

Smart Routing Et HTTPS Pour Tous

Traefik En Action !



<https://containous.github.io/slides/bbl-decathlon-2019>

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

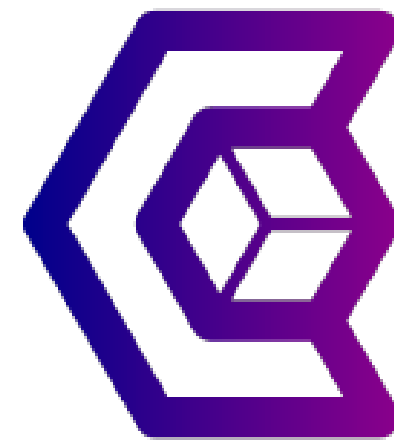
- Damien DUPORTAL:
 - Træfik's Developer 🥑 Advocate @ Containous
- 🐦 @DamienDuportal
- 🐙 dduportal



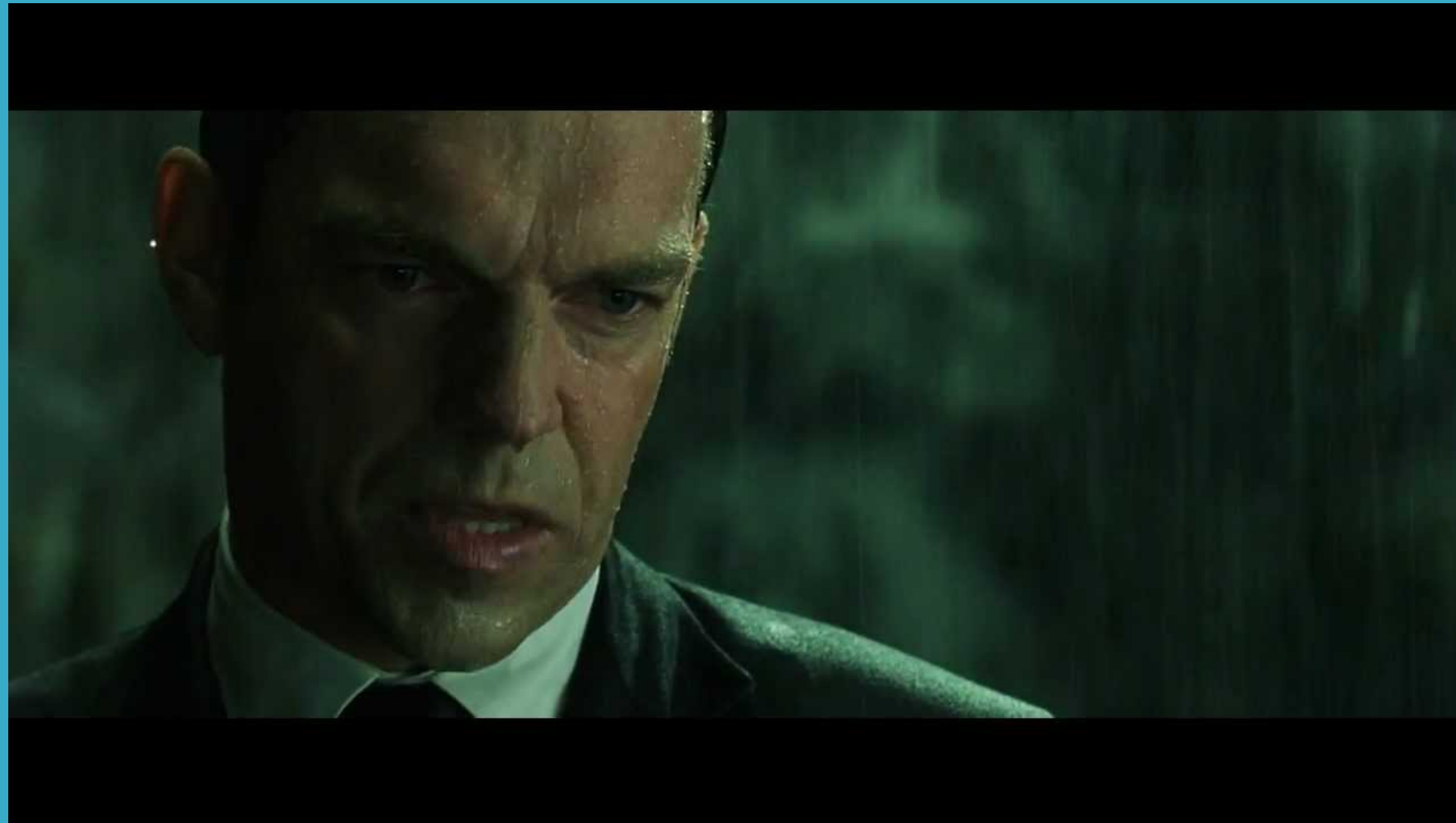
Containous

<https://containo.us>

- We Believe in Open Source
- We Deliver Traefik
- Commercial Support for Traefik
- 20 people, 90% tech



Why Traefik?



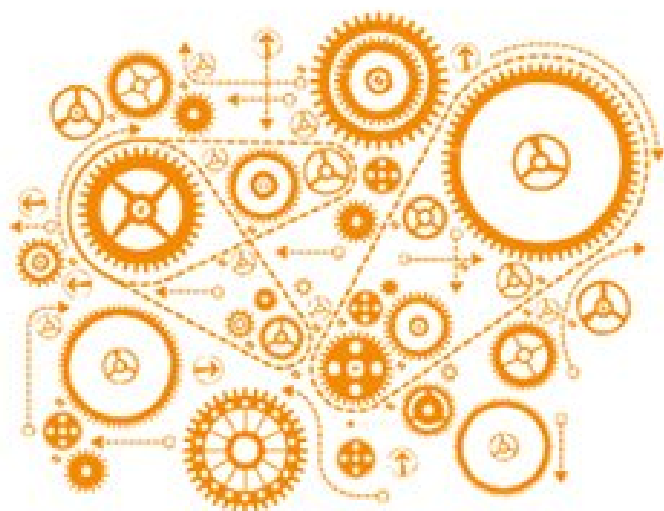
Why, Mr Anderson?

Evolution Of Software Design

1990s and earlier

Coupling

Pre-SOA (monolithic)
Tight coupling



2000s

Traditional SOA
Looser coupling



2010s

Microservices
Decoupled



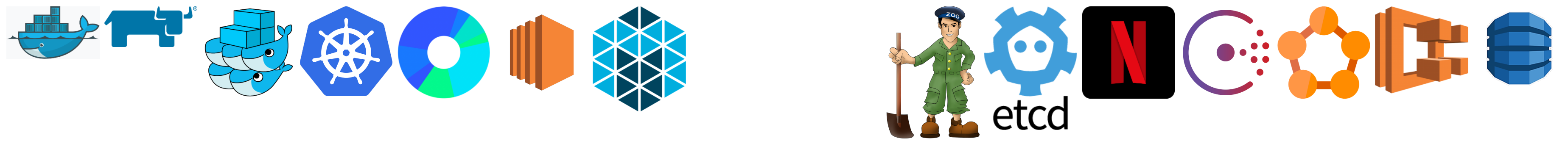
The Premise Of Microservices...



