{codemotion}

We code the future. Together

30 October, 2019

BARCELONA

{codemotion}

30 October, 2019

Kubernetes: Beyond Minikube

Horacio Gonzalez
@LostInBrittany

OVH

BARCELONA

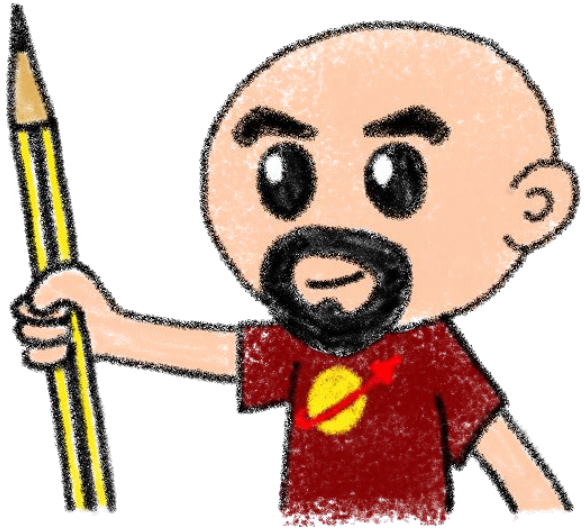
Who are we?

Introducing myself and
introducing OVHcloud

Horacio Gonzalez

@LostInBrittany

Spaniard lost in Brittany.
Developer, speaker,
dreamer, geek



OVHcloud

Team DevRel

DevFest du
Bout du Monde

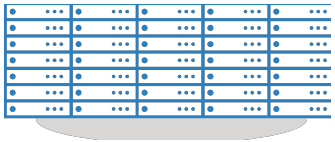
Finist Devs

Google Developers Experts 2019
Web Technologies
GDE
Flutter

OVHcloud: A Global Leader

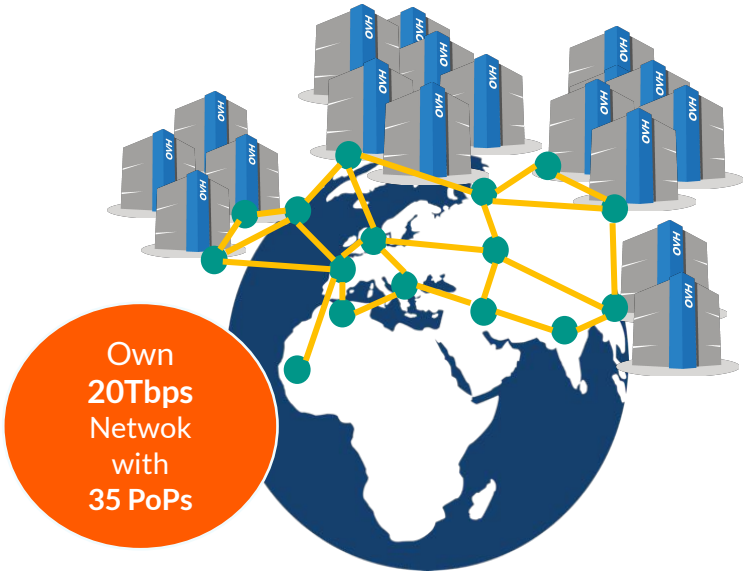
200k Private cloud VMs running

1 **Dedicated IaaS Europe**



Hosting capacity : **1.3M** Physical Servers

360k Servers already deployed



Own **20Tbps** Netwok with **35 PoPs**

30 Datacenters

> **1.3M** Customers in **138** Countries

OVHcloud: Our solutions

Cloud

- VPS
- Public Cloud
- Private Cloud
- Serveur dédié
- Cloud Desktop
- Hybrid Cloud

Mobile Hosting

- Containers
- Compute
- Database
- Object Storage
- Securities
- Messaging

Web Hosting

- Domain names
- Email
- CDN
- Web hosting
- MS Office
- MS solutions

Telecom

- VoIP
- SMS/Fax
- Virtual desktop
- Cloud Storage
- Over the Box

Summary

What I would like to speak about:

- Orchestrating containers
- Kubernetes: some concepts
- I have deployed on Minikube, woah!
- From Minikube to prod
- Building a managed Kubernetes service

Kubernetes for Developers

Or what's this kubething for?

kubernetes

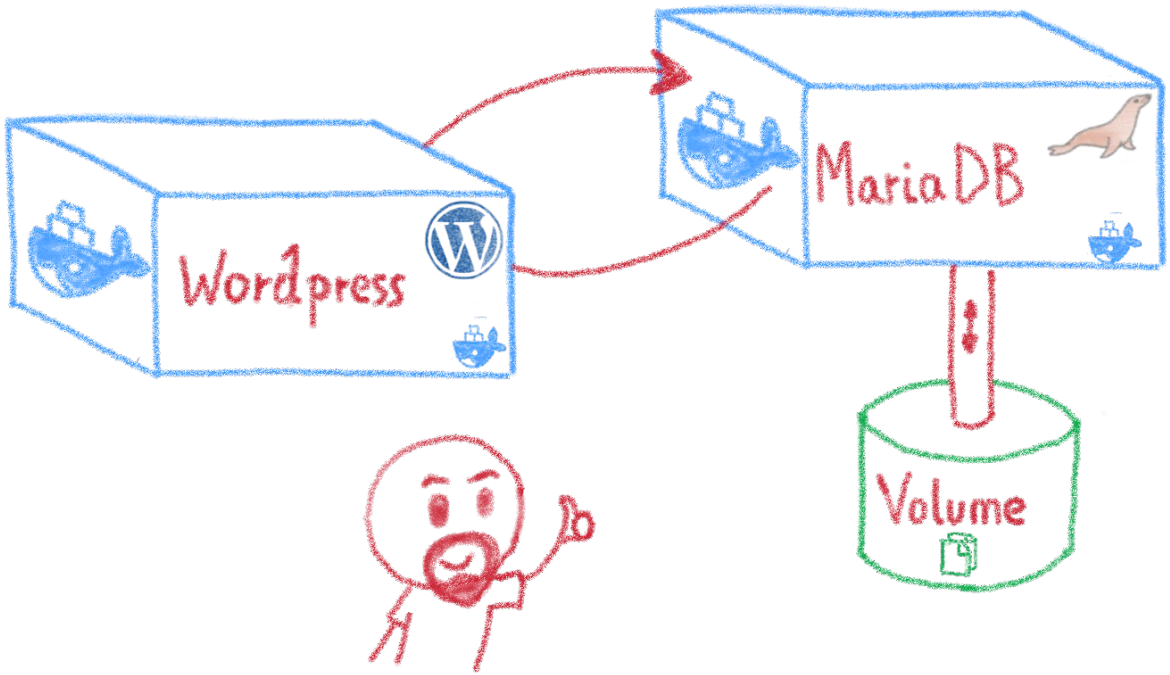
Orchestrating containers

Like herding cats... but in hard mode!

From bare metal to containers

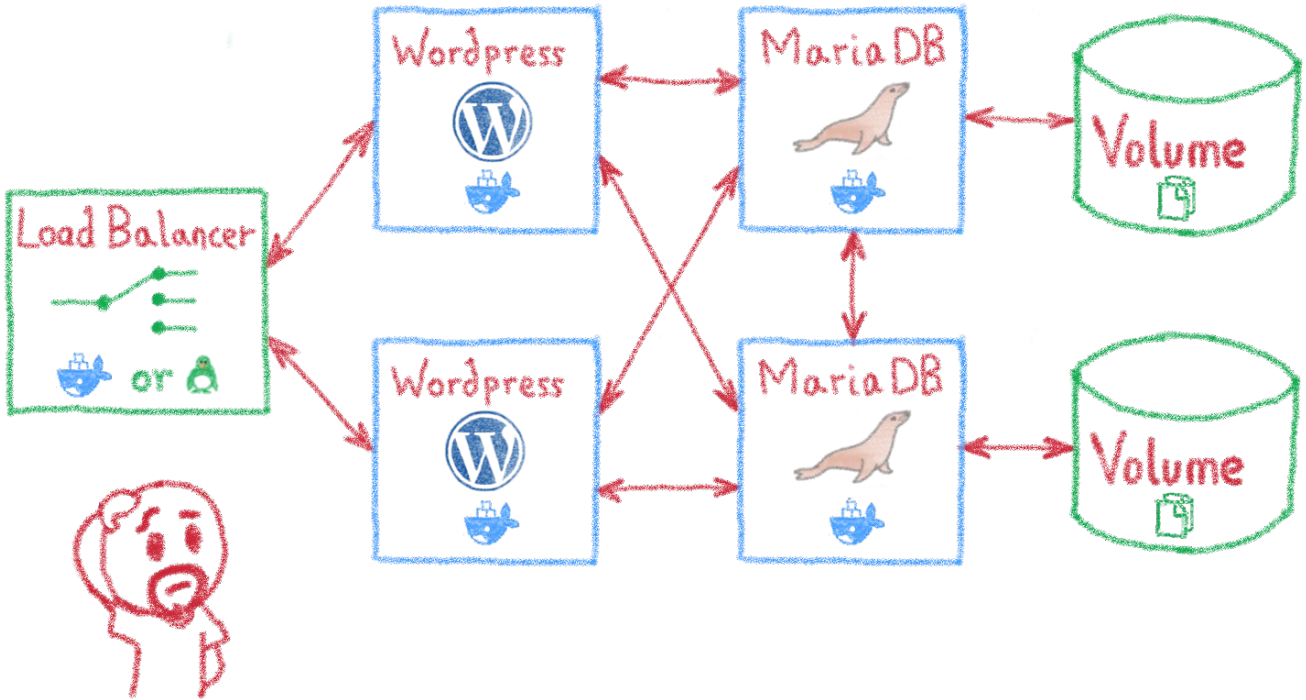
Another paradigm shift

Containers are easy...



