

Grafana & Friends Meetup

Sentry.io Office Vienna 2022-09-28



Introduction to k6 And Deep Dive into xk6

```
import http from 'k6/http';

export default function () {
  http.get('https://test.k6.io');
}
```

presenter:

name: stefan dunkler

company: grafana labs

role: solutions engineer

based_in: salzburg

activities:

- running
- mountaineering

: <https://twitter.com/StefanDunkler>

linkedin: >

<https://www.linkedin.com/in/stefandunkler/>



presenter:

name: oleg bespalov
company: grafana labs
role: k6 maintainer
based_in: vienna
activities:

- hiking
- running

linkedin: >

<https://www.linkedin.com/in/olegbespalov/>





k6.io

Overview

- 1 What is load testing?
- 2 What is k6?
- 3 How k6 fits into Grafana
- 4 How k6 can be extended



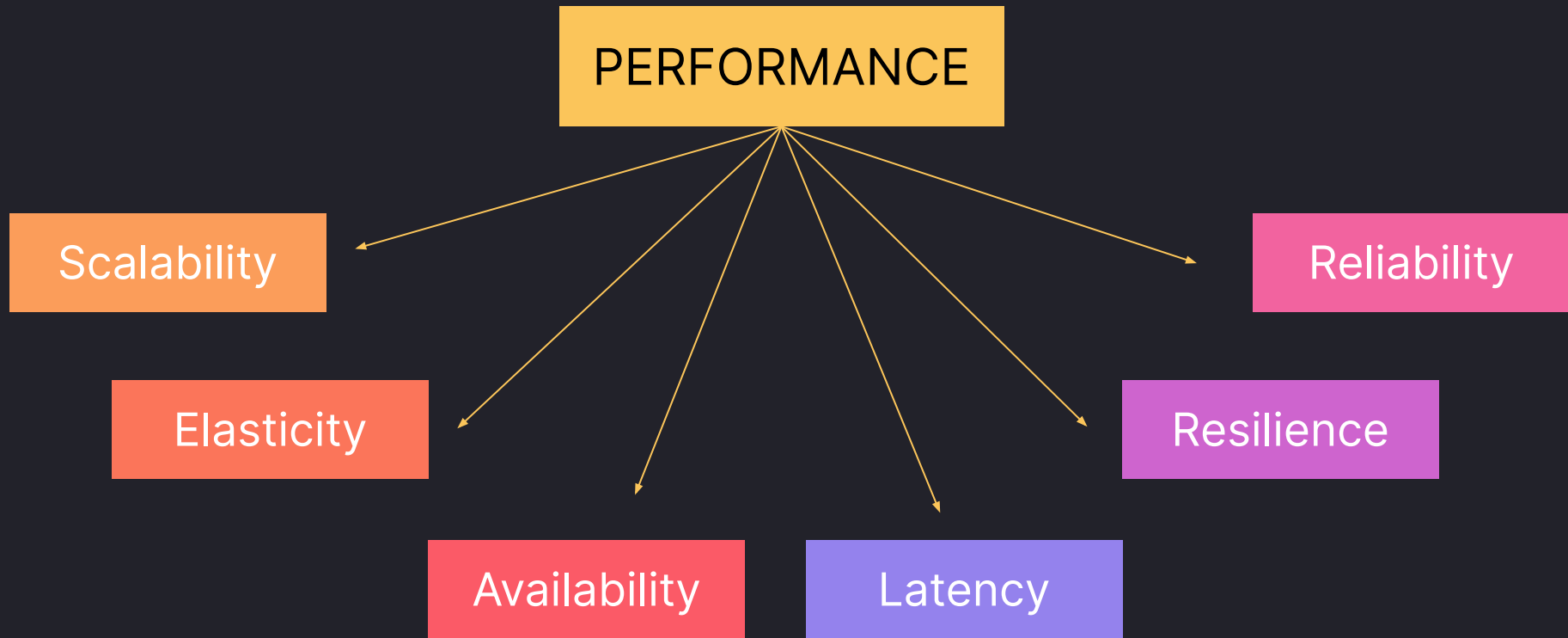
What is load
testing?



