

# PKWade goes Kubernetes

When migration hits you hard

Lauß & Lumesberger

# Agenda

**What you gonna hear from us**

The current project & what we want

What is Kubernetes?

How can I use Kubernetes?

Little insight

Problems


# The Project

## The architecture


### Alle Marken

Abarth Aixam Alfa Romeo Alpina Alpine Aston Martin Audi Austin Bentley BMW British Leyland Buick Cadillac Casalini Caterham Chevrolet Chevrolet / Daewoo Chrysler Citroën Corvette Cupra Dacia Daihatsu Dodge DS Automobiles Eli Ferrari Fiat Ford GMC Graf Carello Honda Hummer Hyundai Infiniti Isuzu IVECO JAC Jaguar Jeep KIA KTM Lada Lamborghini Lancia Land Rover Lexus Ligier Lincoln Lotus Mahindra MAN Maserati Maybach Mazda McLaren Mercedes-Benz Mercury MG Microcar MINI Mitsubishi Morgan Nissan Opel Peugeot Polestar Pontiac Porsche Puch Renault Rolls-Royce Rover Saab Seat Skoda Smart SsangYong Subaru Suzuki Talbot Tata Tesla Toyota Triumph Volvo VW Wiesmann ZhiDou Sonstige

### brandCrawler




Audi A4 S4  
Benzin, Schaltgetriebe  
2000 EZ 118.000 km 265 PS (195 kW)  
Privat 9900 Wlch  
**€ 24.999**




Audi A4 2.5 TDI Cabriolet  
Diesel, Automatik, gültiges Pickert  
2003 EZ 220.000 km 163 PS (120 kW)  
Privat 9100 Ansdorf  
**€ 7.990**

WERBUNG



Audi A4 Avant 35 TDI S-tronic  
Hybrid (Benzin/Diesel), Automatik, gültiges Pickert, Gewährleistung  
2020 EZ 35.000 km 163 PS (120 kW)  
Autobaus Senker GmbH 3350 Haag  
**€ 39.880**




Audi A6 Avant 40 TDI quattro Sport  
Diesel, Automatik, gültiges Pickert, Gewährleistung  
2022 EZ 10.000 km 204 PS (150 kW)  
Porsche Inter Auto GmbH & CO KG ZNL Alpenstrasse  
**€ 77.000**

### overviewCrawler

Audi A6 Avant 40 TDI quattro Sport Kombi / Family Van

4/2022 EZ 10.000 km 204 PS (150 kW)

Zuletzt geändert: 03.05.2022, 11:35 Uhr | willhaben-Code: 564345516



**€ 77.000** Verkaufspreis  
Dieses Fahrzeug finanzieren  
Dieses Fahrzeug versichern

**PORSCHE**  
ALPENSTRASSE  
Porsche Inter Auto GmbH & CO  
KG ZNL Alpenstrasse

Verkäufer kontaktieren

004... Nummer anzeigen

Mehr von diesem Verkäufer

Alpenstrasse 175  
5020 Salzburg  
Salzburg Stadt, Salzburg  
Firmenwebsite

**Vorteile zu diesem Fahrzeug**  
Gewährleistung

**Fahrzeuginformationen**

Erstzulassung	4/2022	Leistung	204 PS (150 kW)
Getriebeart	Automatik	Treibstoff	Diesel
Kilometerstand	10.000 km	Antrieb	Allrad

