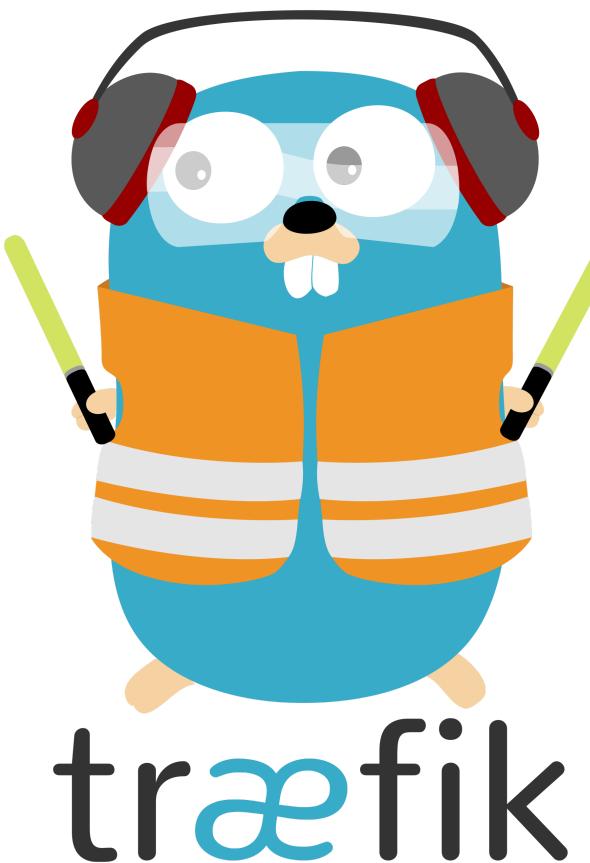


Edge Routing And HTTPS For Everyone

Traefik In Action!



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

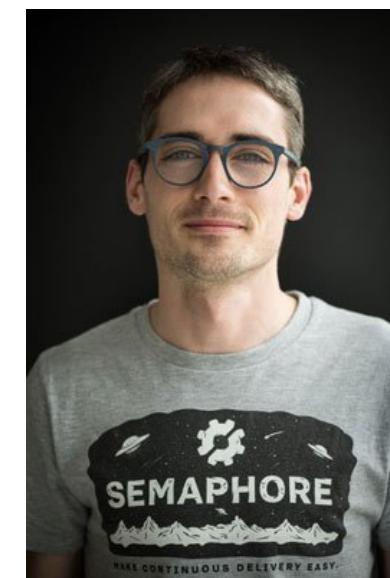
How To Use These Slides?

- **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 1/2

Michael Matur

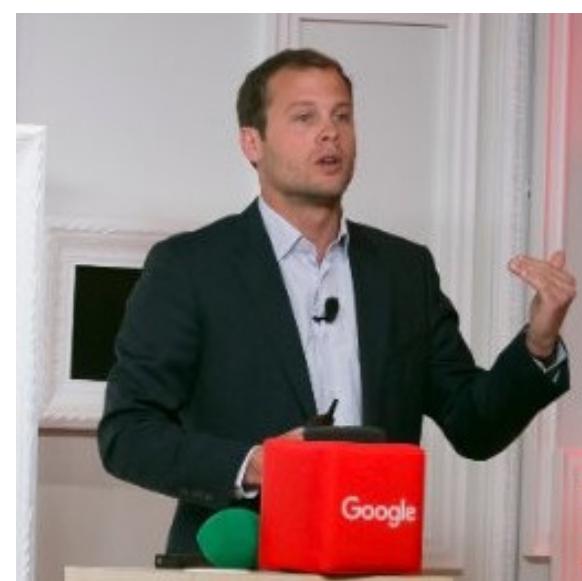
- Devops & Developer @ [Containous](#)
- Blacksmith on [Traefik](#)
-  [@michaelmatur](#)
-  [mmatur](#)



Whoami 2/2

Adrien Martinet

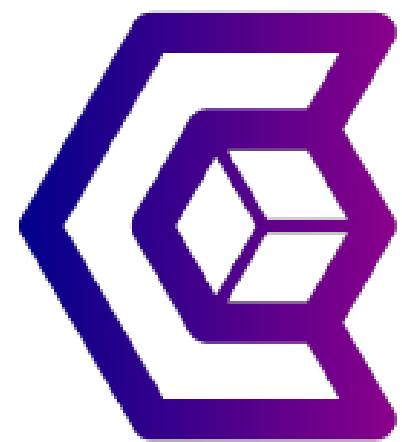
- Sales @ Containous
-  @martinet_adrien
-  adrimartinet



Containous

<https://containo.us>

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



Why Traefik?



Why, Mr Anderson?

Evolution Of Software Design



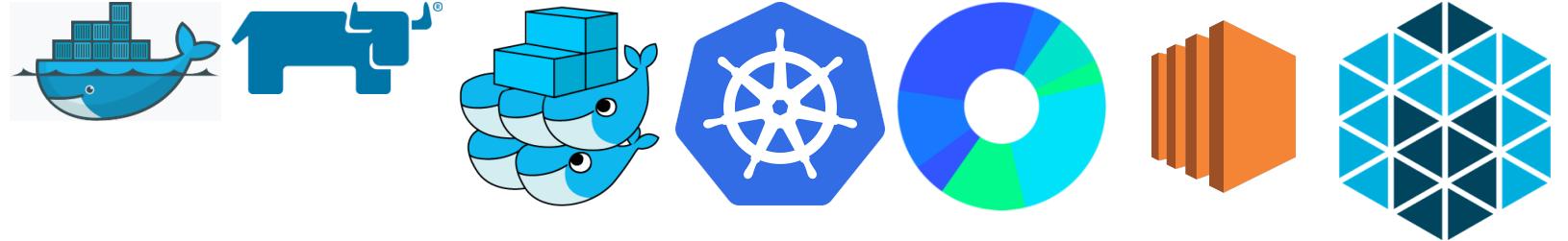
The Premise Of Microservices...