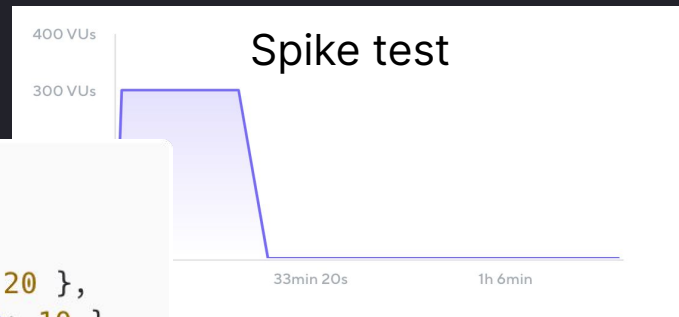
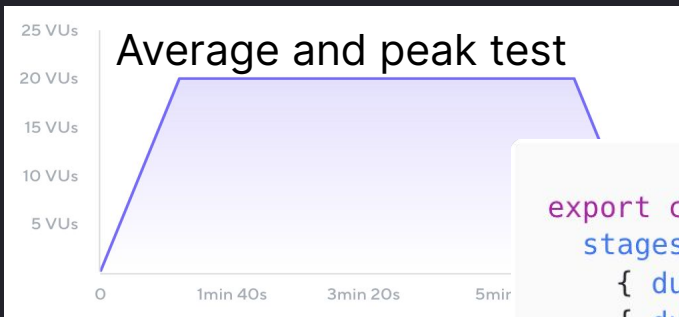
Myths about load testing

- Performance testing = load testing.
- Load testing is only for large companies.
- Load testing is expensive.
- Load testing should only be done in production.
- You don't need load testing if you have observability.

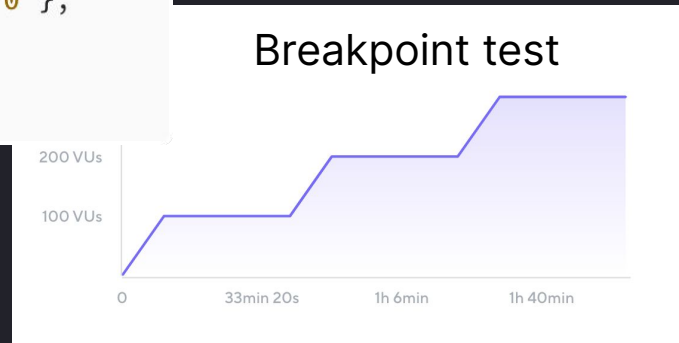
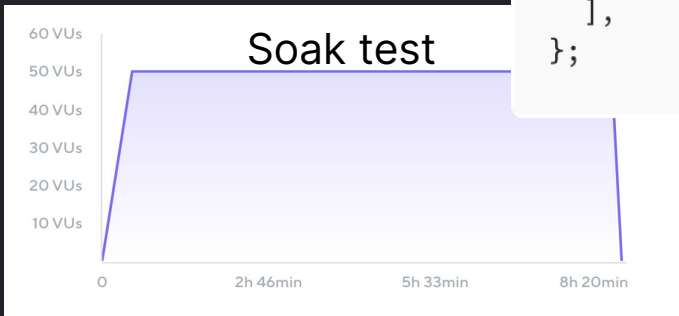




Common types of load tests



```
export const options = {  
  stages: [  
    { duration: '30s', target: 20 },  
    { duration: '1m30s', target: 10 },  
    { duration: '20s', target: 0 },  
  ],  
};
```



Why do load
testing?



Why load testing today?