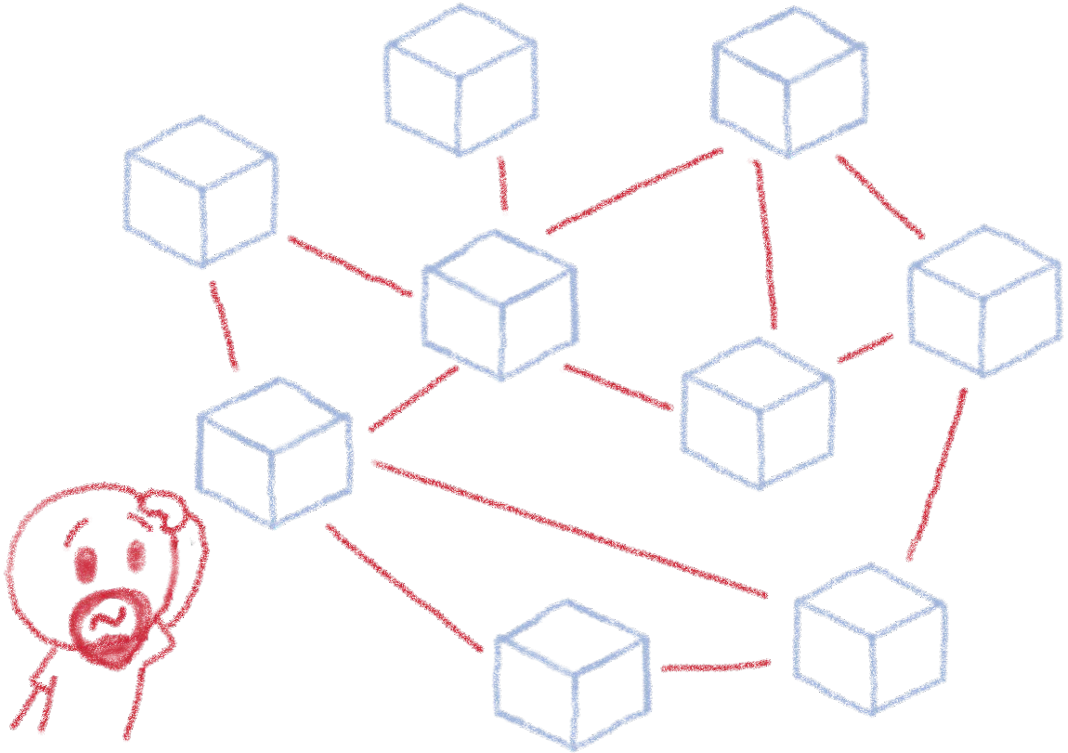
For developers

Less simple if you must operate them



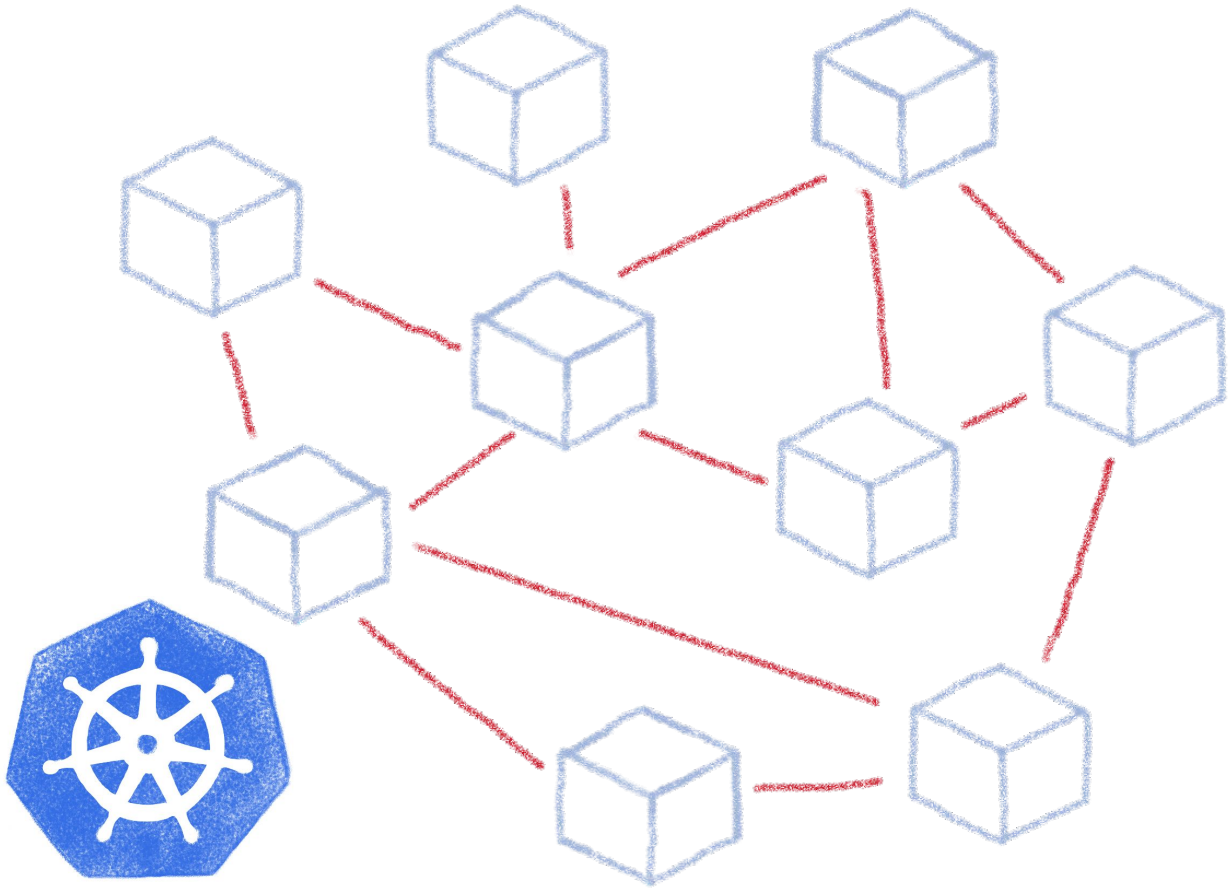
Like in a production context

And what about microservices?



Are you sure you want to operate them by hand?

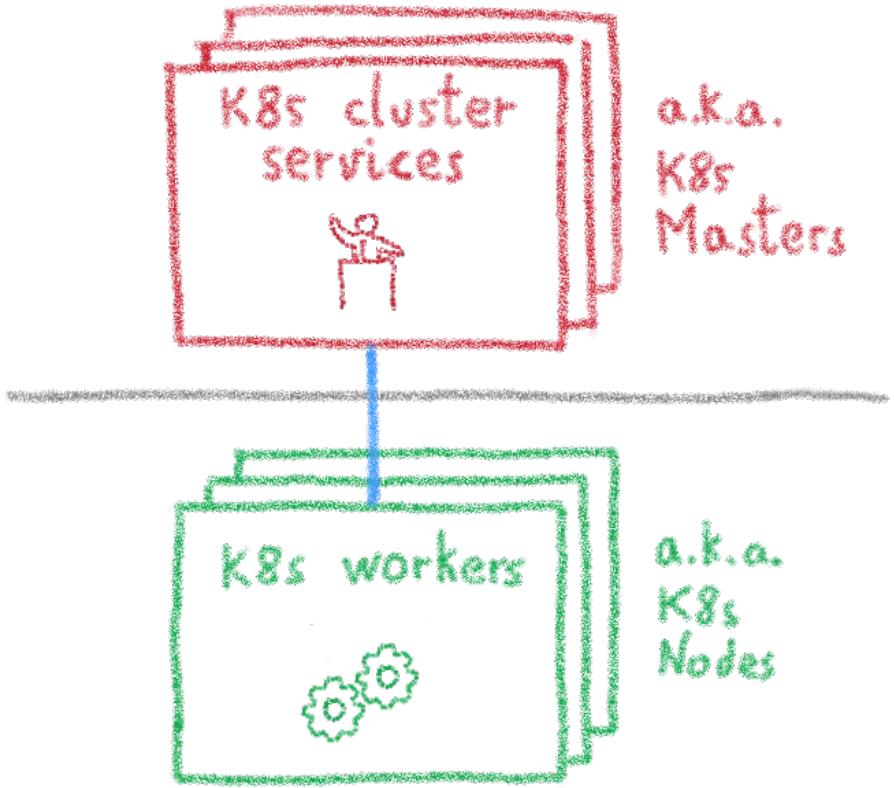
Taming microservices with Kubernetes



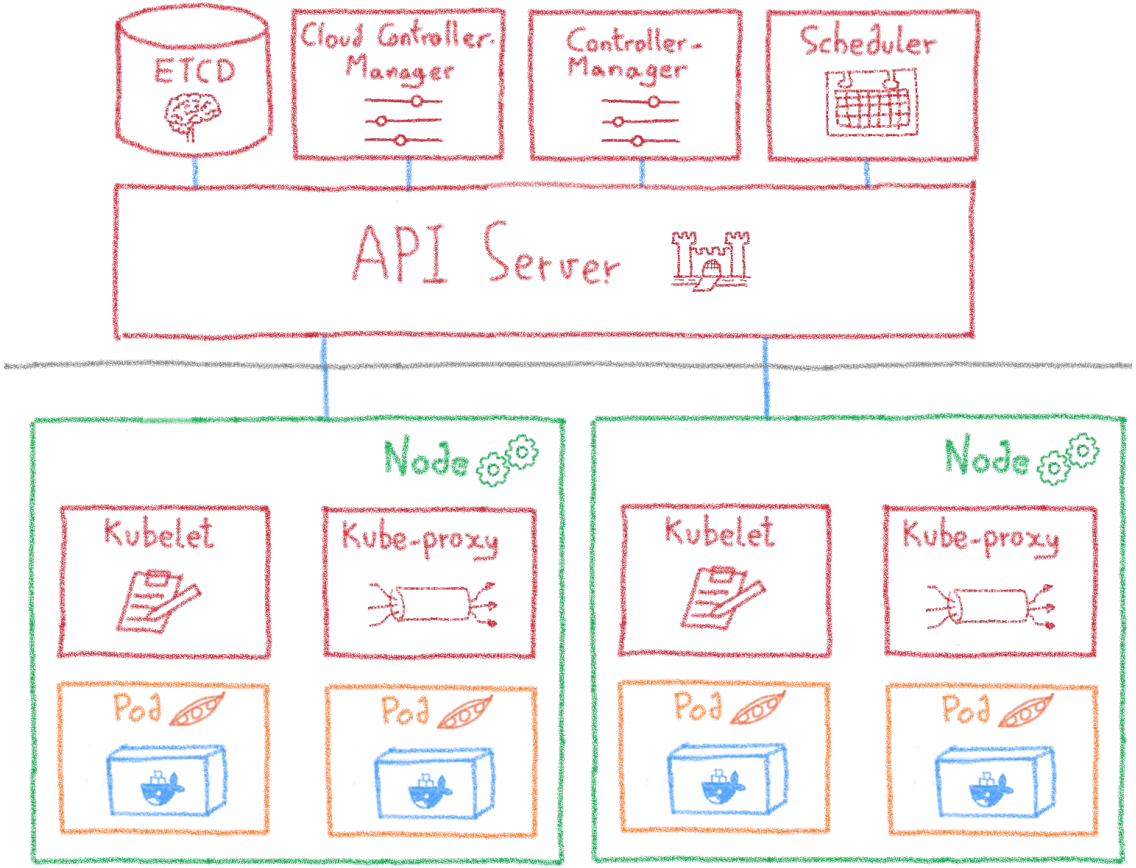
Kubernetes

Way more than a buzzword!

