



KUBERMATIC

Cloud Native Linz / 24.11.2025

The Kubernetes & and the Bazaar

"The most important book about technology today,
with implications that go far beyond programming."
—Guy Kawasaki

Revised & Expanded

THE CATHEDRAL & THE BAZAAR

MUSINGS ON LINUX AND OPEN SOURCE
BY AN ACCIDENTAL REVOLUTIONARY



ERIC S. RAYMOND

WITH A FOREWORD BY BOB YOUNG, CHAIRMAN & CEO OF RED HAT, INC.

**"Every good work of software starts
by scratching a developer's personal itch"**

whoami



- Hubert Ströbitzer
- Kubernetes Trainer since > 6 years @ Kubermatic
- CKAD/CKA/CKS
- Software Dev for ~ 12 years, but switched focus many years ago
- iaam, does someone remember? :)



ueberbiber.bsky.social

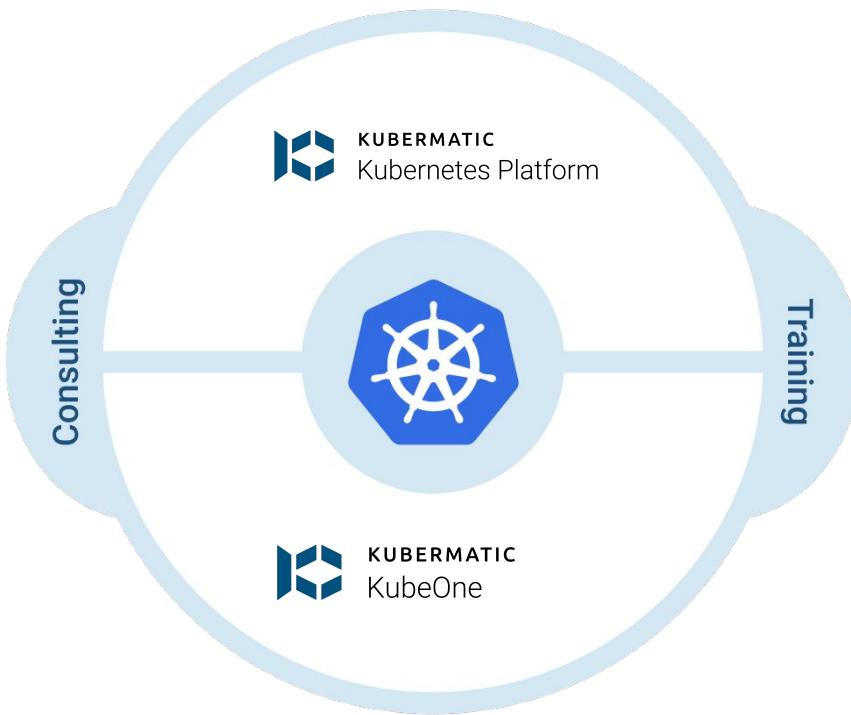


stroebitzer

<https://stroebitzer.com>

(to be fixed ;))

Kubermatic



Kubermatic Kubernetes Platform

Kubermatic Kubernetes Platform empowers you to easily deploy, manage and run multiple Kubernetes clusters in the cloud, in private data centers or hybrid scenarios.