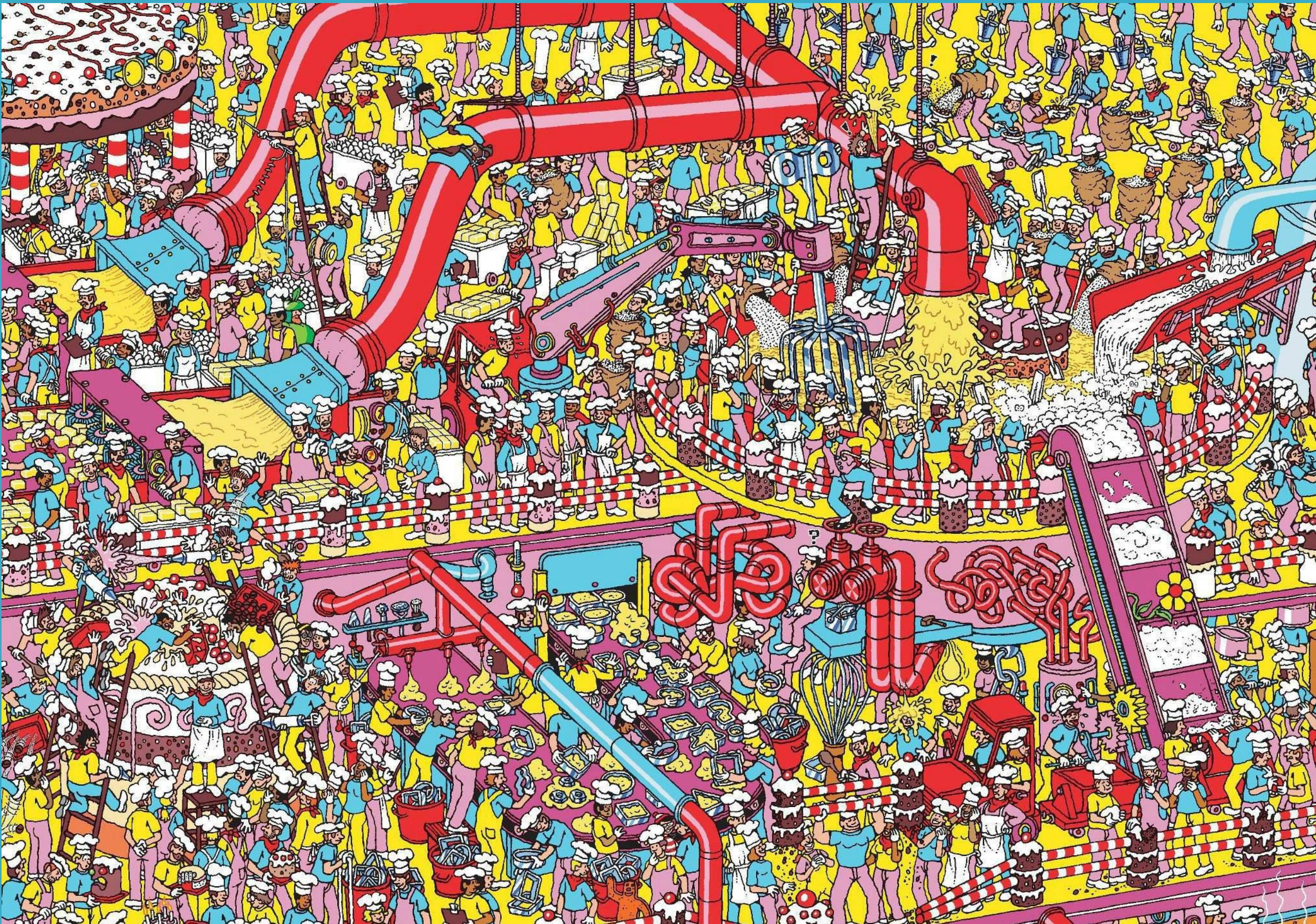
...And What Happens

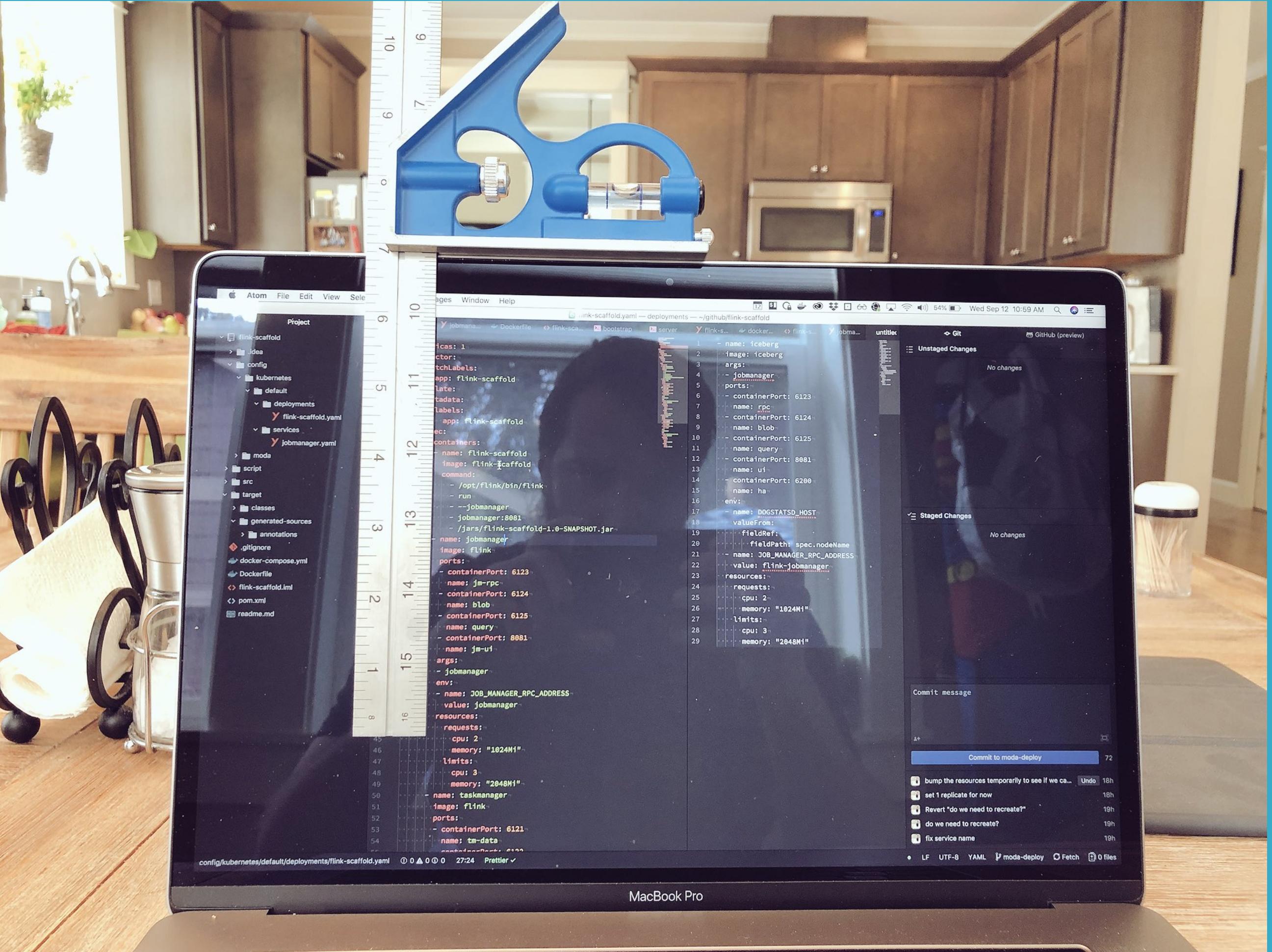


Tools Of The Trade



Where Is The Service?





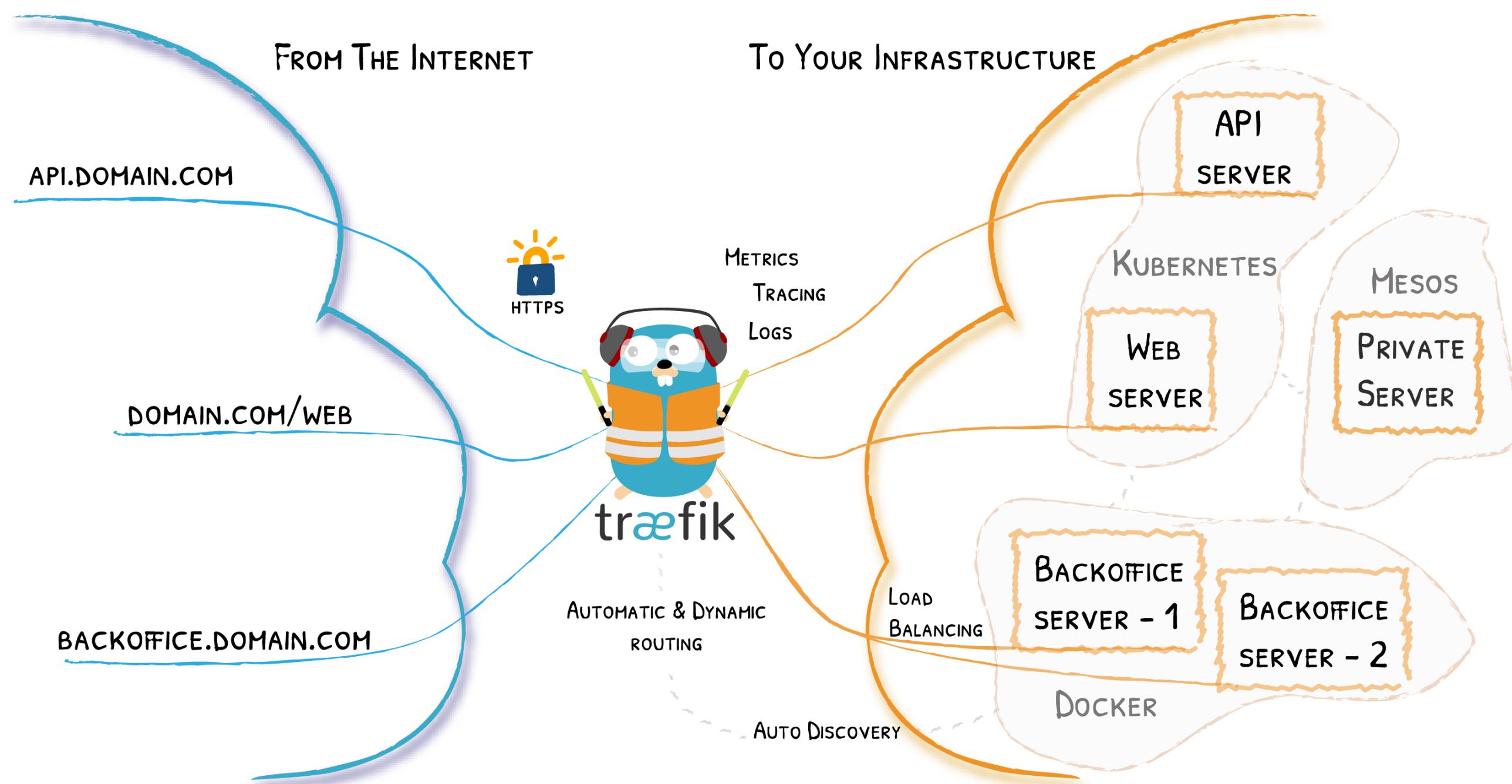
Source: <https://twitter.com/Caged/status/1039937162769096704>

What If I Told You?



