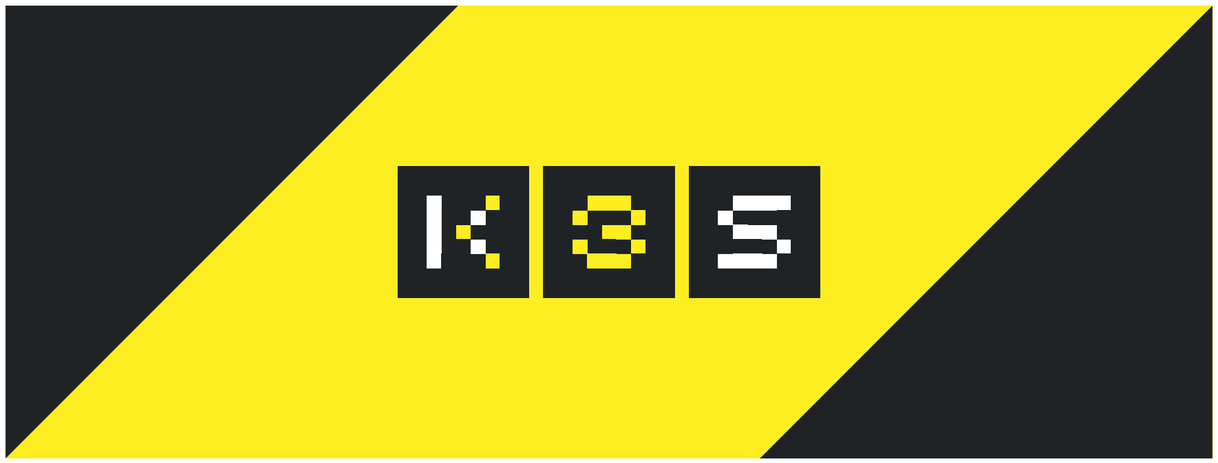
Speed Up Your Cloud Native Applications Deployment Using K3s And Traefik



traefik

How To Access The Slides?

- Slides (HTML): https://containous.github.io/slides/rancher-masterclass
- Slides (PDF): https://containous.github.io/slides/rancher-masterclass/slides.pdf
- Source on : https://github.com/containous/slides/tree/rancher-masterclass

How To Use These Slides?

- **Browse the slides:** Use the arrows
  - Change chapter: Left/Right arrows
  - Next or previous slide: Top and bottom arrows
- **Overview of the slides:** keyboard's shortcut "o"
- **Speaker mode (and notes):** keyboard's shortcut "s"

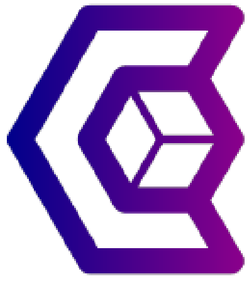
Whoami

- Manuel Zapf:
  - Træfik's Solution Architect 🔨 @ Containous
- @mZapfDE
- SantoDE

Containous

https://containo.us

- We Believe in Open Source
- We Deliver Traefik, Traefik Enterprise Edition and Maesh
- Commercial Support
- 30 people distributed, 90% tech



Why K3s & Traefik?

Why, Mr Anderson?

Evolution Of Kubernetes

- 2014: Google Introduces Kubernetes
- 2015: The year of Kube v1.0 & CNCF
- 2016: The Year Kubernetes Goes Mainstream!
- 2017: The Year of Enterprise Adoption & Support
- 2018: Kubernetes gets bigger and bigger
- 2019: Kubernetes all over the World

Challenges

- Kubernetes the hard way to setup
- Demanding in Ressources, Knowledge...
- Complex Concepts
- Hard to test

What If I Told You?

That there is a solution?

Here Comes K3s & Traefik!

