

TAGENAL

FLORENT POINSARD & MALTE MENG

INTRODUCTION

WHAT IS TAGENAL?

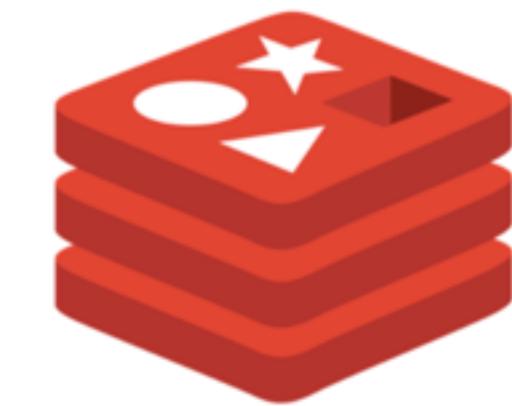
- Relational Database Sharding with Vitess
- Container Orchestration with Kubernetes
- Complete Runtime Tracing and Observation with Jaeger
- Application State Monitoring with Grafana, Alertmanager and Prometheus
- Request Caching with Redis Cluster
- APIs and Front-End Application

WHAT DOES TAGENAL USE?

Infrastructure



Database / Caching



Communication



Routing



Monitoring

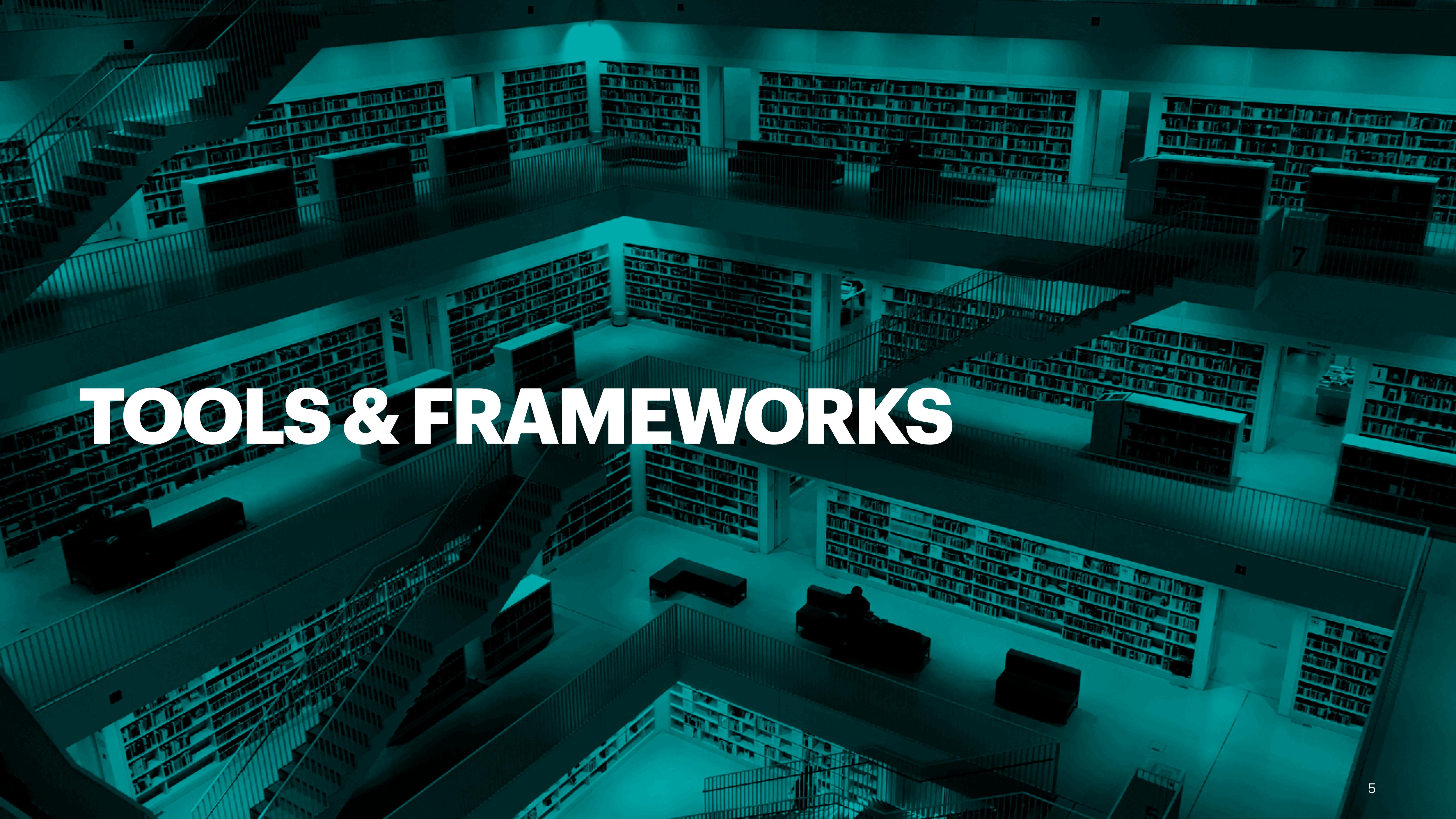


Grafana

Observability



CI / CD



TOOLS & FRAMEWORKS

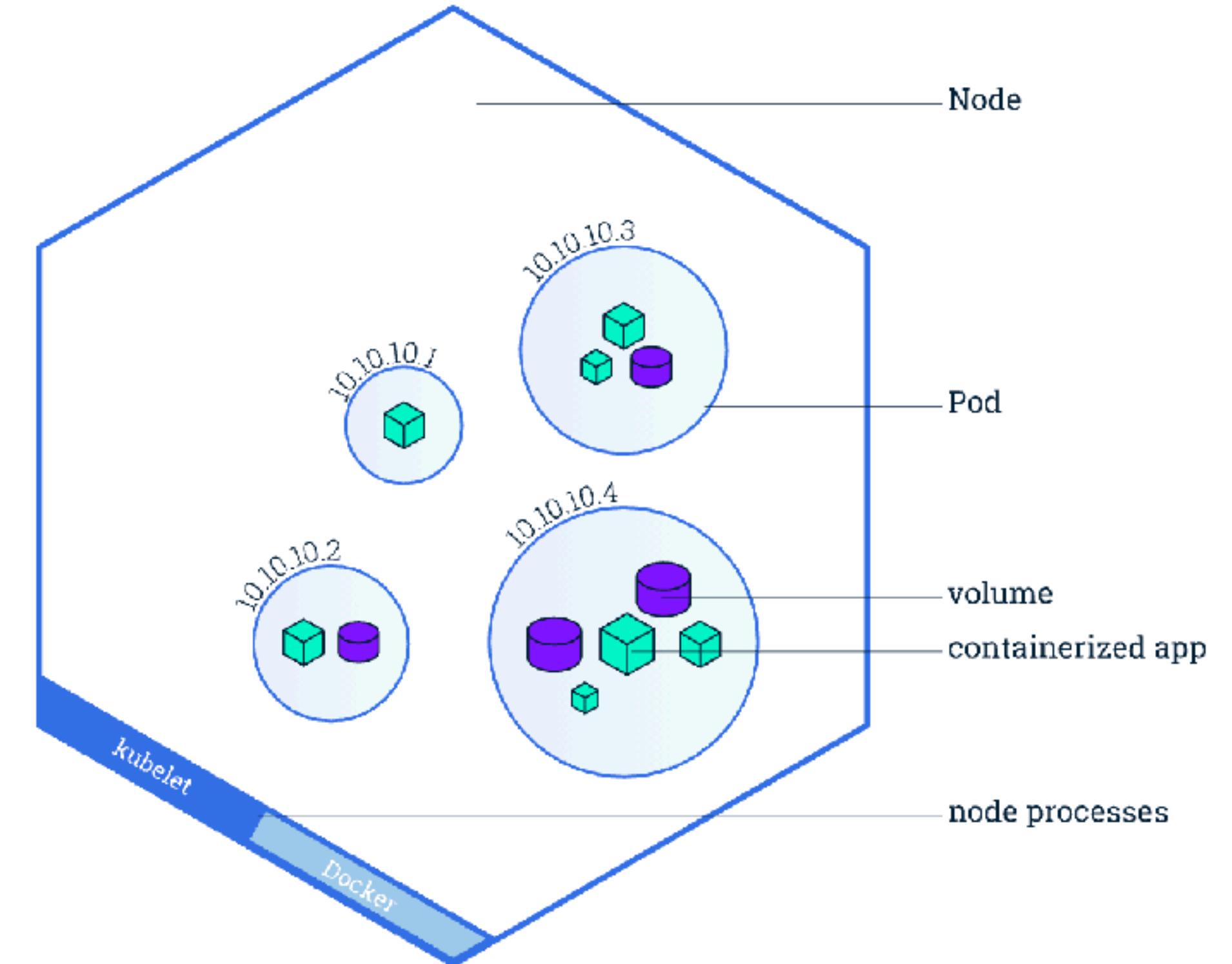
KUBERNETES

Open-source container-orchestration system

Automates computer application deployment,
scaling, and management.