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

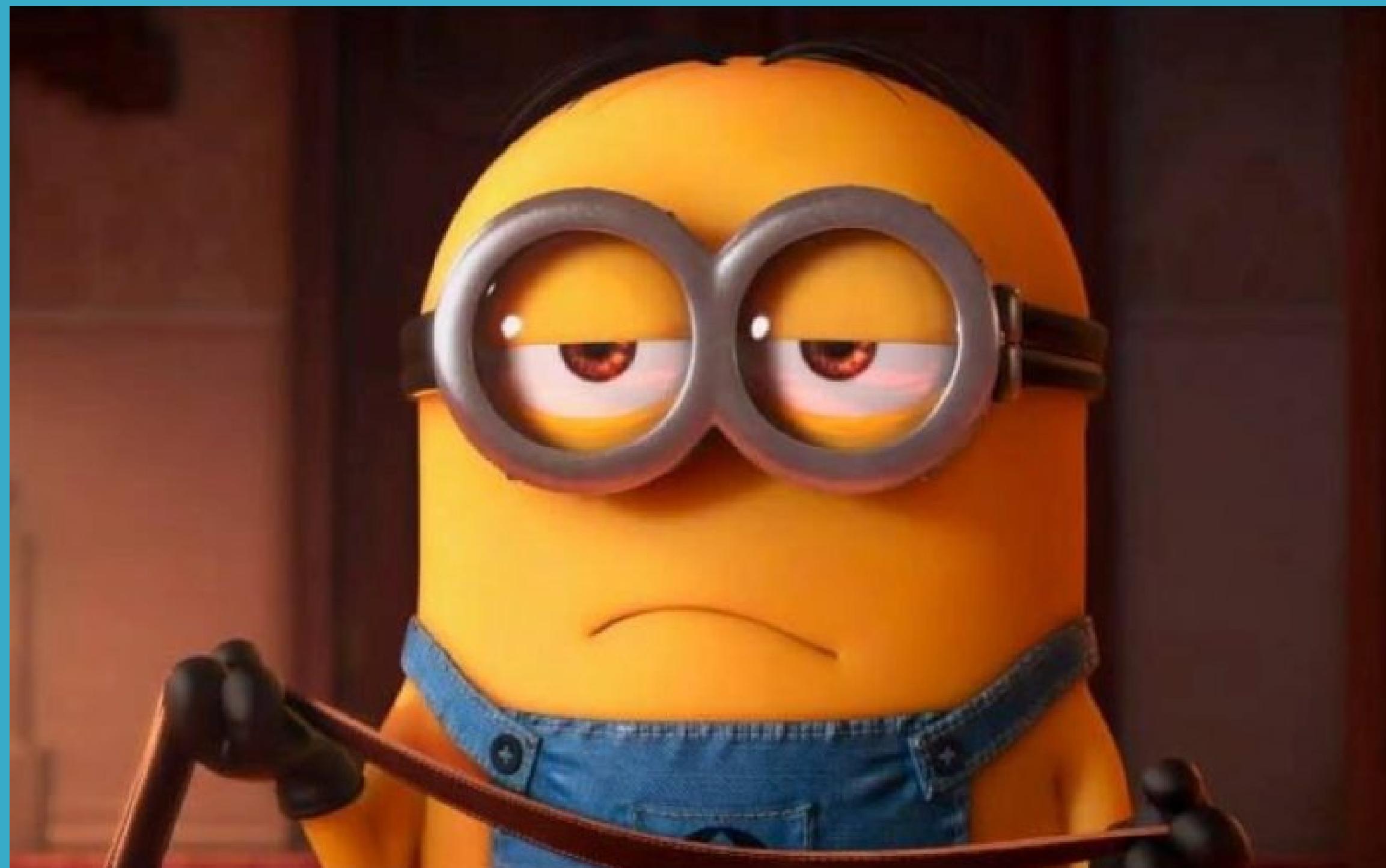
Here Comes Traefik!



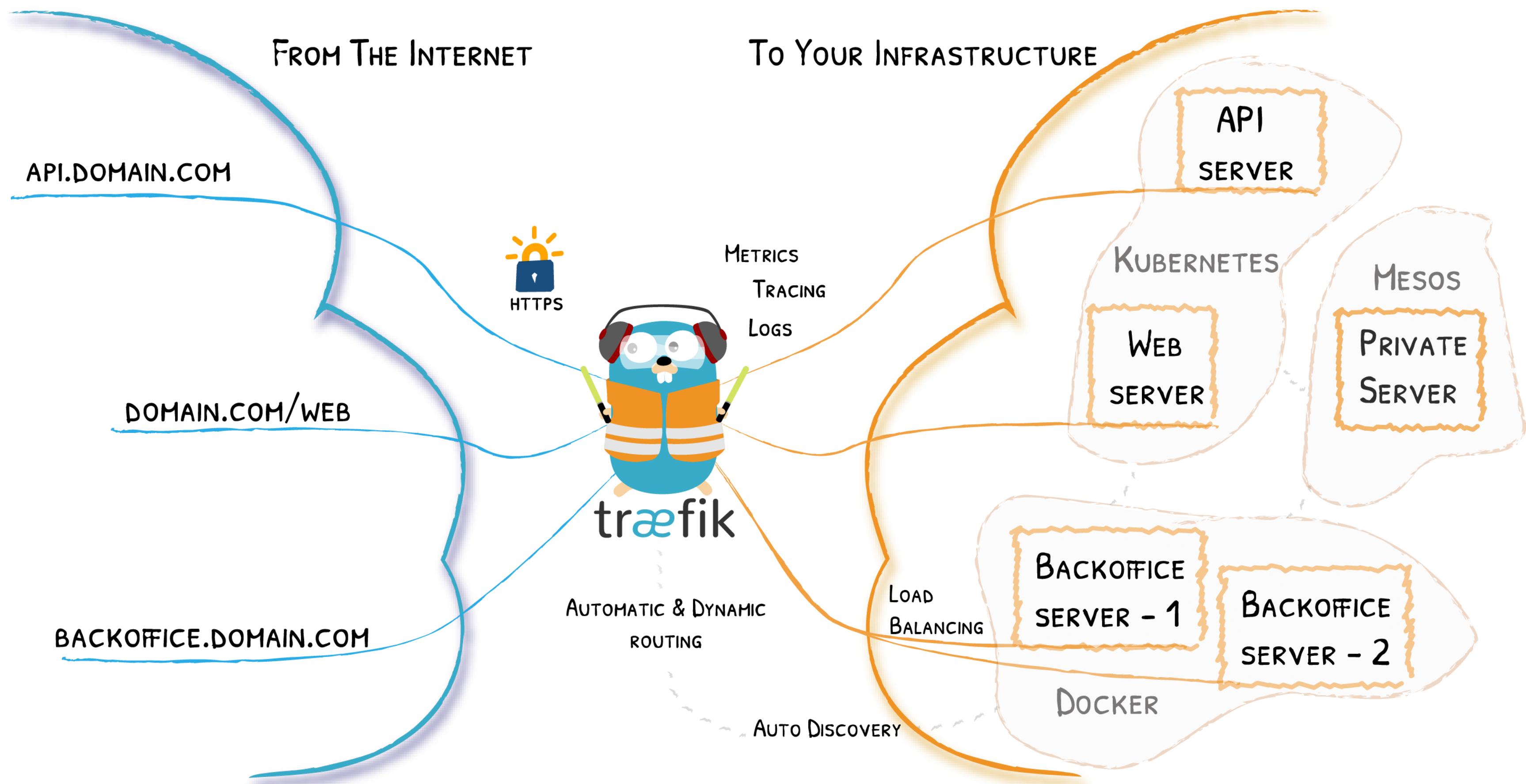
Traefik Project

-  <https://github.com/containous/traefik>
- MIT License
- Written in Go, a popular language
- 22,000+ 
- 700M+ 
- 350+ 

