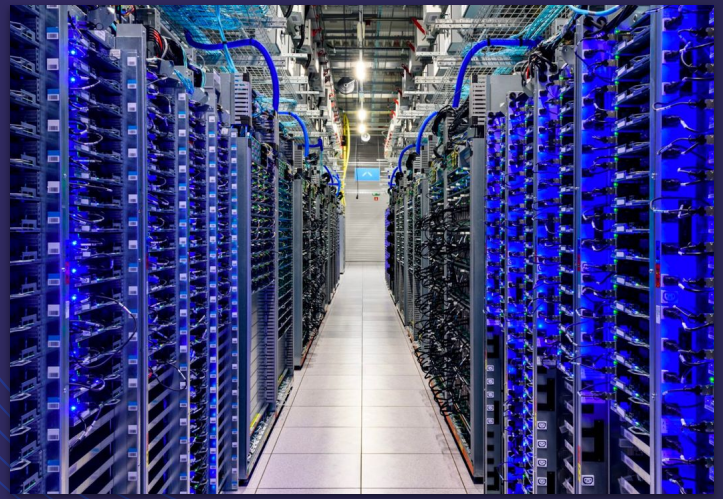
Cluster architecture example



But what about...

local development ?
local testing ?

E2E testing environment



Remote (cloud-like)
Realistic
Costly

Local
Simple
Limited resources

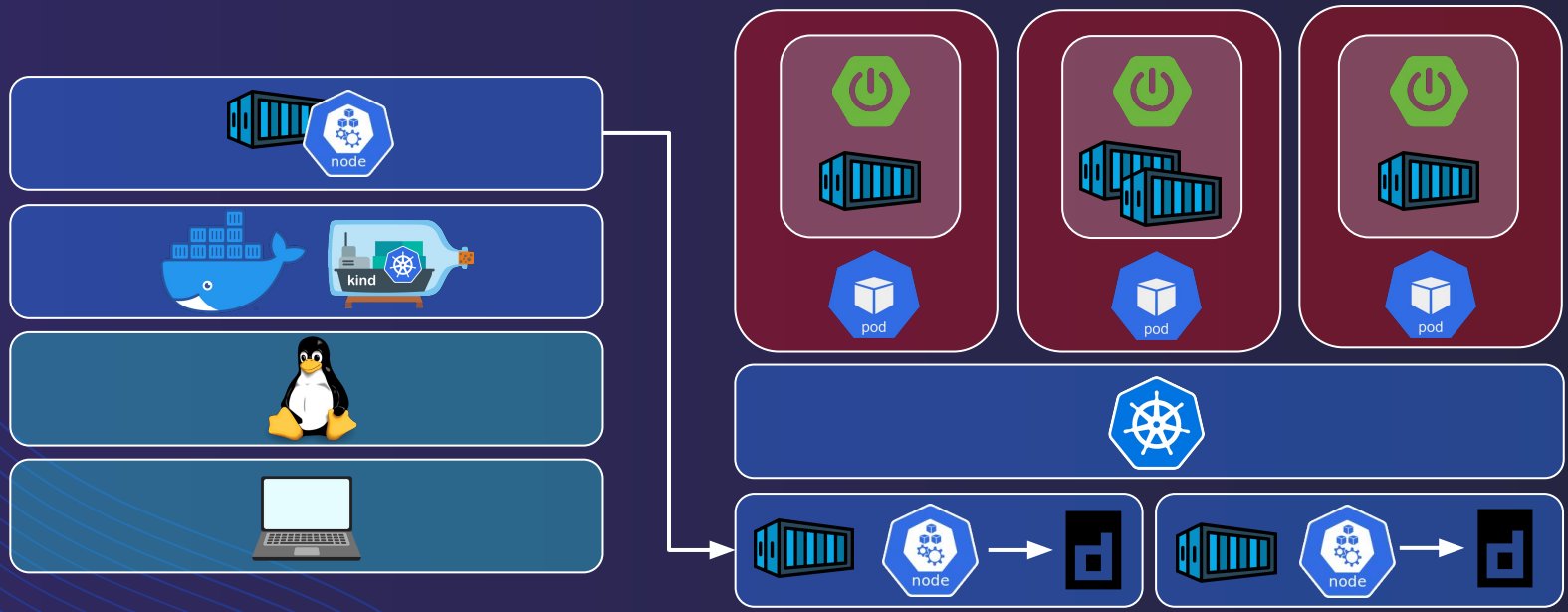
KiND
Kubernetes in **Docker**

Technology overview