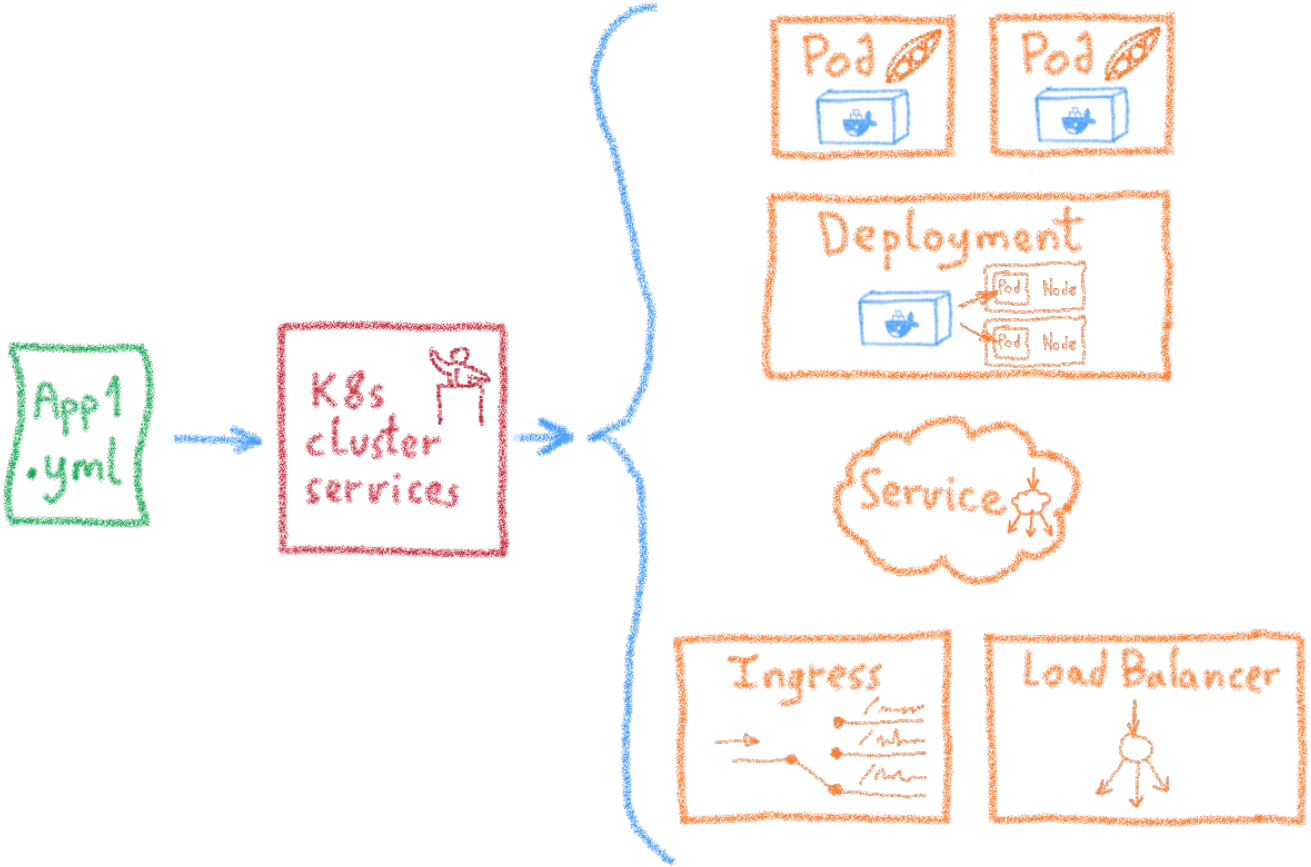
Masters and nodes



Some more details



Desired State Management



Ingress

Services

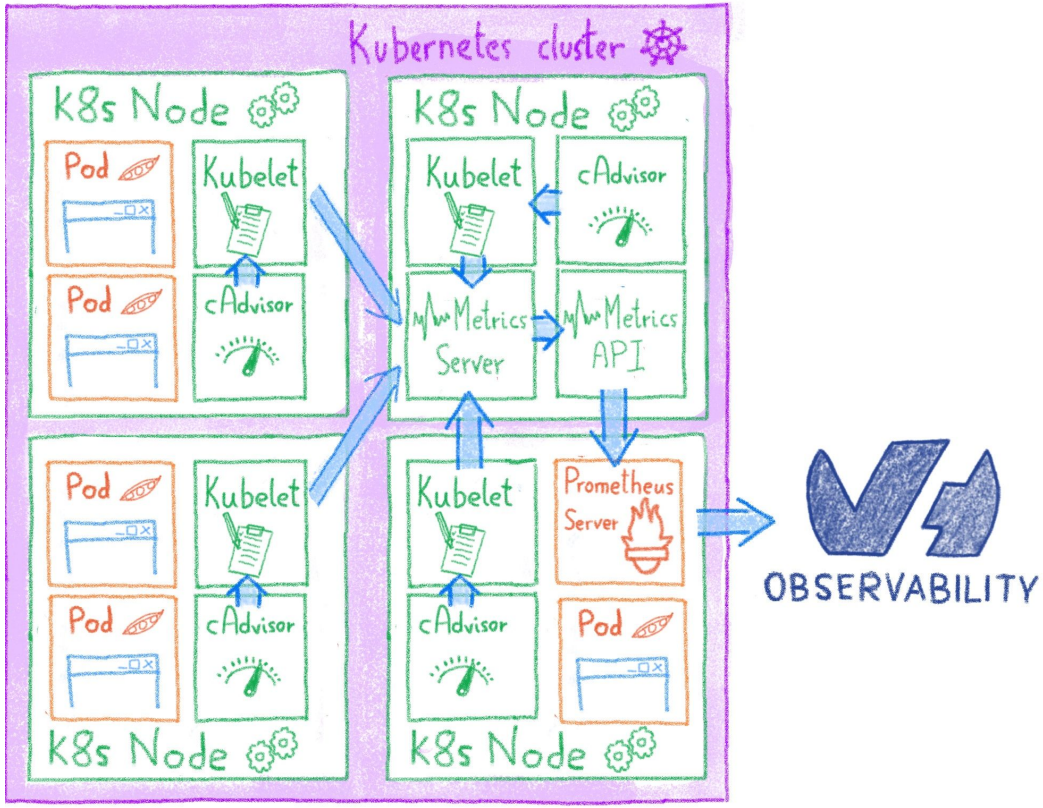
Deployments

Pods

Sidecars

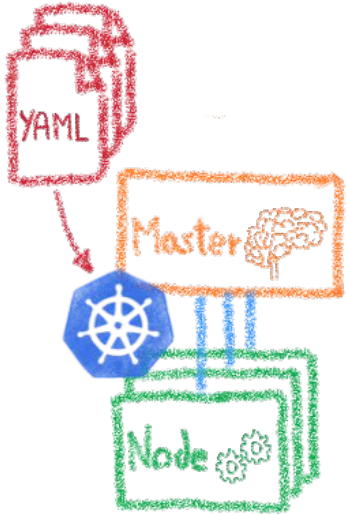
Replica Sets

Extending Kubernetes

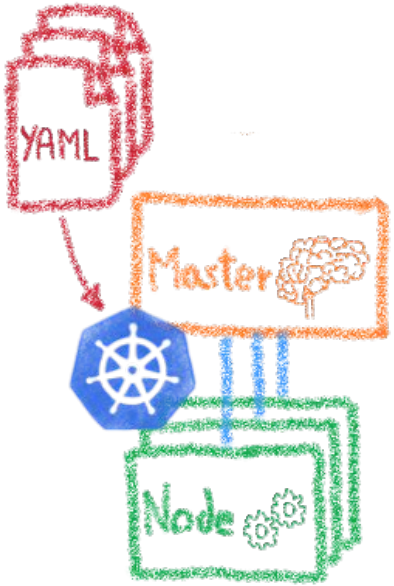


Multi-environment made easy

Dev, staging, prod, multi-cloud...