kubernetes

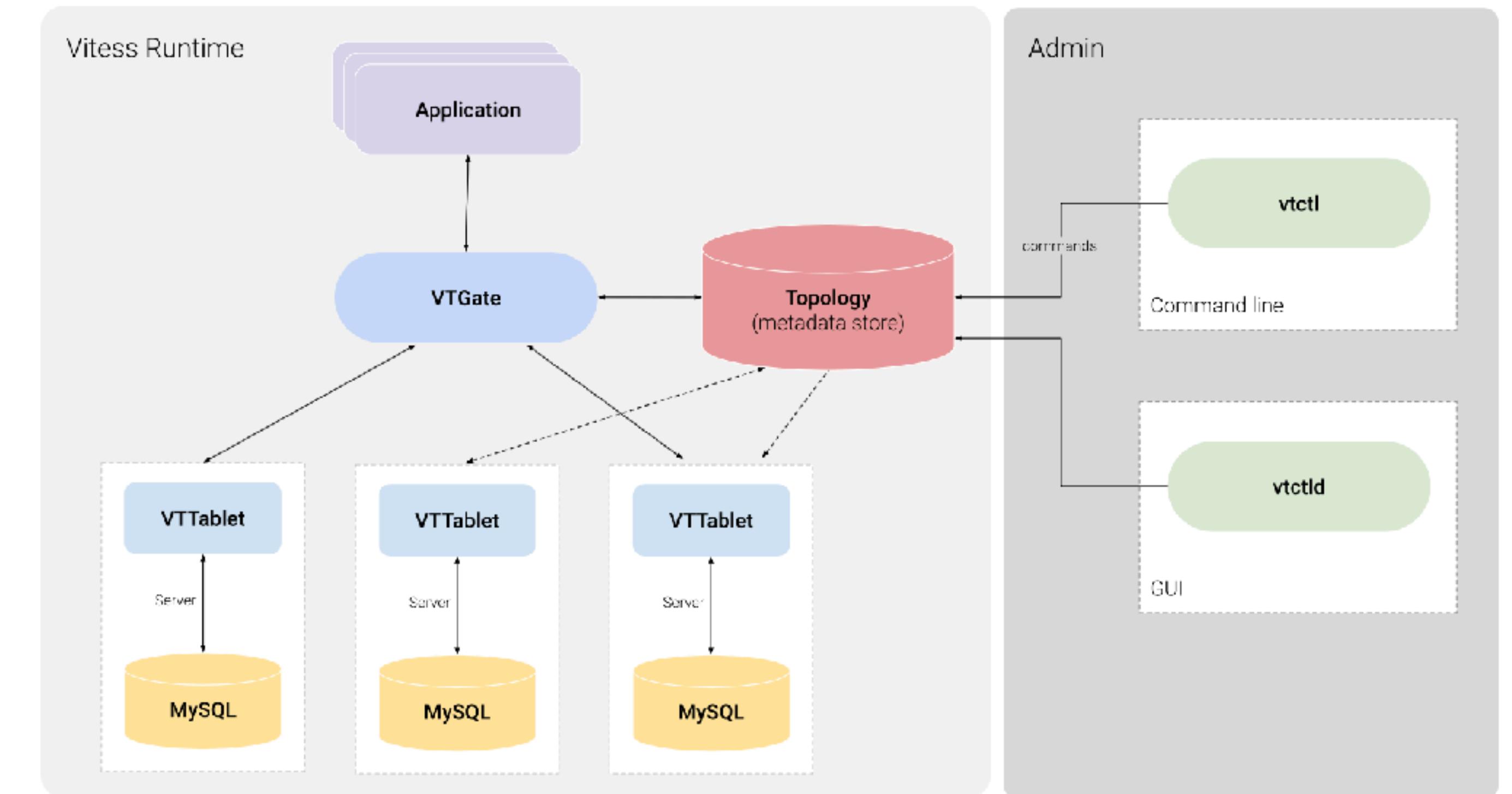


VITNESS

Database clustering system for horizontal scaling of MySQL.

