the cloud runners factory

Bootstrapping a multi-DC Observability Stack

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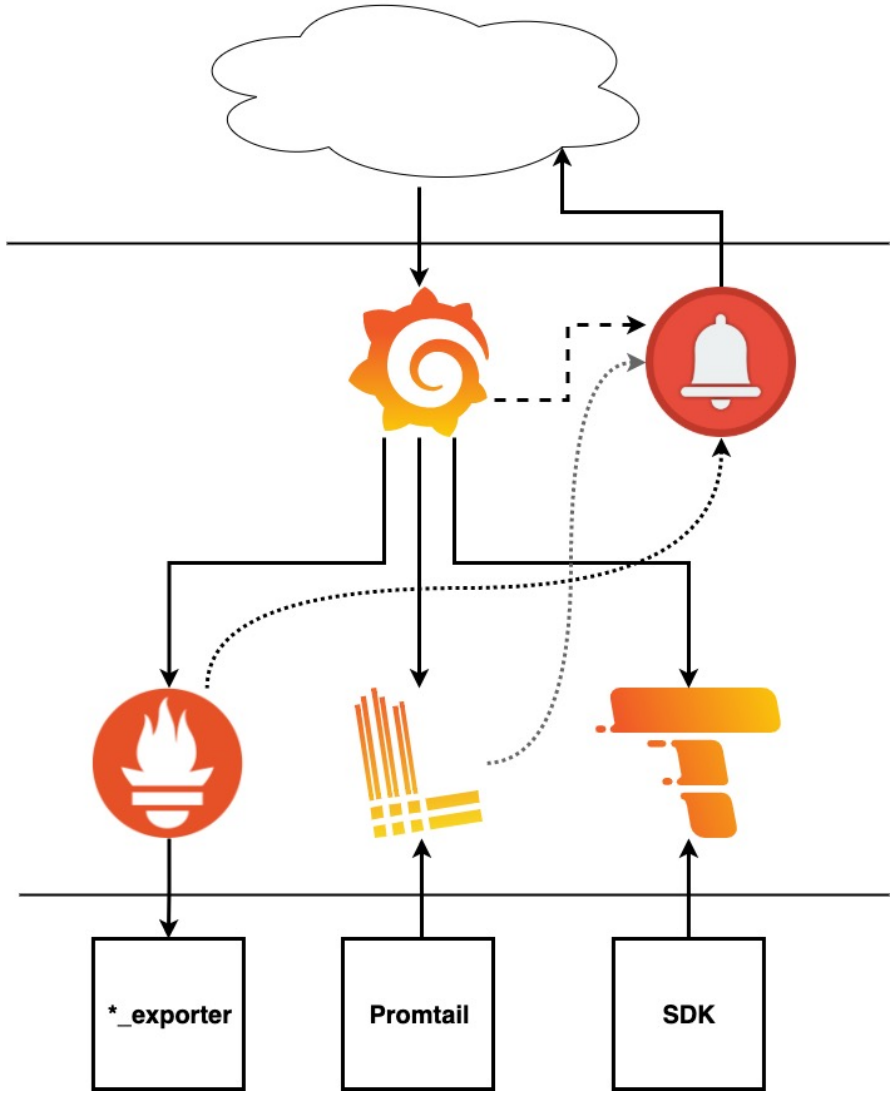
$ whoami

- Used to be a Molecular Biologist
- Then became a Dev
- Now an Ops
- Currently Cloud Engineer @ The Factory

Observability (o11y) Stack



Metrics

https://prometheus.io/

Prometheus Configuration

```
global:
  scrape_interval: 10s
scrape_configs:
  - job_name: node
    static_configs:
    - targets:
        - localhost:9100
        - localhost:3100
        - localhost:3200
```

PromQL

```
http_requests_total{job=”nginx", handler="/grafana"}[5m]
sum by (job) ( rate(http_requests_total[5m]) )
```

https://prometheus.io/docs/prometheus/latest/querying/basics/

Logs

https://grafana.com/oss/loki/

Loki Configuration

Loki

```
auth_enabled: false
server:
  http_listen_port: 3100
common:
  path_prefix: /tmp/loki
  storage:
    filesystem:
      chunks_directory: /tmp/loki/chunks
      rules_directory: /tmp/loki/rules
  replication_factor: 1
schema_config:
  configs:
    - ...
ruler:
  alertmanager_url: http://localhost:9093
```

promtail

```
server:
  http_listen_port: 9080
  grpc_listen_port: 0
clients:
- url: http://192.168.56.40:3100/loki/api/v1/push
positions:
  filename: "/tmp/positions.yaml"
scrape_configs:
- job_name: system_secure
  static_configs:
  - targets:
    - localhost
    labels:
      job: var_log_secure
      host: dc1.observability.vagrant
      __path__: "/var/log/secure"
```

