

Prometheus Deep Dive

Monitoring. At scale.

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Who are we?

- Richard "RichiH" Hartmann
 - Swiss army chainsaw at SpaceNet
 - Project lead for building one of the most modern datacenters in Europe
 - Debian Developer
 - FOSDEM, DebConf, DENOGx, PromCon staff
- Ben "SuperQ" Kochie
 - Staff engineer at GitLab
 - Bit plumber
 - Retired SRE
 - FOSDEM infrastructure, PromCon staff

Show of hands

- Who has heard of Prometheus?
- Who is considering to use Prometheus?
- Who is POCing Prometheus?
- Who uses Prometheus in production?

Prometheus 101

- Inspired by Google's Borgmon
- Time series database
- int64 timestamp, float64 value
- Ecosystem of instrumentation & exporters
- Not for events
 - Logging
 - Tracing (more on that later)
 - etc.
- Dashboarding via Grafana

Main selling points

- Highly dynamic, built-in service discovery
- No hierarchical model, n-dimensional label set
- PromQL: for processing, graphing, alerting, and export
- Simple operation
- Highly efficient

Cloudy with a chance of buzzwords

- So it's built with highly dynamic environments in mind
- It's the second project to ever join CNCF and the de facto standard in cloud-native monitoring
- Kubelets, sidecars, microservices, ALL the cloud-native
- But it's a monolithic application
- ...why?

Resilience, resilience, and also resilience

- What do you need for operations?
 - Power and cooling
 - Network connectivity
 - Observability, a.k.a. Monitoring
- The rest you can fix

Three main features

- Storage backend
 - Caveat: Prometheus 2.0 comes with storage v3
- Staleness handling
- Remote read & write API is now stable-ish
- Links to in-depth talks about these features are at the end

Prometheus 1.x

- We used to have one file per time series
- ..and one common index for all of time
- Relatively easy to implement
- Pretty efficient
- Why change?

Churn

- Churn was becoming more and more of a problem
- There's a company with a 15 minute maximum lifetime for their containers
- If you have a lot of files which might contain data for any given time frame, you need to look at all of them