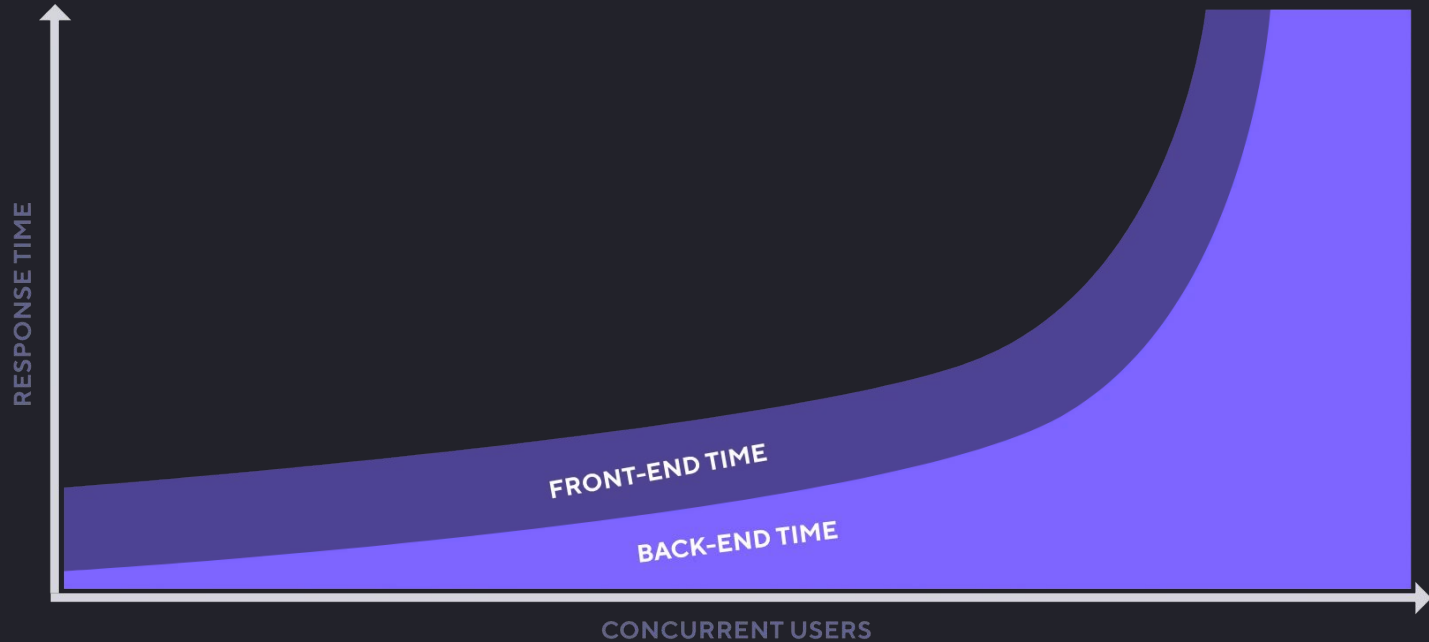
UX

SLOs



Why do load testing today?

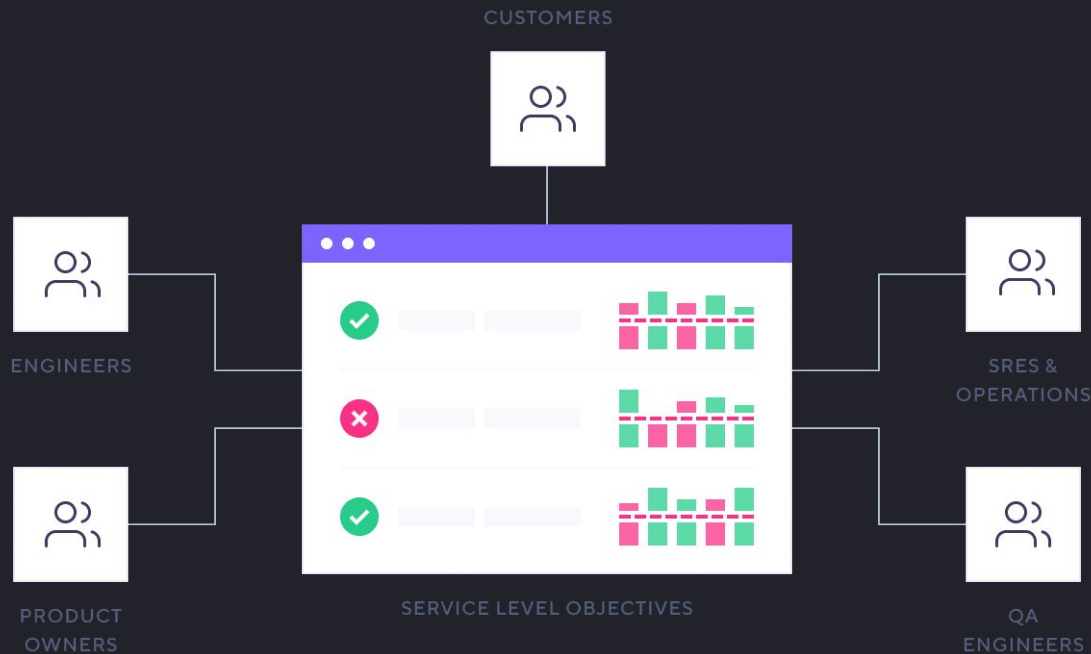
UX



Why load testing today?