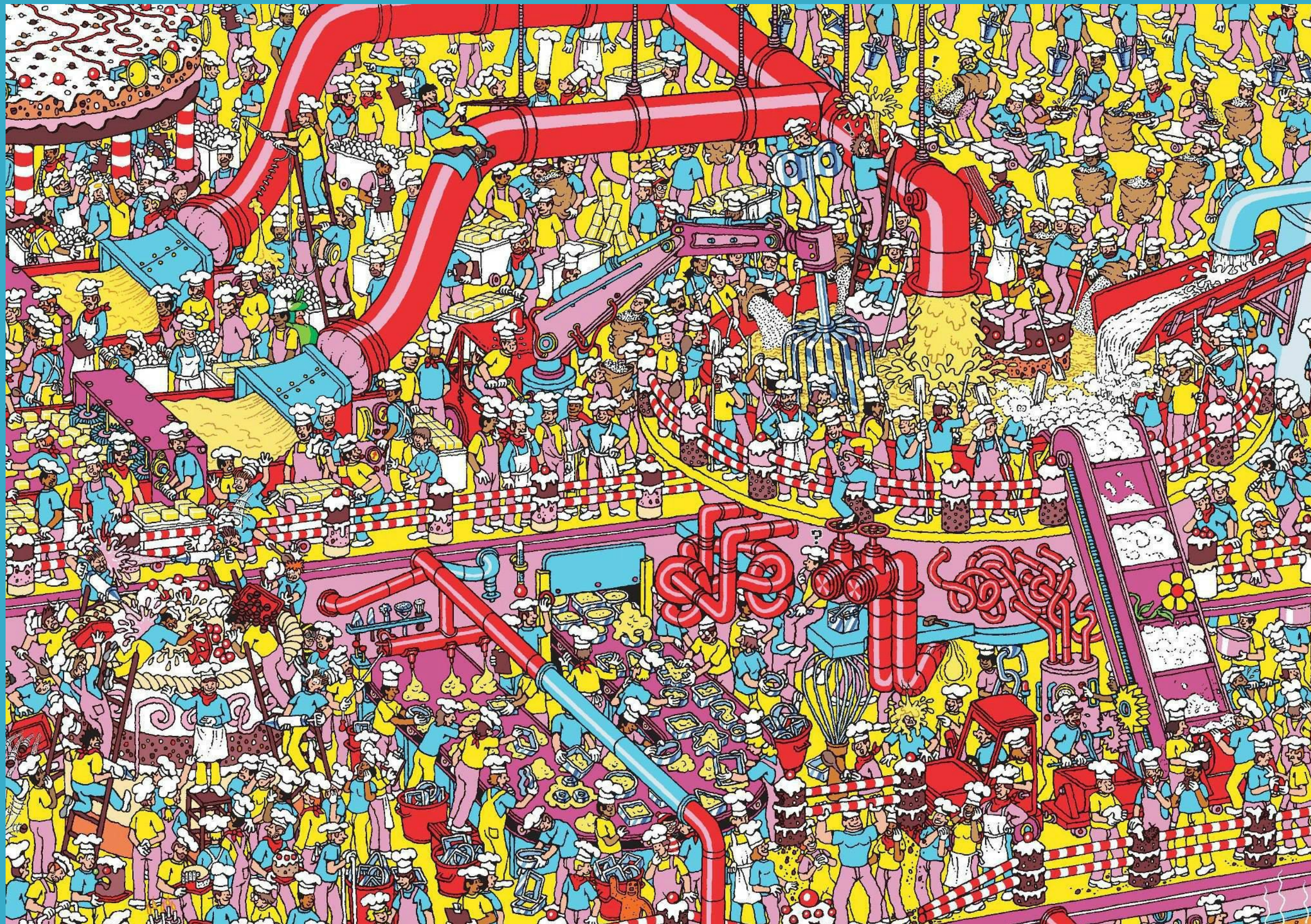
...And What Happens

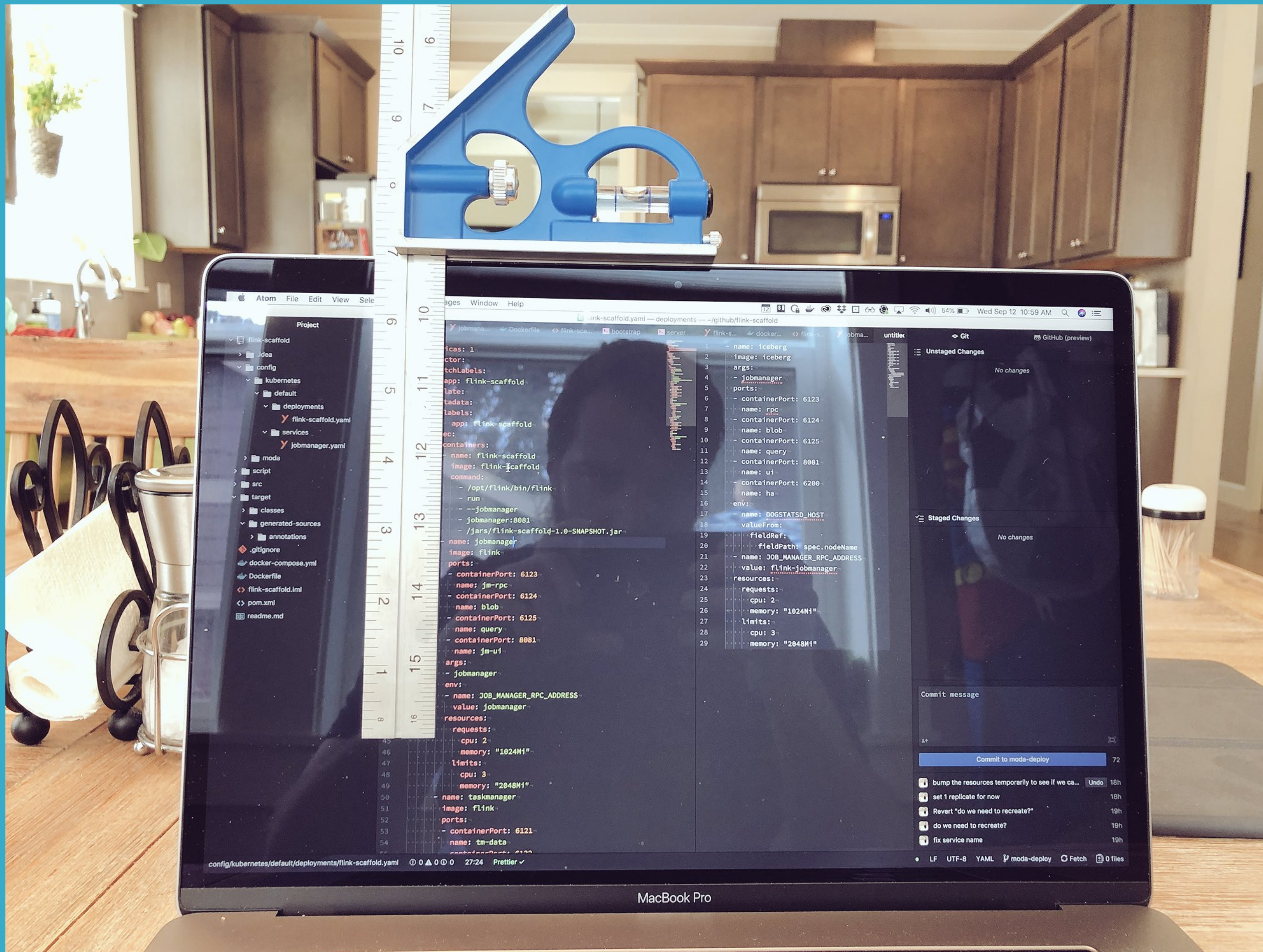


Tools Of The Trade



Where's My Service?





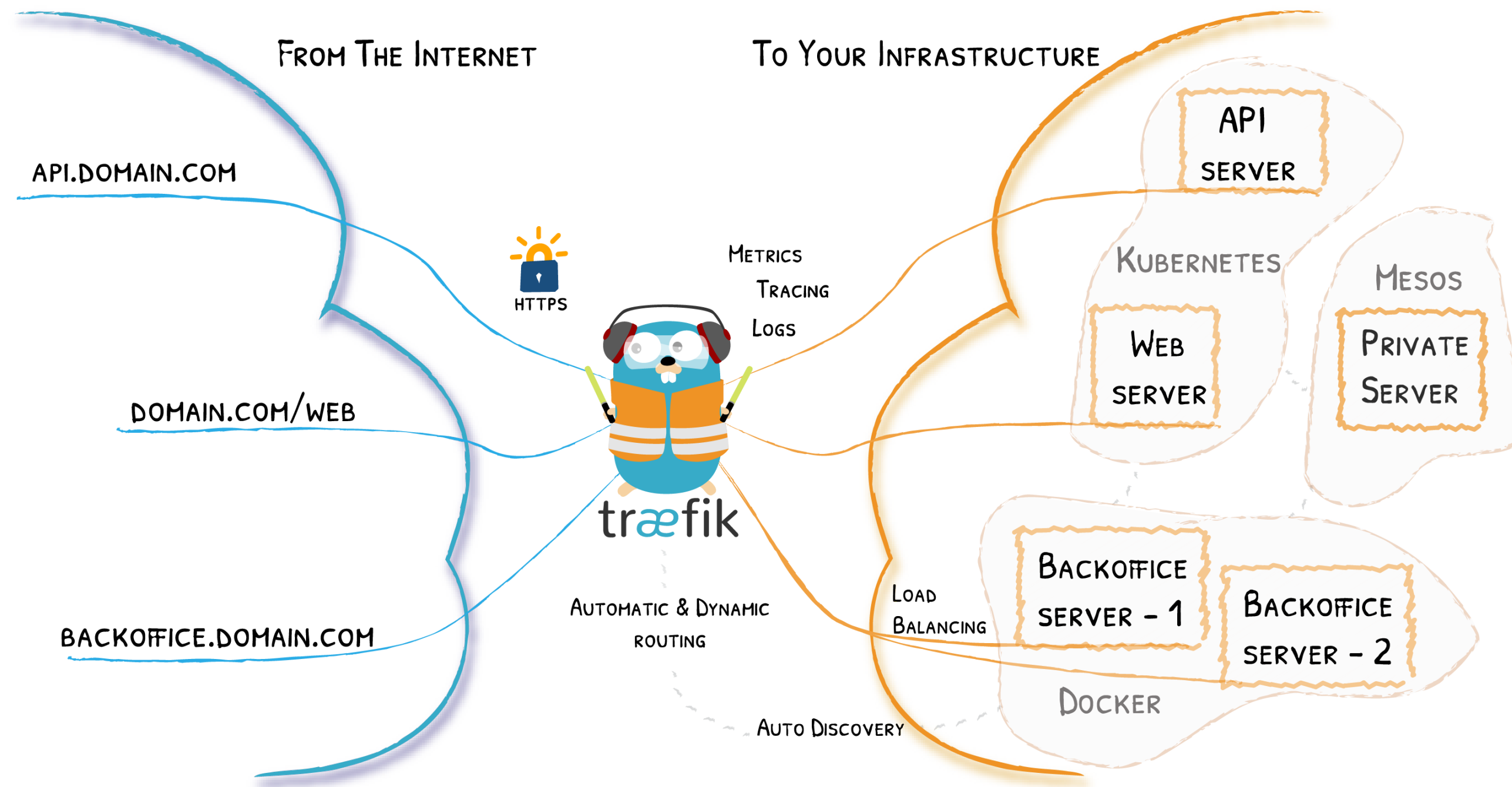
Source: <https://twitter.com/Caged/status/1039937162769096704>

What If I Told You?



That You Don't Have to Write This Configuration File...?

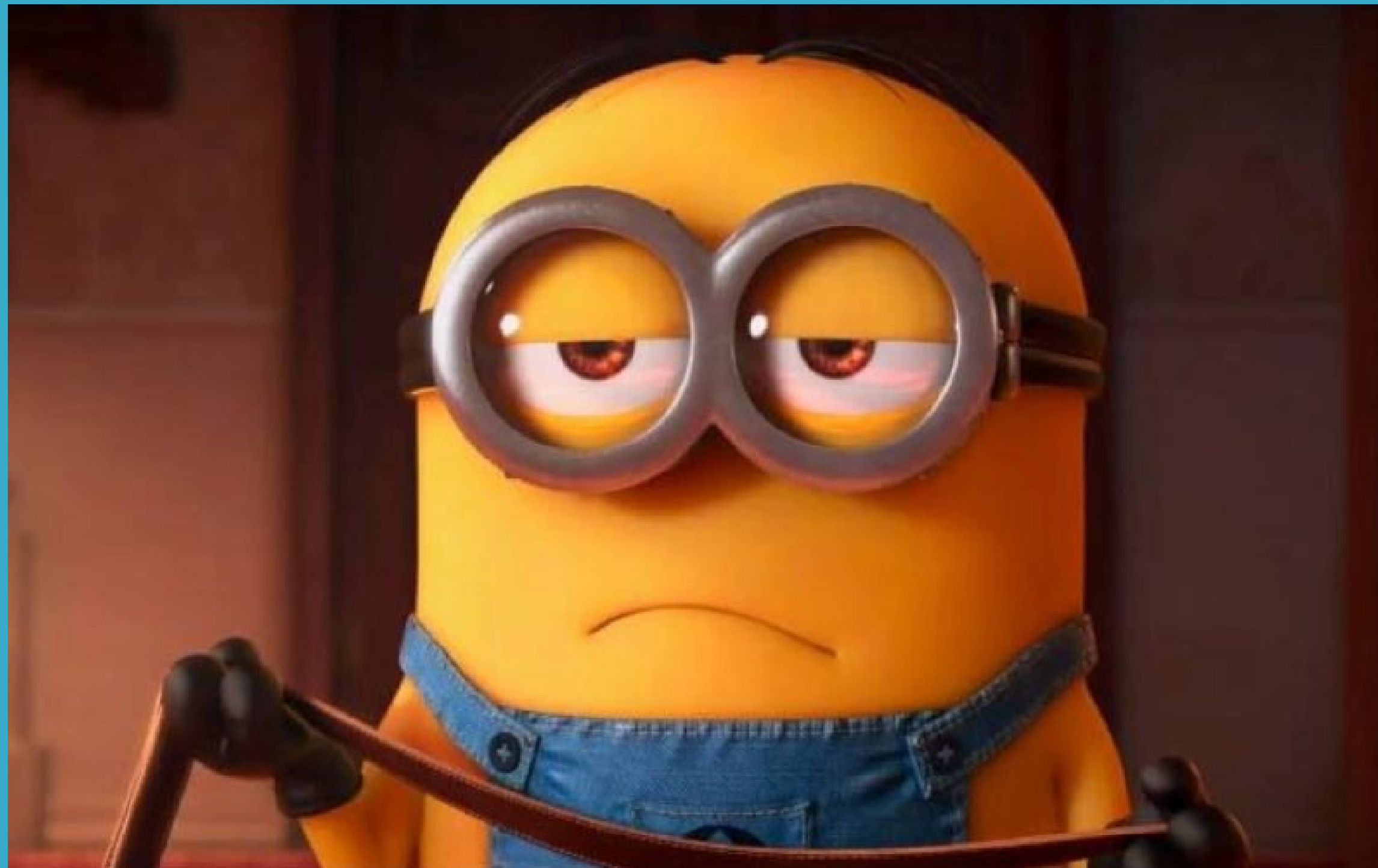
Here Comes Traefik!



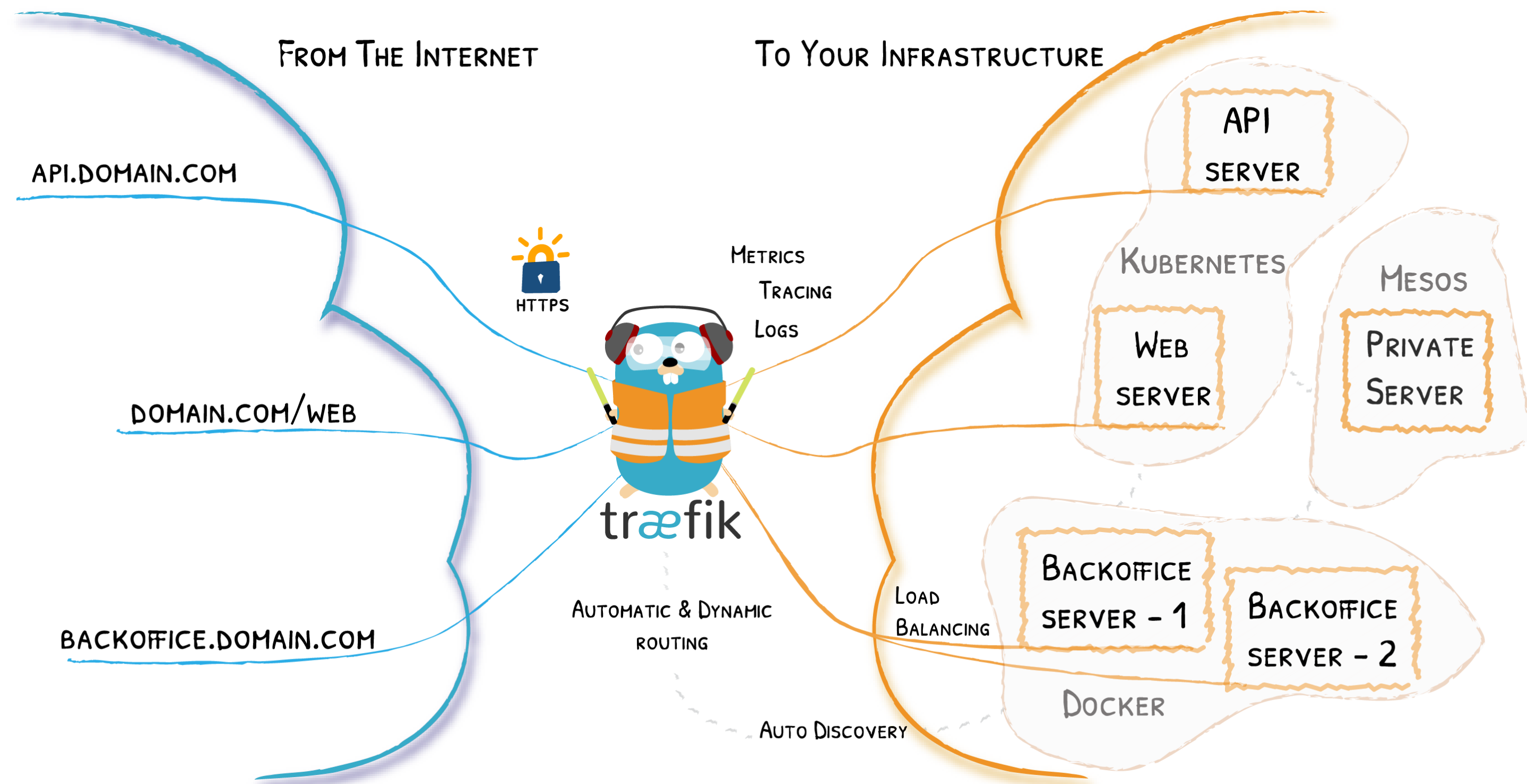
Traefik Project

-  <https://github.com/containous/traefik>
- MIT License
- Written in Go
- 21,000+ 
- 600M+ 
- 350+ 