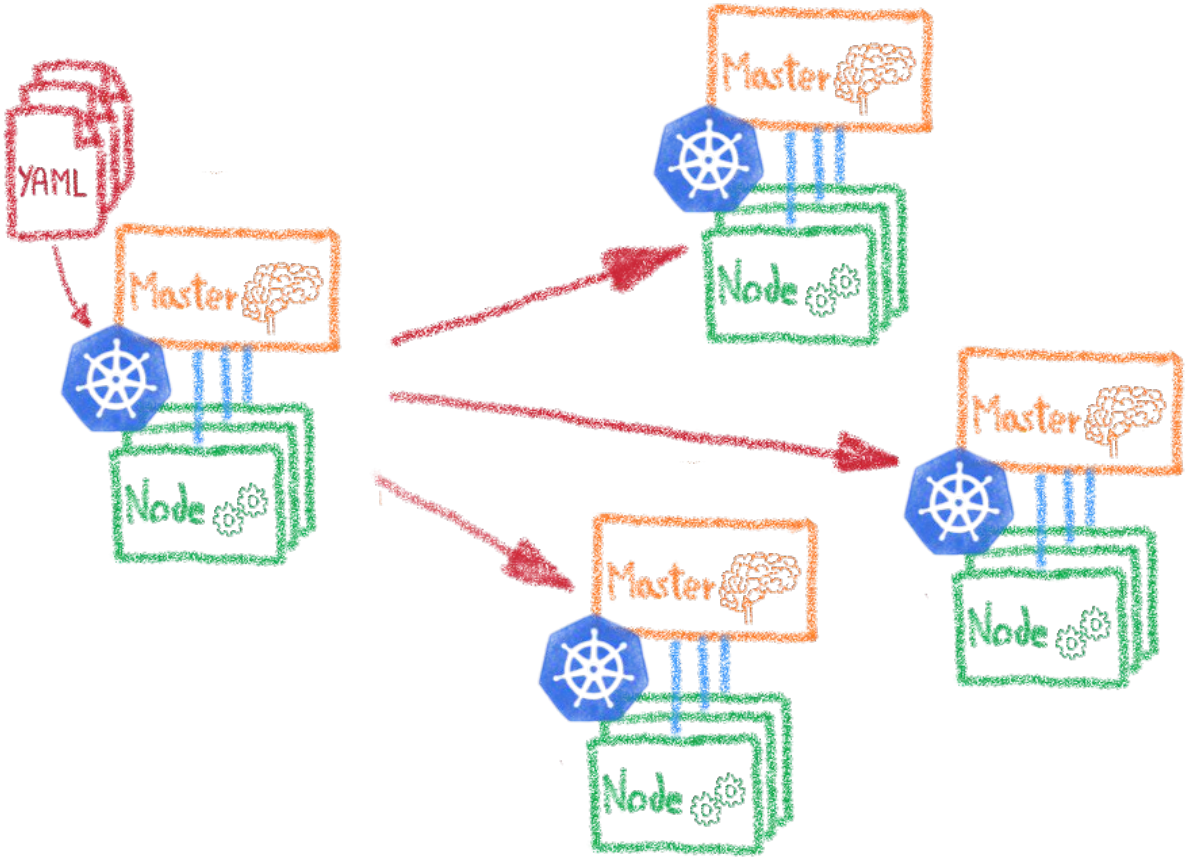


Declarative infrastructure



Multi-environment made easy

Having identical, software defined envs



Dev envs

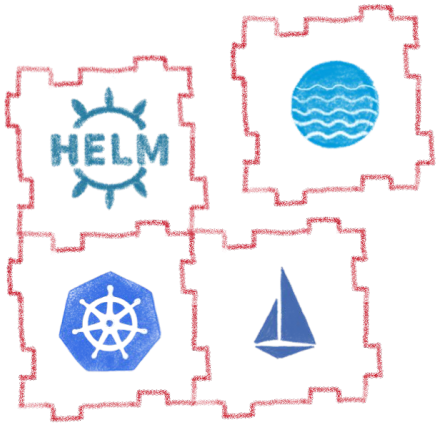
Staging

Multi-cluster

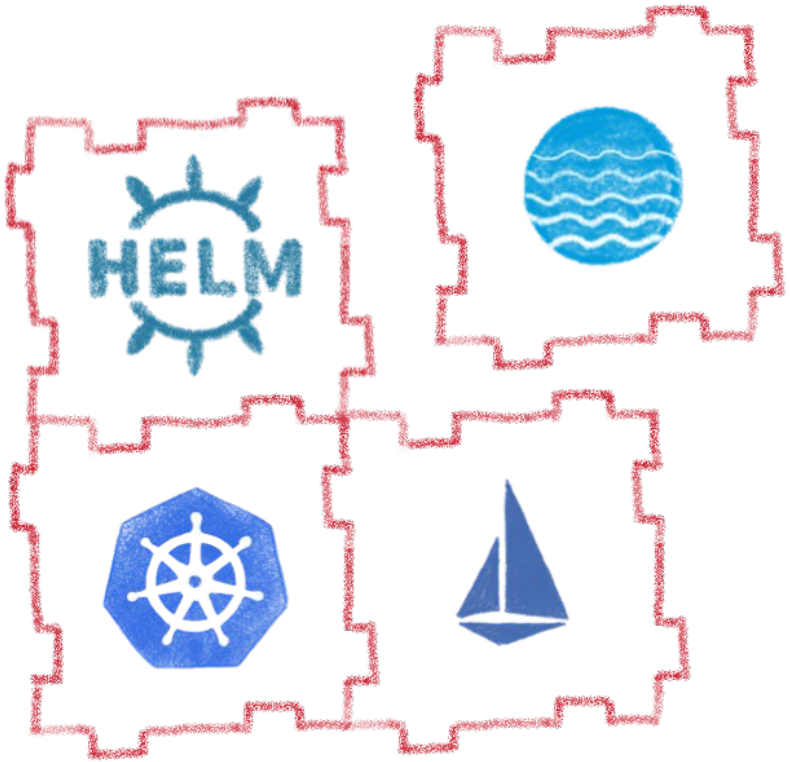
Multi-cloud

Kubernetes modulaty

Extending and customizing K8s



Extending Kubernetes

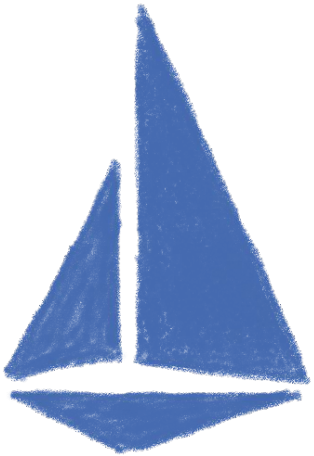


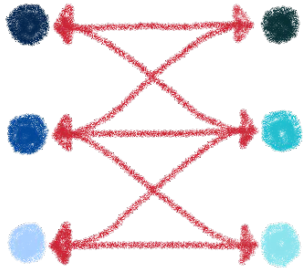
Fully extensible

- Kubernetes API
- Cluster demons
- Controllers
- Custom resources
- ...

Operators

Istio, a Service Mesh for Kubernetes

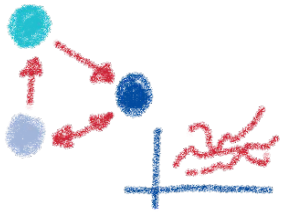




Connect

Secure

Control



Observe

Rolling upgrades

A/B Testing

Canary Testing

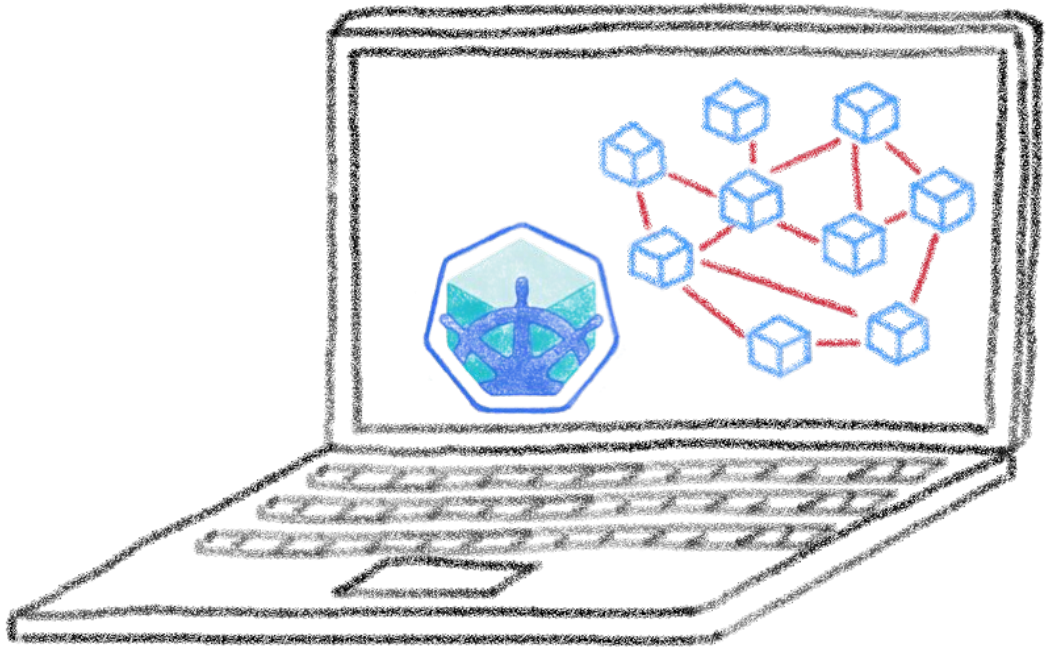
Edge traffic management

Multicluster service mesh

I have deployed on Minikube, woah!