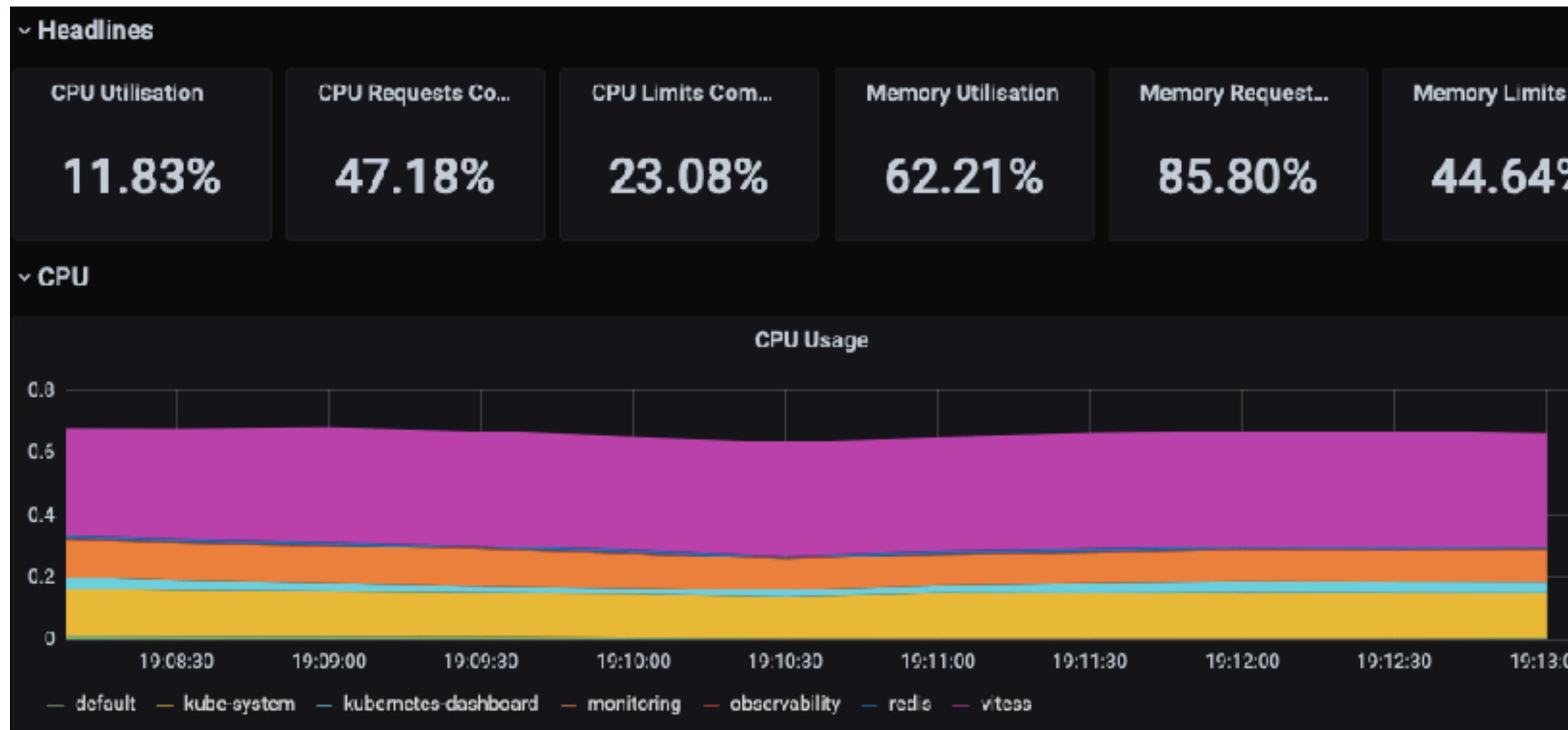


GitHub



MONITORING

- Our monitoring stack is composed of Grafana, Prometheus, and Alertmanager.
- Monitoring of the whole Kubernetes cluster.
- Real time monitoring and alerting, personalised dashboards.



Pods

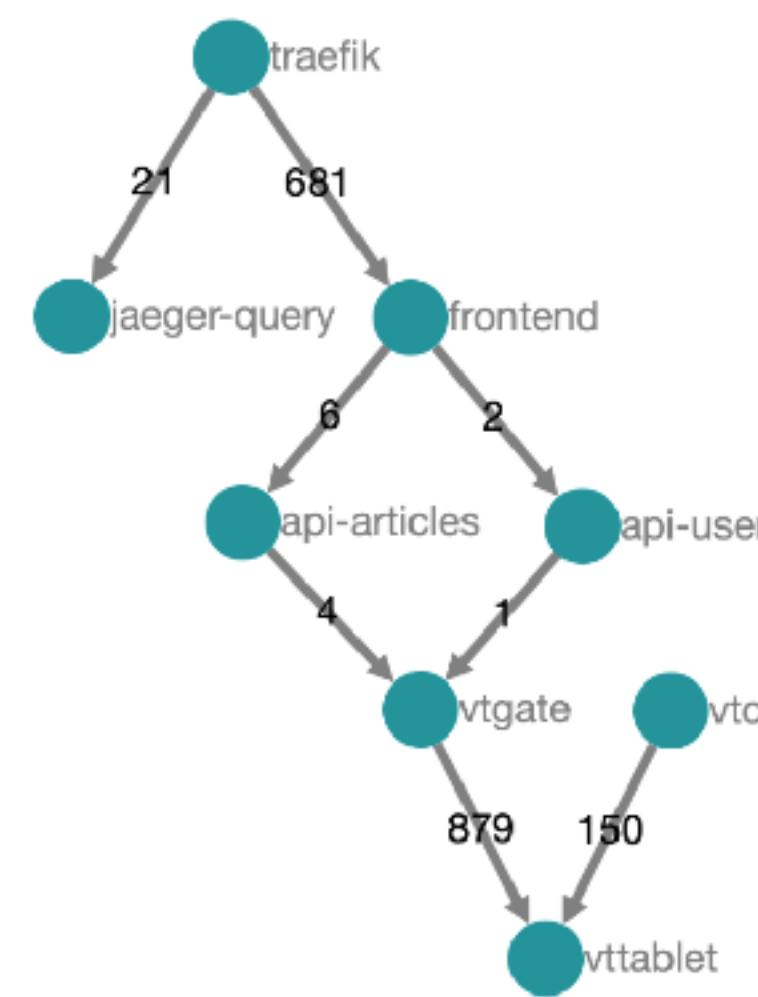
Name	Namespace	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created	⋮
articles-api-784464cc4-vhq2	default	app:articles-api pod-template-hash:784464cc4	minikube	Running	0	0.00m	8.45Mi	14 minutes ago	⋮
users-api-54fbff9b4c-bqmxl	default	app:users-api pod-template-hash:54fbff9b4c	minikube	Running	0	0.00m	9.42Mi	14 minutes ago	⋮
articles-api-784464cc4-nx8zh	default	app:articles-api pod-template-hash:784464cc4	minikube	Running	0	0.00m	11.07Mi	14 minutes ago	⋮
users-api-54fbff9b4c-59kh6	default	app:users-api pod-template-hash:54fbff9b4c	minikube	Running	0	0.00m	9.47Mi	14 minutes ago	⋮
tagenai-frontend-675d48f667-njngn	default	app:tagenai-frontend pod-template-hash:675d48f667	minikube	Running	0	0.00m	8.75Mi	14 minutes ago	⋮

