Styx

Exporting Data from Prometheus, for Science!

About me

Matthias Loibl

- I am software developer and computer science student at **TU Berlin**
- Employee at **JustWatch** (SRE, Go)
- I love working on Distributed Systems with **Go**, **Docker**, **Kubernetes**, and **Prometheus**
- Creator of **gopass**

Why do we need Styx?

What is pluto?

- IMAP server on **planetary-scale**, research prototype at TU Berlin
- **Synchronize** mailbox state across replicas world-wide
- Consistency via Conflict-free Replicated Data Types (CRDTs)
- Write a paper

How we run pluto

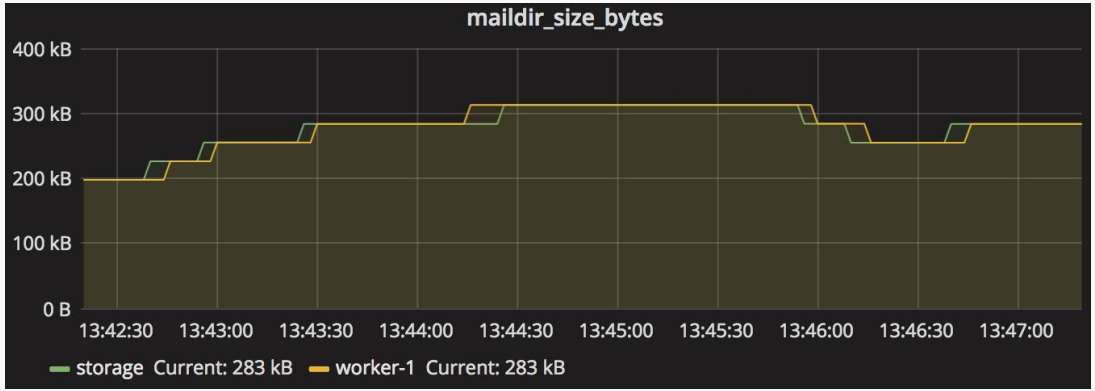
- Running on federated Kubernetes clusters in EU & US
- Each cluster is running its own Prometheus
  - Metrics tell us how fast we're consistent

Why Prometheus?

- Prometheus awesome for insights to our software
  - pluto is written in Go → easy to integrate metrics
- Monitor our infrastructure
- View graphs with grafana in real time

Why not just Grafana? Why Styx?

- Screenshots aren't professional for scientific papers
- Export the data from Prometheus as a backup
- Edit the graphs in a friendly manner later on → gnuplot & matplotlib



Styx

- Written in Go, thus single binary
  - `go get github.com/go-pluto/styx`
- Optional dependencies
  - gnuplot
  - matplotlib
- Talks to Prometheus via API endpoint `/api/v1/query_range`
- Styx is also one of the pluto moons, thus the name

CSV

```
$ styx 'go_goroutines'
$ styx --duration 5m 'go_goroutines'
$ styx --prometheus http://prom.example.com 'go_goroutines'
```

Exports simple .csv file to further utilization in Excel, Google Spreadsheet…

gnuplot

- Code Generation!
- Generate a `.gnuplot` file with all gnuplot commands and the data.
  - Self contained and reproducible graphs outside of Prometheus