Proactively test

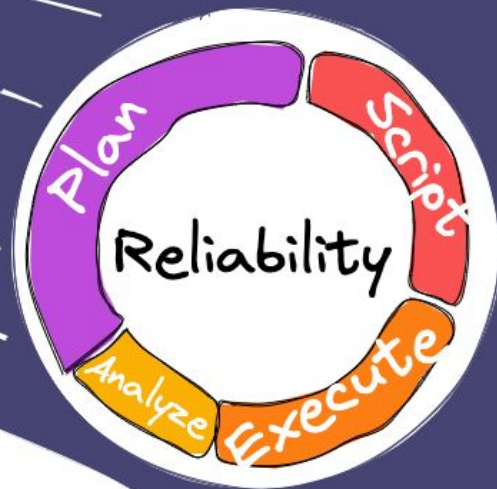
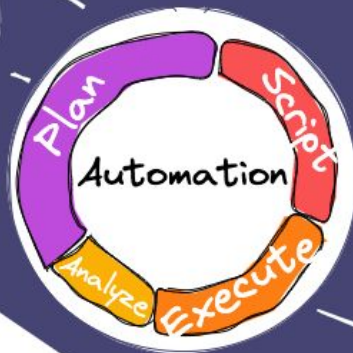
SLOs



What is k6?



Continuous Testing





k6.io

What is k6?

- 1 Open source
- 2 Programmable
- 3 Performant
- 4 Extensible



Open source

Same k6 test script for multiple execution modes

>_

k6 run script.js

LOCAL

>_

kubectl apply -f k6.yaml

K8S

>_

k6 cloud script.js

CLOUD



Programmable

Load test as Code

Mimic real-world conditions

Developer- and tester- friendly



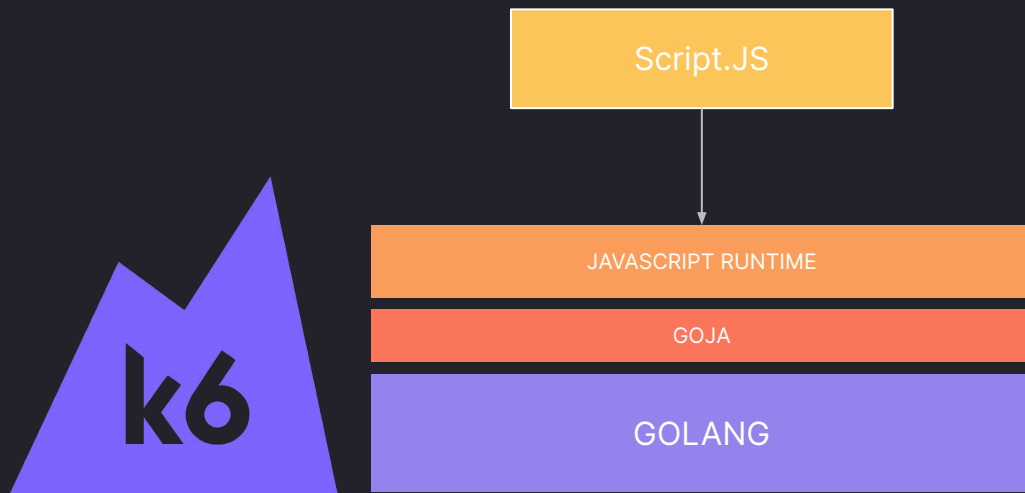
```
import { userFlowA, userFlowB } from './my-lib';  
  
export default function () {  
  userFlowA();  
  userFlowB();  
}
```



Performant

40K VUs in one load generator

Limitations with NodeJS and
browser libraries



Extensible

k6.io/docs/extensions/getting-started/explore/

Use cases

Browser testing

Infrastructure testing

Chaos testing

Telemetry

...

Outputs

InfluxDB

Prometheus

TimescaleDB

Grafana Cloud

NewRelic

Dynatrace

...

Protocols

Redis

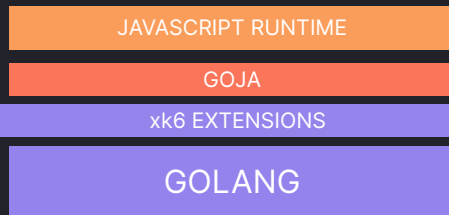
AMQP / Kafka

SQL / NoSQL

Auth

Stomp / NATS

...