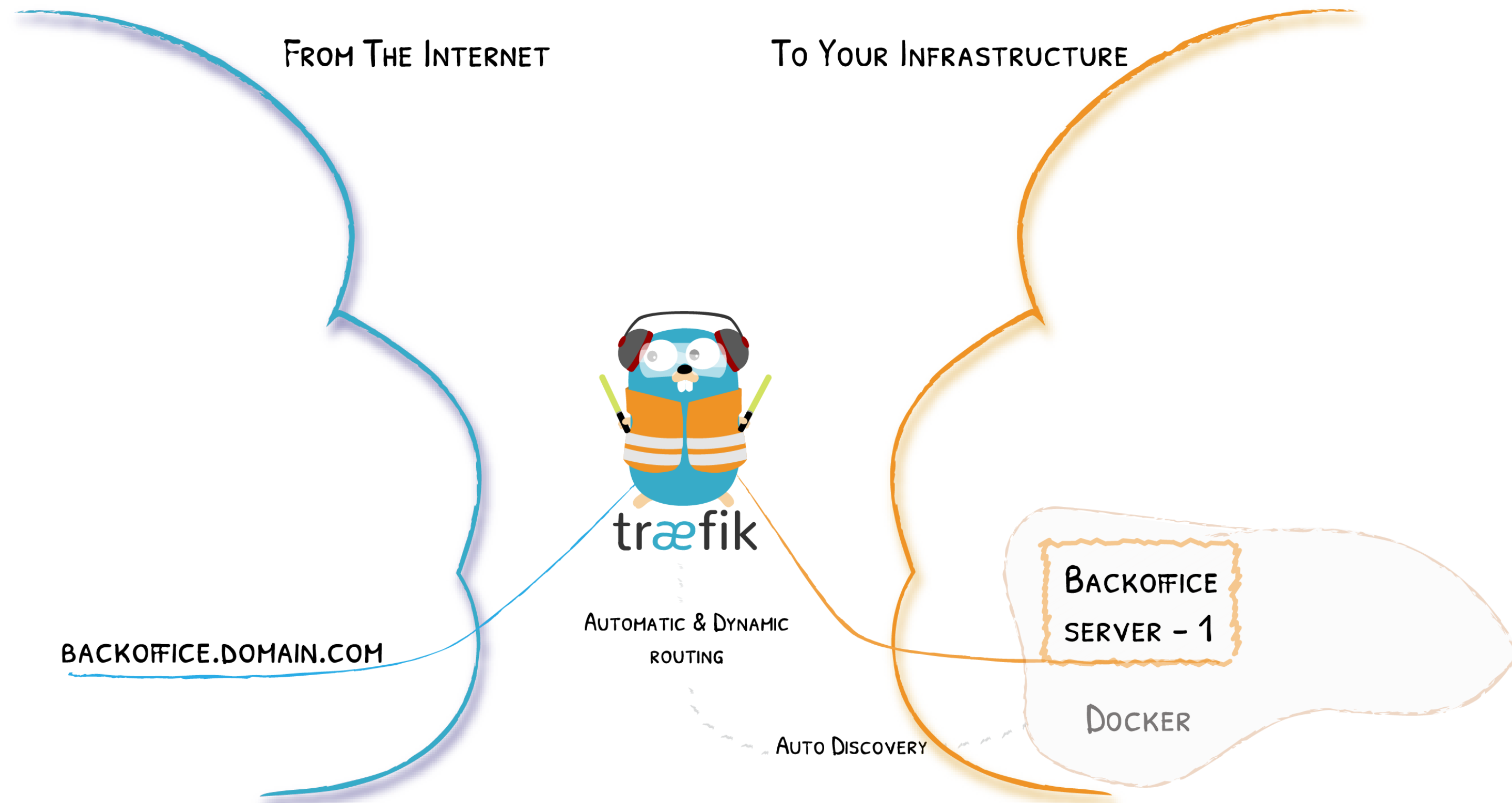
Traefik Core Concepts



Remember The Diagram?



Let's Simplify



Providers



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Entrypoints

INCOMING REQUESTS



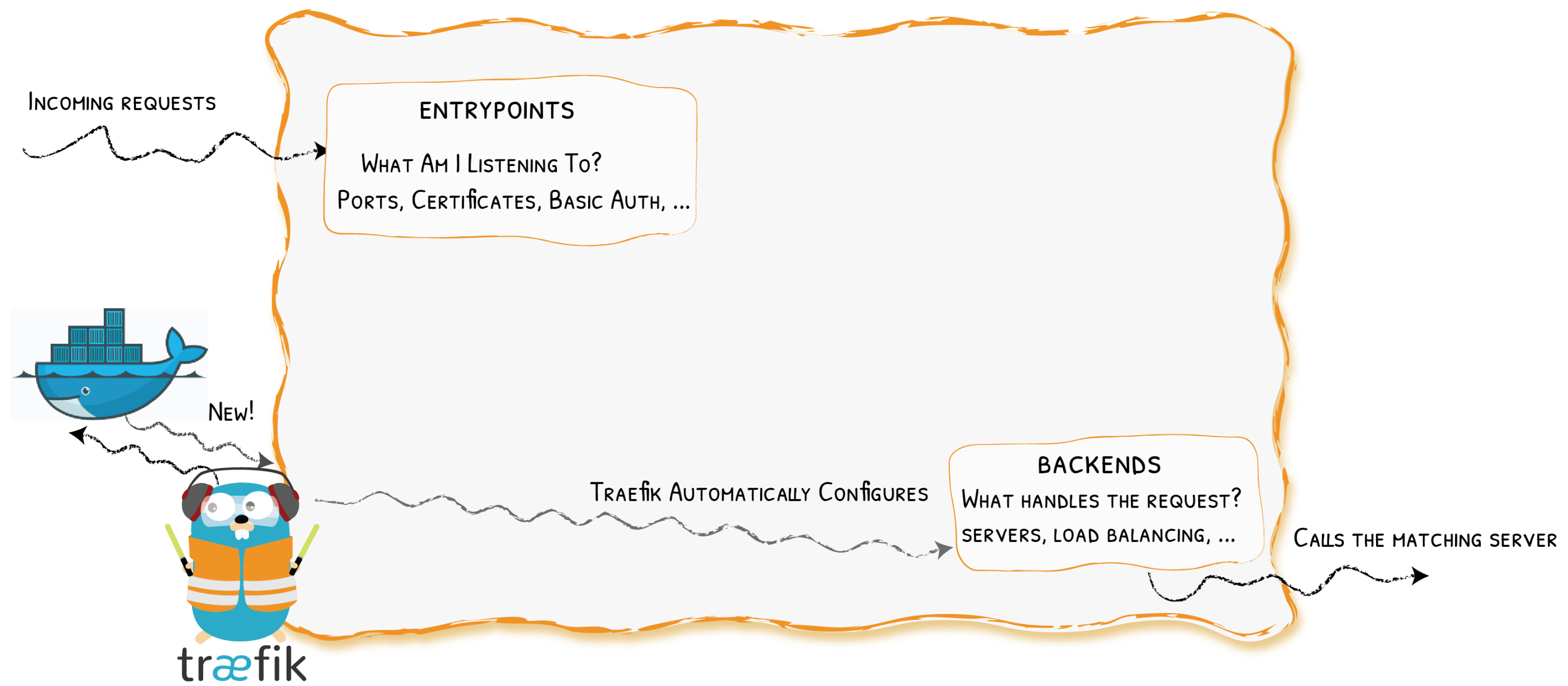
ENTRYPPOINTS

WHAT AM I LISTENING TO?
PORTS, CERTIFICATES, BASIC AUTH, ...