Antoine GITTON
Titouan MINIER MANCINI

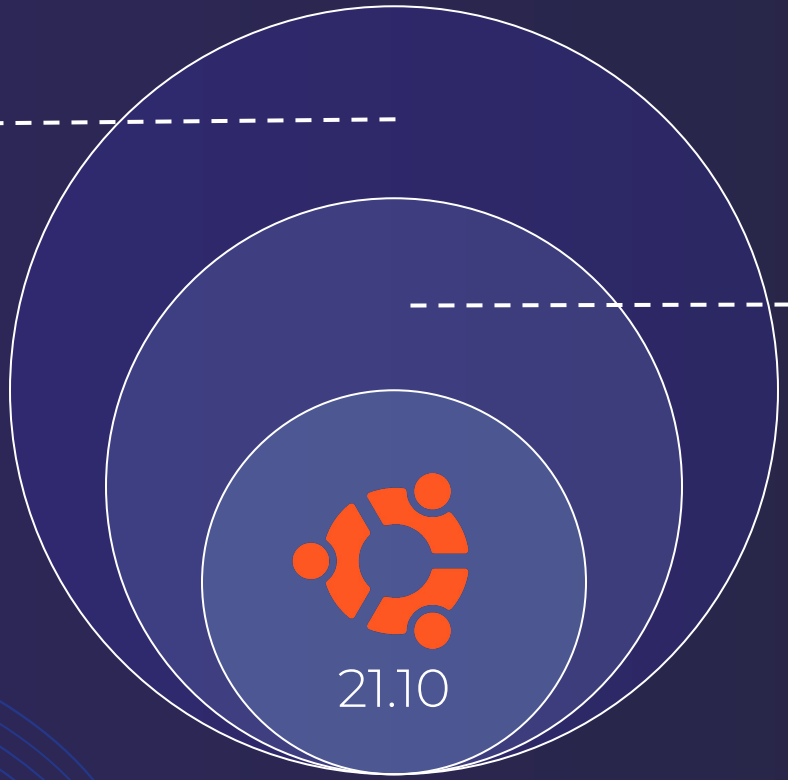
Container-ception

Containers inside containers



“Node” Docker image

Node image
- Loaded images
- Kube components
- Kubeadm



Base image
- Systemd
- Containerd
- Packages...
-... for kube components
-... for the container runtime