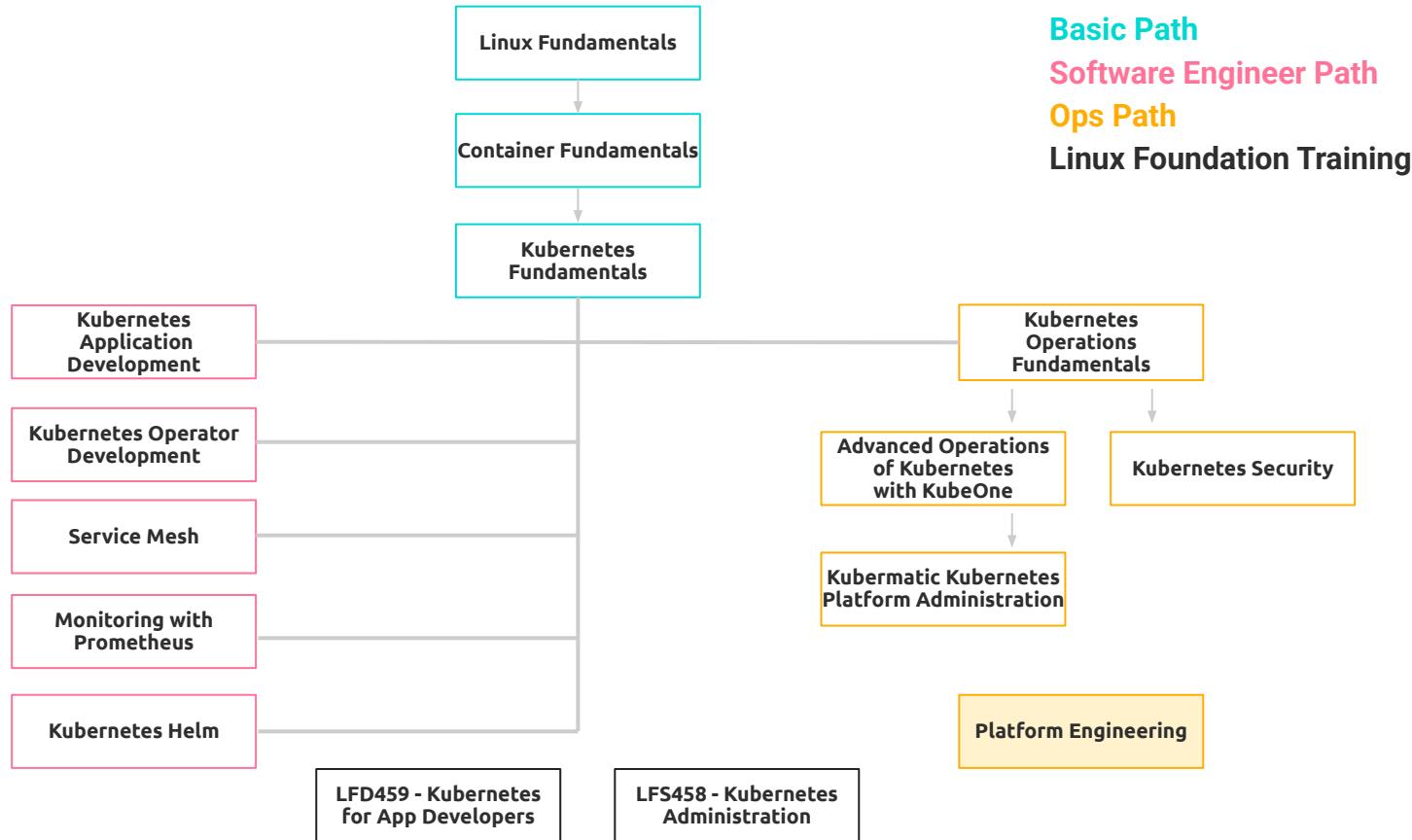
Professional Services

With our tailor-made consulting services, we are a reliable partner at every step in building, implementing, running and automating your containerized infrastructure.



Training

Our experienced instructors will make sure that your team has the knowledge and skills needed to successfully adopt container and cloud native technologies.



Chapter I: Why?

Platform Engineering

**... is the discipline of designing and building toolchains
and workflows that enable self-service capabilities for
software engineering organizations.**

**DevOps =
"You build it, you run it"**

**Platform Engineering =
"You build it, you run it -
but we give you the tools to run it easily"**



Björn

Lead Dev

But, Hubert, we have that already with
[FILL IN YOUR US HYPERSCALER OF
CHOICE]



Cons of using AWS/GCP/Azure/...