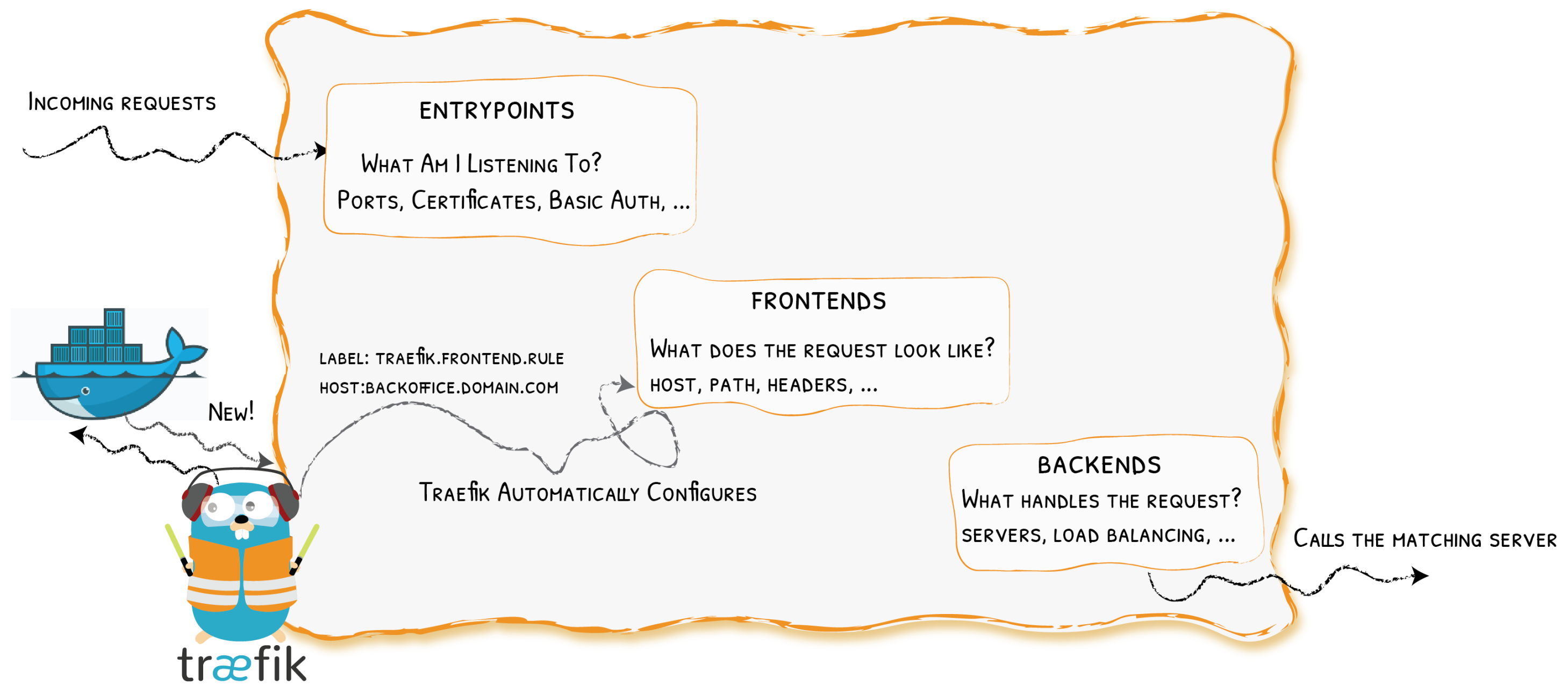


træfik

Backends

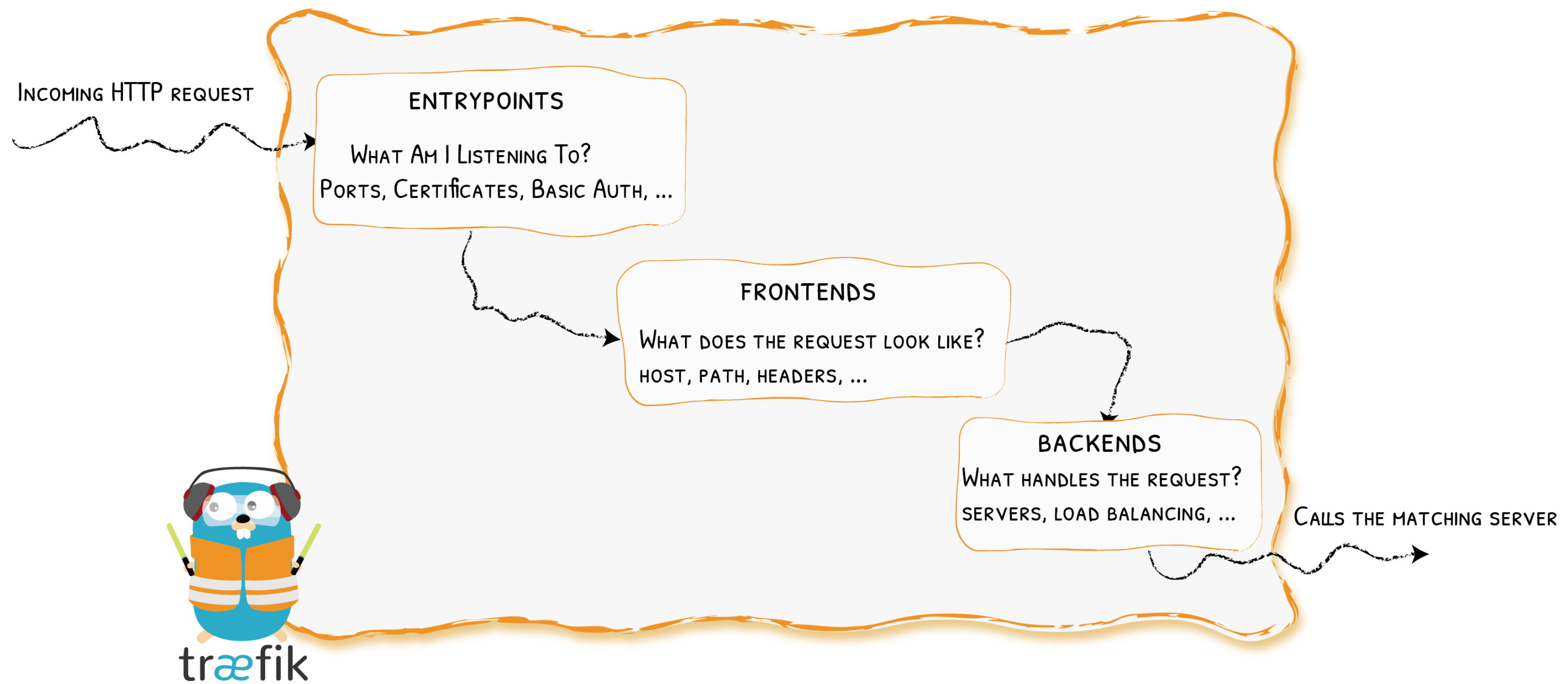


Frontends

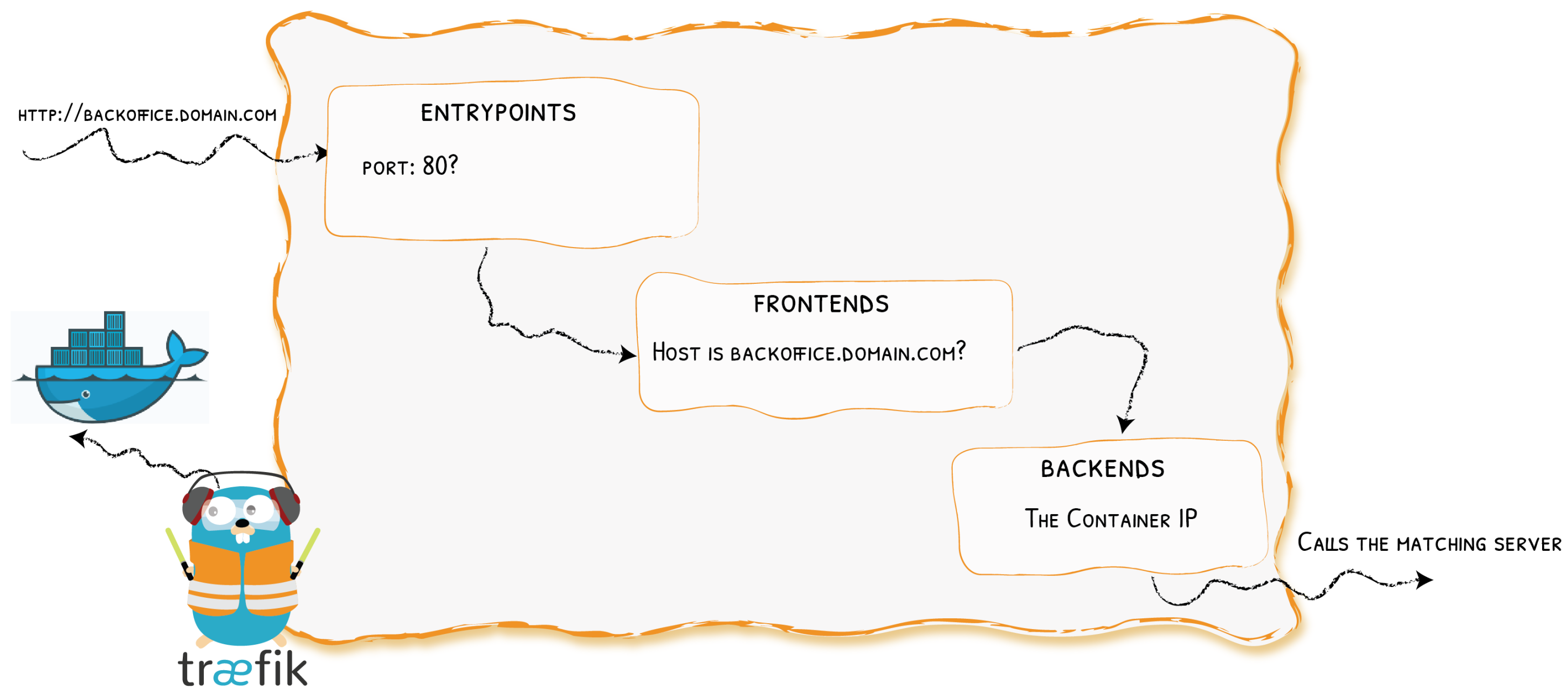


At A Glance

TRAEFIK ARCHITECTURE AT A GLANCE



In Practice



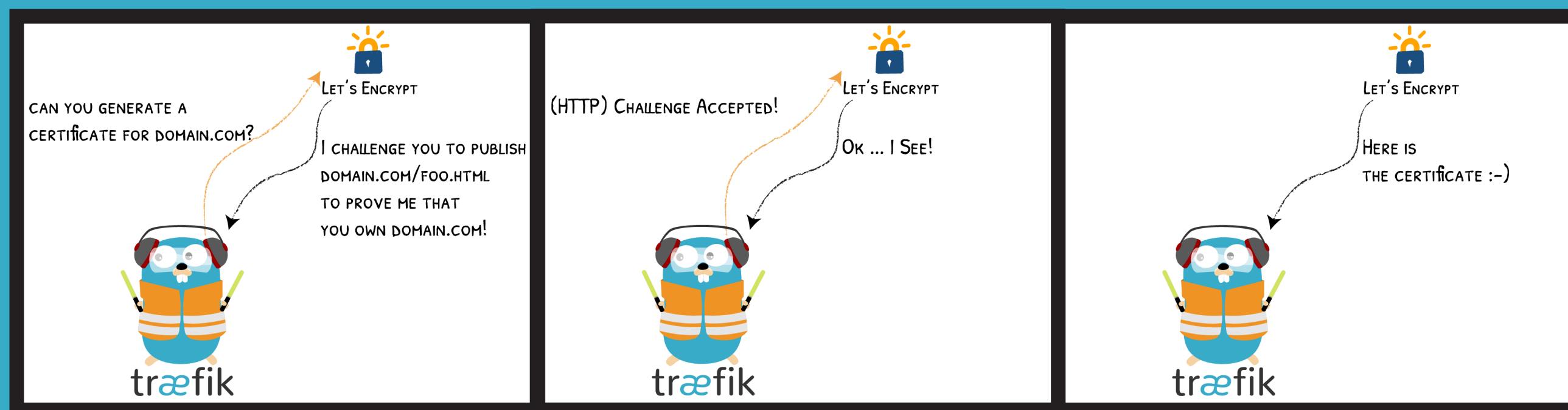
Show Me The Configuration!

Keep It Simple

- With 🐳:

```
entrypoint:  
  image: traefik:v1.7  
  command:  
    - "--docker"  
    - "--docker.domain=mycompany.org"  
    - "--acme.email=ssl-admin@mycompany.org"  
    - "--acme.httpChallenge.entryPoint=http"  
    # Or you could use a TOML file with "--configFile=/etc/traefik/traefik.toml  
volumes:  
  - /var/run/docker.sock:/var/run/docker.sock
```

HTTPS For Everyone With Let's Encrypt



- TLS, DNS and HTTP challenges supported

With : Simple Backend

```
# https://www.mycompany.org -> http://webserver:80/  
webserver:  
  image: nginx:alpine  
  labels:  
    - "traefik.frontend.rule=Host:www.mycompany.org"
```

With : Context

```
# https://mycompany.org/jenkins -> http://jenkins:8080/jenkins
jenkins:
  image: jenkins/jenkins:lts
  labels:
    - "traefik.frontend.rule=PathPrefix:/jenkins"
    - "traefik.port=8080" # Because 50000 is also exposed
  environment:
    - JENKINS_OPTS=--prefix=/jenkins
```


With : Rewrites

```
# https://mycompany.org/gitserver -> http://gitserver:3000/  
gitserver:  
  image: gitea/gitea:1.5  
  labels:  
    - "traefik.frontend.rule=PathPrefixStrip:/gitserver"  
    - "traefik.port=3000" # Because 22 is also exposed
```

With : Websockets

```
# https://mycompany.org/webterminal -> http://webterminal:7681/  
webterminal:  
  image: ts10922/ttyd  
  labels:  
    - "traefik.frontend.rule=PathPrefixStrip:/webterminal"  
  expose:  
    - "7681"
```