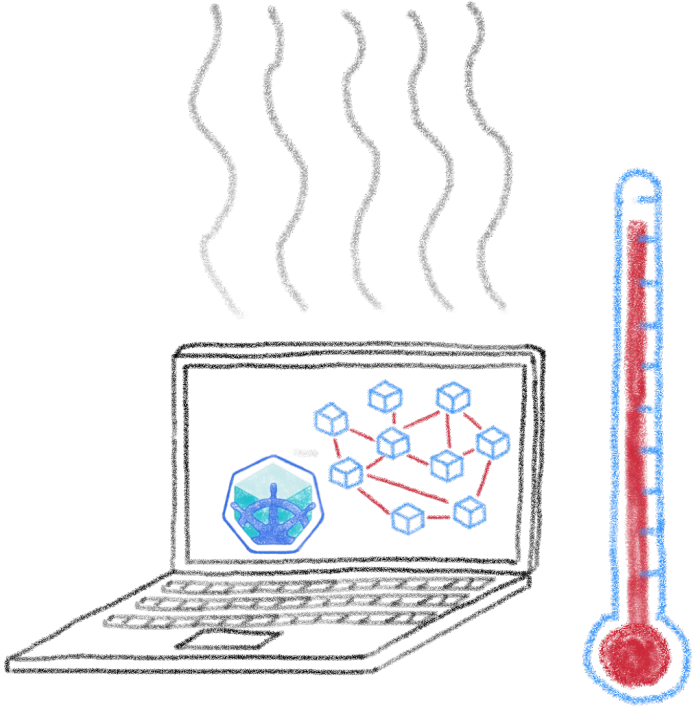
A great fastlane into Kubernetes

Running a full K8s in your laptop



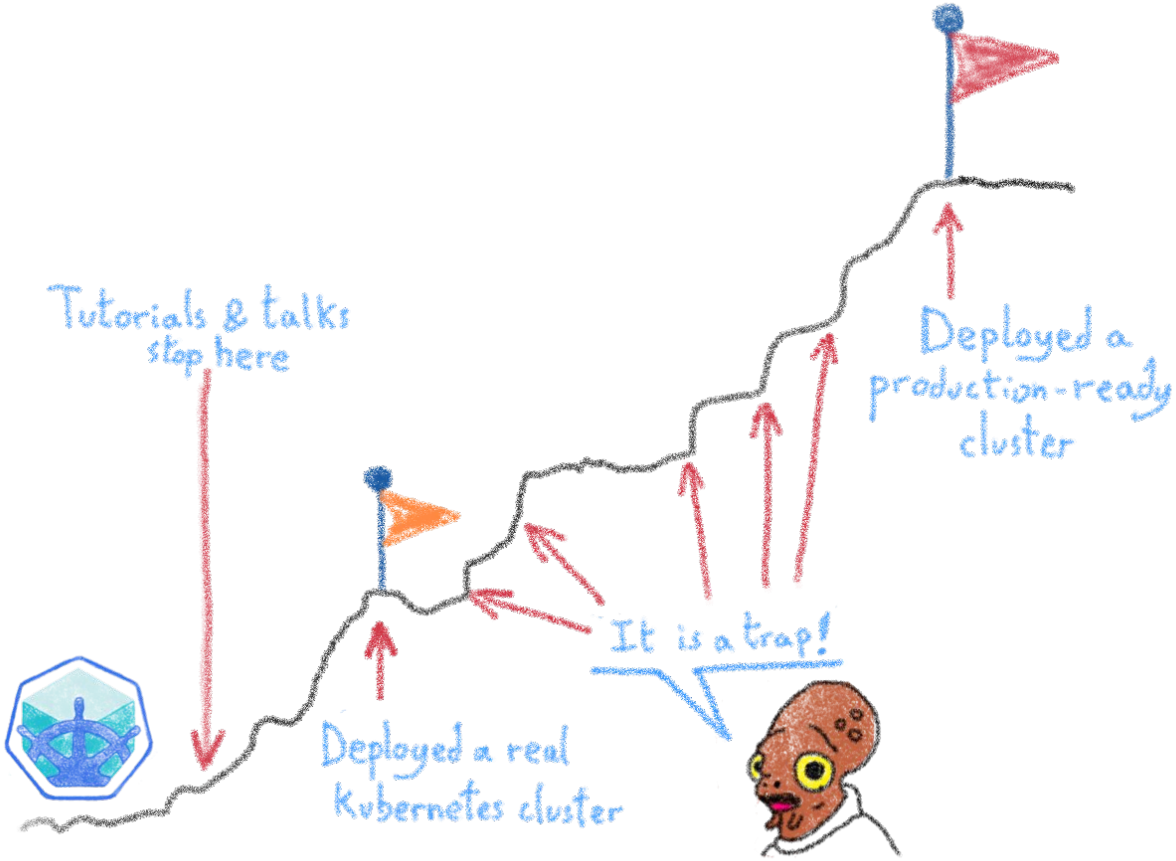
A great learning tool

Your laptop isn't a true cluster



Don't expect real performances

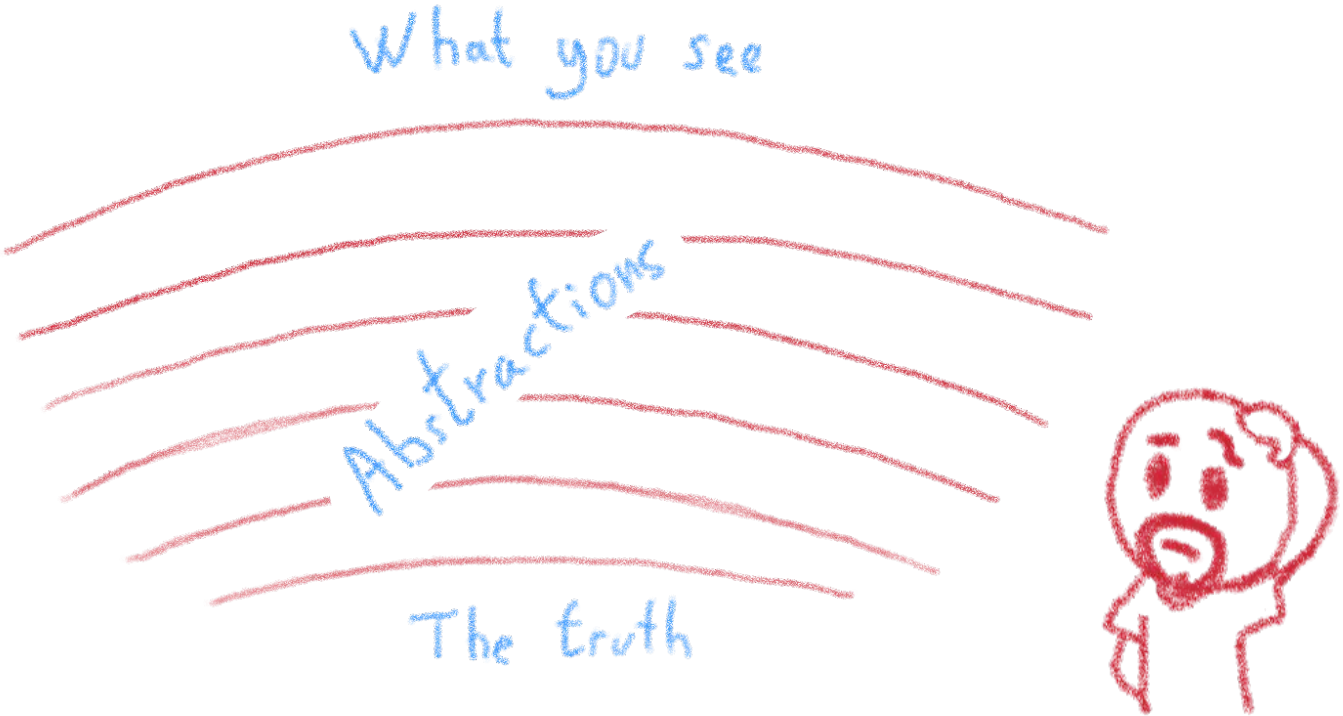
Minikube is only the beginning



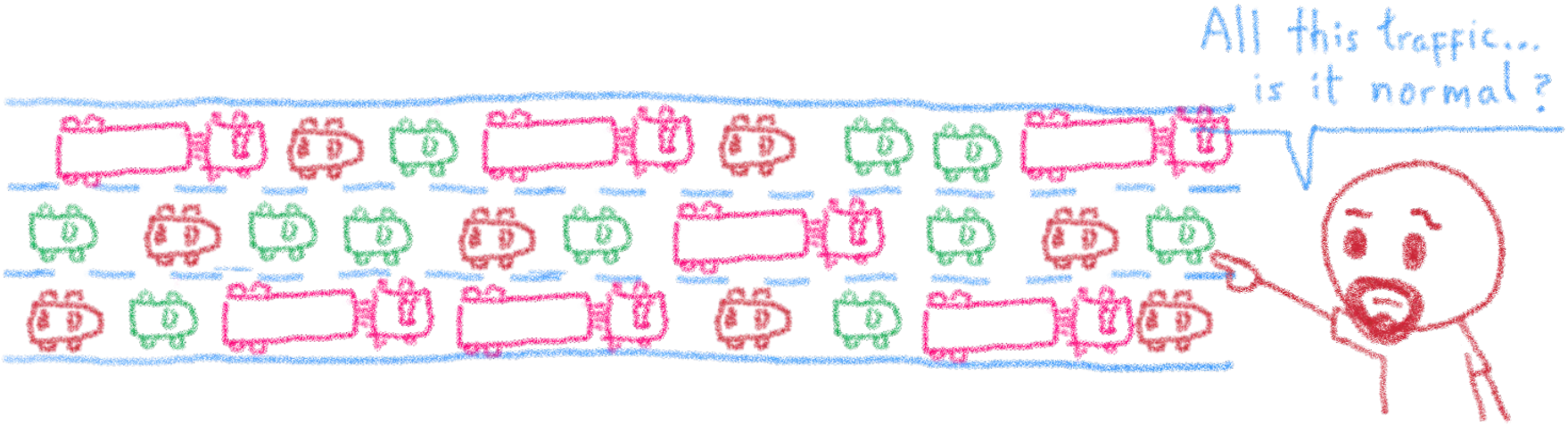
From Minikube to prod

A journey not for the faint of heart

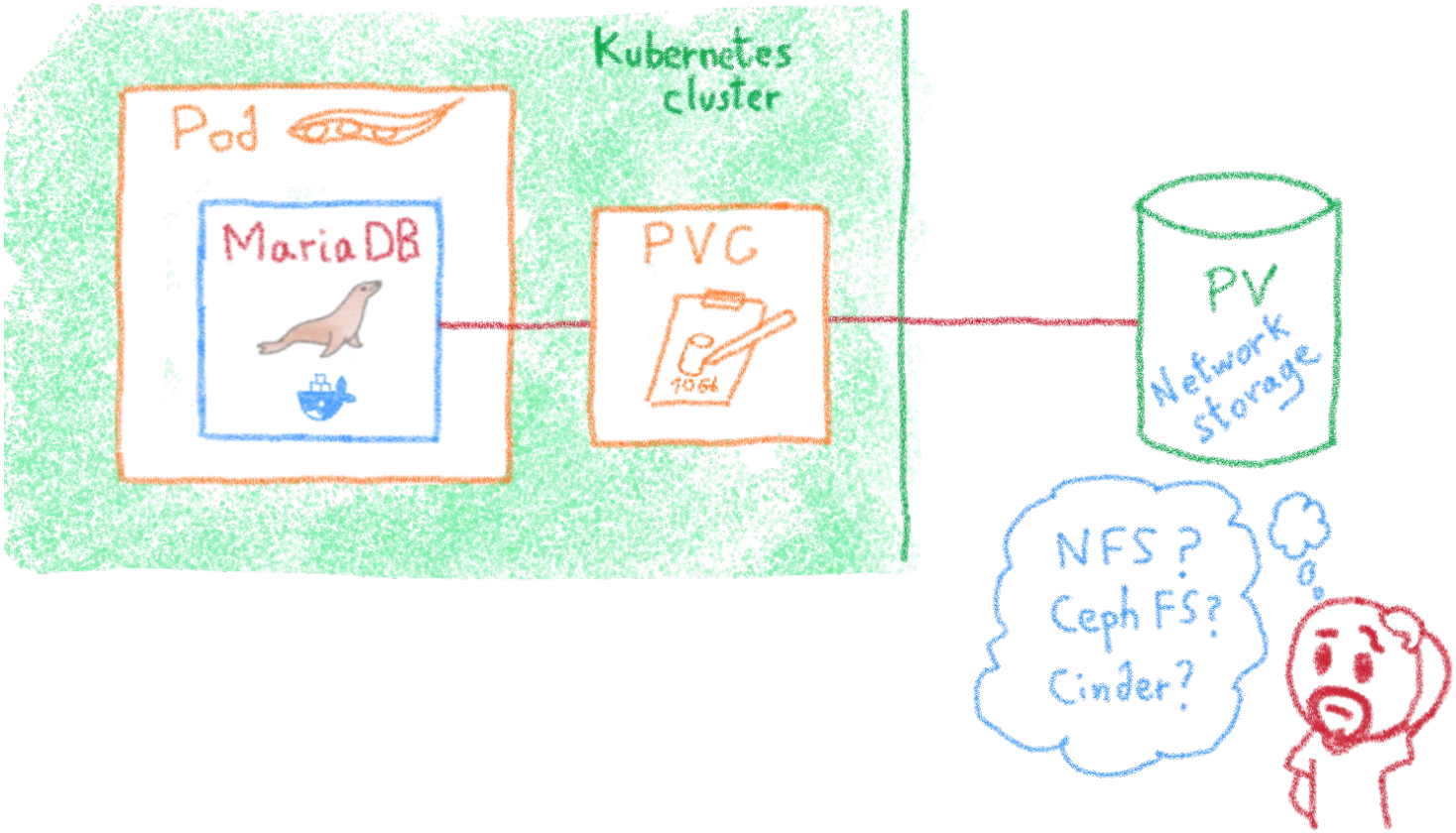
The truth is somewhere inside...



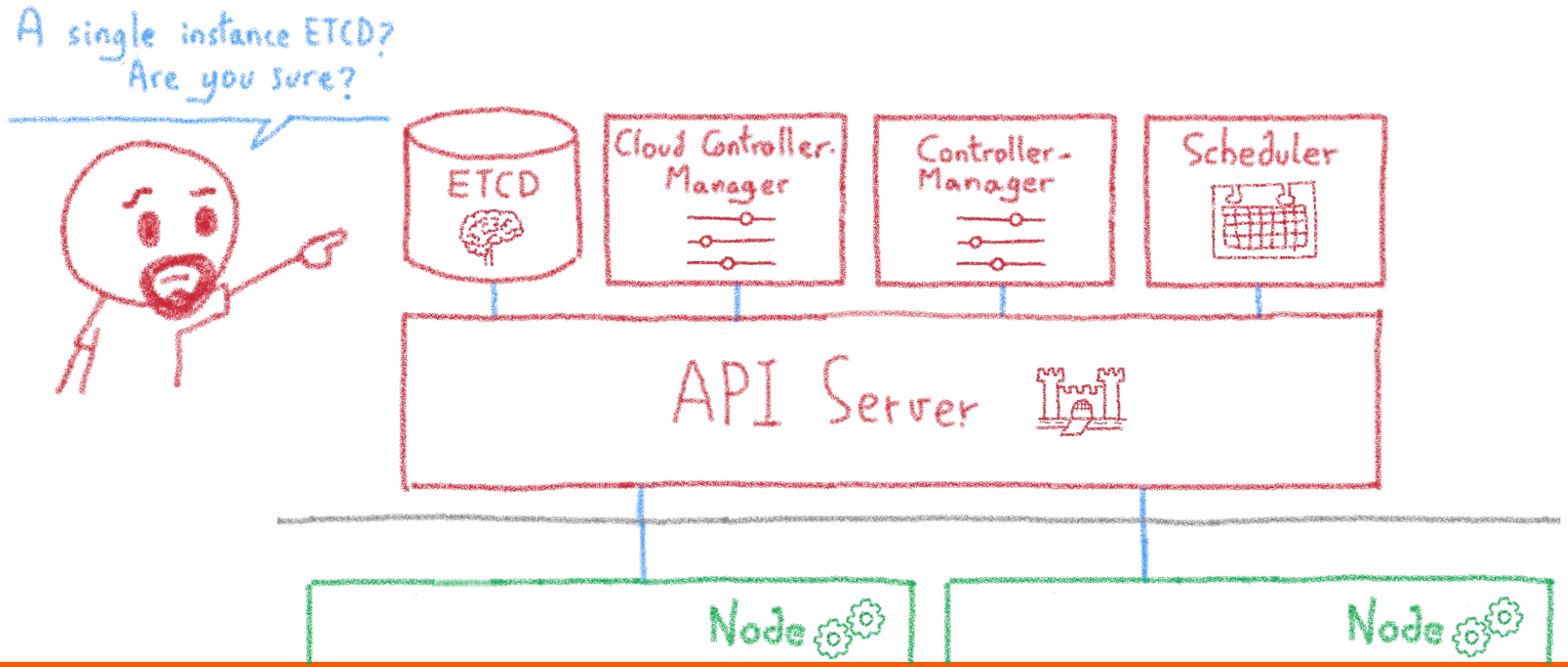
The network is going to feel it...



