Performance Testing gRPC Services

Mostafa Moradian, SSWE

gRPC Community Meetup - May '22

Who am I?

- Mostafa Moradian
- Over 10 years of experience in SWE and security
- Senior Software Engineer & Security Lead at Grafana k6
  - Been with the company for 3 years now
- Python, Go, JS, or whatever I feel like using to get the job done
- Still learning

Twitter: @MosiMoradian

GitHub: @mostafa

Website: https://mostafa.dev

Table of Contents

- What is Performance Testing?

- What is k6?

- Demo Time

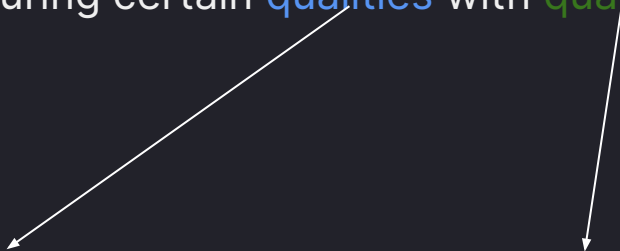- k6 Features

- gRPC in k6

- Demo Time

- Q/A

What is performance testing?

Testing a system to see how it performs and behaves under various conditions (usually under load) to fulfill non-functional requirements

What is performance testing?

Measuring certain qualities with quantities

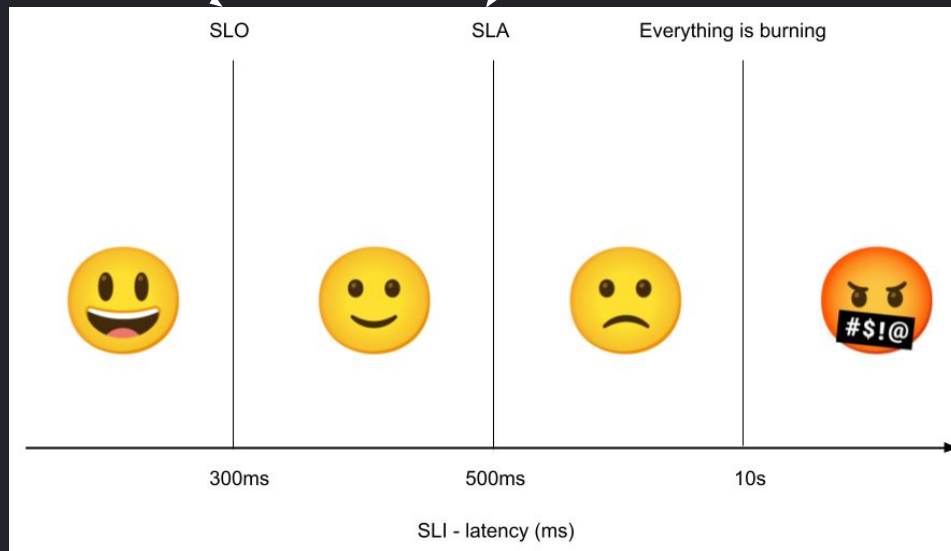Measuring reliability with latency, response time and failure rate, etc.

It's all about SLIs, SLOs & SLAs

What is k6?

- A modern reliability testing tool for developer happiness
- Written in Go, scriptable with JavaScript
- Developer-centric:
  - Easy to use interfaces and APIs
  - Integrable with CIs, monitoring tools, etc.
  - Supports ES2015/ES6 JS syntax
  - Extensible using in Go via xk6
  - Extensive documentation
- AGPL-licensed

- Use cases:
  - Load testing
  - Performance and synthetic monitoring
  - Chaos and reliability testing
- Built-in support for:
  - HTTP/1.1 and HTTP/2
  - WebSockets
  - gRPC
- Can run bundled JS modules, but:
  - No support for Node.JS and Browser APIs

DEMO TIME

k6 features

- Test lifecycle

- Metrics

- Checks

- Thresholds

- Modules

- Tags and Groups

- Scenarios

- Environment variables

- Execution context variables

gRPC in k6

- Only unary requests are supported for now

- Event loop is added in v0.37.0 ⇒ v0.38.3

- Issue #2020 (Support gRPC streaming)

DEMO TIME

```
checks.................: 100.00% ✓ 5108        ✗ 0
data_received..........: 30 MB    1.8 MB/s
data_sent..............: 3.5 MB   218 kB/s
grpc_req_duration......: avg=235.88ms min=92.64ms med=147.81ms max=7.02s  p(90)=617.3ms p(95)=766.68ms
iteration_duration.....: avg=2.13s    min=1.48s   med=1.77s    max=16.22s p(90)=3.07s   p(95)=3.5s
iterations.............: 5109     313.44178/s
vus....................: 6        min=6       max=1000
vus_max................: 1000     min=1000    max=1000
```

Thanks for listening! 😊

Questions?