Traefik With

TRAEFIK AS YOUR INGRESS CONTROLLER IN KUBERNETES

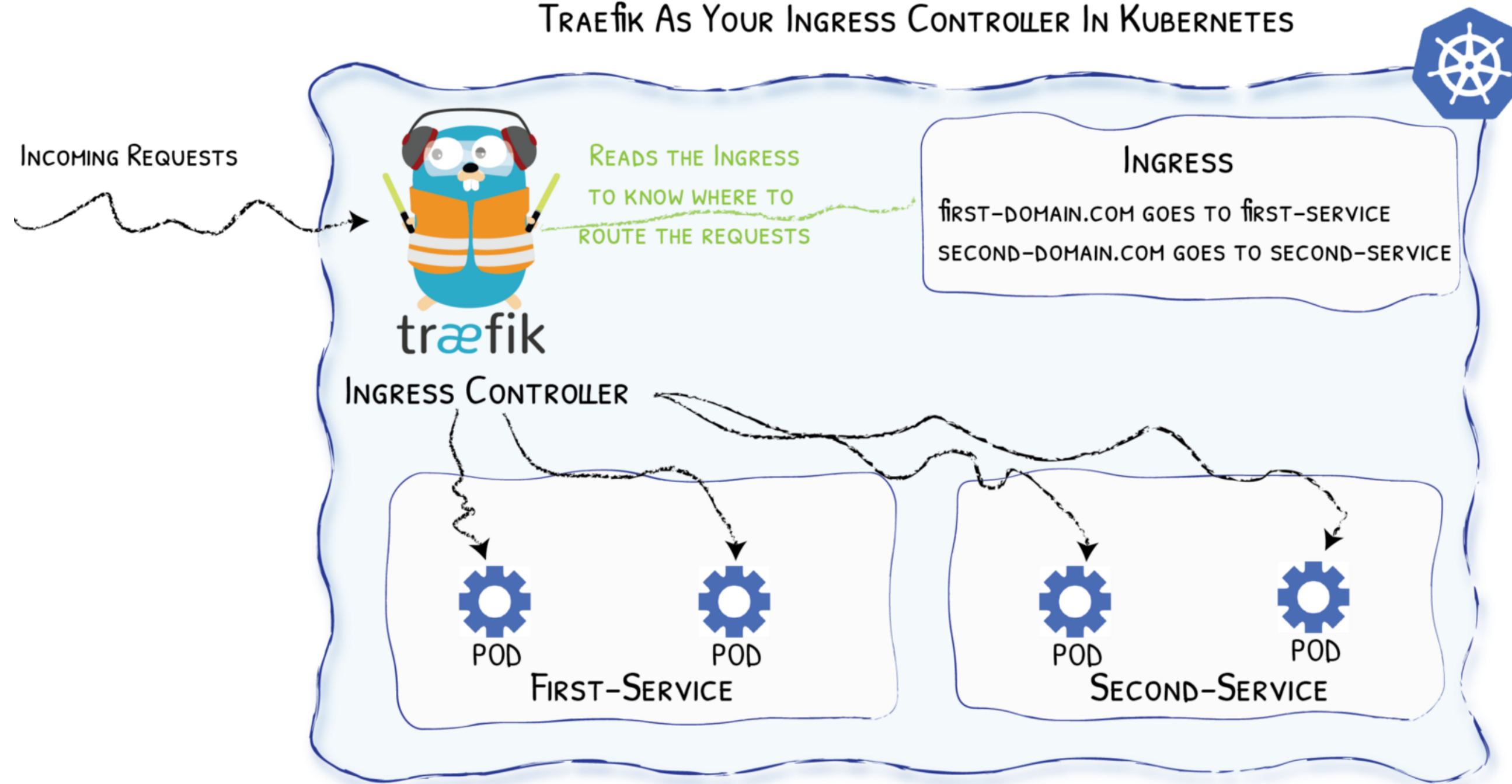


Diagram from <https://medium.com/@geraldcroes>

Did You Say YAML?

```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  annotations:
    # kubernetes.io/ingress.class: 'nginx'
    kubernetes.io/ingress.class: 'traefik'
spec:
  rules:
  - host: mycompany.org
    http:
      paths:
      - path: "/whoami"
        backend:
          serviceName: whoami
          servicePort: 80
```

We Missed Talking About...

A word cloud of various technical terms and concepts, including:

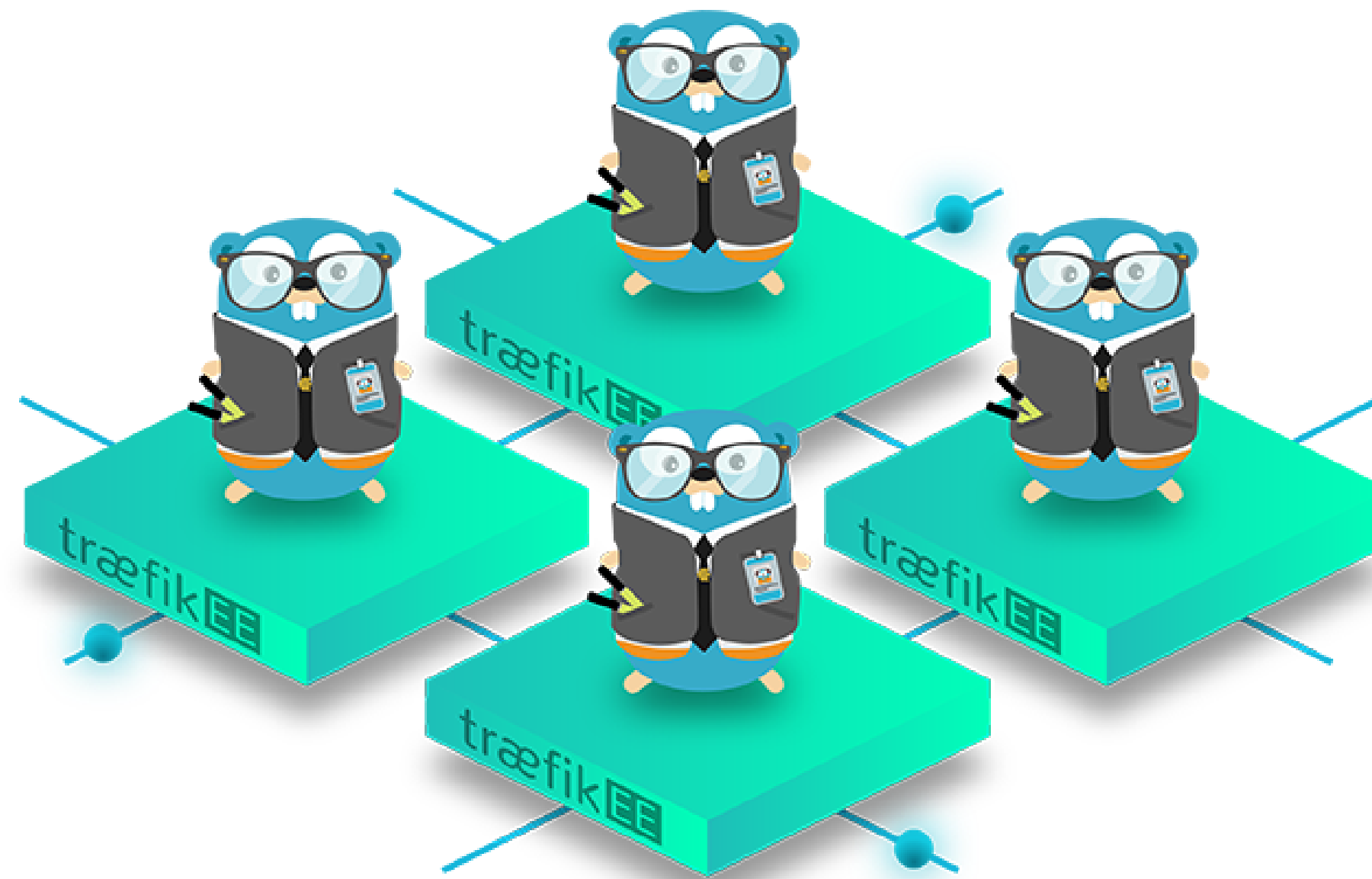
- MESOS
- ZIPKIN
- LIMITING
- KUBERNETES
- Dynamic
- Metrics
- HTTP
- CERTIFICATE
- ERROR
- TLS
- Reverse-Proxy
- HEADERS
- GRPC
- DYNAMIC/WILDCARD
- Security
- Configurations
- Tracing
- PROXY
- SECRETS
- PROMETHEUS
- JAEGER
- WEBSOCKETS
- SSL
- REDIRECTS
- DOCKER
- CHECKS
- PROTOCOL
- HEALTH
- HSTS
- CLUSTER
- AUTH
- RATE
- CONSUL
- SWARM
- MODE

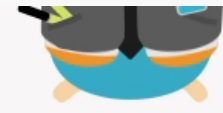
The Herd



You came to the wrong neighbour

Traefik Comes In Herd





HIGH AVAILABILITY

trafik **ENTERPRISE EDITION**

SECURITY

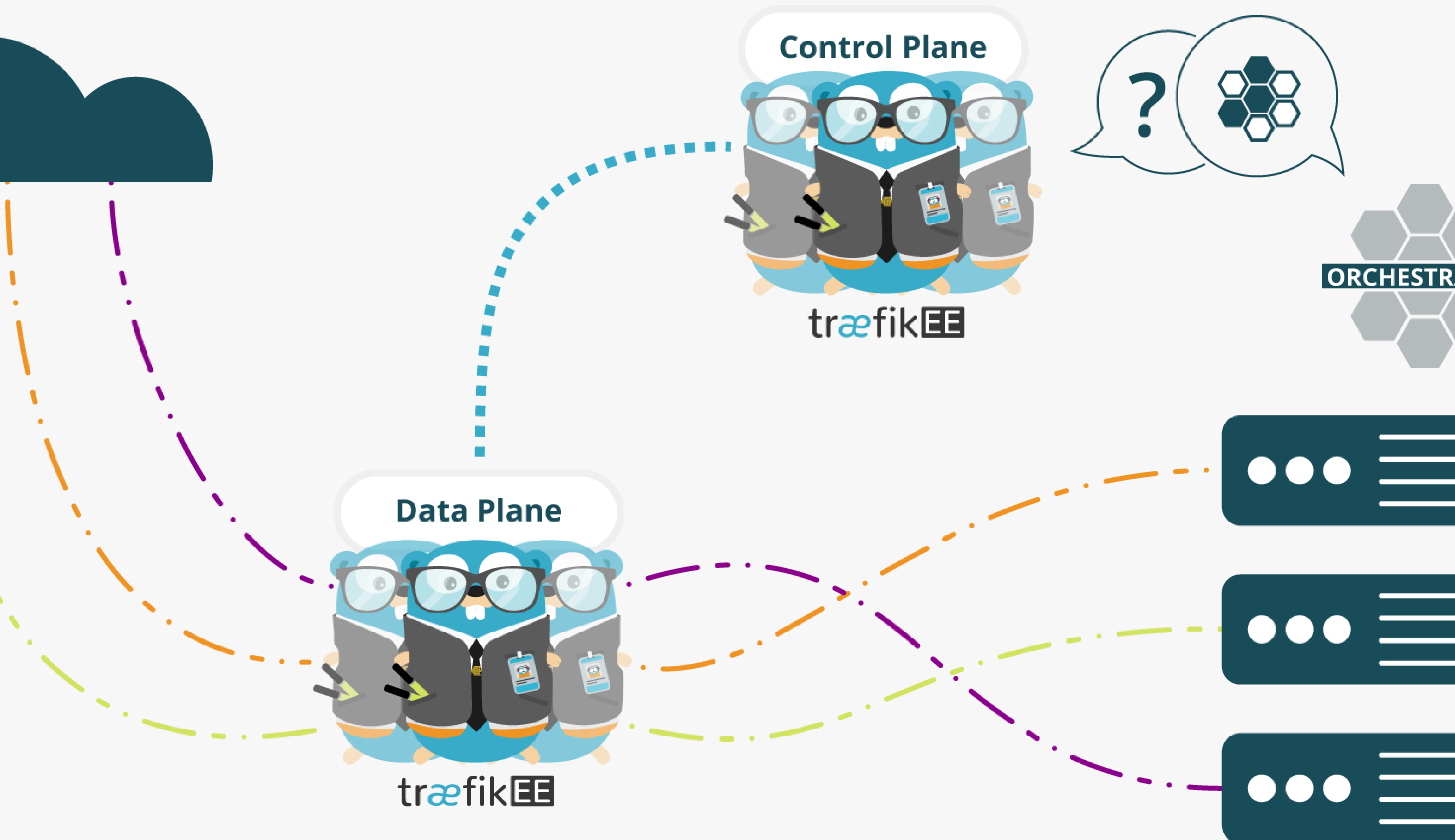
traefik **ENTERPRISE EDITION**

SCALABILITY

traefik **ENTERPRISE EDITION**

INTERNET

TO YOUR INFRA



As Simple As Traefik

- Install it:

```
# Cluster Installation
traefikeectl install \
  --licensekey="SuperSecretLicence" \
  --dashboard \
  --kubernetes # Or --swarm
```

- Configure it:

```
# Routing Configuration, same as Traefik's
traefikeectl deploy \
  --acme.email=ssl-admin@mycompany.org
  --acme.tlsChallenge
  ...
```

Early (Free) Access

<https://containo.us/traefikee>

But

What About Open Source?

BACK TO TRAEFIK 2.0



Revamped Documentation

The screenshot shows the Traefik documentation website in a browser window. The browser's address bar contains the text "Search or enter website name". The website's header includes the Traefik logo, a search bar, and a GitHub repository link showing "21k Stars · 2.1k Forks".

The main content area features a "Welcome" heading and a central diagram illustrating Traefik's role as an edge router. The diagram is divided into two main sections: "FROM THE INTERNET" and "TO YOUR INFRASTRUCTURE".