- \$\$\$ => and no safety concerning the future costs
- Vendor Lockin => serverless???
- Outages => eg AWS 19-20.10.2025
- They are not interested in supporting you at Multi Cloud
- They are not interested in supporting you in Hybrid Cloud
- They make it easy get data in, but not on getting data out again
- They make money out of OSS projects and some of them are not contributing anything back to the community
- Because of EU regulations they are not an option
- Geopolitical Concerns
- The UI!!!!!! (the abstraction layer has to fit for the entire universe)



Björn

Lead Dev

OK, I get it, we will implement an abstraction layer on our own



What are the options?

- Terraform / OpenTofu
- Pulumi
- Crossplane
- Backstage
- ...

What are the problems?

- Terraform / OpenTofu
 - State management
 - Providing a good abstraction layer for Devs is lots of work
- Pulumi
 - State management
 - Providing a good abstraction layer for Devs is lots of work
- Crossplane
 - Runs on a K8s Cluster and brings it to its limits => number of CRDs, etcd and apiserver load
 - no real multitenancy
- Backstage
 - is only an IDP (internal developer portal) frontend
- ...

Some abbreviations...

- IaaS (Infrastructure as a Service)
 - eg rent a VM
 - you are responsible starting from eg maintaining the VM
- KaaS (Kubernetes as a Service)
 - eg GKE
 - you are responsible starting from Containerization of your Application
- PaaS (Platform as a Service)
 - eg Heroku
 - you are responsible for your Source Code
- SaaS (Software as a Service)
 - eg Github
 - you are responsible for using the Software

Some more abbreviations...

- EDP (External Developer Platform)
 - Cloud Services like AWS App Runner, Google Cloud Run,...
- IDP (Internal Developer Platform)
 - Red Hat Open Shift, VMWare Tanzu, Rancher
- KCP (Kubernetes Control Plane)
 - OSS Project of the CNCF
 - Addresses some limitations of Kubernetes
- KDP (Kubermatic Developer Platform)
 - UI
 - Self Service Developer Portal
 - built on the ideas of KCP



Björn

Lead Dev

Congrats Hubert, now I am completely lost. What was the topic about?



To the initial question again, why?

- Reducing the cognitive load on Devs
- Keeping the Devs on the steering wheel
- Avoid blockers for Devs
- Providing the "best possible" abstraction of infrastructure things for Devs
- Allow Devs to do their job

Chapter II: How?



Consumers

But who builds the Bazaar?

Providers

You ;)
(The Platform Team)
via KCP and KDP (optional)

Kubernetes

[excalidraw] Kubernetes Architecture

[excalidraw] Reconciliation Loops

**Kubernetes is awesome,
but was not built for that!**

What are the strengths of Kubernetes?

- The API
- The Reconciliation Architecture
- OSS
- Industry Standard
- Runnable everywhere keeping the same abstraction layer
- Solves the Vendor Lock In Problem

What are the problems with Kubernetes here?

- "real" multitenancy
- Kubernetes is about running Containers, but sometimes that does not fit
- Scaling issues, eg on doing Crossplane
 - Single Kubernetes Cluster running everything?
 - api-server and etcd reach their limits
 - CRD overload
- Spreading Workloads across Kubernetes Clusters is not a built-in feature

So, we have to change Kubernetes :)

KCP

a Kubernetes-like control plane

<https://www.cncf.io/projects/kcp/>

[excalidraw] KCP Architecture

KCP demo

running locally (do not do this in production!)

[excalidraw] KCP Multitenancy on etcd

Nice, but what about...?

