

Application Monitoring with Prometheus

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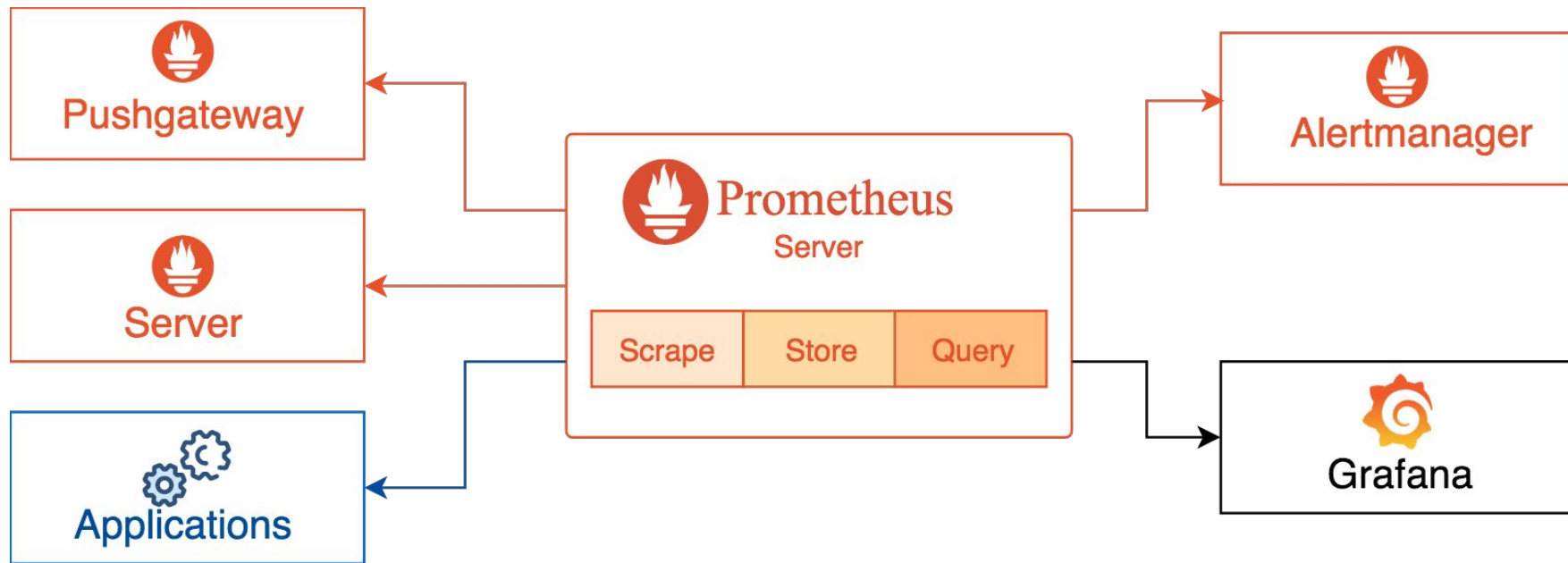
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Monitoring

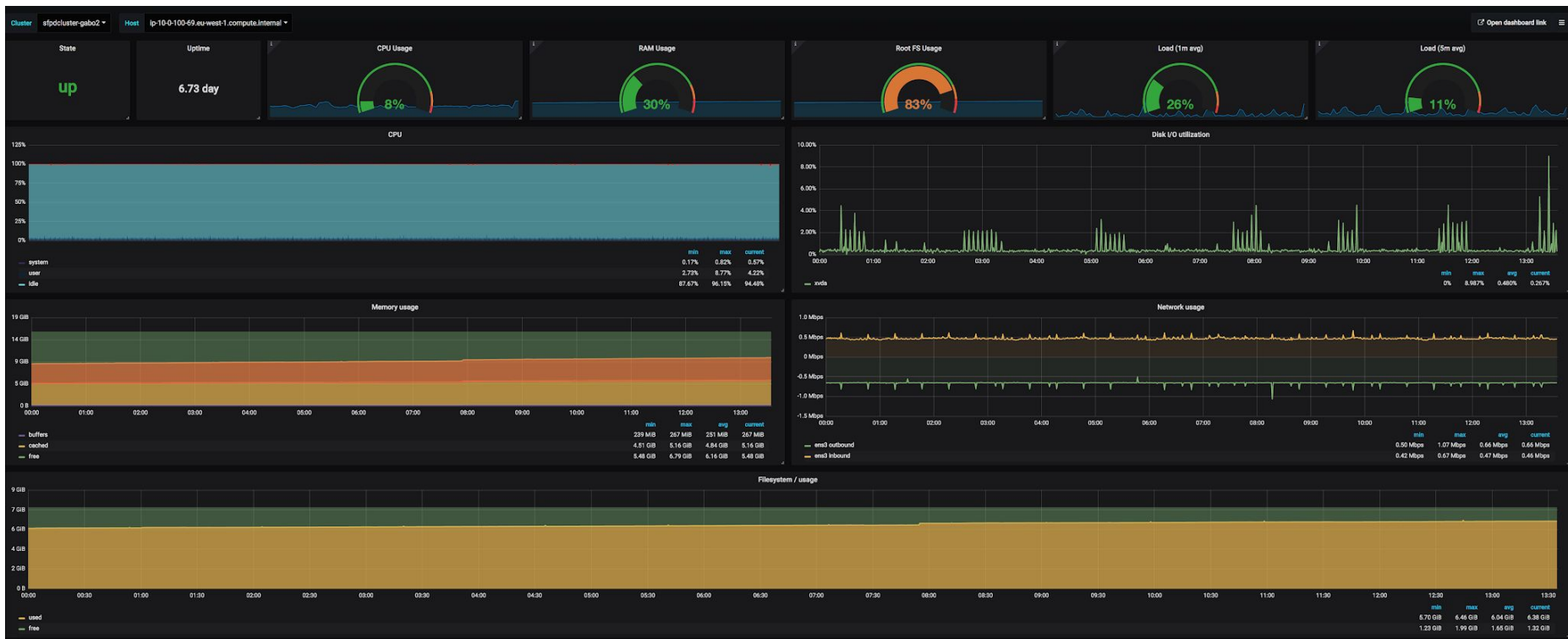
- “Observe and check the progress or quality of (something) over a period of time”
- Several solution (maybe too many?)