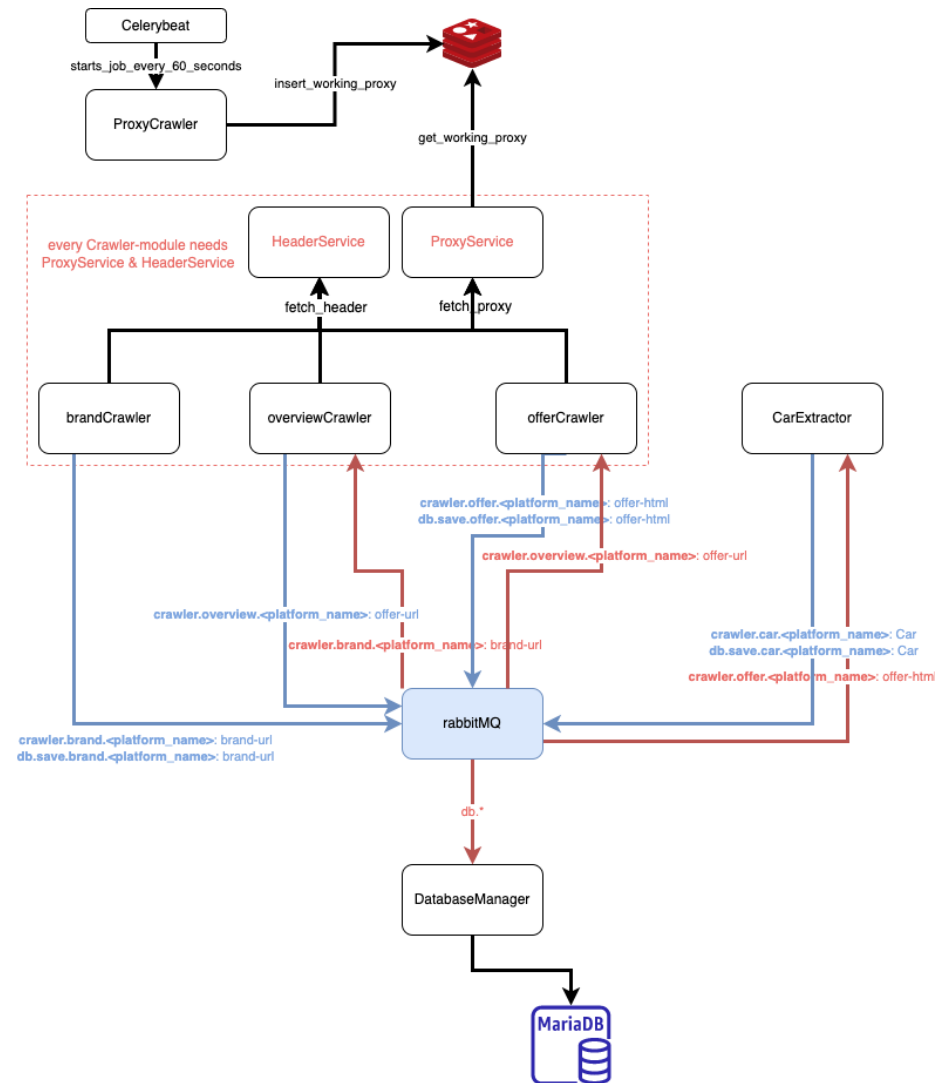
**Karosserie & Technik**

CO <sub>2</sub> -Ausstoß	158 g/km	Anzahl Türen	4
Zustand	Gebrauchtwagen	Anzahl Sitze	5
Fahrzeugtyp	Kombi / Family Van	Außenfarbe	Schwarz
Hubraum	1.968 ccm	Metalllackierung	✓

**Weitere Vorteile**

Gewährleistung	✓	57a "Pickert"	✓
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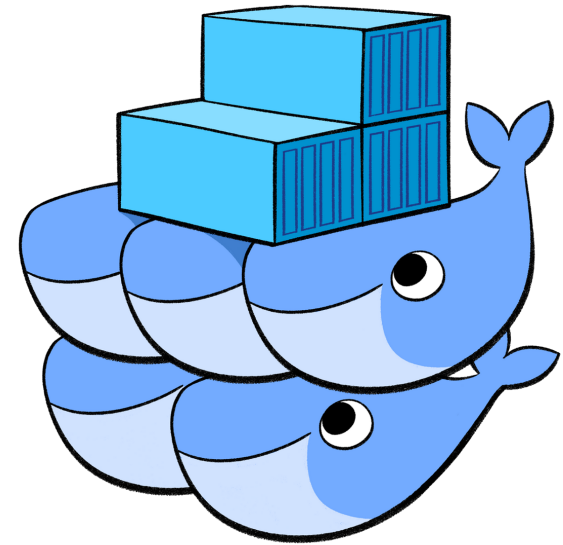
### offerCrawler