LogQL

```
{job="mysql"} |= "error”
{job="mysql"} |= "error" != "timeout"
```

https://grafana.com/docs/loki/latest/logql/

Traces

https://grafana.com/oss/tempo/

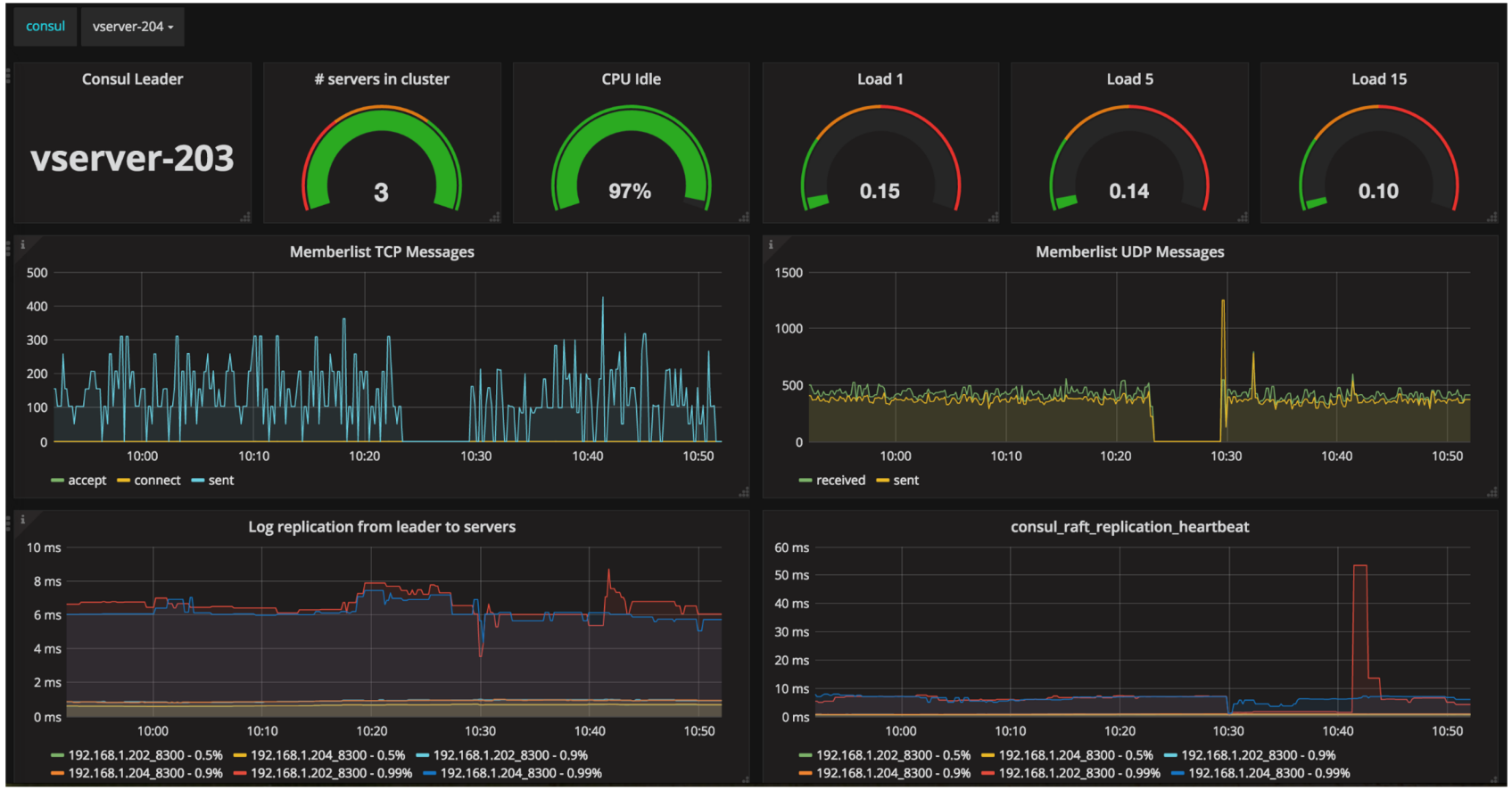
Tempo Configuration

```
---
distributor:
  receivers:
    jaeger:
      protocols:
        thrift_http:
        grpc:
        thrift_binary:
        thrift_compact:
    zipkin:
```