FROM THE INTERNET: This section shows three domain names: "API.DOMAIN.COM", "DOMAIN.COM/WEB", and "BACKOFFICE.DOMAIN.COM". These domains are connected to a central Traefik icon (a blue and orange robot) via blue lines. A lock icon labeled "HTTPS" is positioned above the Traefik icon, and the text "AUTOMATIC & DYNAMIC ROUTING" is located below it.

TO YOUR INFRASTRUCTURE: This section shows various server components connected to the Traefik icon via orange lines. The components include:

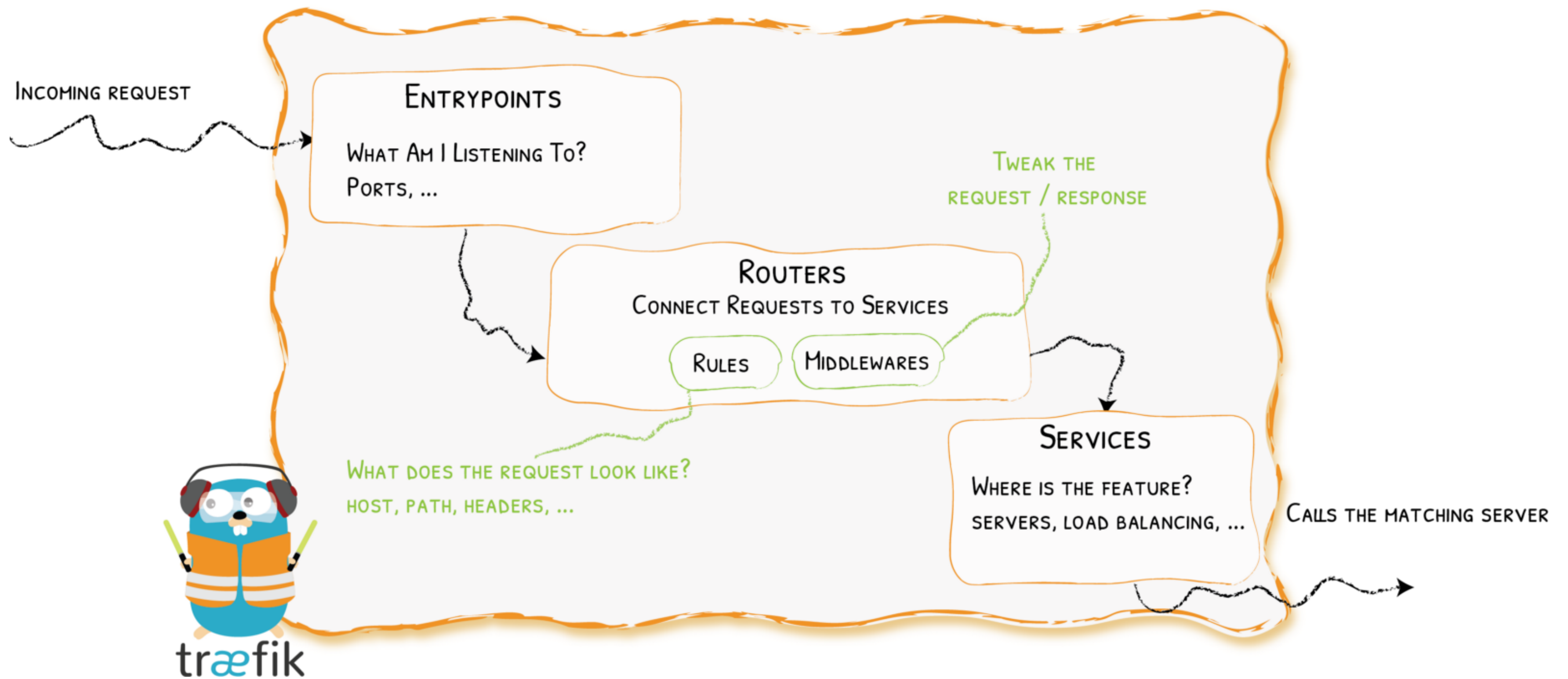
- API SERVER** (connected to API.DOMAIN.COM)
- WEB SERVER** (connected to DOMAIN.COM/WEB)
- BACKOFFICE SERVER - 1** and **BACKOFFICE SERVER - 2** (connected to BACKOFFICE.DOMAIN.COM)
- DOCKER** (connected to the Backoffice servers)
- KUBERNETES** and **MESOS** (connected to the Web and API servers)
- PRIVATE SERVER** (connected to the Web server)

Additional features shown in the diagram include "METRICS TRACING LOGS" and "LOAD BALANCING".

Below the diagram, the text reads: "Traefik is an [open-source Edge Router](#) that makes publishing your services a fun and easy experience. It receives requests on behalf of your system and finds out which components are responsible for handling them."

Clarified Concepts

TRAEFIK ARCHITECTURE AT A GLANCE



Expressive Routing Rule Syntax

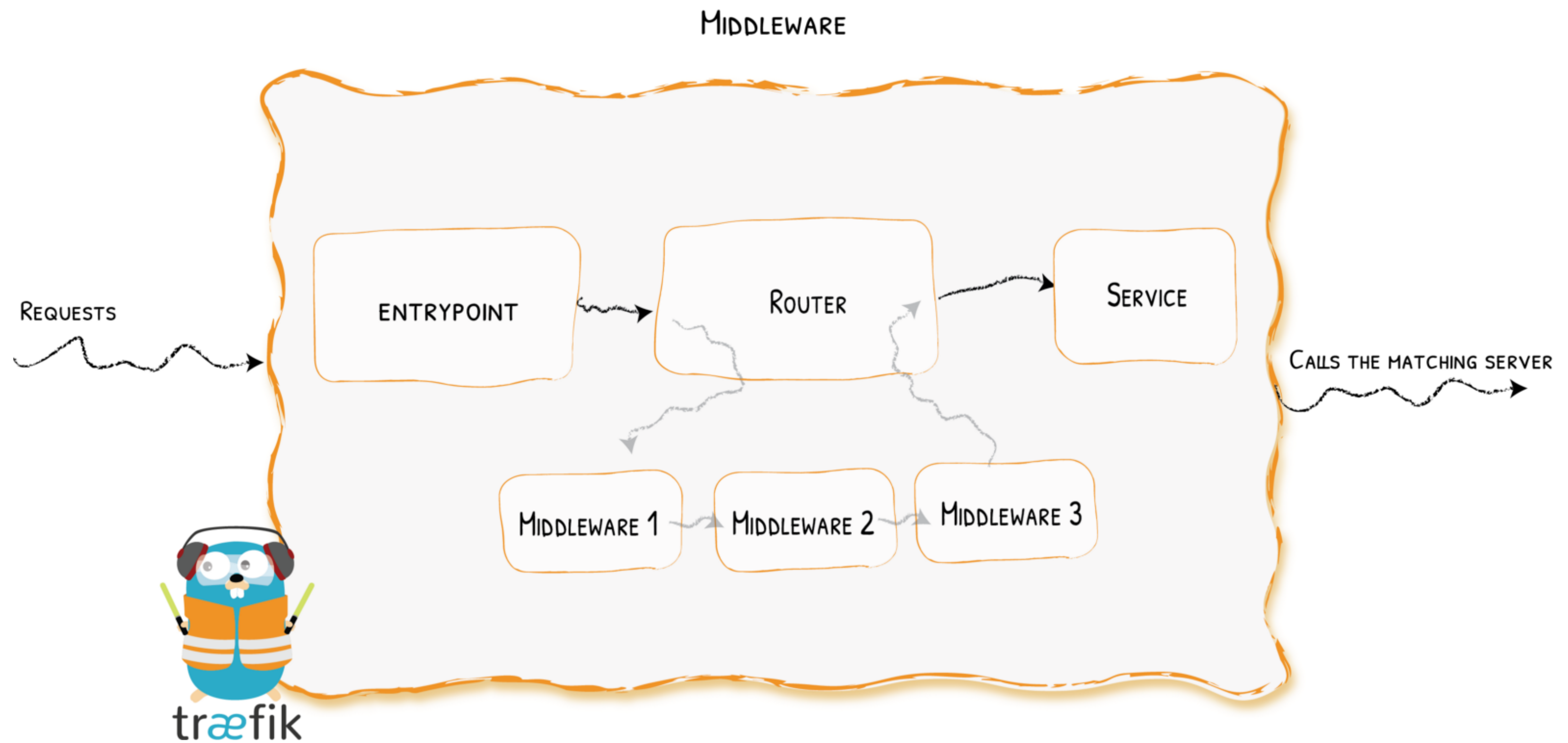


```
Host(`api.dom`) || (Host(`dom`) && Path(`/api`))
```

```
# Send both requests to backend service:  
# https://api.mycompany.com/v2  
# https://api-v2.mycompany.com
```

```
rule=(Host('api.mycompany.com') && PathPrefix('/v2')) || Host('api-v2.mycompany.com')
```

Middlewares



⚓ CRD - Custom Resources Definition

```
apiVersion: traefik.containo.us/v1alpha1
kind: IngressRoute
spec:
  entrypoints:
    - web
    - web-secure
  routes:
    - match: Host(`traefik.io`) && PathPrefix(`/foo`)
      kind: Rule
      services:
        - name: whoami1
          port: 80
          strategy: RoundRobin
      middlewares:
        - name: stripprefix
    - match: Host(`containo.us`) && Method(`POST`)
      kind: Rule
      services:
        - name: whoami2
          port: 80
  tls:
    secretName: supersecret
```