# The Project

## The mission

- Deployed via Docker Swarm on multiple nodes
- Transition towards Kubernetes
  - Future proof
  - Stateful Services



kubernetes

- (Try to analyse some data from car-offerings)

# What is Kubernetes?

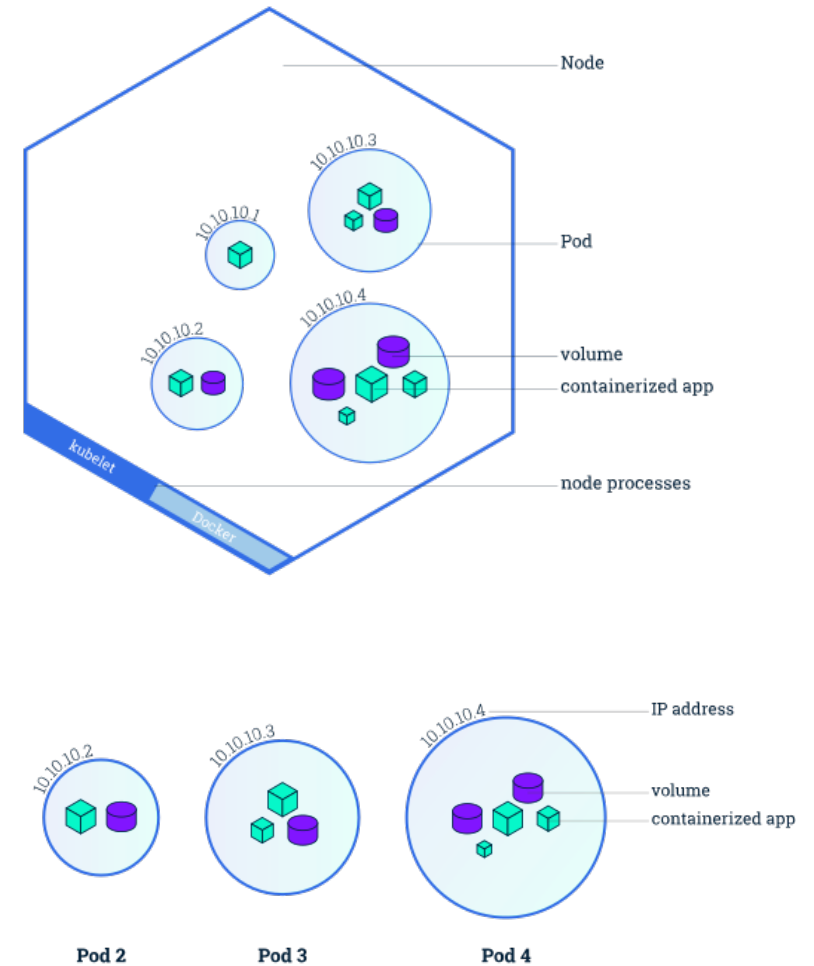
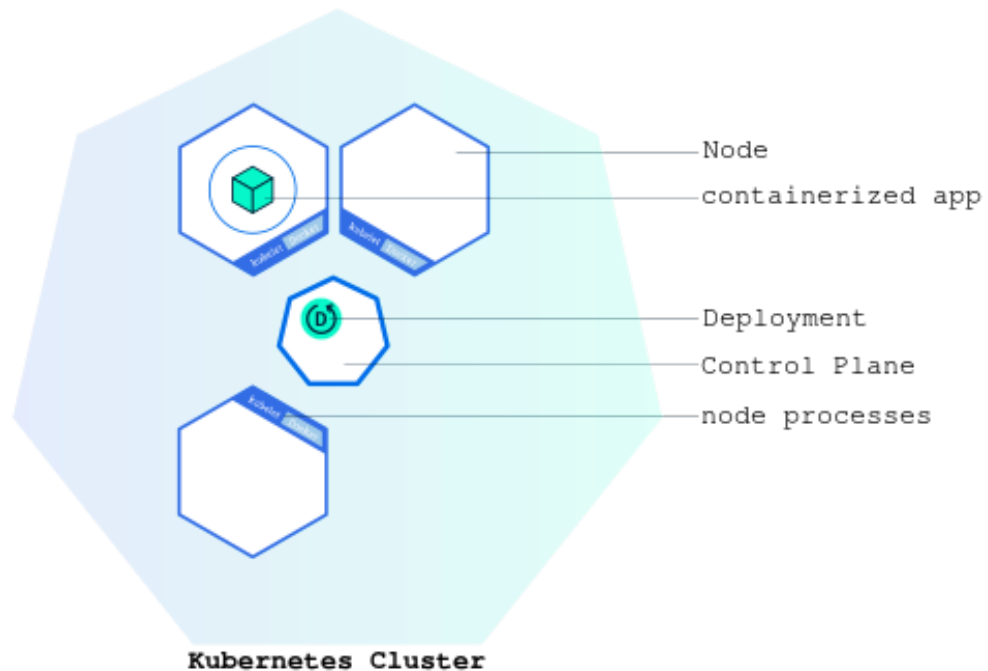
# Kubernetes (K8s)