Dashboards

https://grafana.com/oss/grafana/

Dashboards

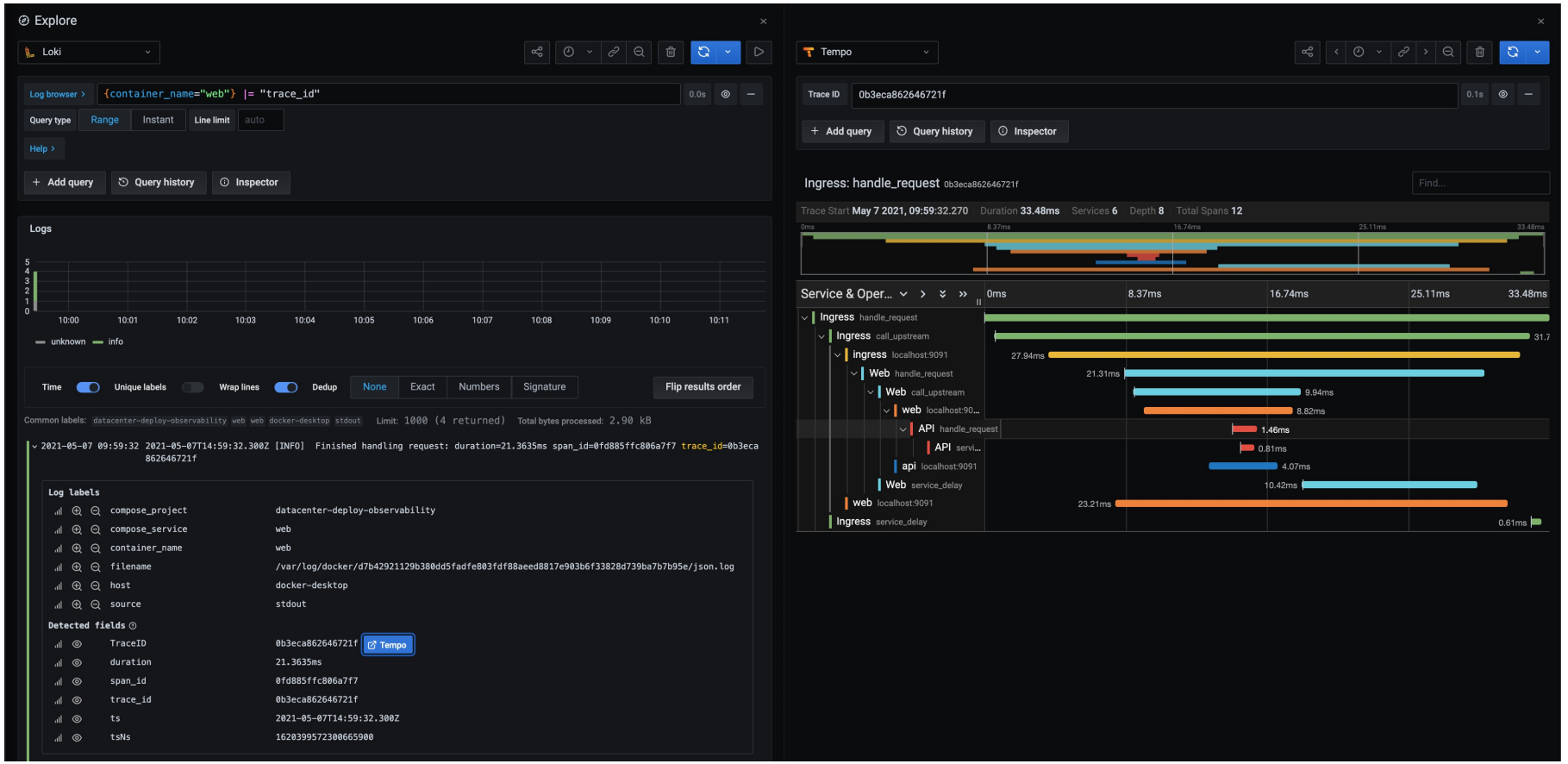


https://grafana.com/grafana/dashboards
https://github.com/grafana/grizzly

Data Sources

```
- name: Loki
  type: loki
  access: proxy
  orgId: 1
  url: http://192.168.56.40:3100
  basicAuth: false
  isDefault: false
  version: 1
  editable: false
  apiVersion: 1
  jsonData:
    derivedFields:
      - datasourceUid: tempo
        matcherRegex: (?:traceID|trace_id)=(\w+)
        name: TraceID
        url: $${__value.raw}
```