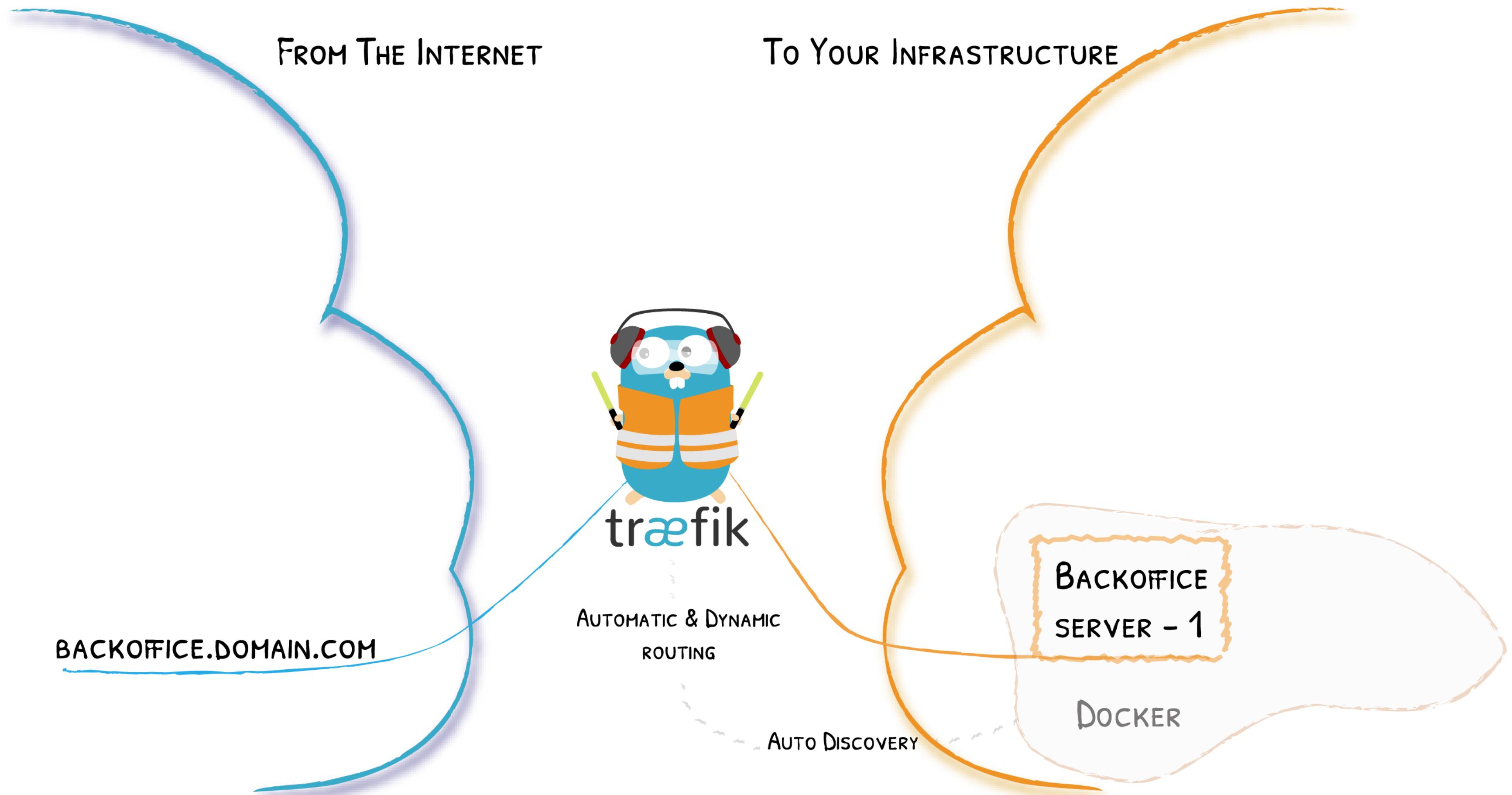
Traefik Core Concepts



Remember The Diagram?