Internal bootstrap

Weave net

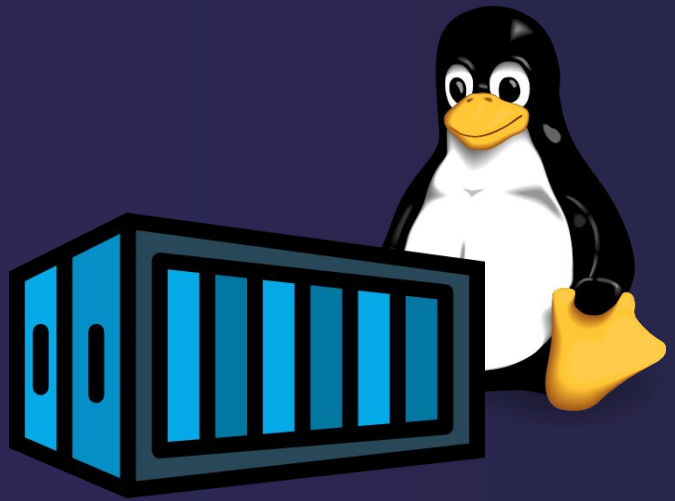
KiND features vs Minikube

K8S SIG

✅ Configurable cluster

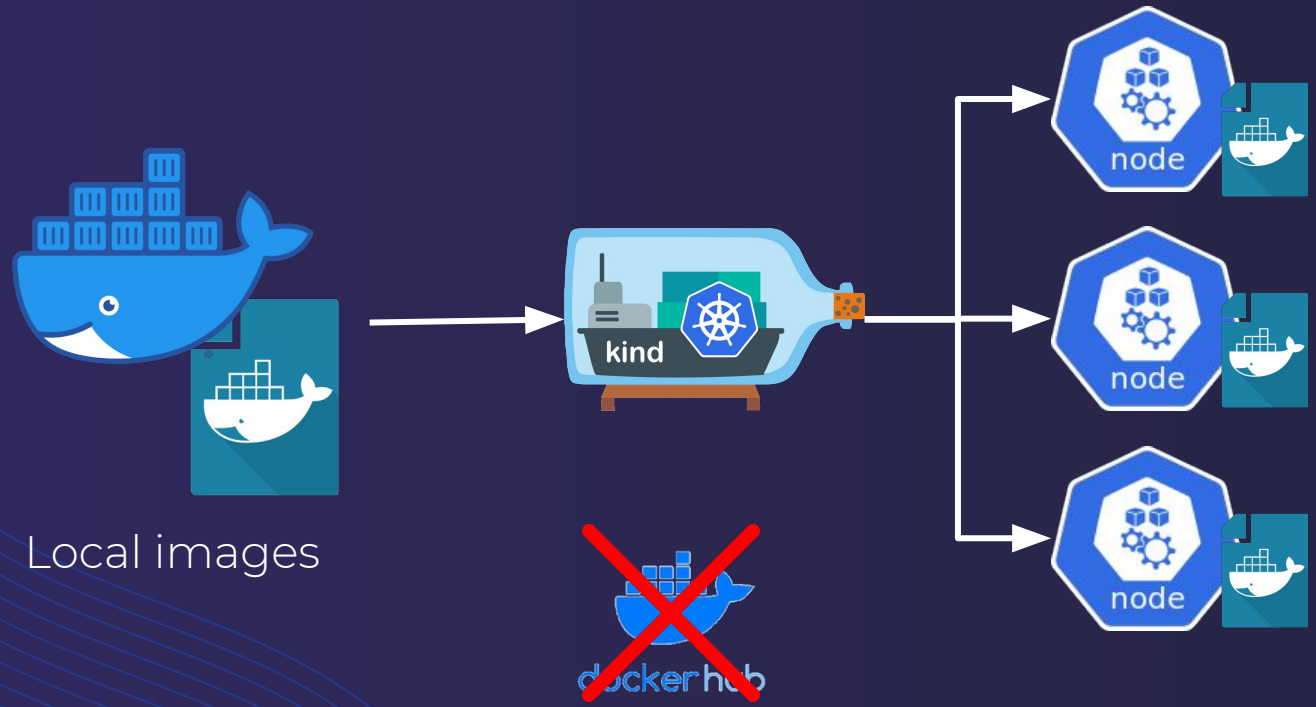
```yaml
kind: Cluster
apiVersion: kind.x-k8s.io/v1alpha4
nodes:
- role: control-plane
  kubeadmConfigPatches:
  - |
    kind: InitConfiguration
    nodeRegistration:
      kubeletExtraArgs:
        node-labels: "ingress-ready=true"
  extraPortMappings:
  - containerPort: 30000
    hostPort: 7000
  - containerPort: 30001
    hostPort: 7001
```