"Although it's easy to get started with k6 all on its own, it really shines with its ease of integration into a developer ecosystem." Thoughtworks

k6 Concepts



Scenarios

Simulating user flows and workload modeling, adding think time

Thresholds

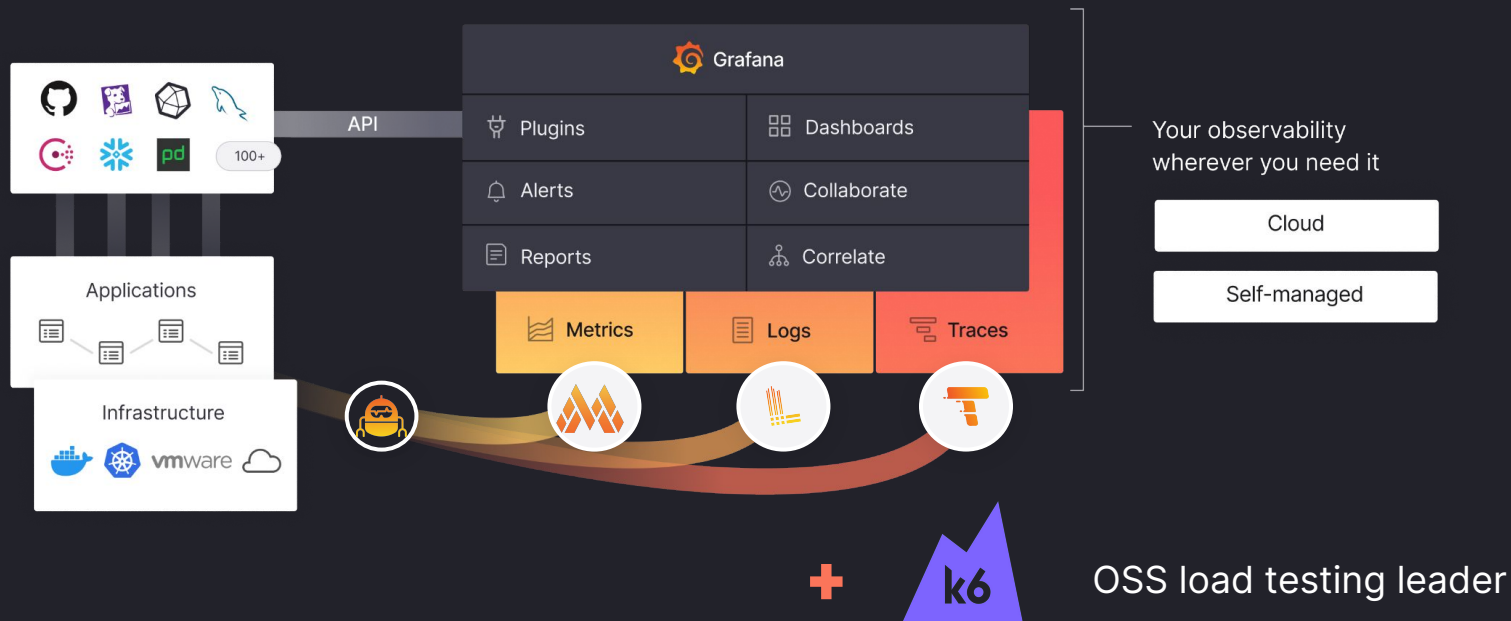
Setting SLOs for the system under load

Test data

Using dynamically generated or random values



Open and Composable Observability Stack





Open source is at the heart of what we do

950+ **Employees** across
40+ countries

1M+ **Instances** across
LGTM Cloud and
OSS

10M+ **Users** across OSS
and Cloud Free tier



Employ **91%** of the
Loki team
members, including
project founders



Employ **89%** of
Grafana team
members, including
project founders



Employ **100%** of
the Tempo team
members, including
project founders



Employ **100%** of
the Mimir team
members, including
project founders



Employ **44%** of the
Prometheus team
members



The **leading
contributors** to the
Graphite project



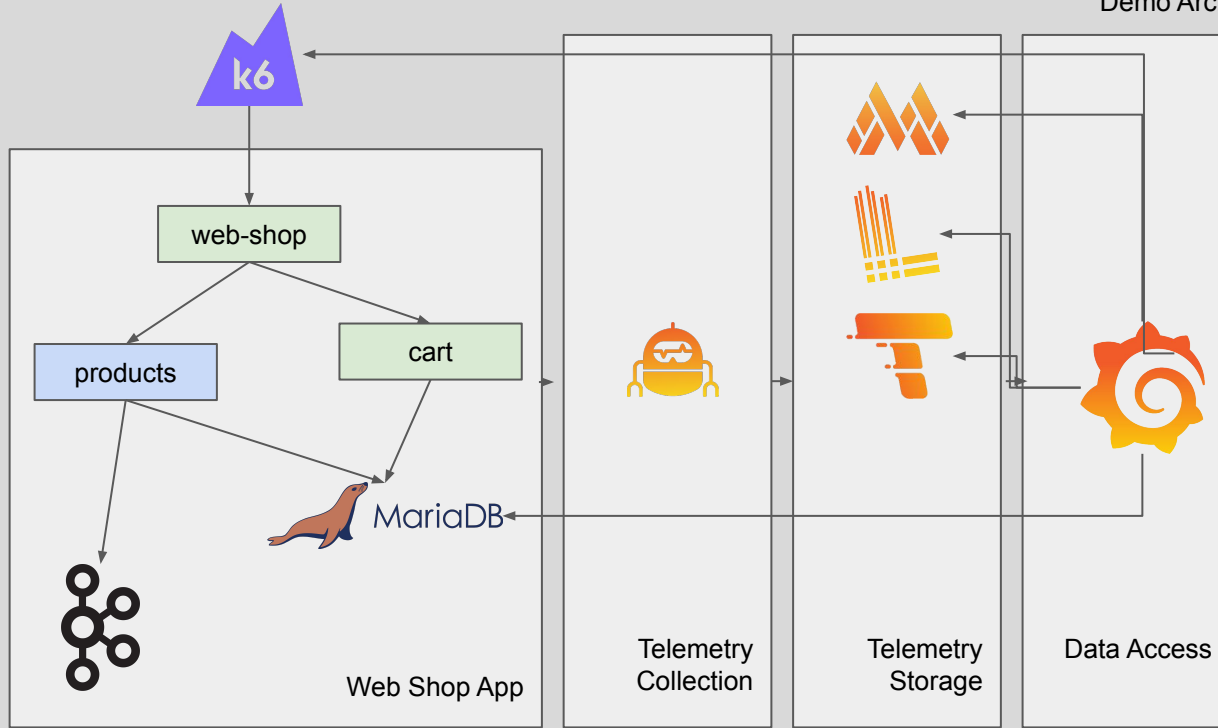