Exploratory Usage



Alerts / Alertmanager

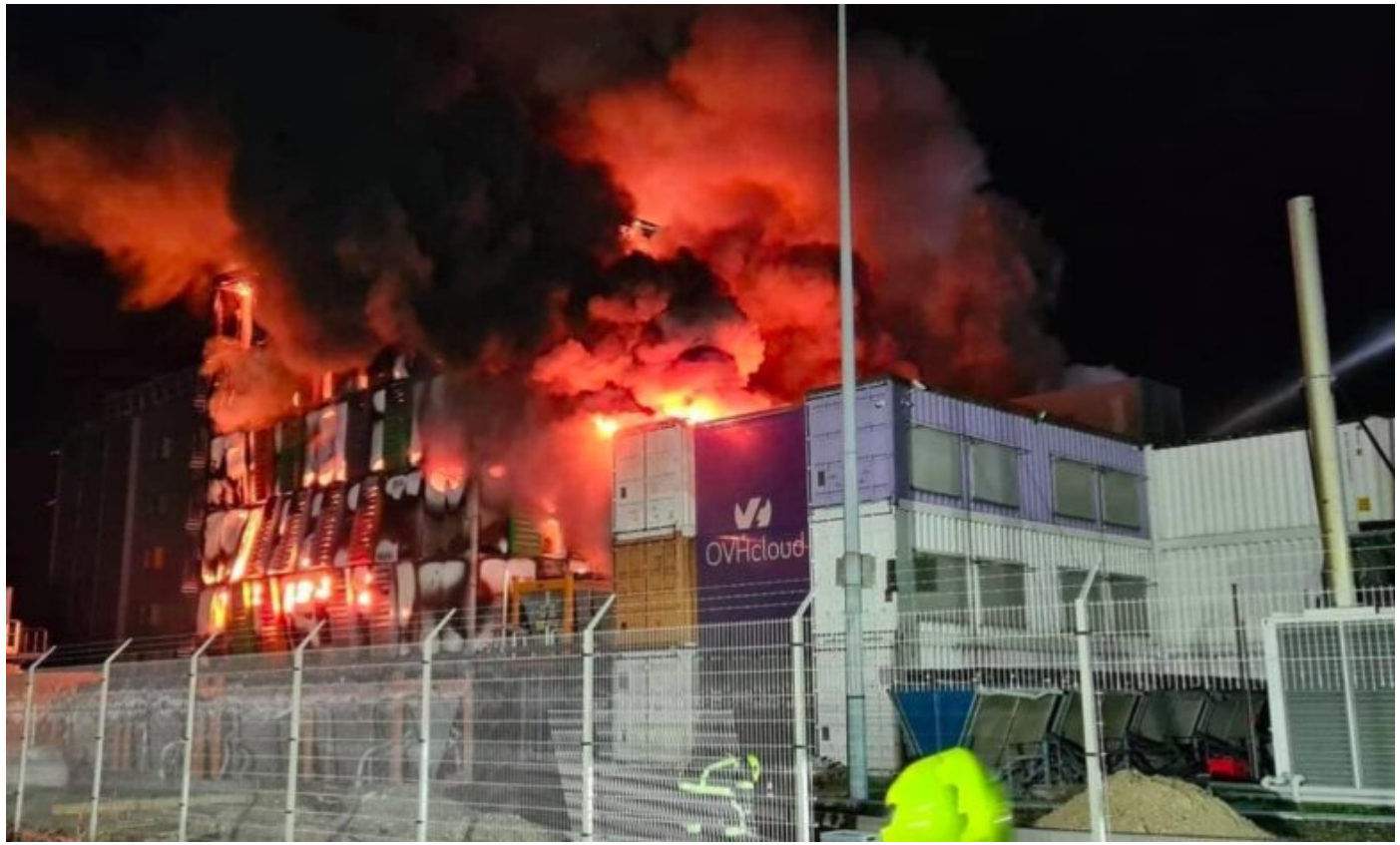
https://github.com/prometheus/alertmanager

Alerts are queries too

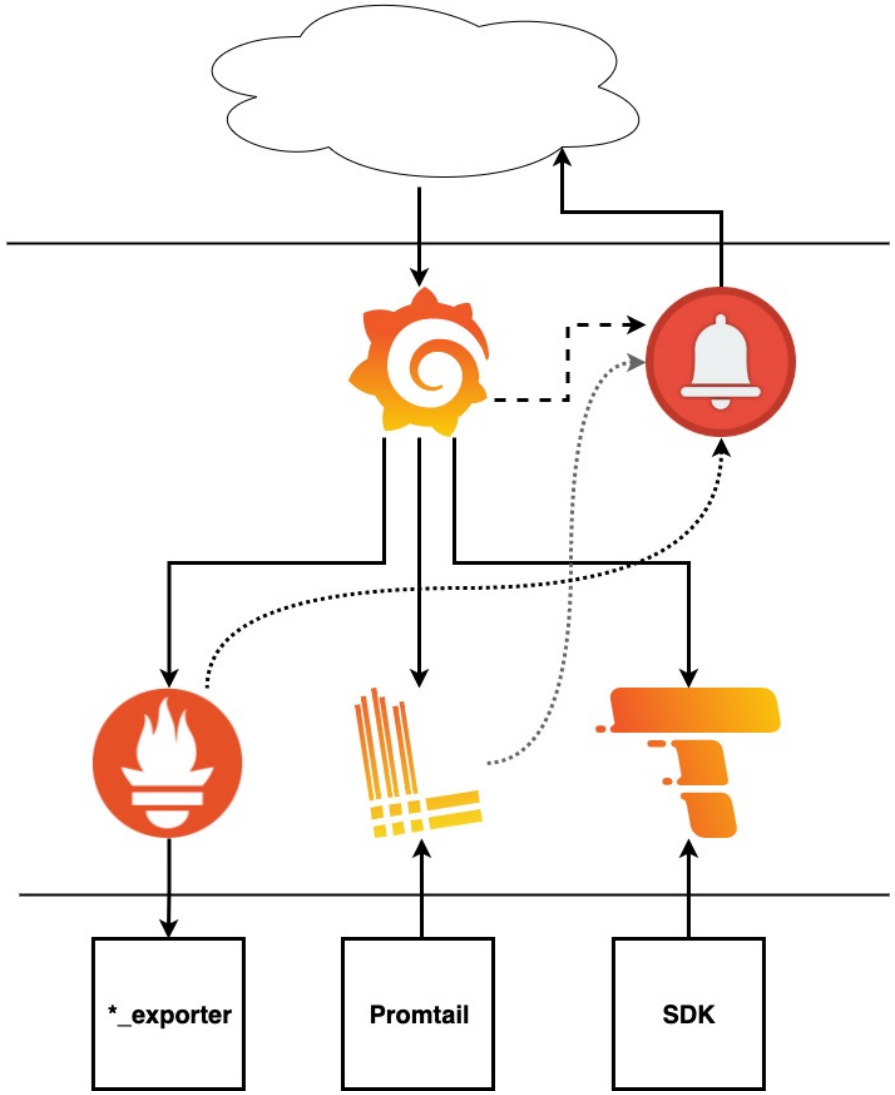
```
- alert: PrometheusJobMissing
  expr: absent(up{job="prometheus"})
  for: 0m
  labels:
    severity: warning
  annotations:
    summary: Prometheus job missing (instance {{ $labels.instance }})
    description: "A Prometheus job has disappeared\n  VALUE = {{ $value }}\n  LABELS = {{ $labels }}"
```