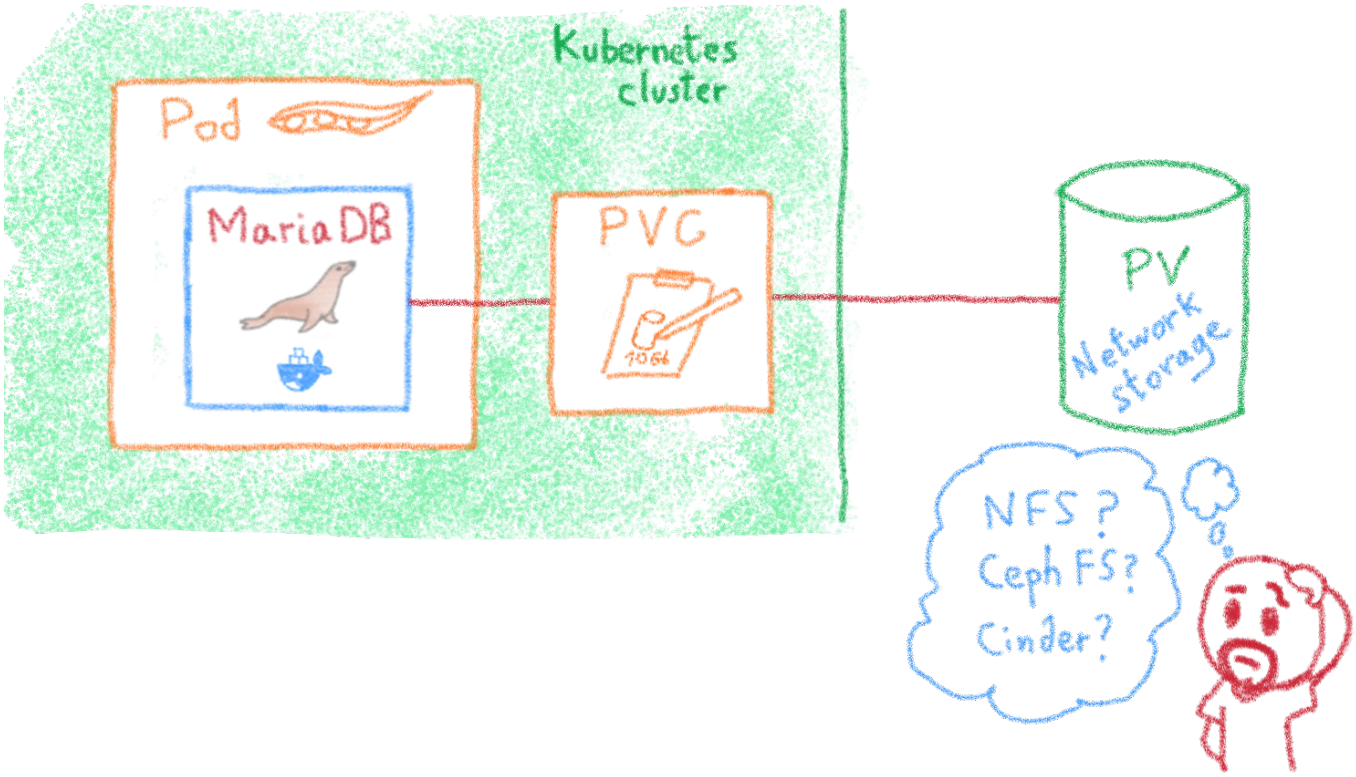
The storage dilemma



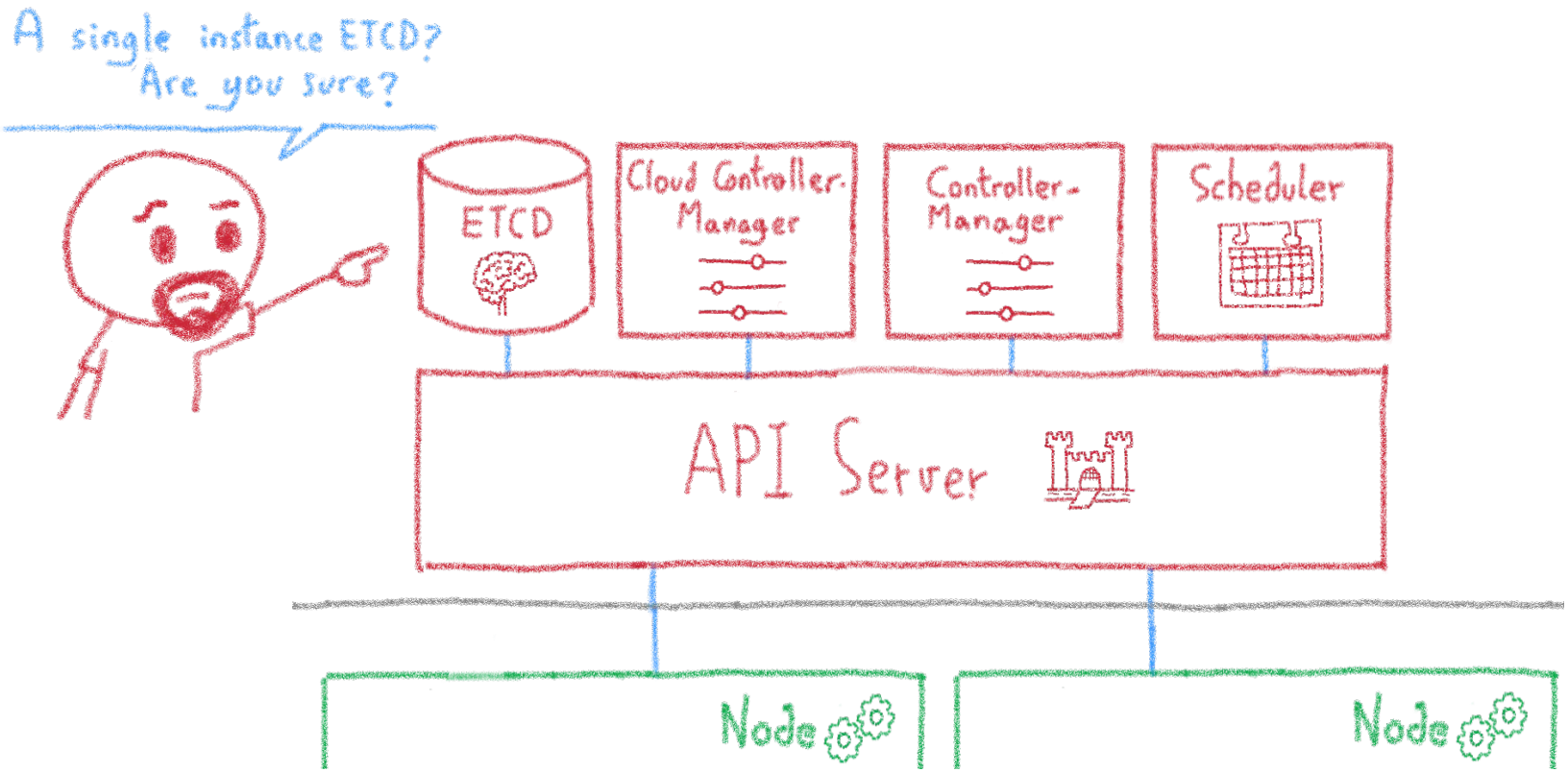
The ETCD vulnerability



The storage dilemma



The ETCD vulnerability



The security journey

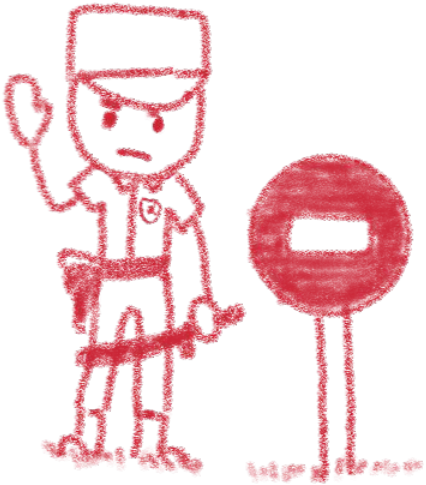
Mattias Gees
@MattiasGees

Your security journey with Kubernetes by @MayaKaczorowski #GoogleNext18

♡ 319 12:59 PM - Oct 11, 2018

Security

Hardening your Kubernetes



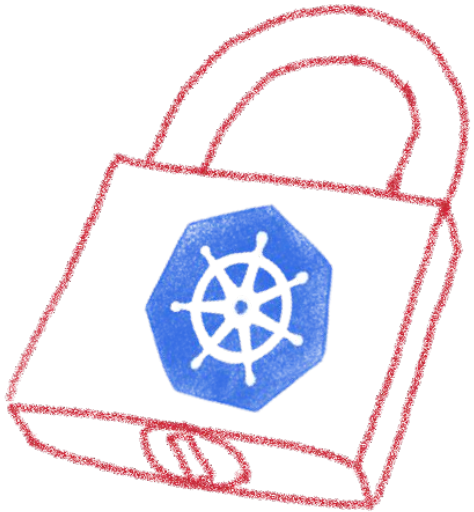
Kubernetes is insecure by design

~~It's a feature, not a bug~~

It's up to the K8s admin to secure it according to their needs

Not everybody has the same security needs

Kubernetes allows to enforce security practices as needed



Listing some good practices

- Close open access
- Define and implement RBAC
- Define and implement Network Policies
- Isolate sensitive workloads