traefik

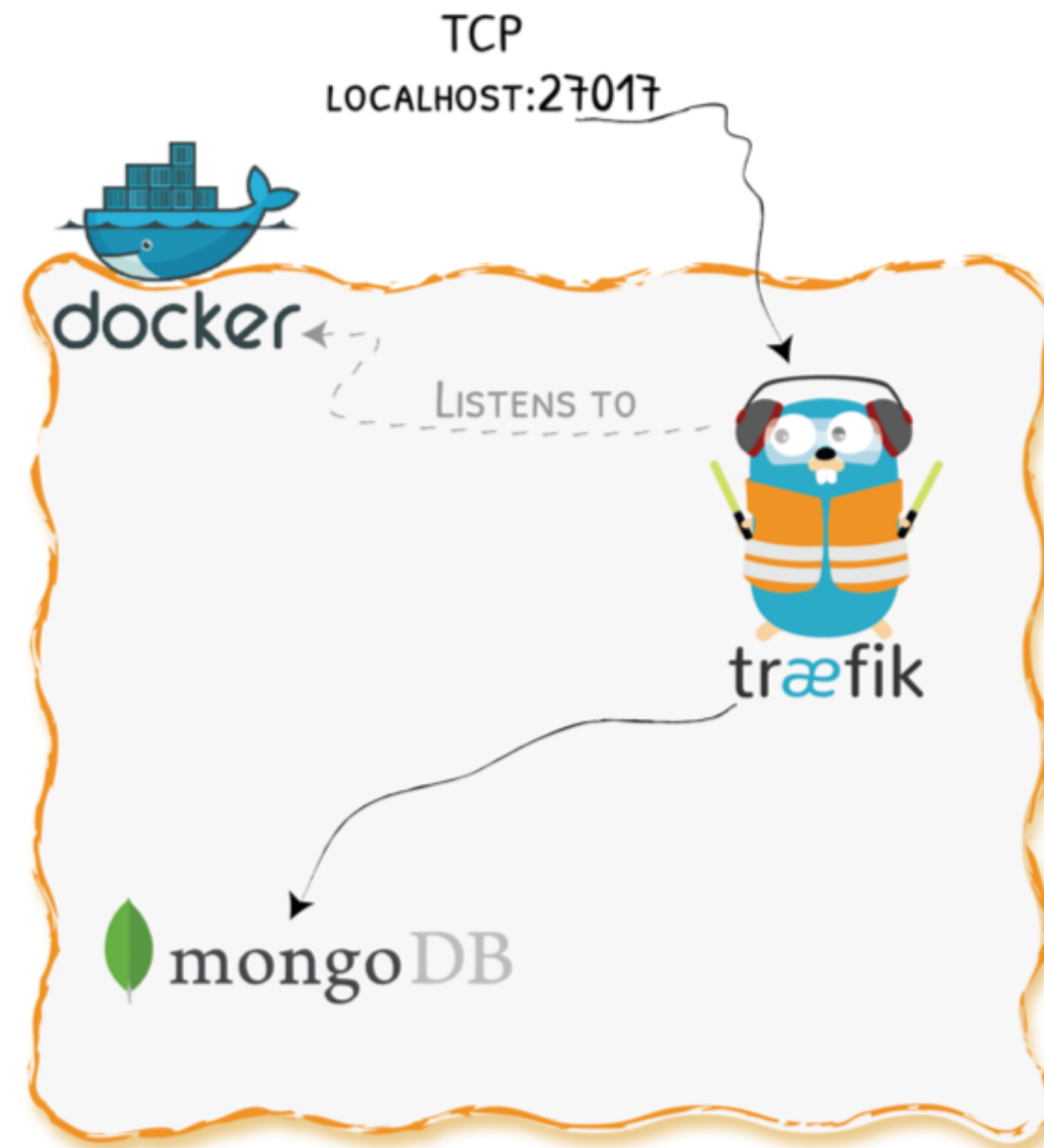


HTTP

&

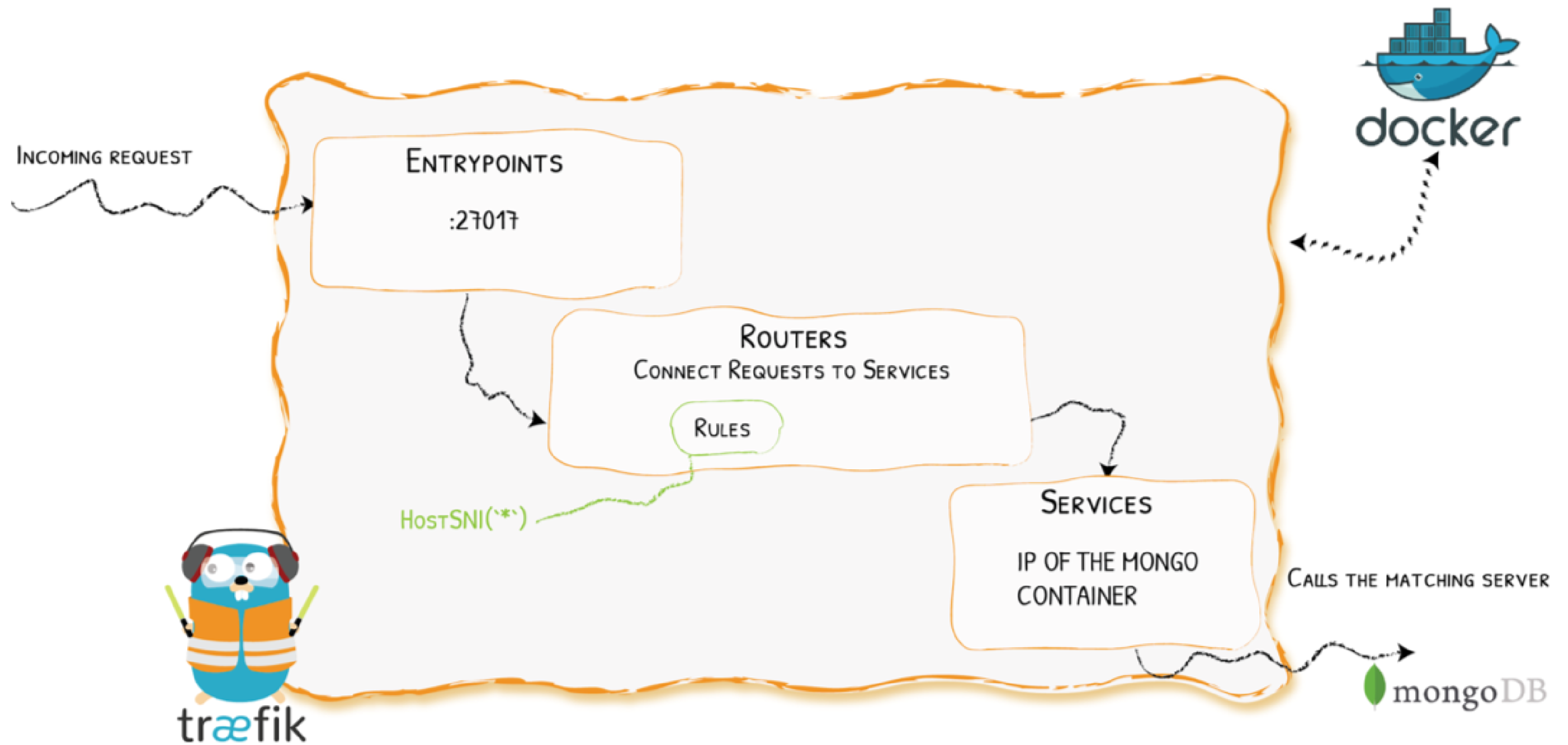
TCP

Demo 1 - Straightforward TCP Routing

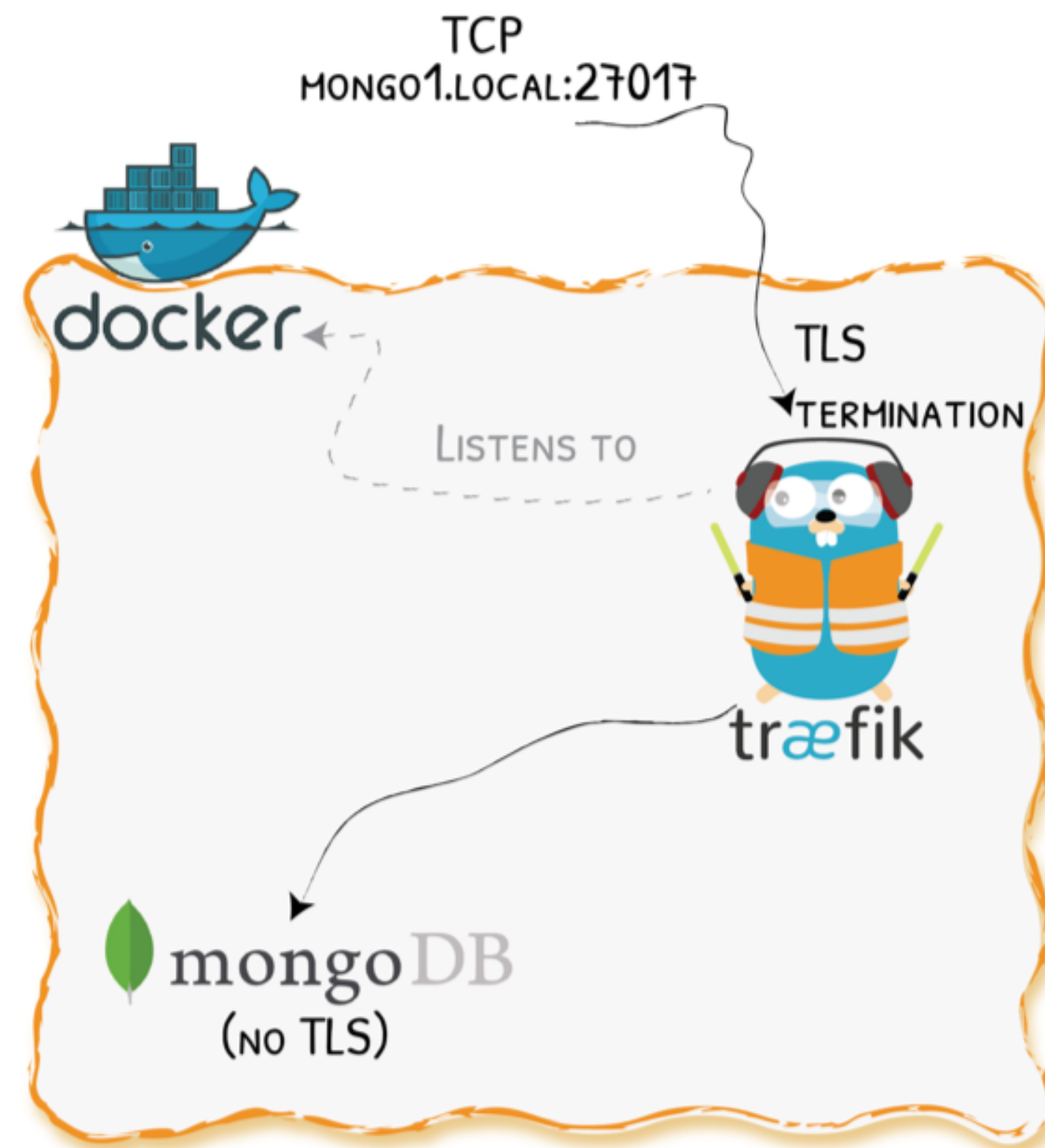


Demo Code on [GitHub](#)