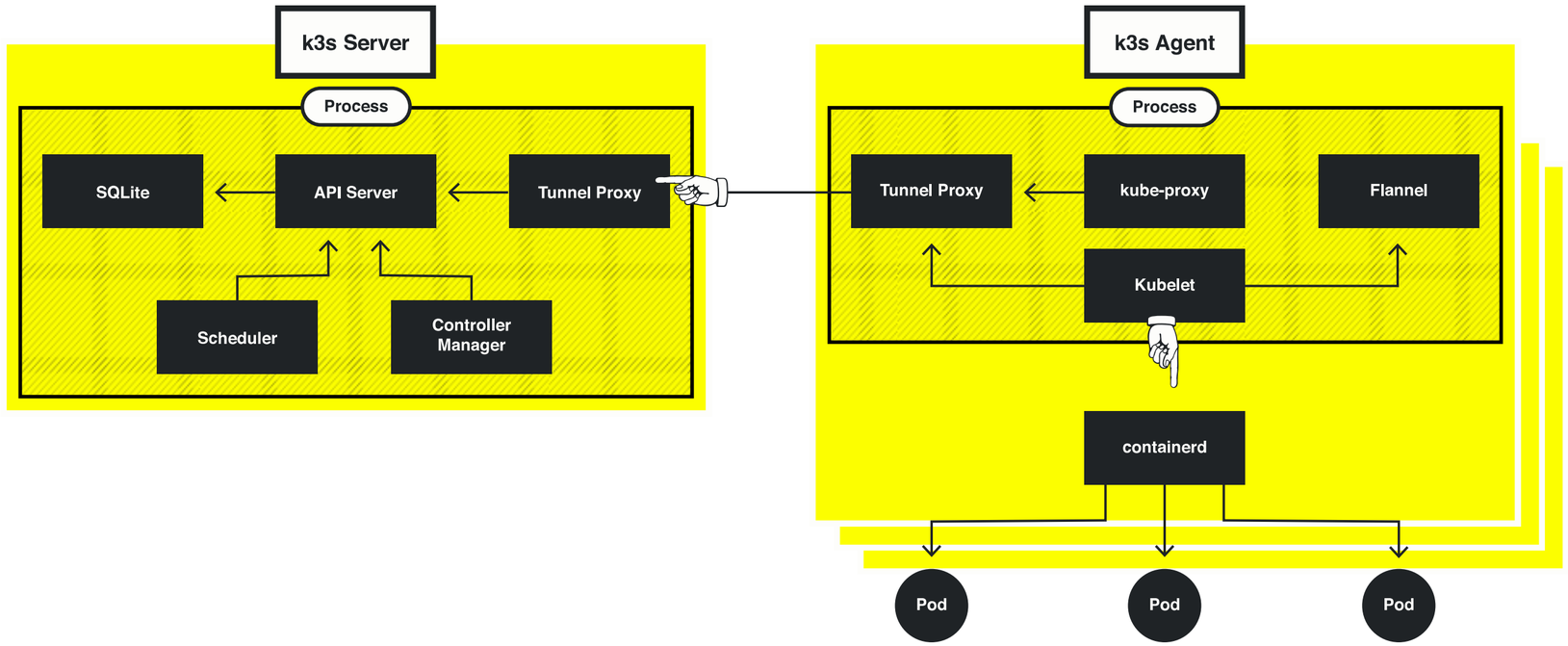
K3s Project

- https://github.com/rancher/k3s
- Apache License 2.0
- Written in Go
- 8800+ ☆ 500k+ ⬇ 50+ 👷
- Created in 2019

What Is K3s?

K3s is a lightweight, fully compliant production-grade Kubernetes distribution, designed for production workloads in unattended, resource-constrained, remote locations or inside IoT appliances.

How It Works


k3s Server
Process
SQLite
API Server
Tunnel Proxy
Scheduler
Controller Manager
k3s Agent
Process
Tunnel Proxy
kube-proxy
Flannel
Kubelet
containerd
Pod
Pod
Pod

Adds

- Simplified, super-fast installation
- SQLite3 support in addition to etcd
- TLS Management
- Automatic Manifest and Helm Chart management
- Traefik

Removes

- Legacy and non-default features
- Alpha features
- In-tree cloud providers
- In-tree storage drivers
- Docker (optional)

k8s - 5 = k3s ;-)

Why Use?