Let's Simplify



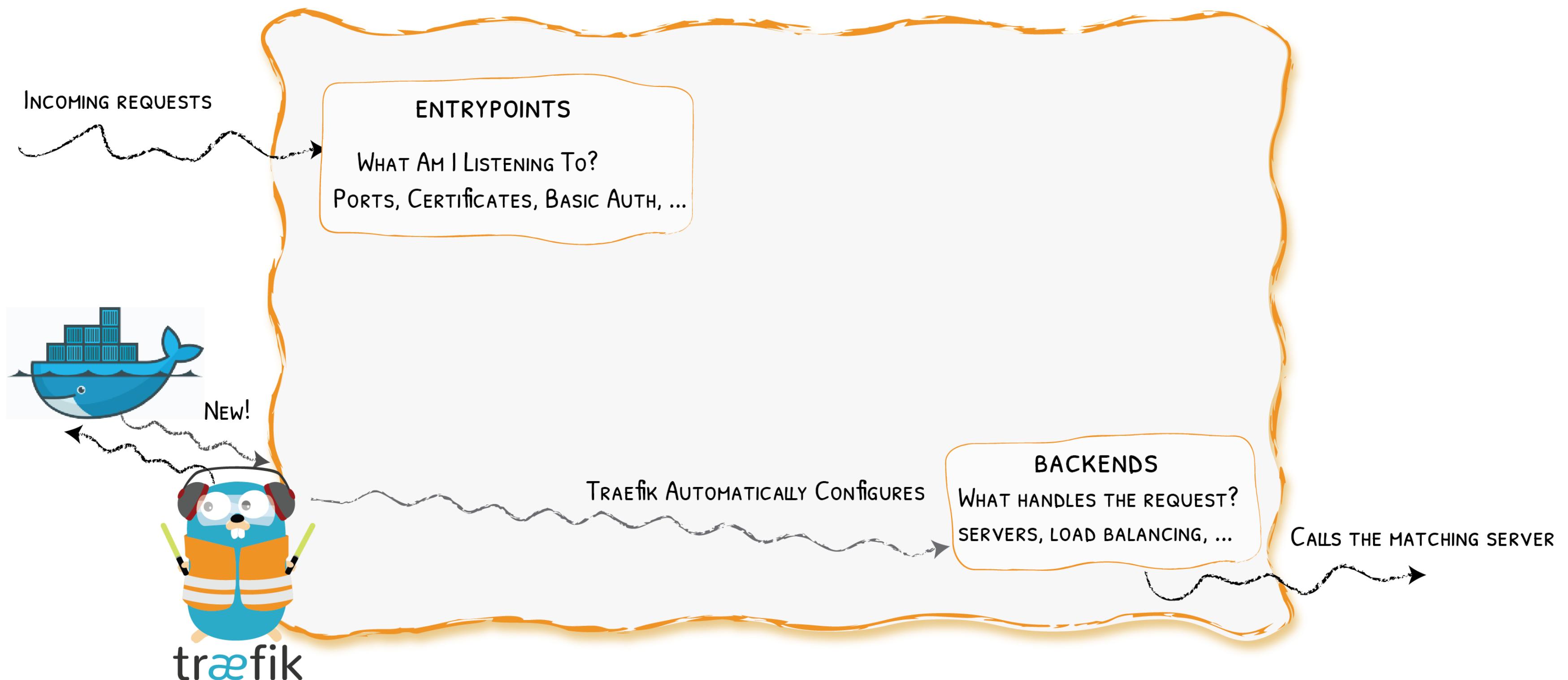
Providers



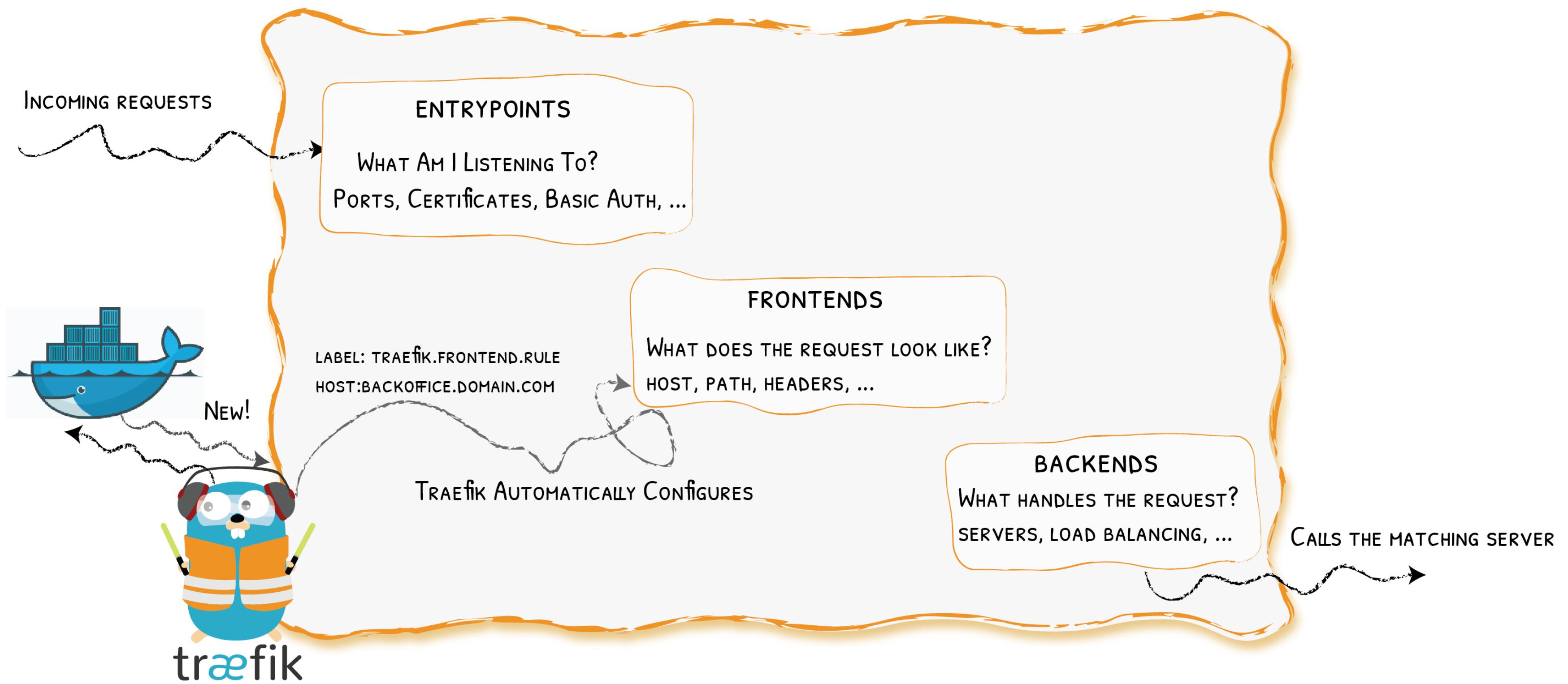
Entrypoints



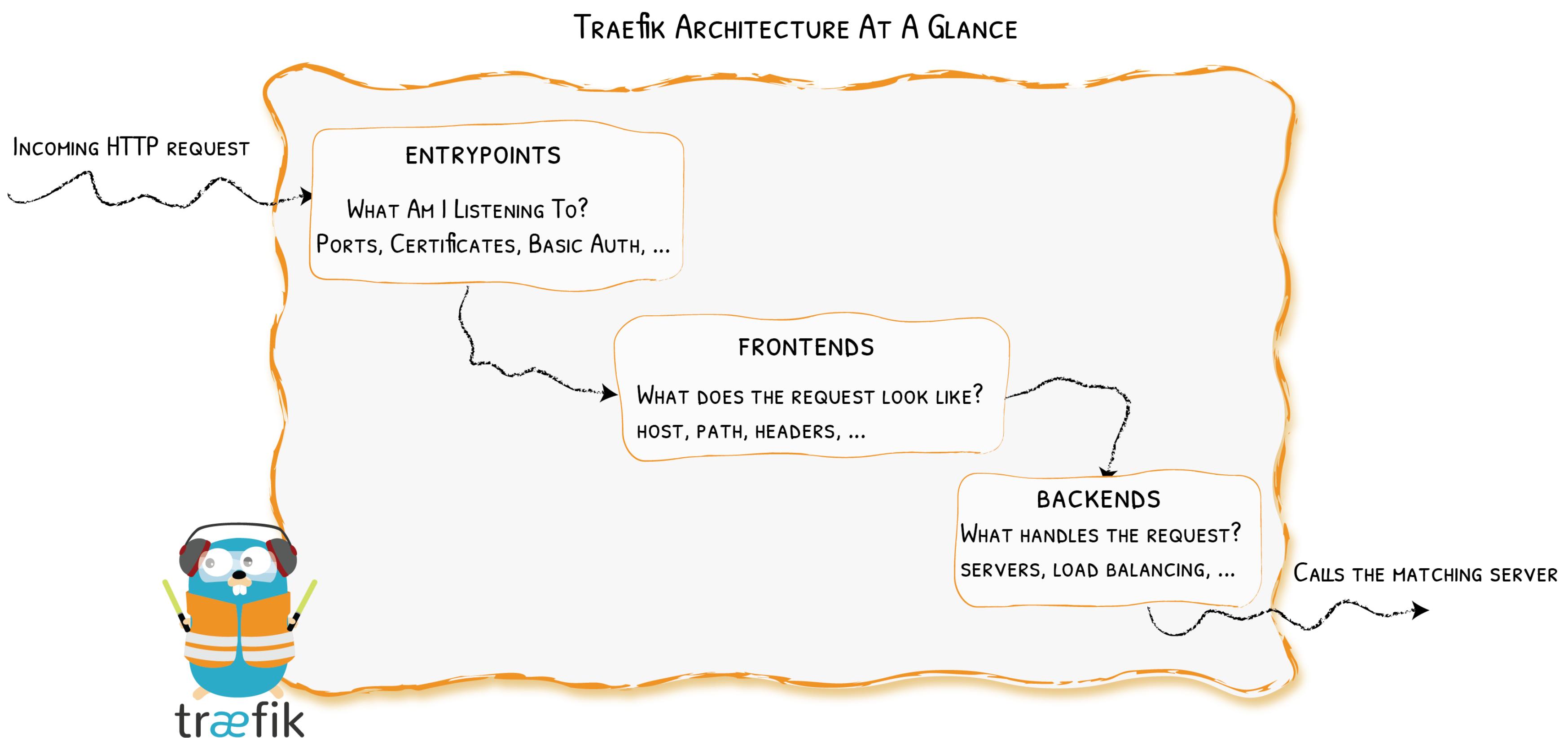
Backends



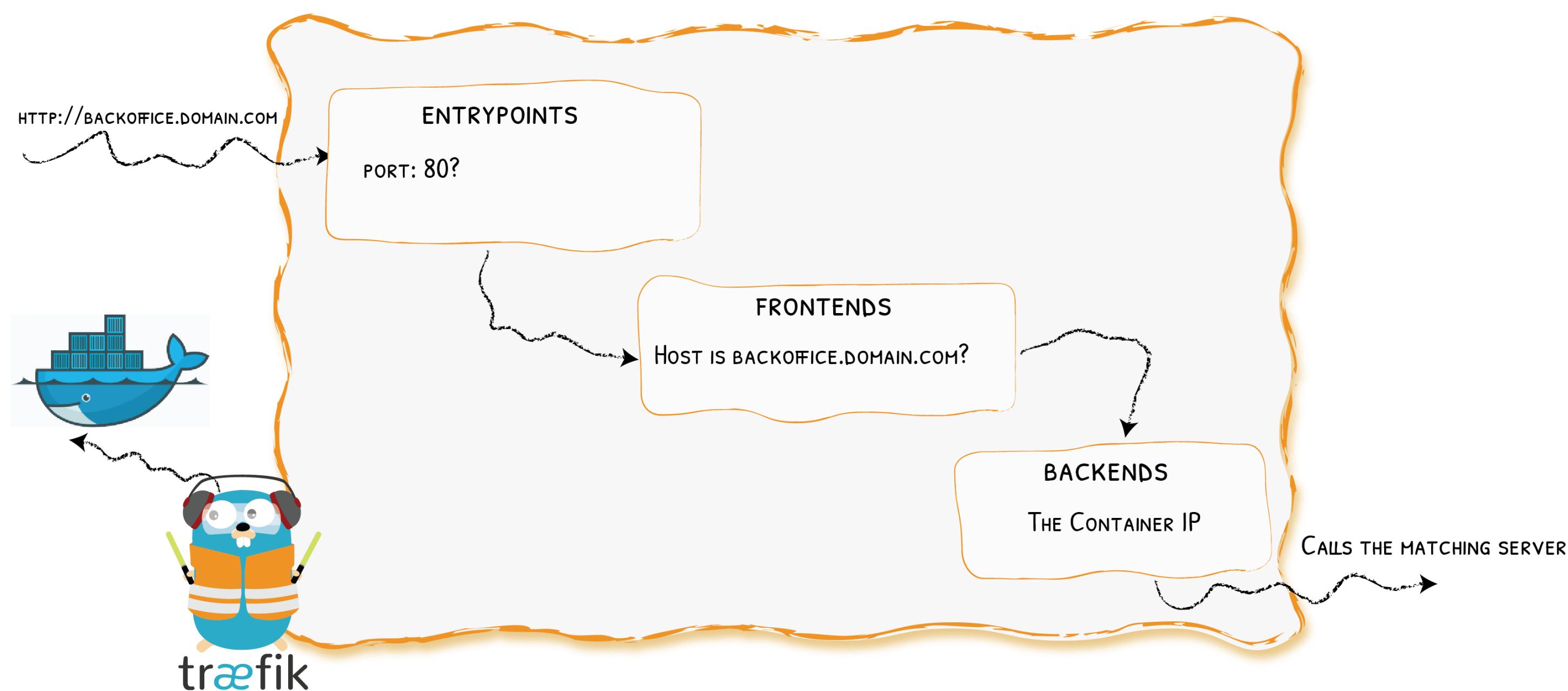
Frontends



At A Glance



In Practice



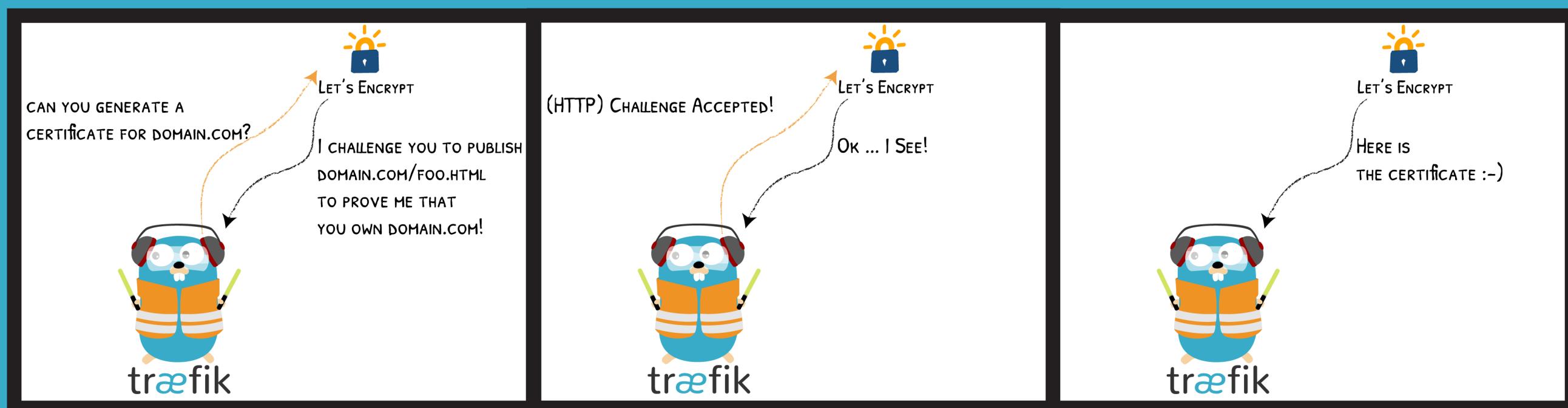