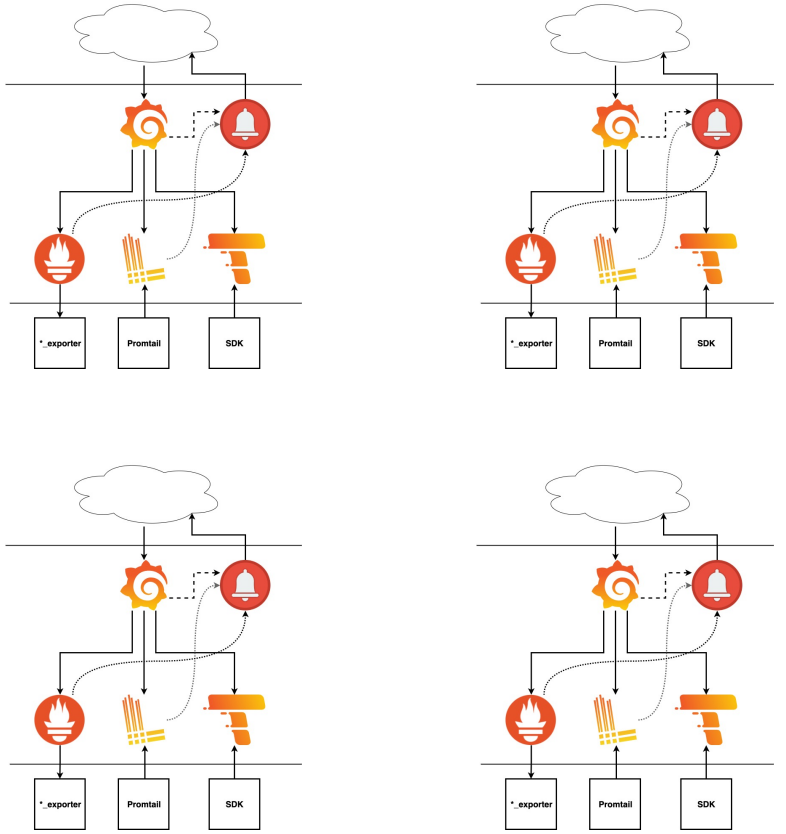
https://awesome-prometheus-alerts.grep.to/

Multi-DC Requirement?



Observability Stack HA ?





Consul

- Open-Source Service Discovery Tool
- Build-in KV store
- Service Mesh tool

https://www.consul.io/

Consul Services

```
$ curl http://127.0.0.1:8500/v1/query --request POST --data @- << EOF
{
"service":
        {
                "checks":[{"http":"http://localhost:3000","interval":"10s"}],
                "id":”grafana",
                "name":”grafana",
                "port":3000,
                "tags":["metrics"]
        }
}
```

dig @127.0.0.1 -p 8600 grafana.service.consul ANY

Consul Prepared Queries

```
$ curl http://127.0.0.1:8500/v1/query --request POST --data @- << EOF
{
  "Name": ”grafana",
  "Service": {
    "Service": ”grafana",
    "Failover": {
      "Datacenters": ["dc2"]
    }}}
EOF
```