Demo 1 - Configuration

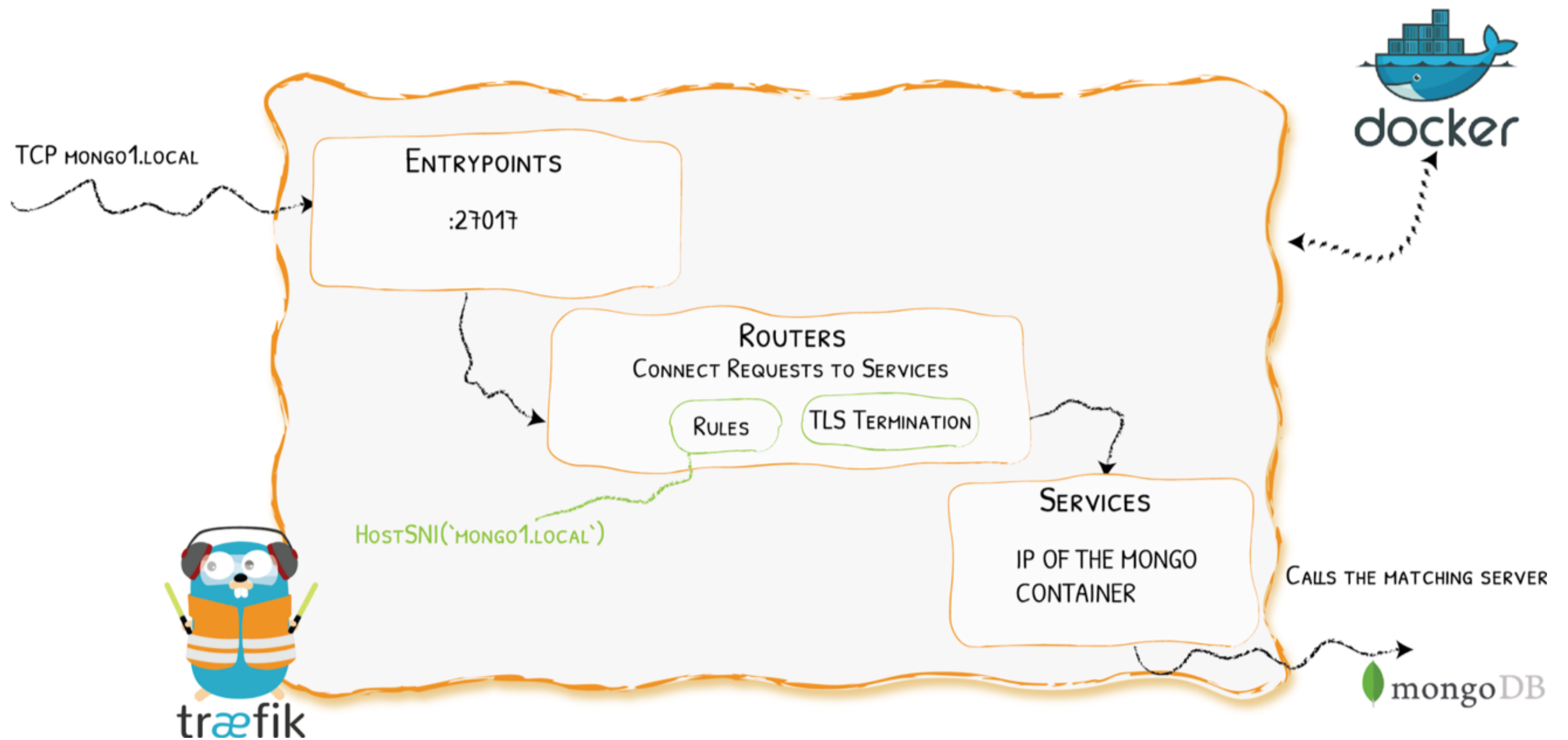


Demo 2 - Let's Add TLS To TCP With Traefik

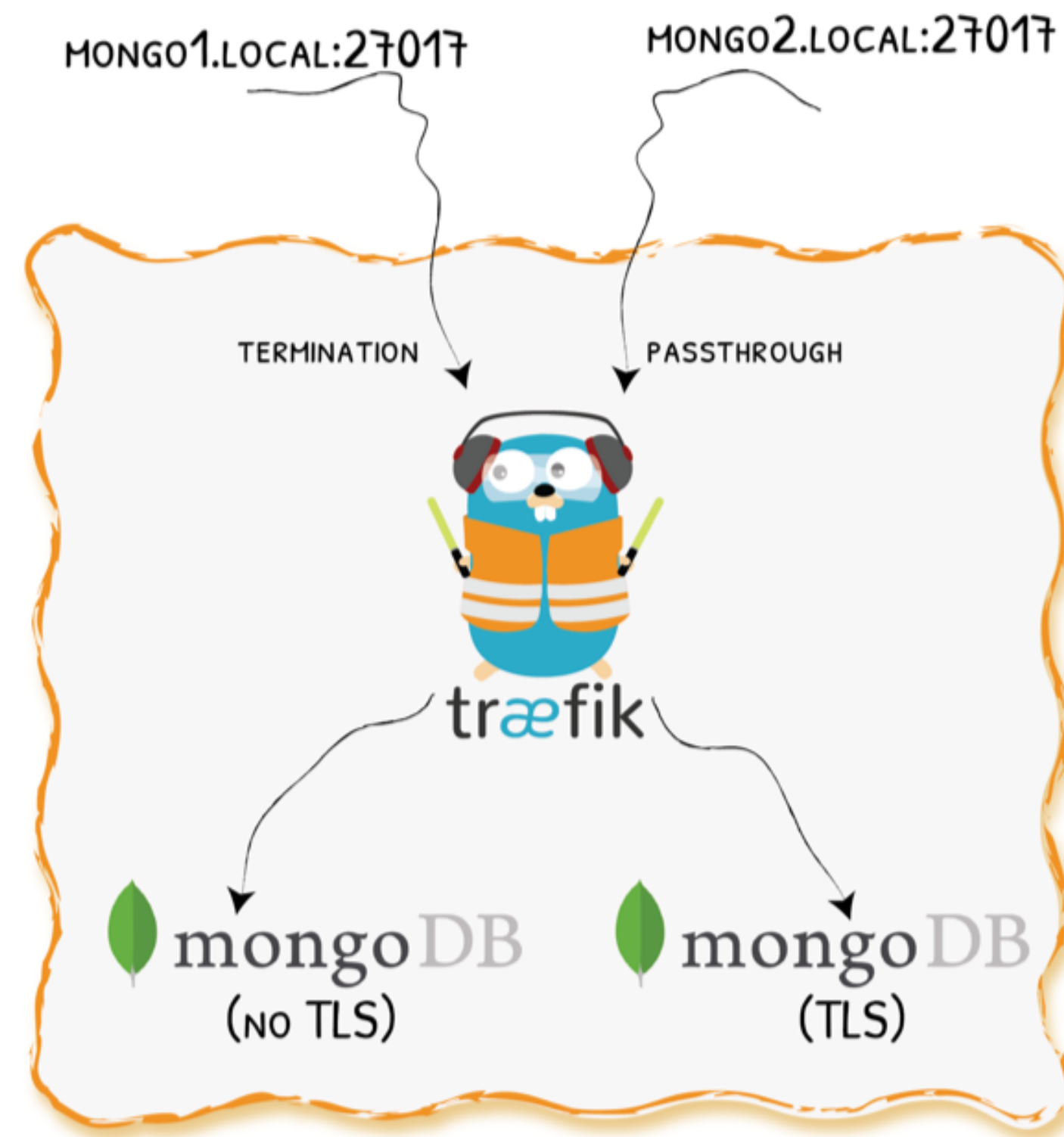


Demo Code on [GitHub](#)

Demo 2 - Configuration

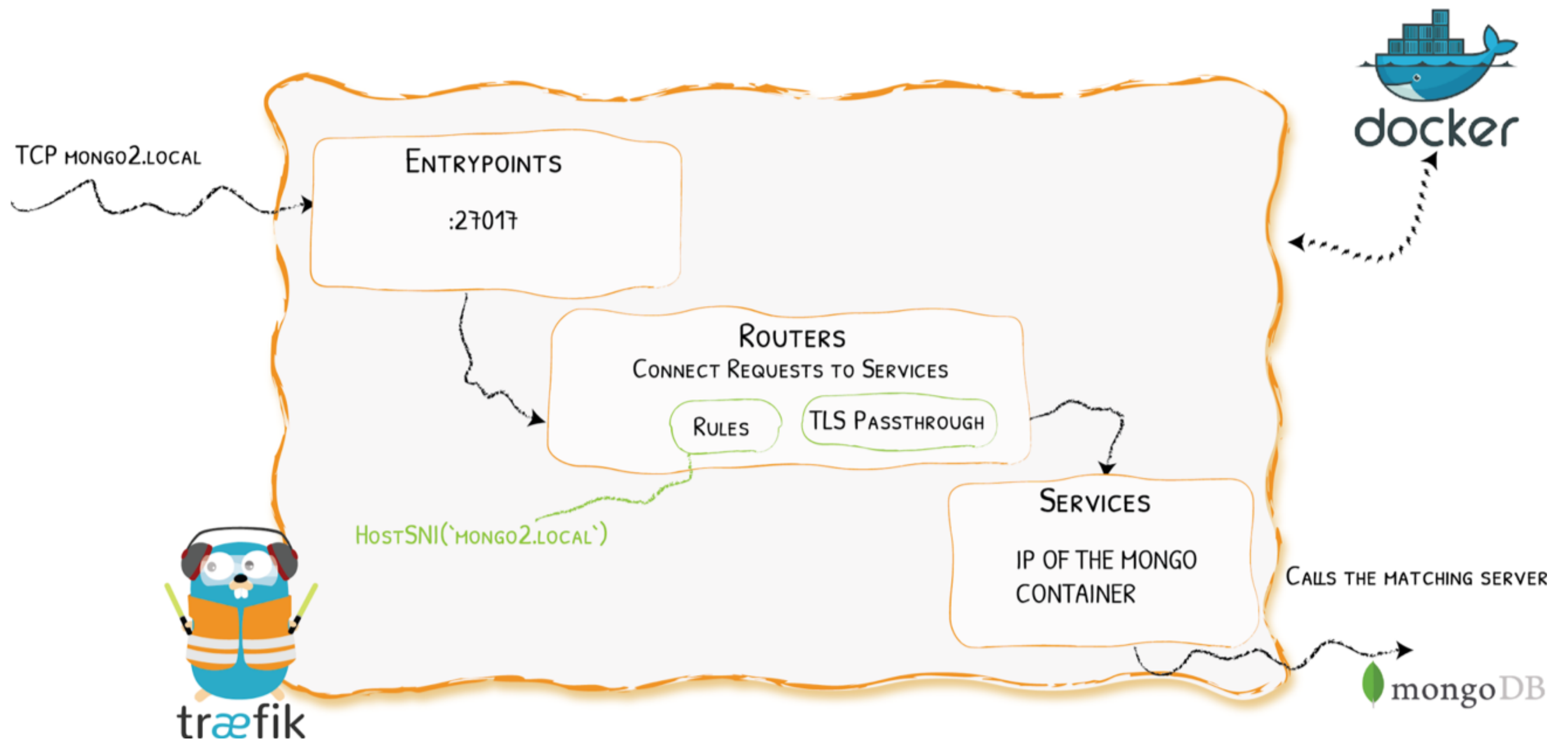


Demo 3 - SNI Routing + TLS Passthrough

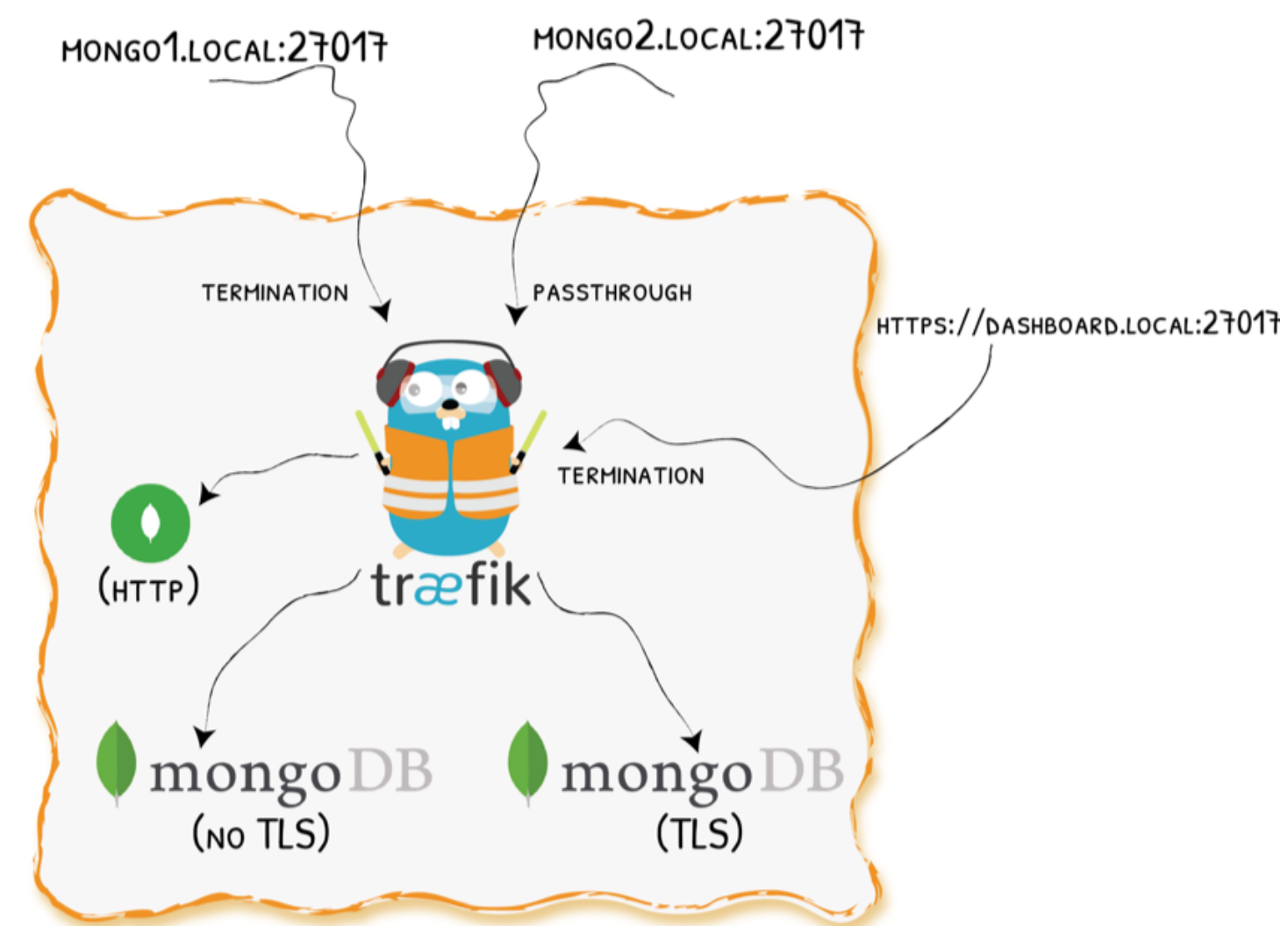


Demo Code on [GitHub](#)

Demo 3 - Configuration



Demo 4 - Muxing HTTPS And TCP On The Same Port



Demo Code on [GitHub](#)

More To Come

- New WebUI
- Newmetrics
- UDP
- YAML
- TLS stores & options
- Canary

More Info

bit.ly/traefik-v2

TO BE

CONTINUED...



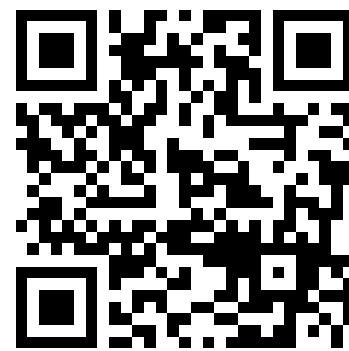
We Have
Stickers!

træfik

Thank You!

 @DamienDuportal

 dduportal



- Slides (HTML): <https://containous.github.io/slides/bbl-decathlon-2019>
- Slides (PDF): <https://containous.github.io/slides/bbl-decathlon-2019/slides.pdf>
- Source on : <https://github.com/containous/slides/tree/bbl-decathlon-2019>