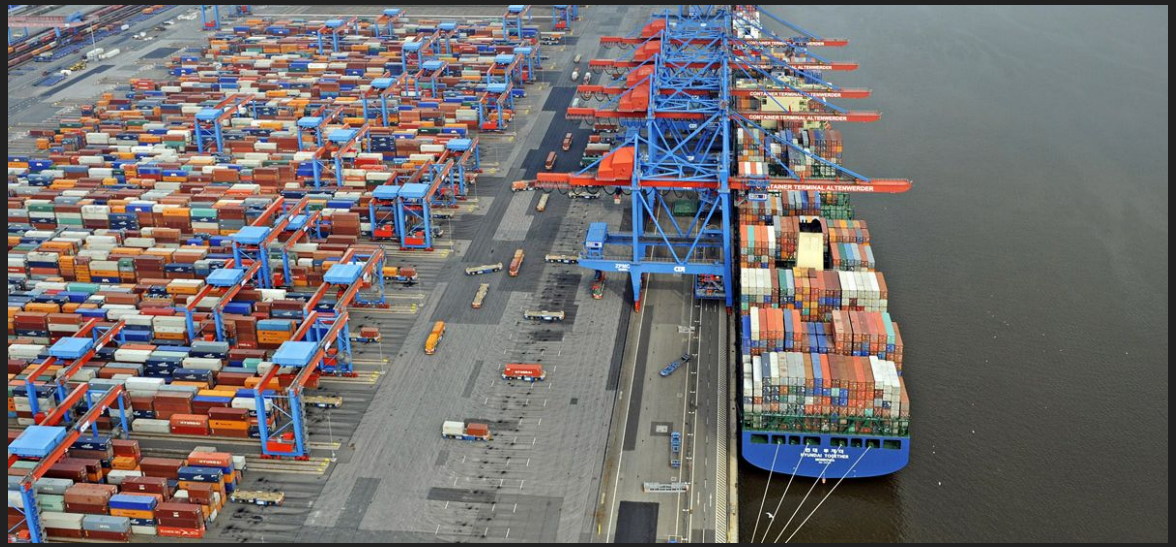
And remember, even the best can get hacked

One of Tesla's cluster got hacked
via an unprotected K8s API endpoint,
and was used to mine cryptocurrency...

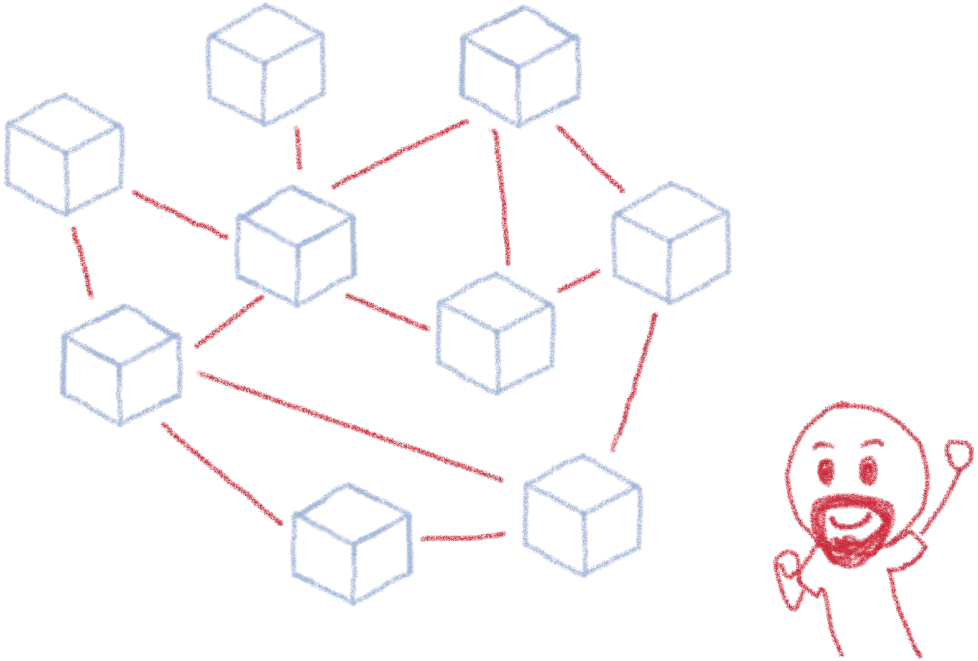
Remain attentive, don't get too confident

Managed Kubernetes

Because operating K8s isn't your job

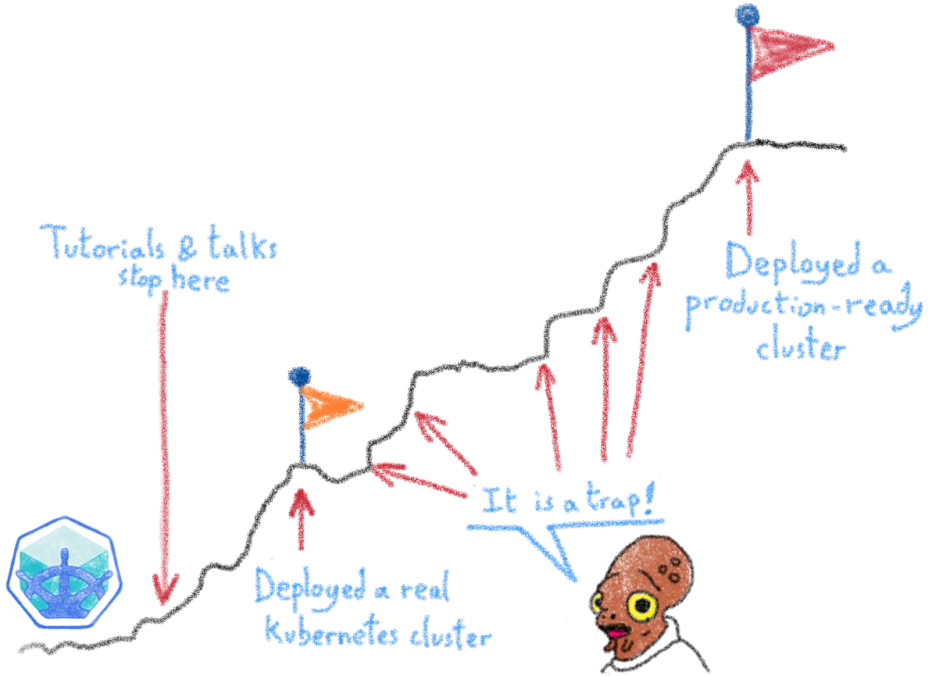


Kubernetes is powerful



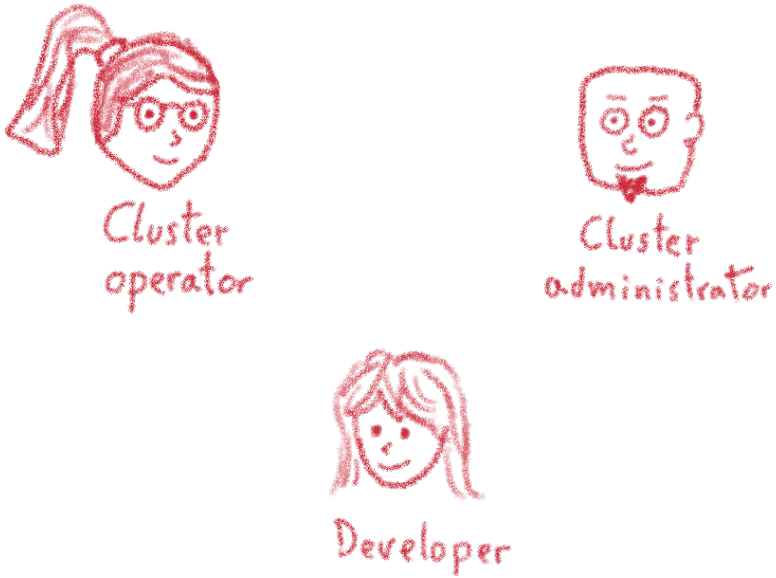
It can make Developers' and DevOps' lives easier

But there is a price: operating it



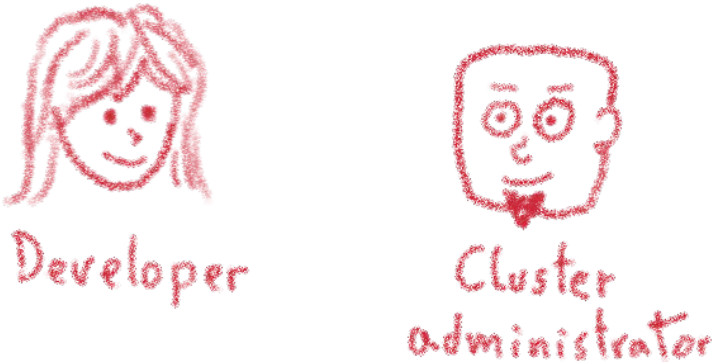
Lot of things to think about

Different roles



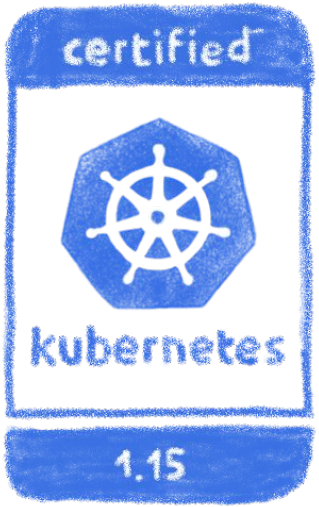
Each role asks for very different knowledge and skill sets

Most companies don't need to operate the clusters



As they don't build and rack their own servers!