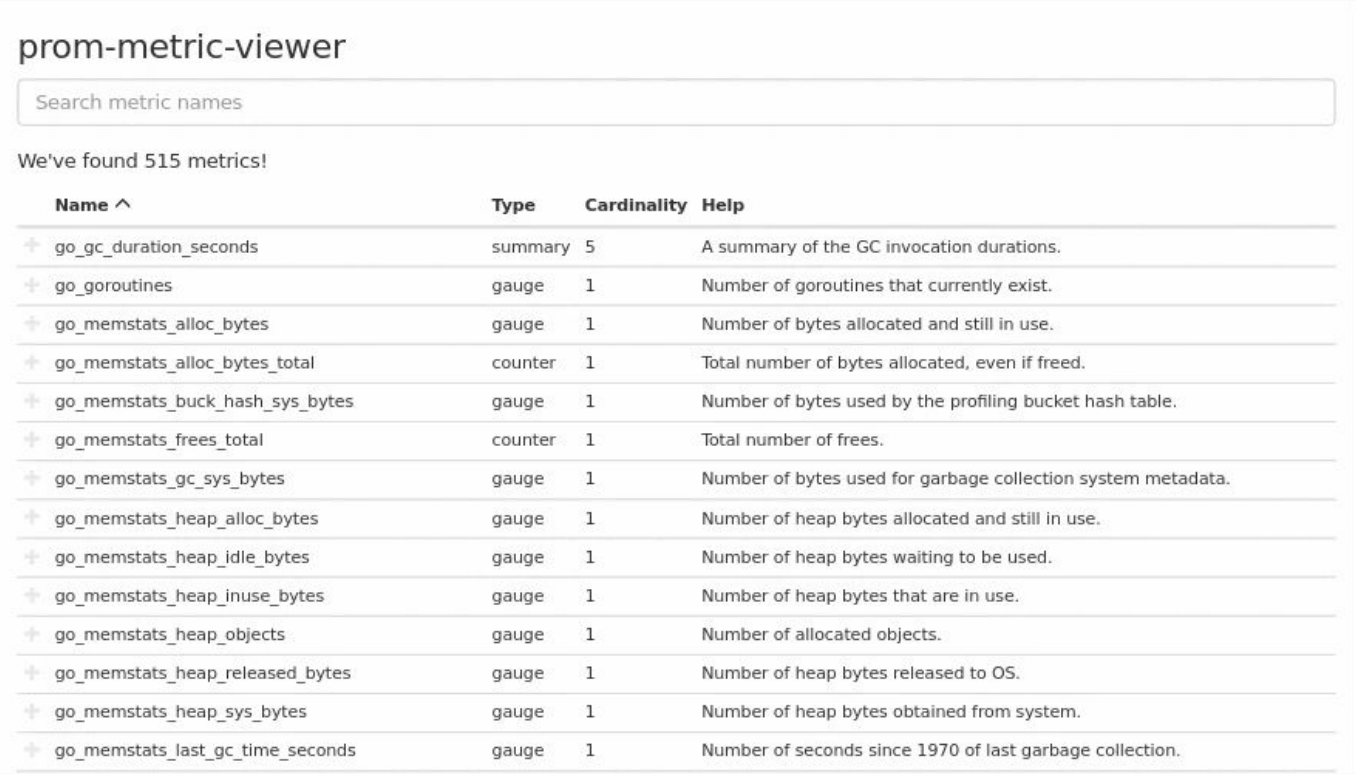
matplotlib

- Code Generation!
- Generate a `.py` file with all matplotlib commands and the data.
  - Self contained and reproducible graphs outside of Prometheus

DEMO

More Prometheus Tools

Prom-Metric-Viewer



Name ^	Type	Cardinality	Help
go_gc_duration_seconds	summary	5	A summary of the GC invocation durations.
go_goroutines	gauge	1	Number of goroutines that currently exist.
go_memstats_alloc_bytes	gauge	1	Number of bytes allocated and still in use.
go_memstats_alloc_bytes_total	counter	1	Total number of bytes allocated, even if freed.
go_memstats_buck_hash_sys_bytes	gauge	1	Number of bytes used by the profiling bucket hash table.
go_memstats_frees_total	counter	1	Total number of frees.
go_memstats_gc_sys_bytes	gauge	1	Number of bytes used for garbage collection system metadata.
go_memstats_heap_alloc_bytes	gauge	1	Number of heap bytes allocated and still in use.
go_memstats_heap_idle_bytes	gauge	1	Number of heap bytes waiting to be used.
go_memstats_heap_inuse_bytes	gauge	1	Number of heap bytes that are in use.
go_memstats_heap_objects	gauge	1	Number of allocated objects.
go_memstats_heap_released_bytes	gauge	1	Number of heap bytes released to OS.
go_memstats_heap_sys_bytes	gauge	1	Number of heap bytes obtained from system.
go_memstats_last_gc_time_seconds	gauge	1	Number of seconds since 1970 of last garbage collection.

https://github.com/metalmatze/prom-metric-viewer

Exporters

- justwatchcom/elasticsearch_exporter
- justwatchcom/sql_exporter
- metalmatze/digitalocean_exporter
- metalmatze/githubql_exporter
- metalmatze/transmission-exporter

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Thanks

github.com/go-pluto/styx