dig @127.0.0.1 -p 8600 grafana.query.consul ANY

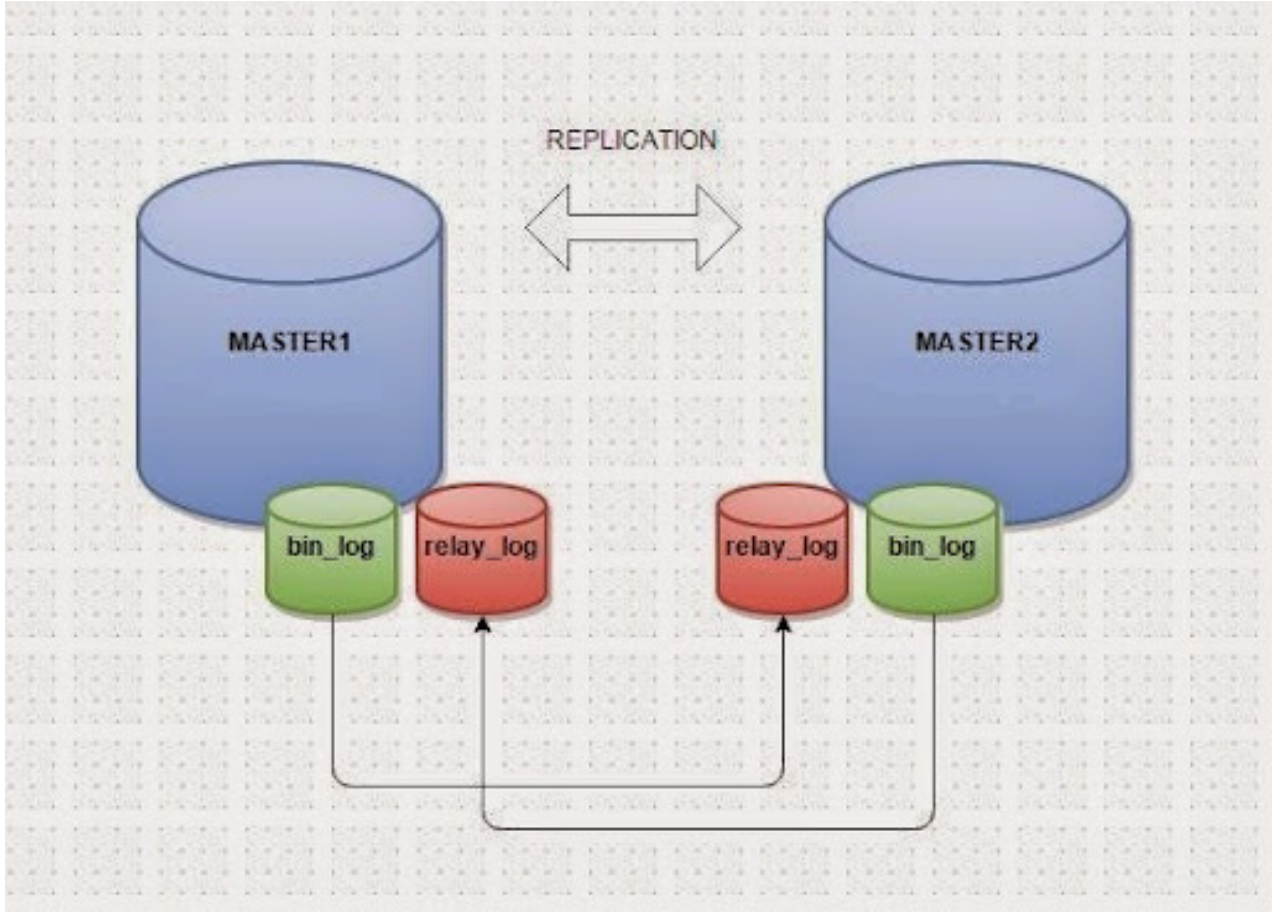
Grafana HA, nginx config

```
server {
  listen *:80;

  server_name      192.168.43.42 192.168.43.40;

  location / {
    proxy_pass     http://grafana.query.consul:3000;
```

Grafana HA, Mysql



Grafana HA, Data Sources

```
- name: Loki
  type: loki
  access: proxy
  orgId: 1
  url: http://192.168.56.40:3100
  basicAuth: false
  isDefault: false
  version: 1
  editable: false
  apiVersion: 1
  jsonData:
    derivedFields:
      - datasourceUid: tempo
        matcherRegex: (?:traceID|trace_id)=(\w+)
        name: TraceID
        url: $${__value.raw}
```

```
- name: Loki
  type: loki
  access: proxy
  orgId: 1
  url: http://loki.query.consul:3100
  basicAuth: false
  isDefault: false
  version: 1
  editable: false
  apiVersion: 1
  jsonData:
    derivedFields:
      - datasourceUid: tempo
        matcherRegex: (?:traceID|trace_id)=(\w+)
        name: TraceID
        url: $${__value.raw}
```