- Optimized for ARM
- Simplified Operations
- Perfect for Edge

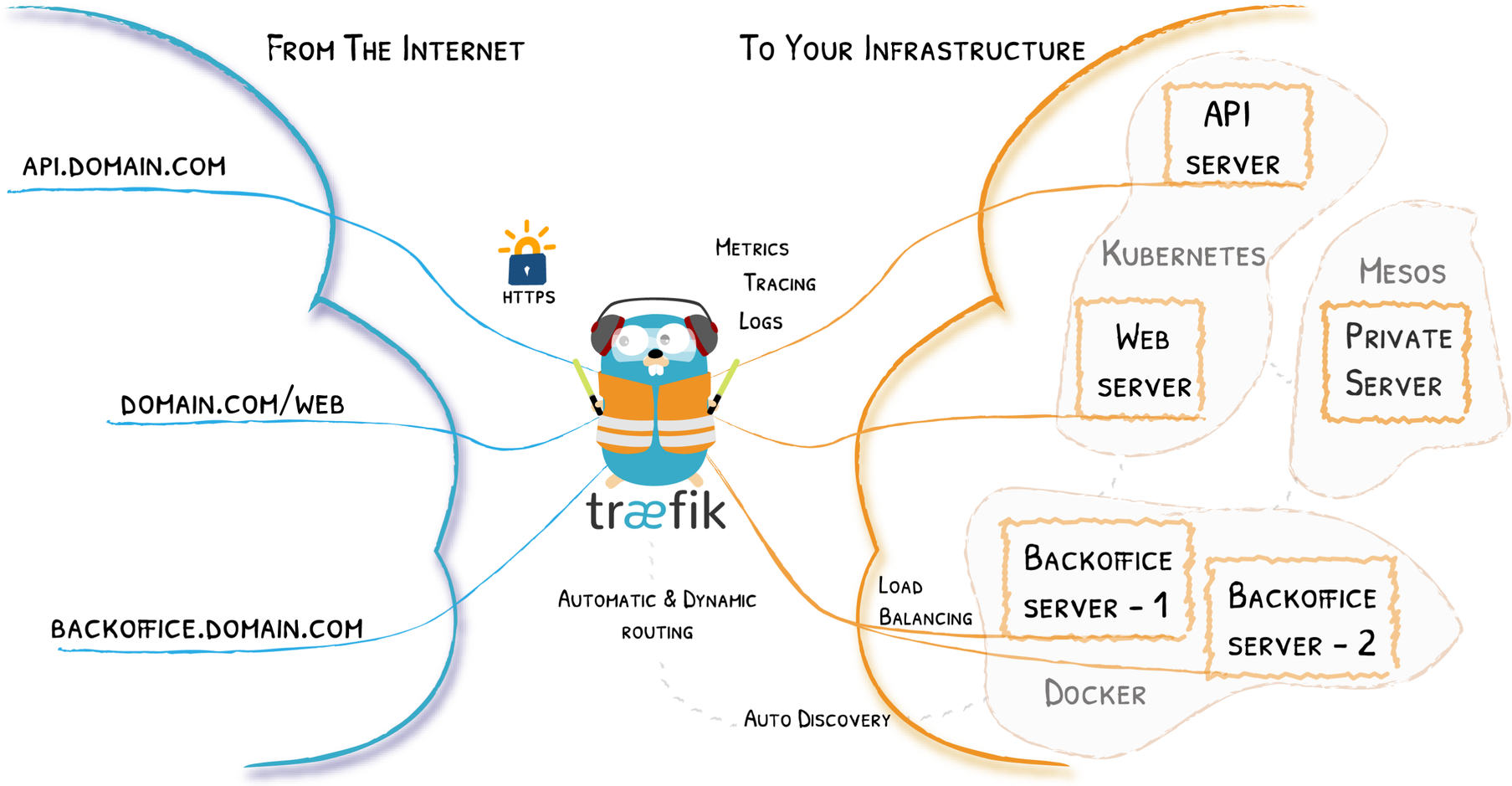
Traefik Project

- https://github.com/containous/traefik
- MIT License
- Written in Go
- 24,000+ ☆ 1B+ ⬇ 400+
- Created in 2015
- Current stable branch: `v2.0`

What Is Traefik?

Traefik is a dynamic, cloud native edge router, fully designed to make your cloud native applications accessible from the outside. It offers major integrations into for example Kubernetes or Docker Swarm, but also to third-party services such as Lets Encrypt

How It Works


From The Internet
To Your Infrastructure
API.DOMAIN.COM
DOMAIN.COM/WEB
BACKOFFICE.DOMAIN.COM
HTTPS
Metrics
Tracing
Logs
træfik
Automatic & Dynamic routing
Auto Discovery
Load Balancing
API server
Kubernetes
Web server
Mesos
Private Server
Backoffice server - 1
Backoffice server - 2
Docker

Overview

- Continuously updates its configuration (No restarts!)
- Lets Encrypt Support
- Circuit breakers, retry
- Websocket, HTTP/2, GRPC ready
- Provides metrics (Rest, Prometheus, Datadog, Statsd, InfluxDB)