Employ **100%** of
the k6 team
members, including
project founders



DEMO time



Demo Architecture



xk6-extensions



xk6



Layers of the k6



k6

JAVASCRIPT

GOJA

xk6 EXTENSIONS

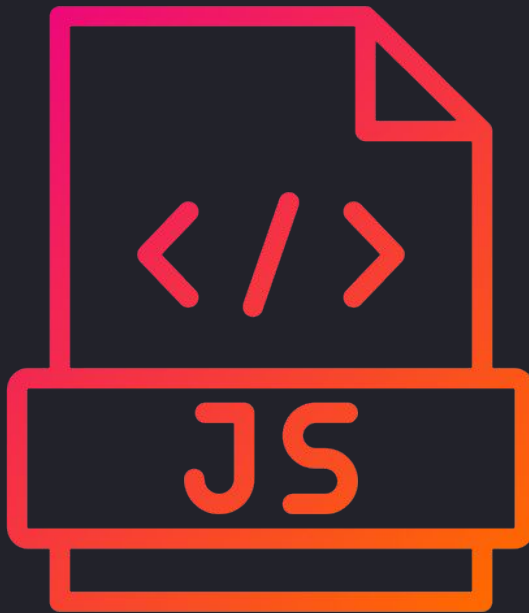
k6 core (GOLANG)



"Although it's easy to get started with k6 all on its own, it really shines with its ease of integration into a developer ecosystem." Thoughtworks

Extension use cases

- Adding support for a new network protocol.
- Incorporating a client library for test dependency.
- Enhancing existing functionality for specialized requirements.
- Improving script performance and efficiency.
- Experimental.



k6 extension ecosystem

Protocols

SQL, Kafka,
ZeroMQ,
Redis,
RabbitMQ,
Avro, MQTT

Output

Prometheus
Remote Write,
Kafka, Loki,
InfluxDB,
Dynatrace,
TimescaleDB

Testing

browser
testing, chaos
testing

Framework

Kubernetes,
Chai assertion
library, k6
Operator for
distributed load
testing within
k8s



k6/experimental/*



Let's create our
first extension!



DEMO time!



Danke!
Q&A