✅ Linux native

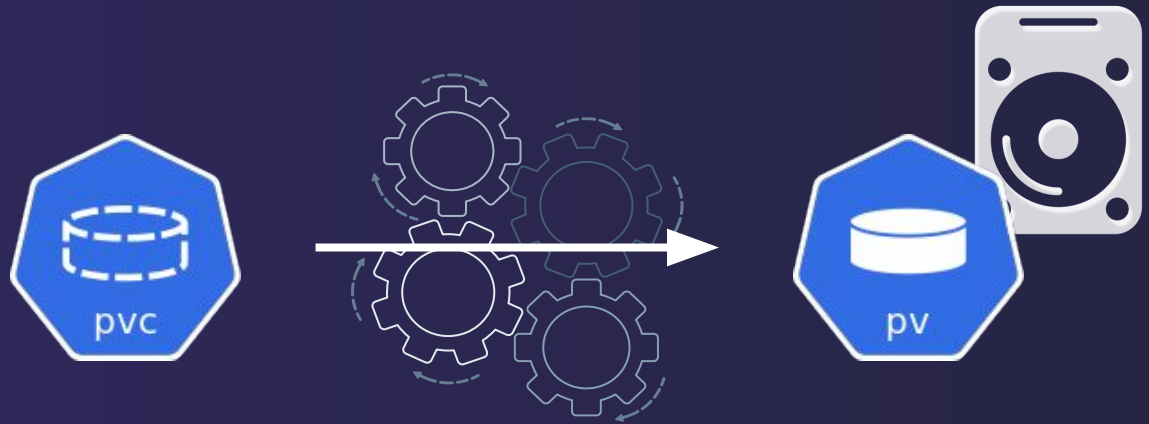


I run inside a VM...

✅ Image sideload



✅ Storage auto provisioning



RANCHER

Not out of the box...

✅ Ingress Controller support

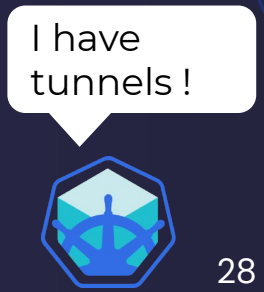
1 line of code, 20 seconds, deployed and ready

NGINX

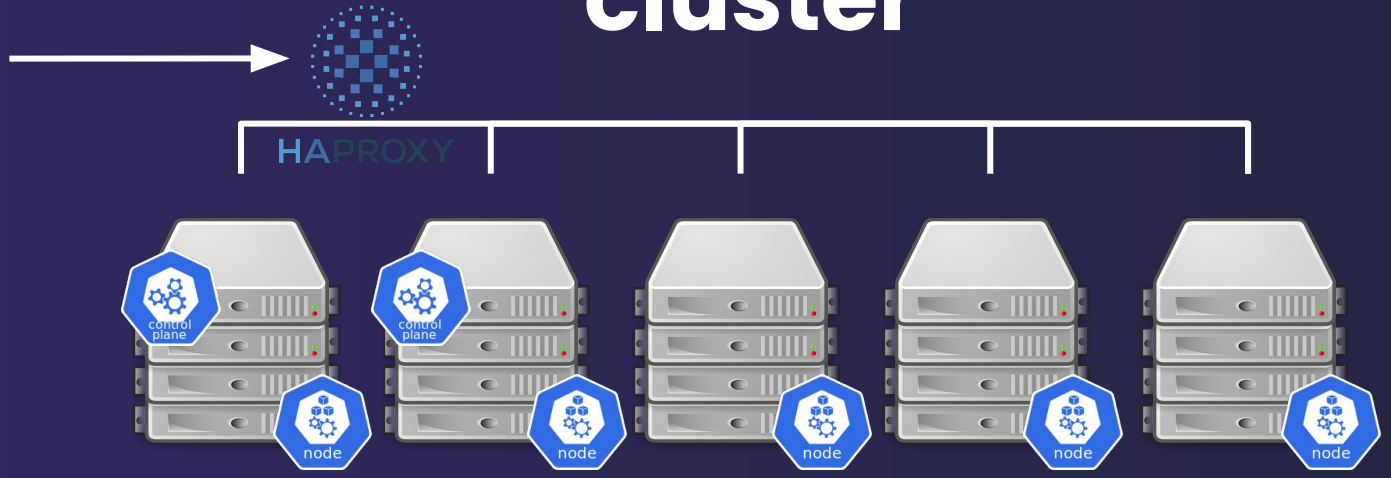
I have addons !

