


Monitoring networks with Prometheus

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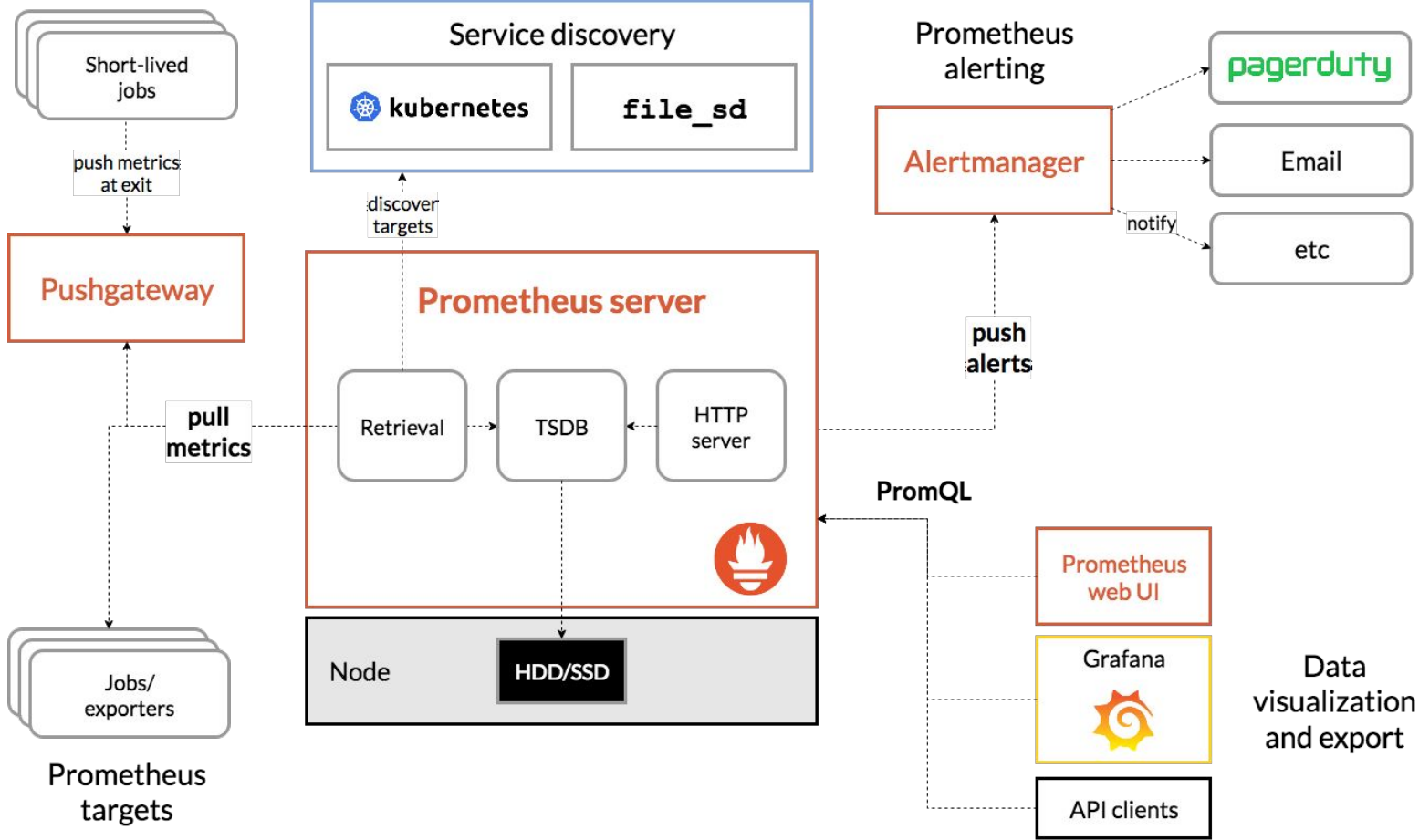
Who am I?

- I'm Štefan Šafár
 - CDN Engineer @ Showmax
 - We deliver tens of Gbit/s
 - Prometheus user since 2015
 - Used to do security, networks and cloud infrastructure
 - Usually based in Prague



Contents

- What is Prometheus
- Why we use it
- Query examples & dashboards



What is Prometheus

- Time-series database
- Stores floating-point values every X seconds
- Raw data - no aggregation
- Powerful query language
- Can sum/average/add/multiply any data
- Labels allow you to slice the data
- Exporters for different services (i.e. SNMP)

Why Prometheus

- Cloud-native monitoring
- Integrates very well with the rest of our stack
- Ops use it already - one system to rule them all
- It allows you to do more stuff more easily
- Everything else* sucks

* that I know of

PromQL Examples

- `arista_port_outOctets{description=~".*NAP.*"}`
- `rate(arista_port_outOctets{description=~".*NAP.*"}[3m])`
- `rate(arista_port_outOctets{description=~".*NAP.*"}[3m])*8`
- `sum(rate(arista_port_outOctets{description=~".*NAP.*"}[3m])*8)`
- `arista_port_outOctets{mtu!="1500"}`
- `(arista_tcam_used / arista_tcam_total)*100`

PromQL Examples

- `sum(rate(arista_port_outOctets{description=~".*NAP.*"}[3m]))*8 - sum(rate(arista_port_outOctets{description=~".*NAP.*"}[3m] offset 1d))*8`
- `arista_sfp_alarms`
- `arista_sfp_alarms AND ON (device, instance) arista_admin_up == 0`

PromQL Examples

- `quantile_over_time(0.99,rate(ifHCOutOctets{ifAlias="600_P2P-CRESTA-OFFICE"}[3m])[1h:])*8`
- `quantile_over_time(0.95,rate(ifHCOutOctets{ifAlias=~".*OPTINET.*"}[3m])[1w:])*8`
- `quantile_over_time(0.95,sum by (instance)(rate(ifHCOutOctets{ifAlias=~".*OPTINET.*"}[3m]))[1w:])*8`

PromQL Examples

- $(\text{arista_tcam_used} / \text{arista_tcam_total}) * 100$
- $\text{irate}(\text{arista_port_inOctets}[5\text{m}]) / \text{irate}(\text{arista_port_inUcastPkts}[5\text{m}]) < 2000$
- $\text{arista_admin_up} \neq \text{arista_l2_up}$
- $\text{arista_sfp_stats}\{\text{sensor}=\text{"rxPower"}\}$
- $\text{arista_sfp_stats}\{\text{sensor}=\text{"rxPower"}\} \text{ AND on}(\text{device}, \text{instance}) (\text{arista_admin_up} == 1)$

Grafana dashboards

- <https://grafana.showmax.cc/d/vvJS0dkWk/sfp-inventory?orgId=1>
- <https://grafana.showmax.cc/d/OZmQd16ik/bgp-status?orgId=1>
- <https://grafana.showmax.cc/d/kduYH-DWz/sfp-receive-power?orgId=1>

Summary

- SNMP sucks
- Prometheus is awesome
- Grafana is awesome
- You are awesome

THANK YOU!

Get in touch!

Štefan Šafár



Additional links

- Data source for most of the queries used in Examples:
<https://github.com/Showmax/arista-eos-exporter>
- Blogpost about Prometheus
<https://tech.showmax.com/2019/10/prometheus-introduction/>