Prometheus/Metrics HA, Dynamic Scraping

```
global:
  scrape_interval: 10s
scrape_configs:
  - job_name: node
    static_configs:
      - targets:
        - localhost:9100
        - localhost:3100
        - localhost:3200
```

```
- job_name: DC1
  scrape_interval: 10s
  consul_sd_configs:
    - server: localhost:8500
      datacenter: dc1
      tags:
      - metrics
- job_name: DC2
....
```

Loki/Logs HA, Just ship it twice

---

clients:

- url: http://192.168.56.40:3100/loki/api/v1/push

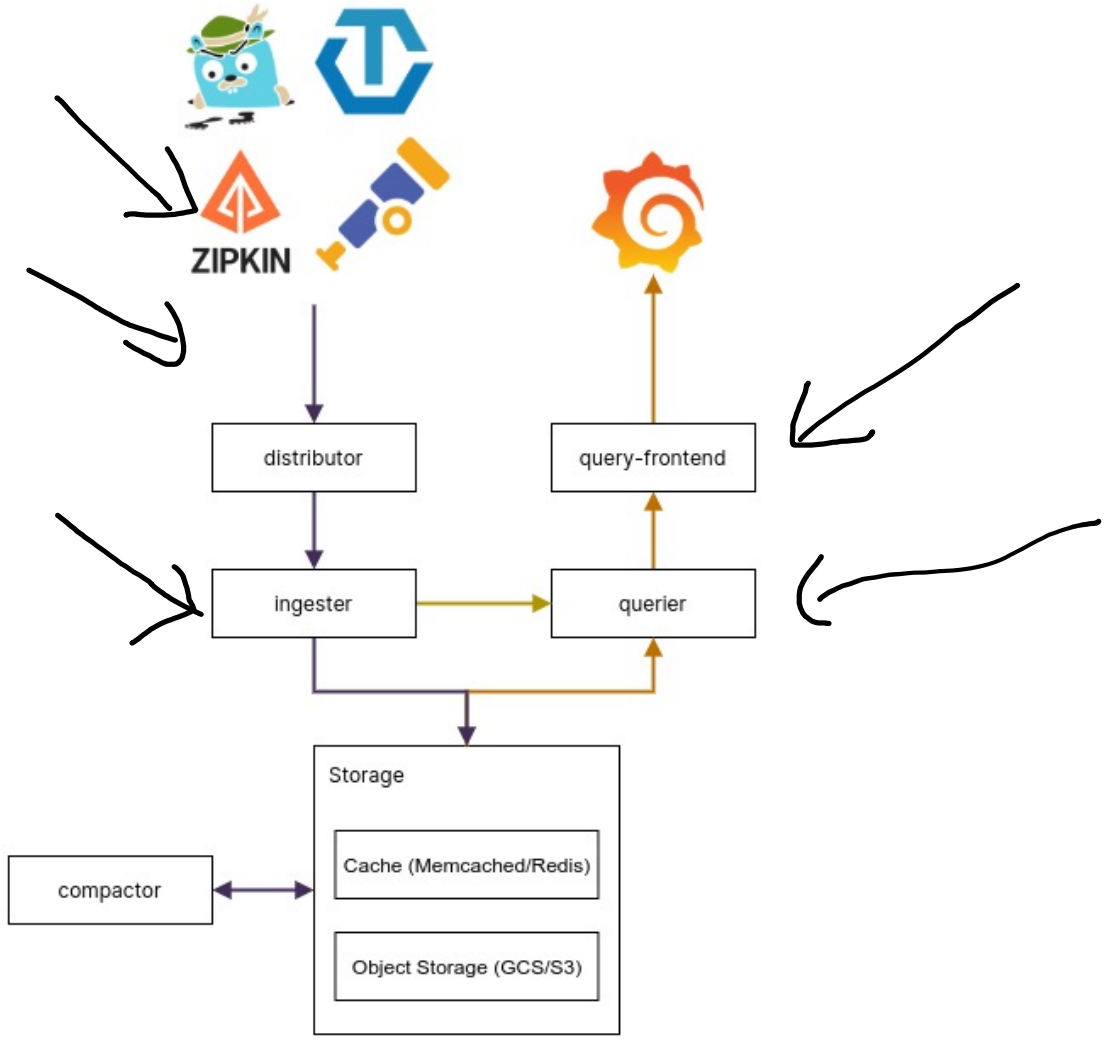
- url: http://192.168.56.41:3100/loki/api/v1/push

Tempo/Traces HA

Sending every trace twice?

Writing every trace twice?

Reading every trace twice?