OBSERVABILITY

Our observability stack is composed of Jaeger, with OpenTracing / OpenTelemetry.

We can trace all the actions from the reverse proxy, all the way to the Vitess' tablets.

We use ElasticSearch to store all the spans and traces.

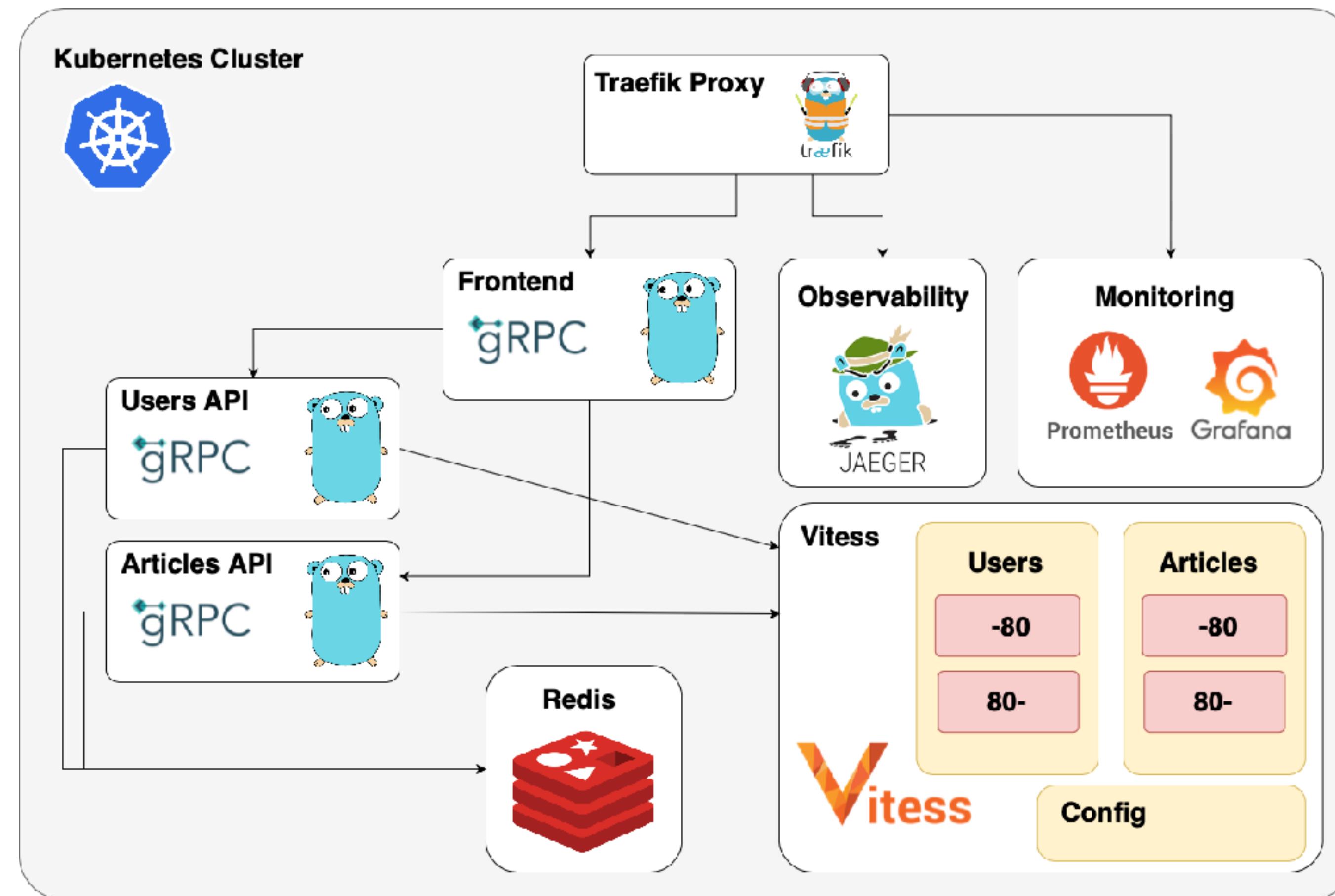


FEATURES & FUNCTIONALITIES

IMPLEMENTATION

1. Bulk data loading with data partitioning and replica consideration
2. Expansion at the DBMS-level allowing a new DBMS server to join
3. Dropping a DBMS server at will
4. Monitoring the running status of DBMS servers, including its managed data.
(amount and location)
5. Hot / Cold Standby DBMSs for fault tolerance