## Little Overview

- Orchestration-Software
- Key-Features:
  - Automated Rollouts and Rollbacks
  - Storage orchestration
  - Service Discovery & Load Balancing
  - Automated Scaling
  - and much, much more

# Kubernetes (K8s)

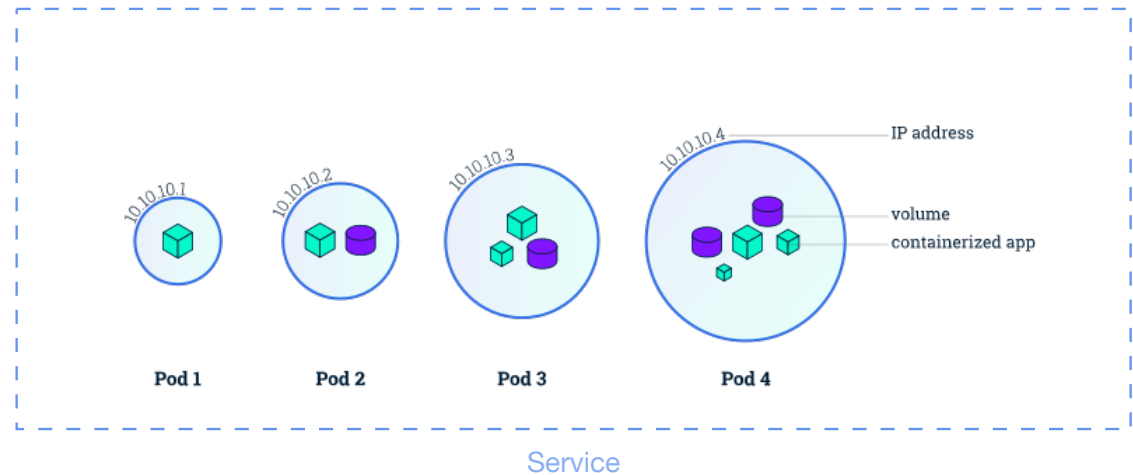
## The Basics



# Kubernetes (K8s)

## More basics

- Pods have different IPs
- Service unites pods
  - ClusterIP
  - NodePort
  - LoadBalancer
  - ExternalName