Grafana Agent

Grafana Agent

https://grafana.com/docs/agent/

Tempo/Traces HA, Grafana Agent Config

```
---
tempo:
  configs:
  - name: default
    receivers:
      zipkin:
    remote_write:
    - endpoint: 192.168.56.41:55680 <--- will be port 4317 in 1.3
    - endpoint: 192.168.56.40:55680 <--- will be port 4317 in 1.3
```

https://grafana.com/docs/agent/

Tempo/Traces HA, Updated Config

```
---
distributor:
  receivers:
    zipkin:
```

```
---
distributor:
  receivers:
    otlp:
      protocols:
        grpc:
```

Alertmanager/Alerts HA

systemd

[Unit]

ExecStart=/usr/local/bin/alertmanager \

--config.file=/etc/alertmanager/alertmanager.yaml \

--storage.path=/var/lib/alertmanager \

--cluster.advertise-

address=192.168.56.40:9094 \

--cluster.peer=192.168.56.41:9094

prometheus

alerting:

alertmanagers:

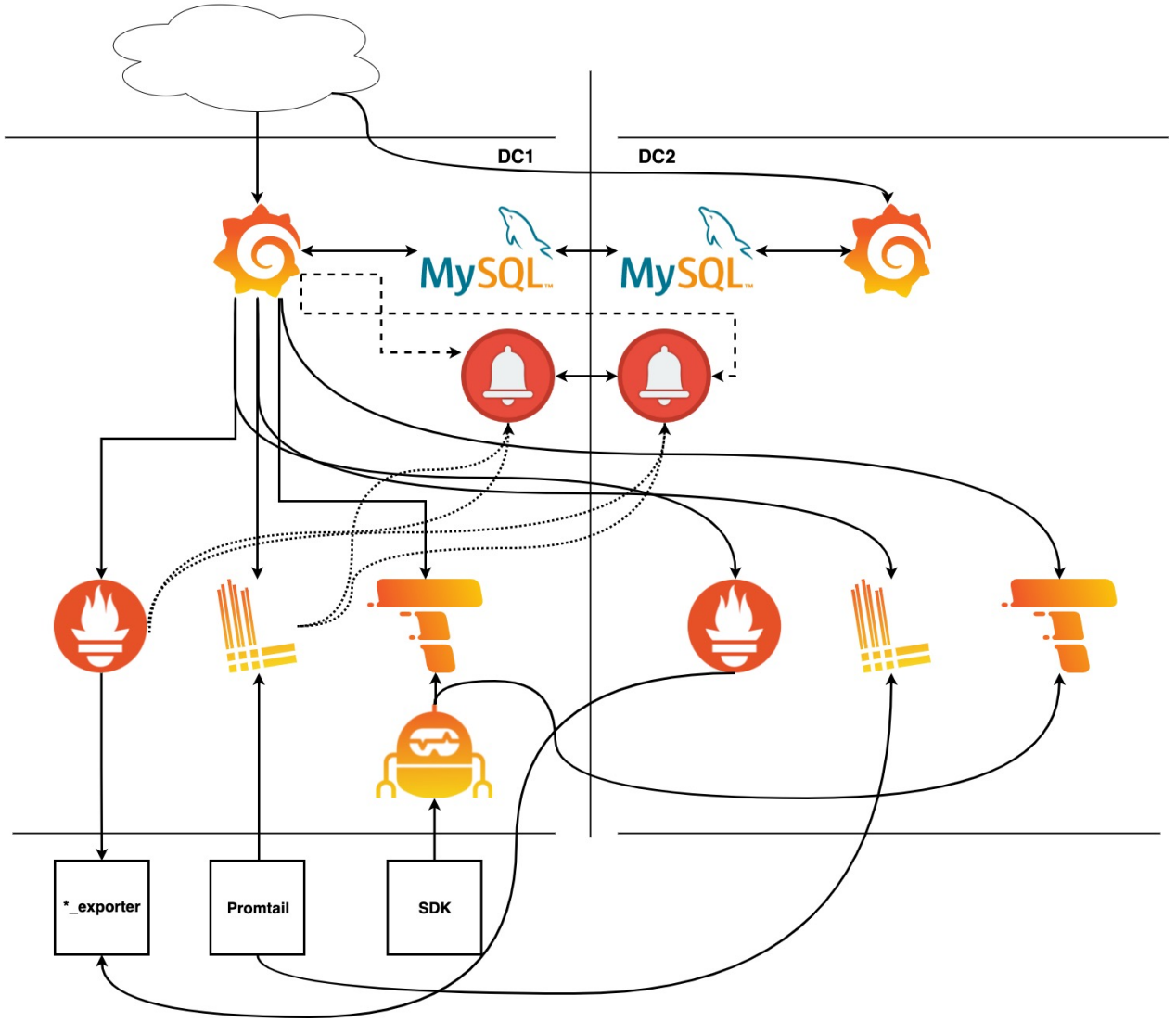
- static_configs:

  - targets:

  - 192.168.56.40:9093

  - 192.168.56.41:9093

Observability Stack HA QED



Contact

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https://www.slideshare.net/attachmentgenie

https://github.com/attachmentgenie/vagrant-observability

The Floor is yours...

Questions ?