Show Me The Configuration!

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 ⚓

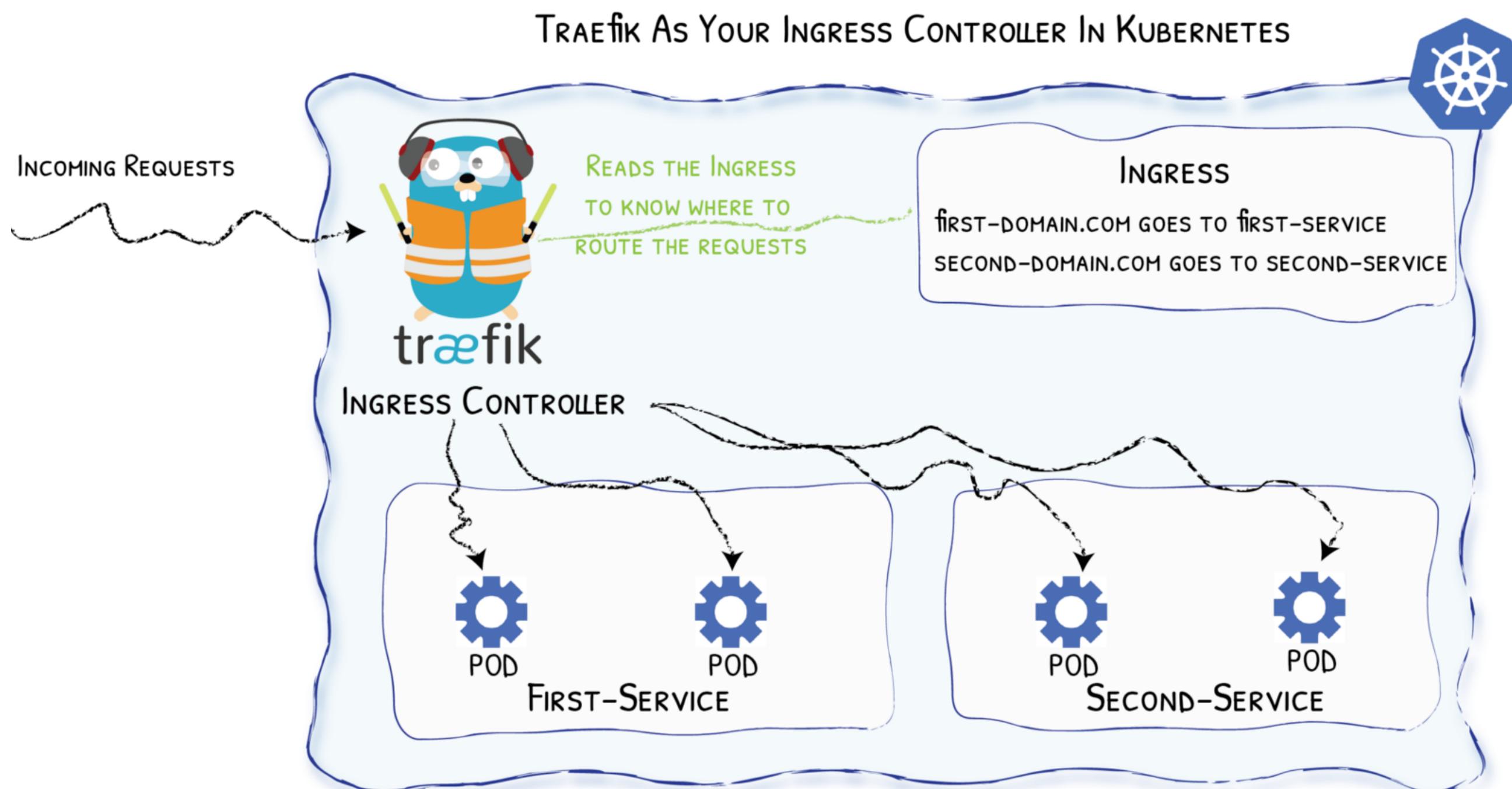


Diagram from <https://medium.com/@geraldcroes>

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 cloud of network and infrastructure terms in various colors, including:

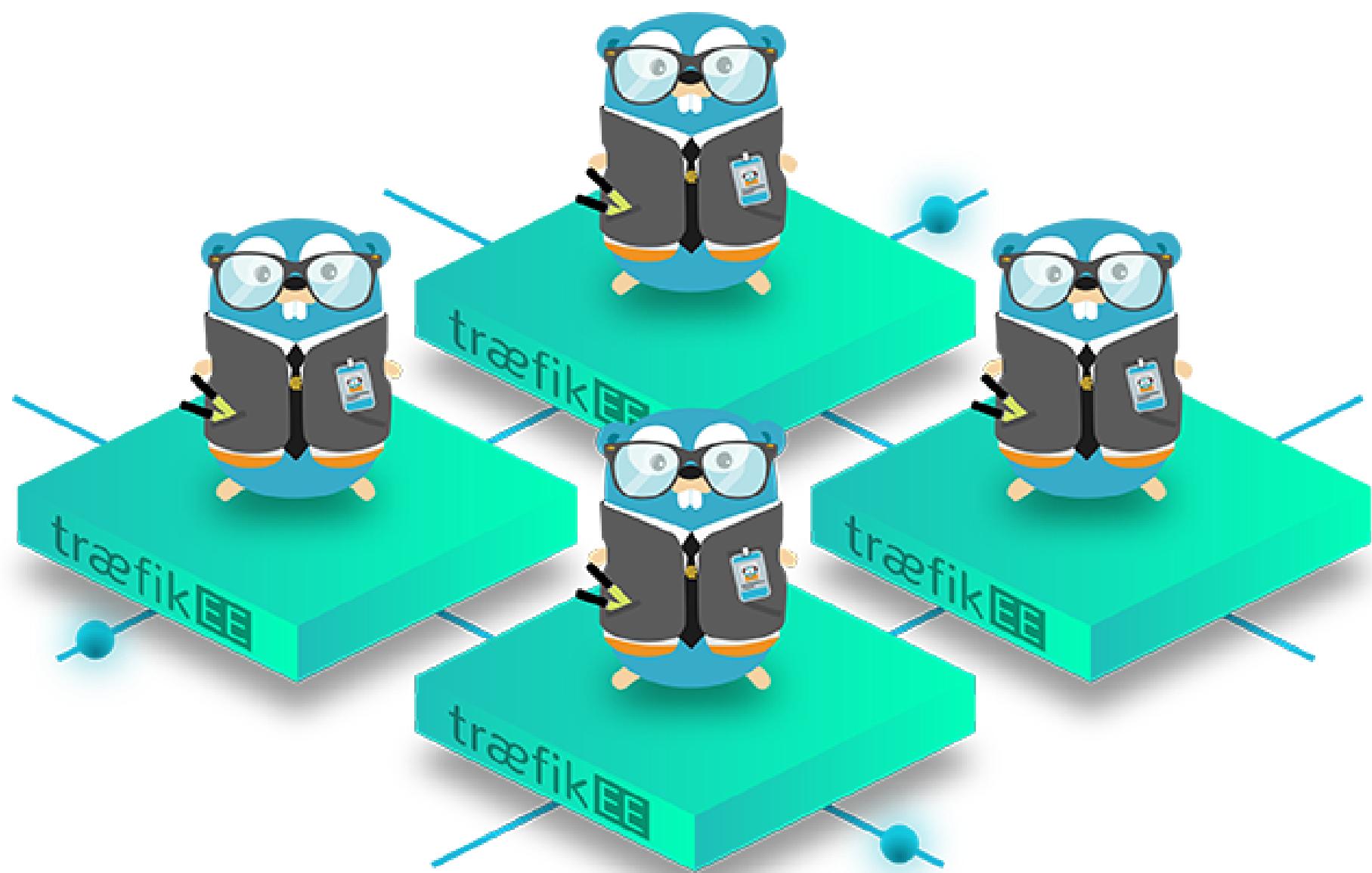
- MESOS
- ZIPKIN
- LIMITING
- KUBERNETES
- Dynamic Metrics
- HTTP ERROR
- CERTIFICATE
- TLS Reverse-Proxy
- HEADERS
- GRPC
- DYNAMIC/WILDCARD
- Security Configurations
- Tracing PROXY
- SECRETS
- PROMETHEUS
- JAEGER
- WEBSOCKETS
- SSL
- FORWARDING
- REDIRECTS
- DOCKER
- PROTOCOL
- CHECKS
- CLUSTER AUTH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