# Kubernetes (K8s)

## Ingress

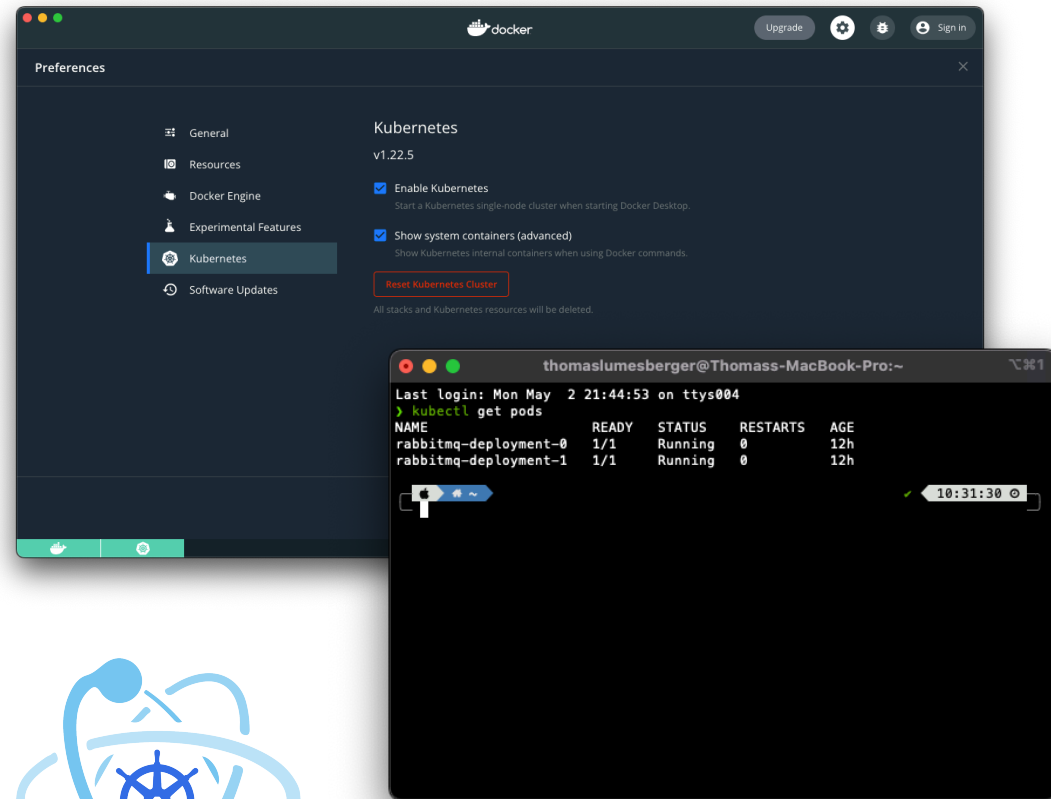
- LoadBalancer managed by Kubernetes
- Often based on nginx



# Kubernetes (K8s)

## How can I use it?

- Docker-Client comes with Kubernetes
  - More configuration needed
  - **Minikube** as alternative
  - **kubectl** on Terminal
- Moving to production
  - **kubeadm** for cluster-creation



How does that look like in  
practice?

# Kubernetes (K8s)

## Deployments, Services and Ingress

- Everything is YAML

```
apiVersion: apps/v1
kind: StatefulSet
metadata:
  name: rabbitmq-deployment
  labels:
    app: rabbitmq
spec:
  replicas: 2
  selector:
    matchLabels:
      app: rabbitmq
  serviceName: rabbitmq-service
  template:
    metadata:
      labels:
        app: rabbitmq
    spec:
      imagePullSecrets:
        - name: regcred
      containers:
        - name: rabbitmq
          image: registry.gitlab.com/lum1nanz/autocheck-2/rabbitmq
          ports:
            - name: management
              containerPort: 15672
```

Deployment

```
apiVersion: v1
kind: Service
metadata:
  name: rabbitmq-service
spec:
  selector:
    app: rabbitmq
  ports:
    - port: 15672
      targetPort: 15672
```