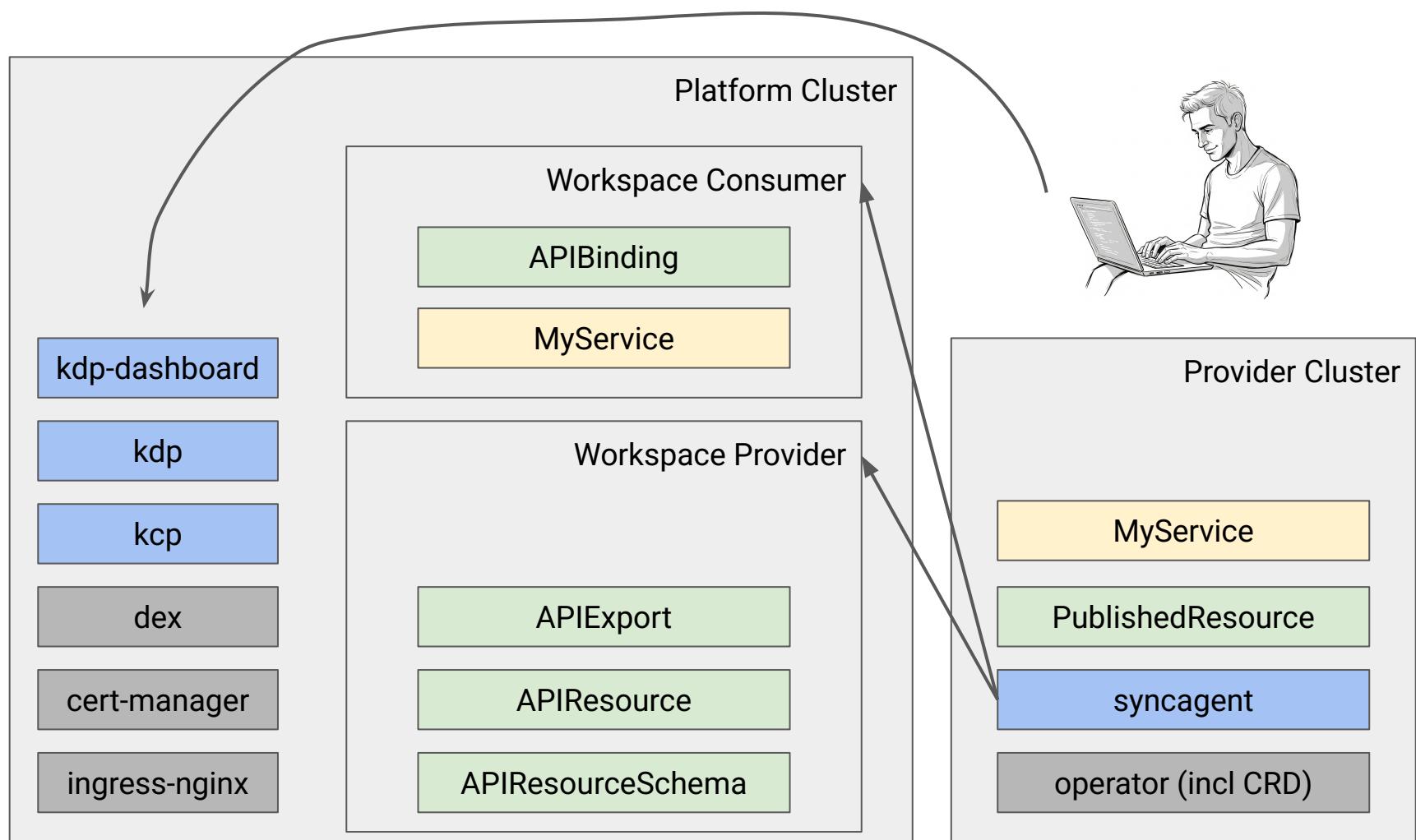
- A fancy UI (and you will want that, due to kcp is very low level)
- Who runs the MyService in the end?
- MultiCluster Support?
- Permissions?
- Abstracting away tech details Devs do not care about?
- I am a Provider and the only thing I care about is a CRD eg. PostGres
<https://operatorhub.io/?keyword=postgres>

KDP

Kubermaic Developer Platform

Now, bring it all together

- Service Consumer
 - wants to have an UI like AWS/GCP/Azure...
 - does not want to have an UI like AWS/GCP/Azure... ;)
- Service Provider
 - runs his services in **his** Kubernetes Cluster (or else where)
 - wants to abstract tech details
 - wants to provide some tech details - eg DB URL, User, Password
 - does not care about the platform, cares eg about CRDs and Operators
- Platform Team
 - has to provide the Bazaar



live demo!!!1

What could possibly go wrong?

Questions?

Thank you!!!

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