The Herd



You came to the wrong neighbour

Traefik Comes In Herd



High Availability



HIGH AVAILABILITY

traefik ENTERPRISE EDITION

SECURITY

traefik ENTERPRISE EDITION

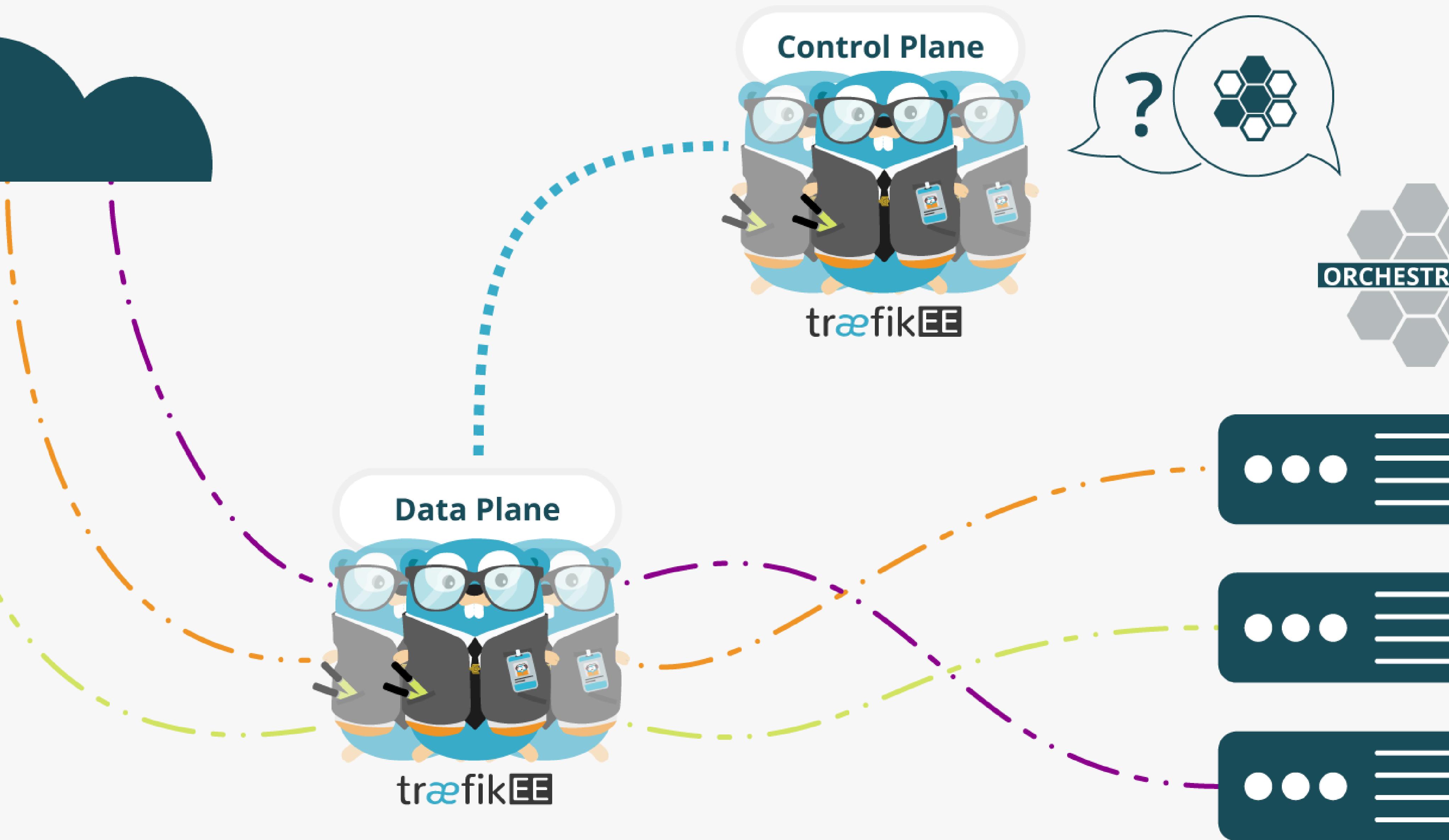
Scalability

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
...
```

Free Trial

<https://containo.us/traefikee>

BACK toTRAEFIK 2.0

PART →



Revamped Documentation

The screenshot shows the Traefik documentation website. The header includes a search bar, a GitHub link (21k Stars - 2.1k Forks), and a logo. The left sidebar has a navigation menu with links like Welcome, Getting Started, Configuration Discovery, Routing & Load Balancing, HTTPS & TLS, Middlewares, Operations, Observability, Contributing, and Glossary. The main content area features a large, colorful diagram illustrating Traefik's role as an Edge Router. The diagram shows requests from the internet (API.DOMAIN.COM, DOMAIN.COM/WEB, BACKOFFICE.DOMAIN.COM) being received by Traefik via HTTPS. Traefik then routes these requests to various infrastructure components: KUBERNETES, MESOS, and DOCKER, which host API SERVERS, WEB SERVERS, and PRIVATE SERVERS. Traefik also handles METRICS, TRACING, and LOGS. Below the diagram, a text summary defines Traefik as an open-source Edge Router.

Welcome

FROM THE INTERNET

API.DOMAIN.COM

DOMAIN.COM/WEB

BACKOFFICE.DOMAIN.COM

HTTPS

træfik

To Your Infrastructure

KUBERNETES

MESOS

PRIVATE SERVER

BACKOFFICE SERVER - 1

BACKOFFICE SERVER - 2

DOCKER

Metrics
Tracing
Logs

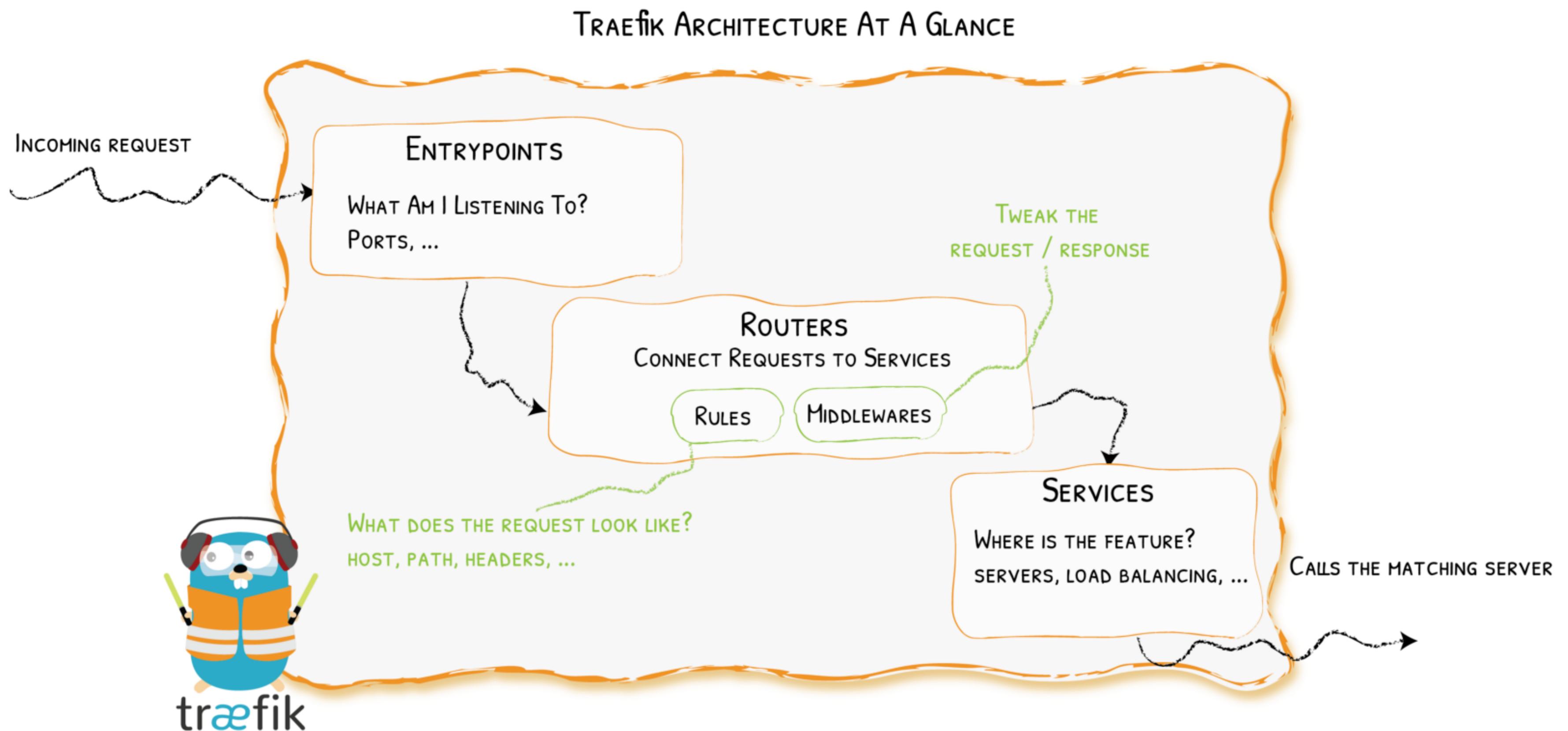
AUTOMATIC & DYNAMIC ROUTING

Load Balancing

Auto Discovery

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



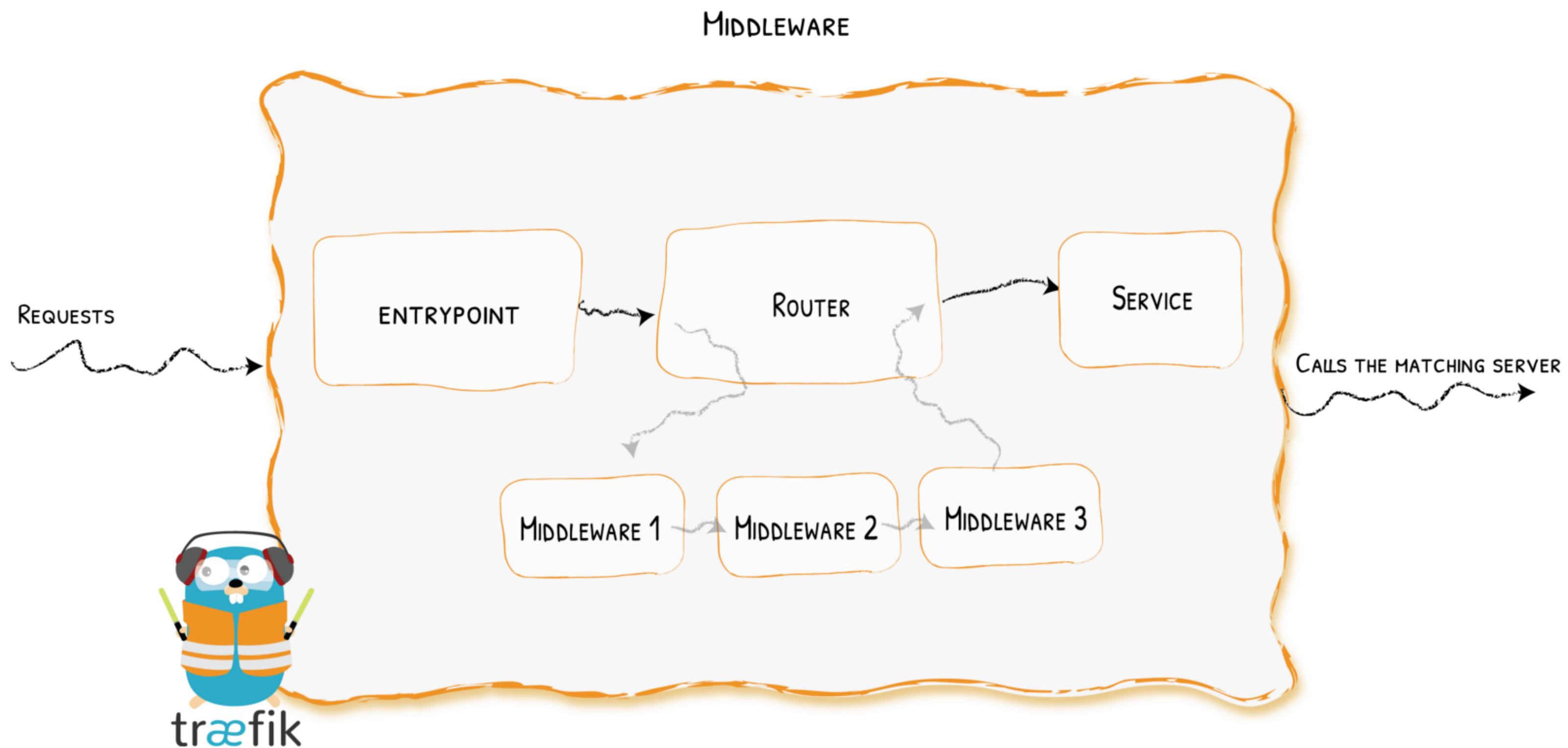
Expressive Routing Rule Syntax



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





HTTP
&
TCP

Quick Glance

```
[entrypoints]
  [entrypoints.web-secure]
    address = "":443"
```

```
[http]
  [http.routers.to-service-1]
    rule = "Host(`demo.containous.cloud`)"
    service = "service-1"
  [http.routers.to-service-1.tls] # terminates the tls connection at HTTP
```

```
[tcp]
  [tcp.routers.to-service-2]
    rule = "HostSNI(`demo.containous.cloud`)"
    service = "service-2"
  [tcp.routers.to-service-2.tls] # terminates the tls connection at TCP
```

```
[tcp.routers.to-service-3]
  rule = "HostSNI(`demo.containous.cloud`)"
  service = "service-3"
  [tcp.routers.to-service-3.tls]
    passthrough = true # sends encrypted data "as is" to service-3
```

And So Much More...

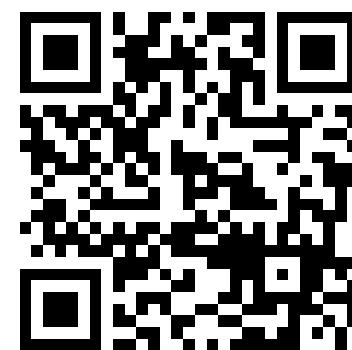
- Learn more on the blog post
- Call for contribution: Grab it, Try it, and give us your feedback!



Thank You!

 @michaelmatur

 mmatur



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