If you don't need to build it, choose a certified managed solution



You get the cluster, the operator get the problems

Like our OVH Managed Kubernetes

OVHcloud

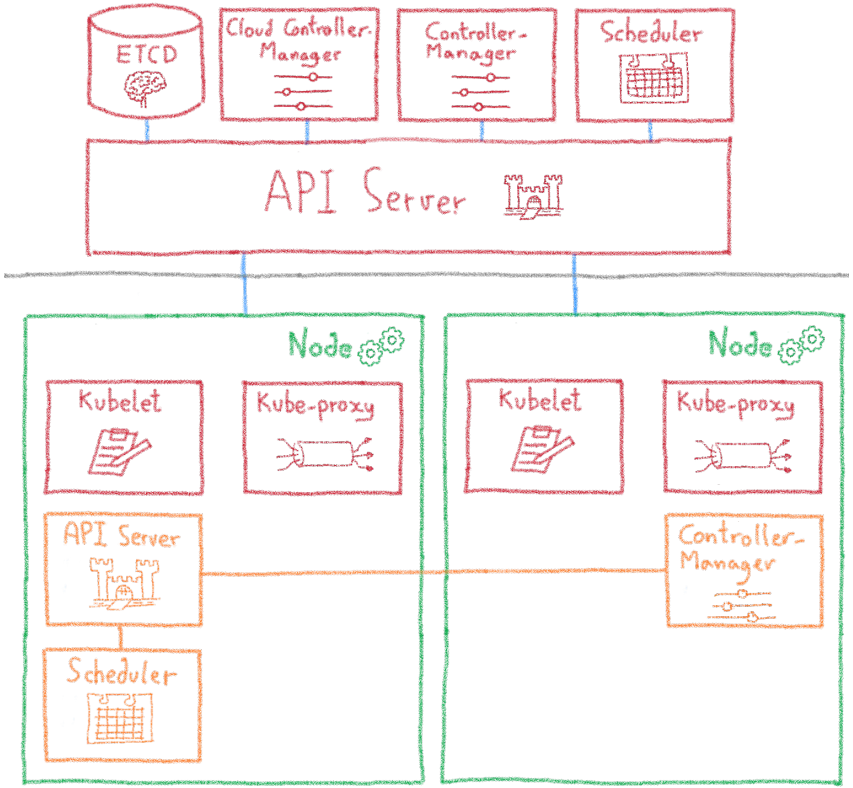
certified kubernetes 1.15

Made with ❤ by the Platform team

Making OVHcloud Mananaged Kubernetes

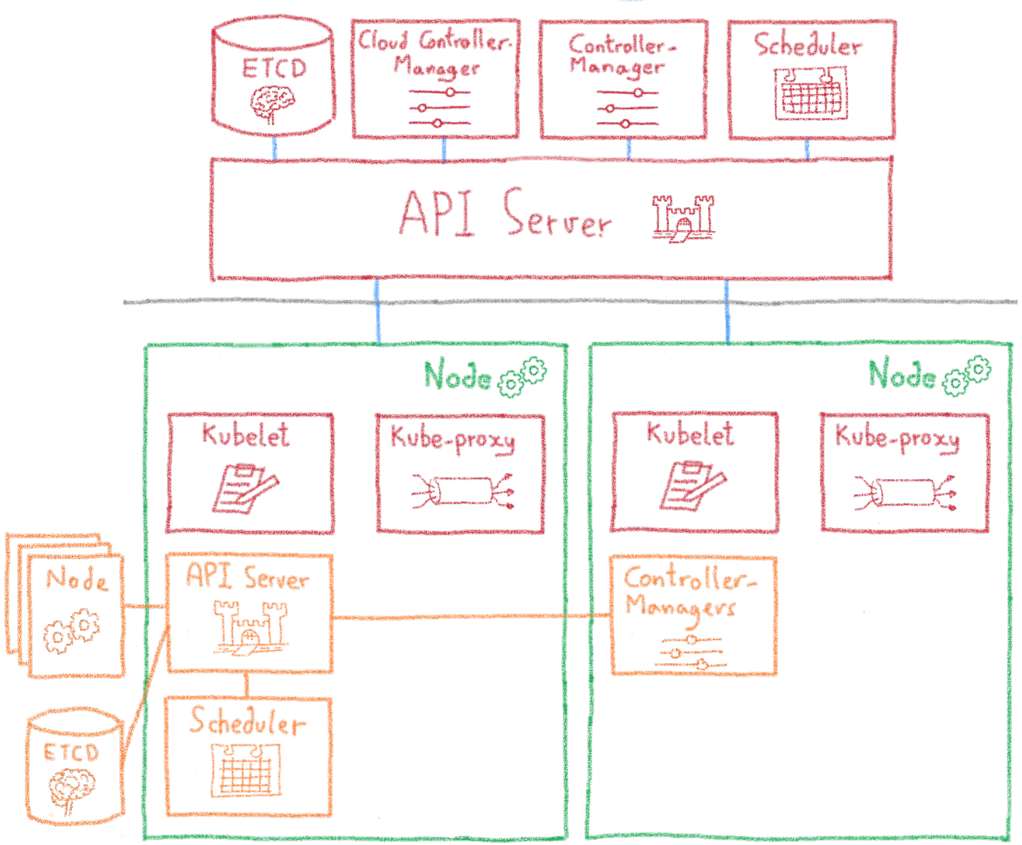
How and why we did what we did

Kubinception: running K8s on K8s

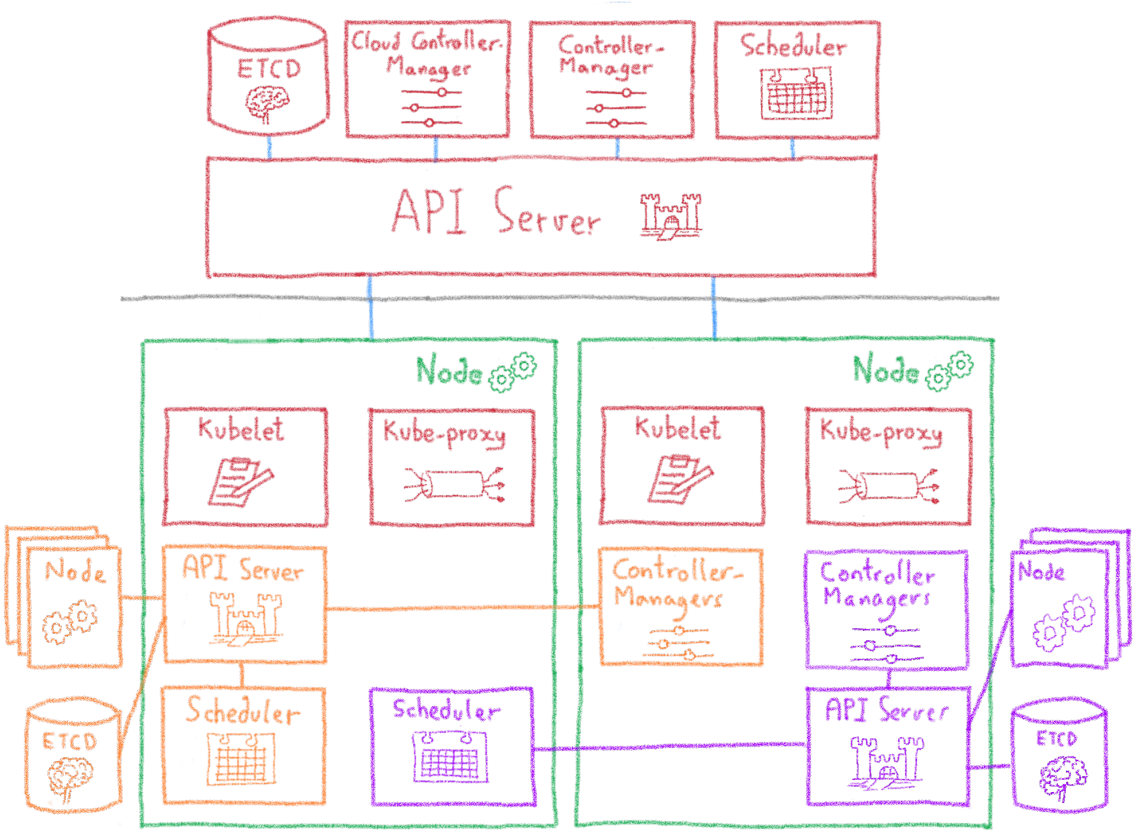


Using Kubernetes to run Kubernetes

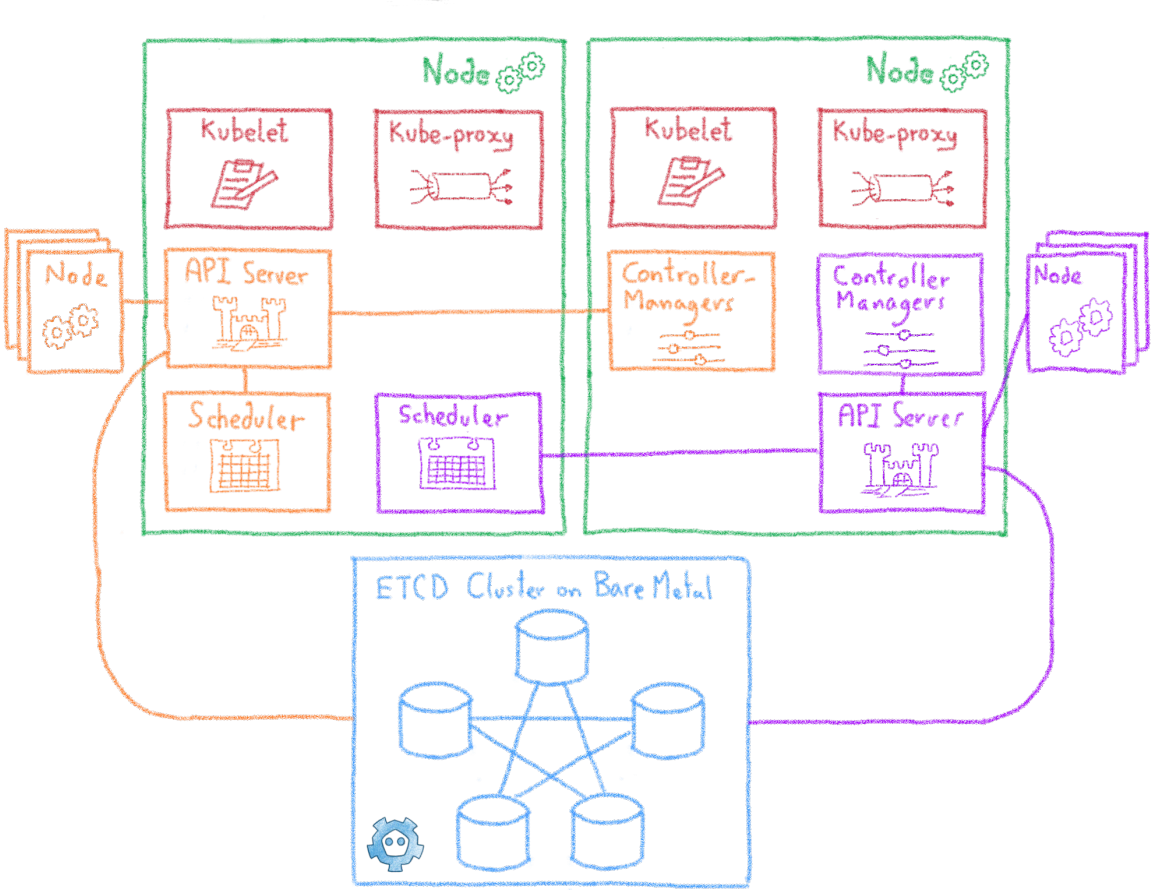
Kubinception: where are the nodes?



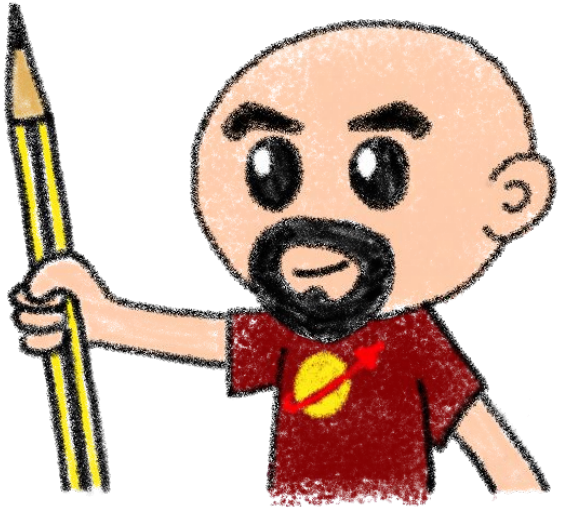
Kubinception with several customers



And the ETCD?


Node
Kubelet
Kube-proxy
API Server
Scheduler
Node
Kubelet
Kube-proxy
Controller-Managers
Controller Managers
API Server
Scheduler
Node
Node
ETCD Cluster on Bare Metal

Do you want to try?



Send me an email to get some vouchers...

horacio.gonzalez@corp.ovh.com

Thank you!

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