Traefik With ⎈

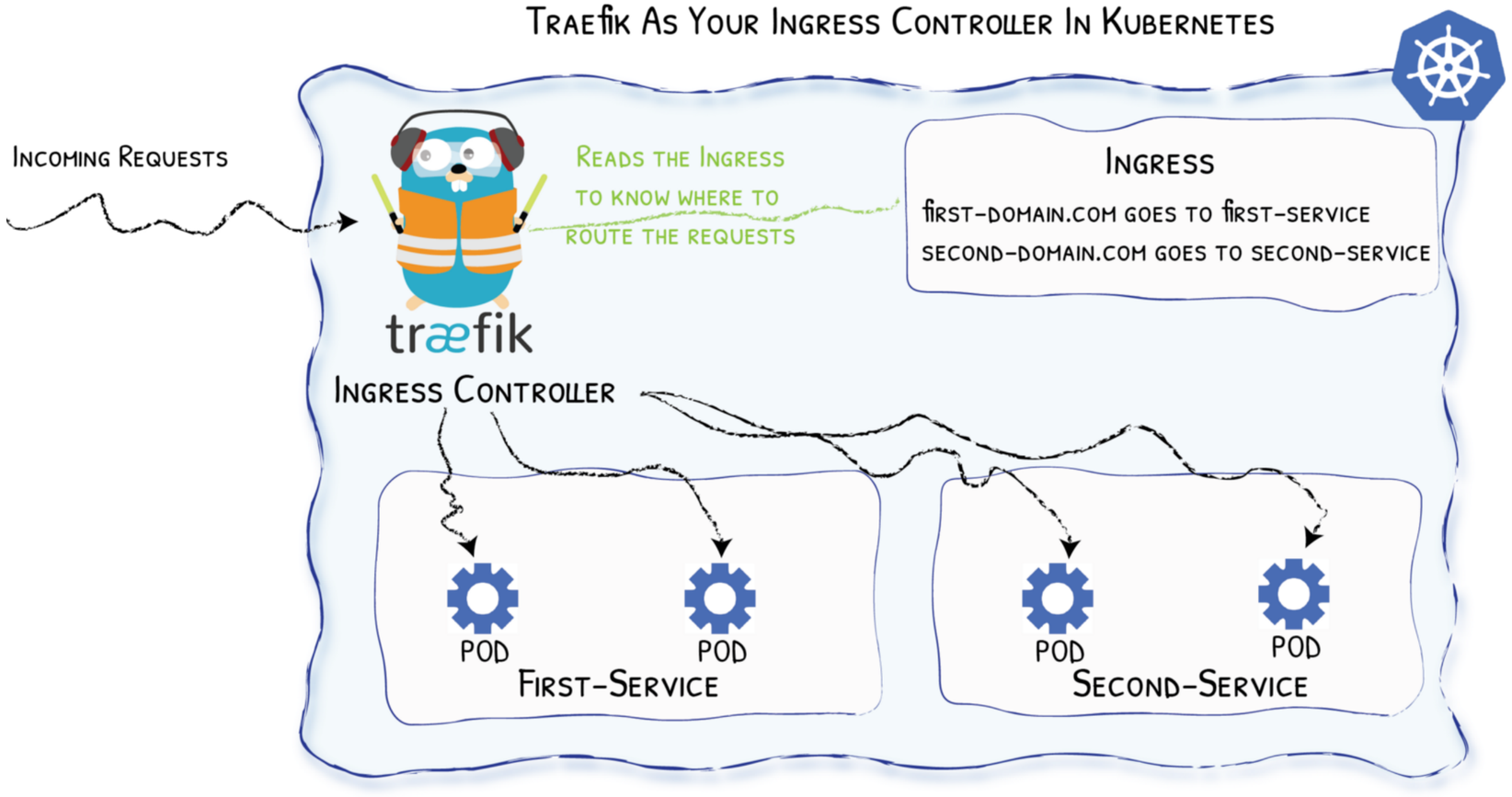


Diagram from https://medium.com/@geraldcroes

Why Should I Care?

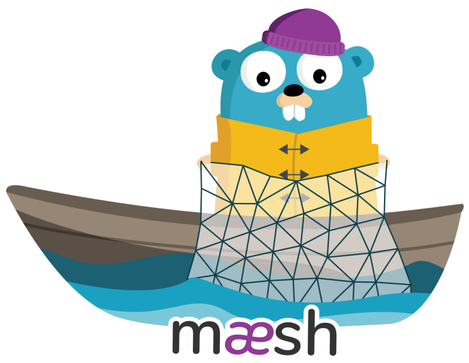
- Running quick Kubernetes Clusters on Arm, IoT, CI or even locally!
- Spin up is a matter of seconds
- Simple to use Ingress Management built in
- Very low ressource usage
- Can be easily run in 🐳 Containers

Integration

- Installed by default as Ingress Controller
- Preconfigured for HTTPS, Metrics & External-DNS
- Easily extendable to activate certain features such as Lets Encrypt

K3d Aka In Containers

Used As Integration Test Platform In



Create Cluster

```
k3d create \
--name="maesh" \
--workers="1" \
--publish="80:80" \
--publish="443:443"
```

Demo

That's All Folks!

Thanks

Thank You!

@mZapfDE

SantoDE

- Slides (HTML): https://containous.github.io/slides/rancher-masterclass
- Slides (PDF): https://containous.github.io/slides/rancher-masterclass/slides.pdf
- Source on : https://github.com/containous/slides/tree/rancher-masterclass