✅ MetalLB support

LoadBalancer Service on bare metal



✅ Multi-node cluster and HA cluster



No way I can do that

Storage-heavy environment

Skaffold

+

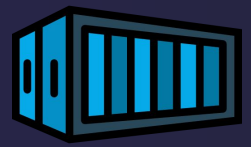
KiND

Node

X (

Image

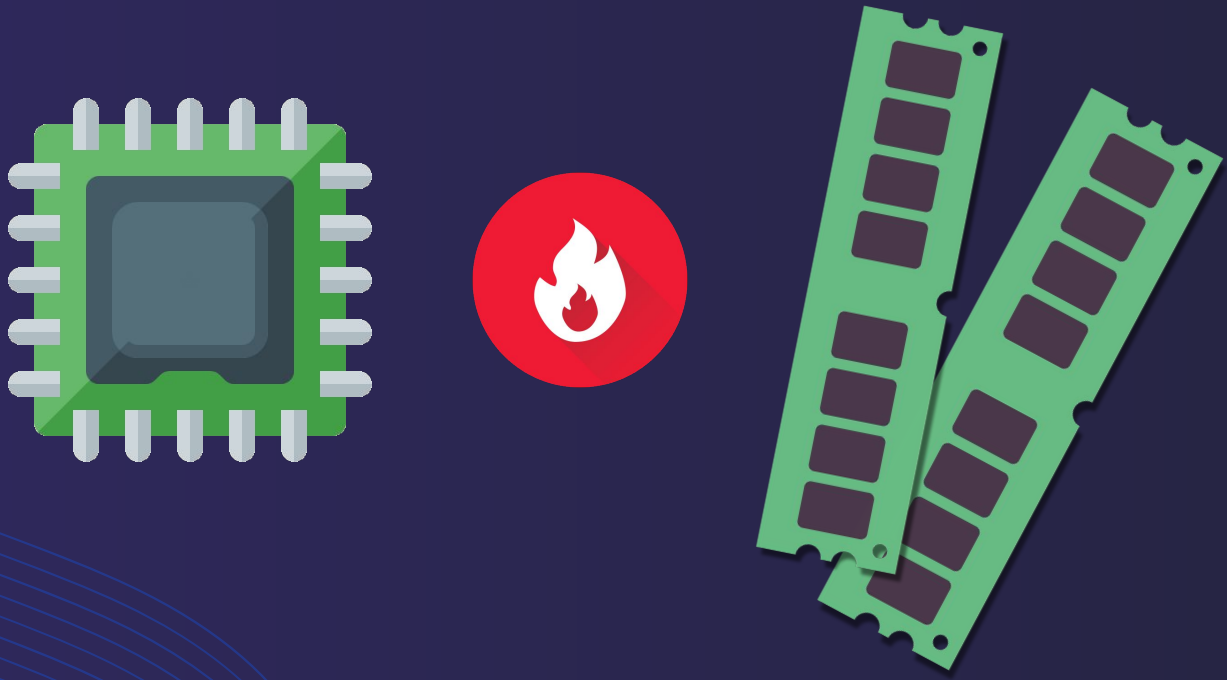
+



Volume

)

Yet, RAM & CPU consuming



Relatively slow release pace

Demo

Personal feedback

Thank you

For your attention