Service

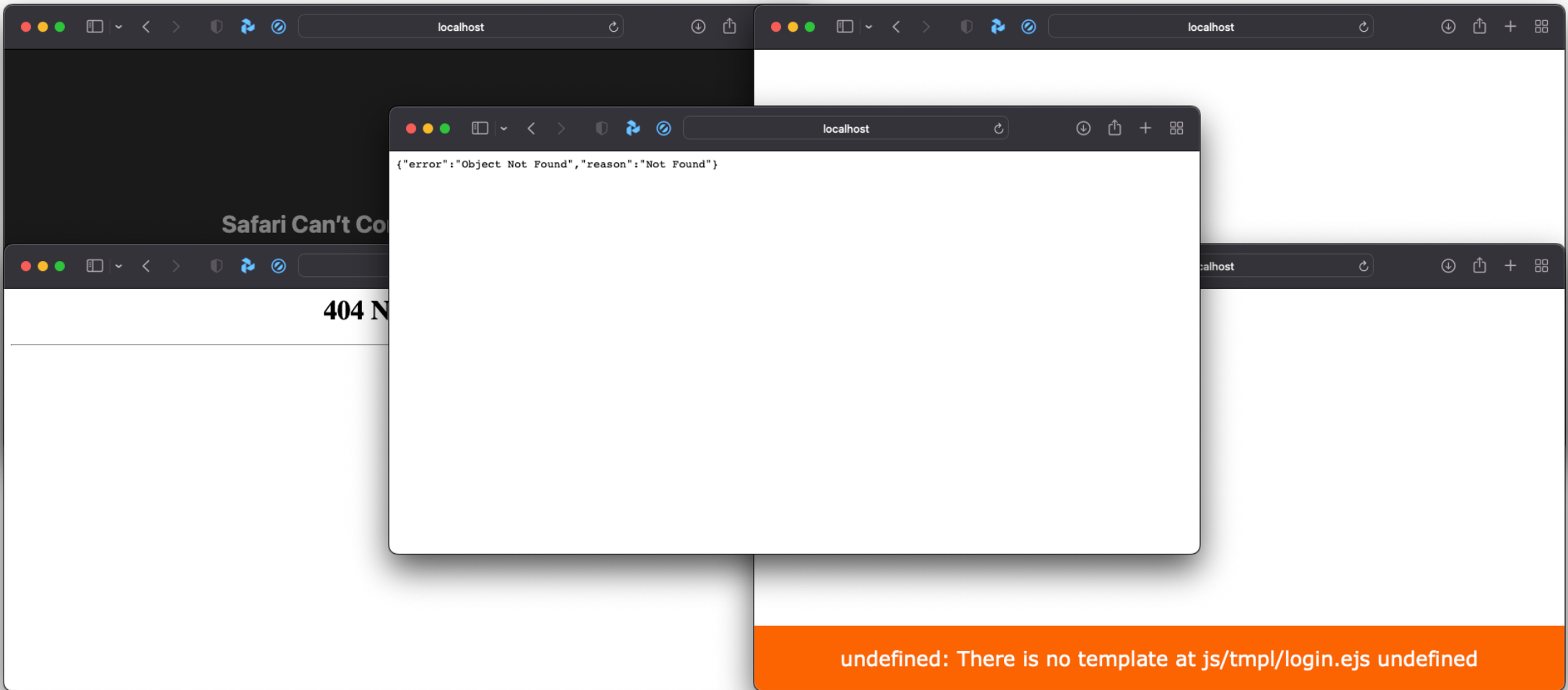
```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: rabbitmq-ingress
  labels:
    name: rabbitmq
  annotations:
    nginx.ingress.kubernetes.io/rewrite-target: /$2
    nginx.ingress.kubernetes.io/ssl-redirect: "false"
spec:
  ingressClassName: nginx
  rules:
    - host: localhost
      http:
        paths:
          - path: /rabbitmq(/|$)(.*)
            pathType: Prefix
            backend:
              service:
                name: rabbitmq-service
                port:
                  number: 15672
```

Ingress

**“We are done in no time”**

# Challenges

...not really



# Challenges

...are challenging



# Challenges



- Switching back from Minikube to Standard-Kubernetes
- Installing the nginx-ingress-controller
- Digging into the rewrite-rules of nginx and Ingress