6. Data migration from one data-center to others
7. Efficient execution of data insert, update, and queries

ARCHITECTURE



DOCUMENTATION

1. Setup the Kubernetes Cluster
2. Setup Jaeger
3. Setup Traefik Proxy
4. Setup the Vitess cluster
5. Setup the Redis cluster
6. Setup monitoring with Grafana, Prometheus and Alertmanager
7. Setup the APIs and frontend

7
STEPS

15
COMMANDS



TAGENAL IN NUMBERS

25 000

LINES OF CODE

200

COMMITS

50

KUBERNETES PODS

130

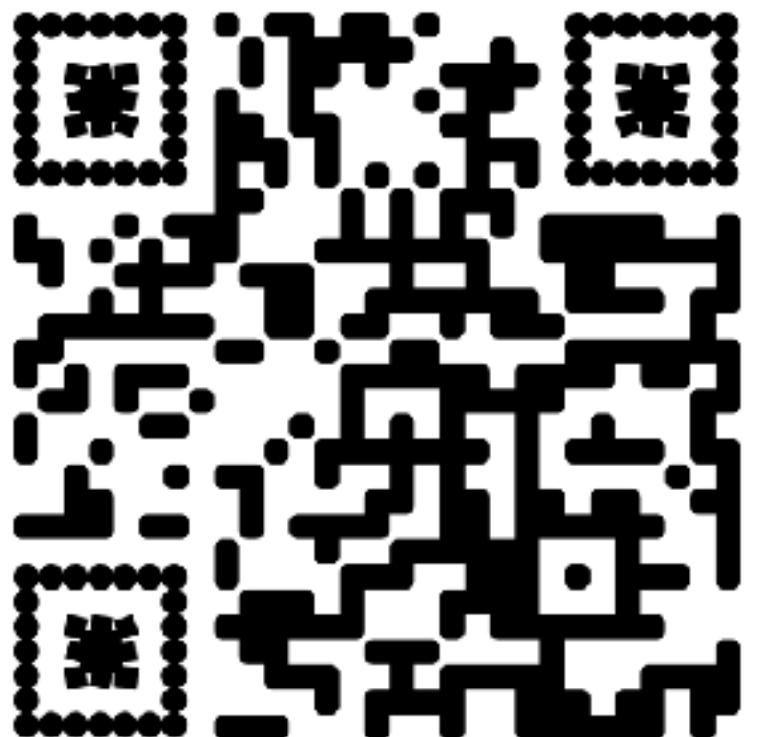
DOCKER CONTAINERS

3

**MONTHS OF RESEARCH
AND EXPERIMENTATION**

DEMOTIME!

QUESTIONS?



[GITHUB.COM/FROUIOUI/TAGENAL](https://github.com/frouiou/tagenal)