Prometheus architecture

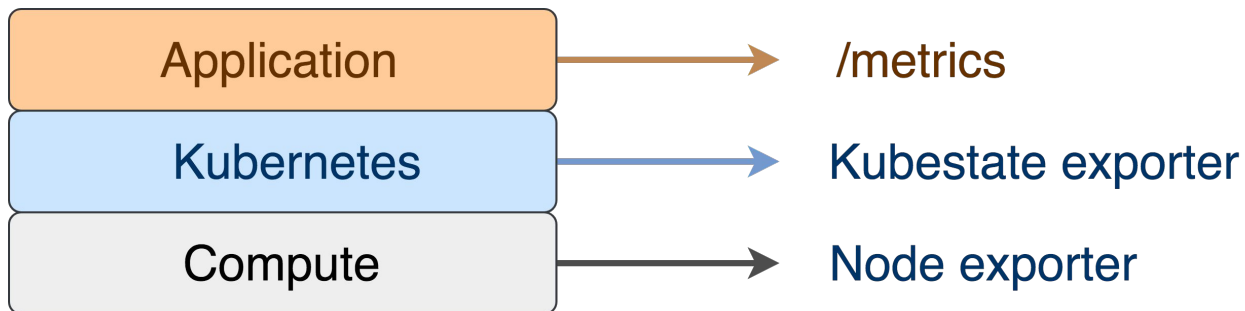


Monitoring the Kubernetes stack



Monitoring the Kubernetes stack

- Problems root cause can be hidden in any layer
- Upper layers means less & less best-practice



Prometheus metric format

- Clear text format
- Time series with labels

```
# Server Requests
nginx_server_requests{code="1xx",host="domain.com"} 0

# Server Bytes
nginx_server_bytes{direction="in",host="domain.com"} 21

# Server Cache
nginx_server_cache{host="domain.com",status="hit"} 2
```

- Best practices
 - Keep constant number of labels
 - Use Prometheus' metric naming conventions

Prometheus Query Language

- Easy to use
- Lot of predefined functions and operators

```
# Total http requests with status like 4xx
```

```
http_requests_total{status!~"4.."}
```

```
# Total http requests per second (all status codes)
```

```
rate(http_requests_total[5m])
```

```
# The number of running instance by application label
```

```
count(instance_cpu_time_ns) by (app)
```

Application monitoring

→ Green field applications

- Easy to start with prometheus libs
- Several out of box implementation (web frameworks etc...)

→ Legacy applications

- Can be troublesome
- Custom format, custom protocols
- Bridge exporters (transforming formats)
- Relabel

Prometheus Relabel

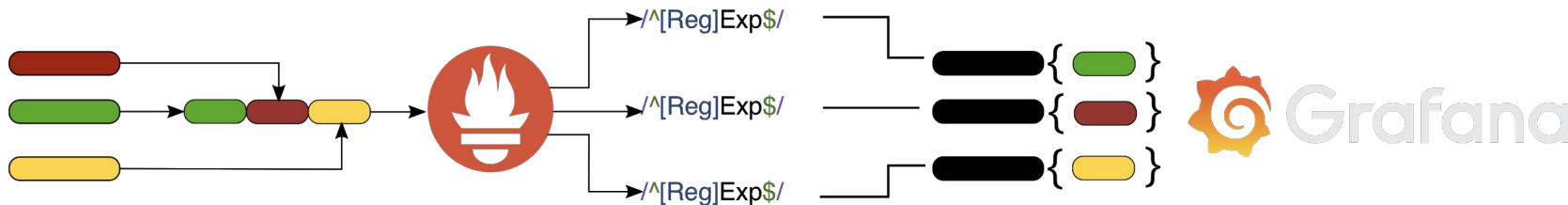
- Prometheus offers simple yet powerful metric transformation
- Allow to rewrite Names and Labels
- Utilise regular expressions for patterns

```
- source_labels: [__oldname__]  
  regex: '(?P<spark_app_name>\w[^\_]+)_(?P<interpreter_group_id>\w[^\_]+)'  
  replacement: '${spark_app_name}'  
  target_label: spark_app_name
```

Prometheus Relabel

HELP ...

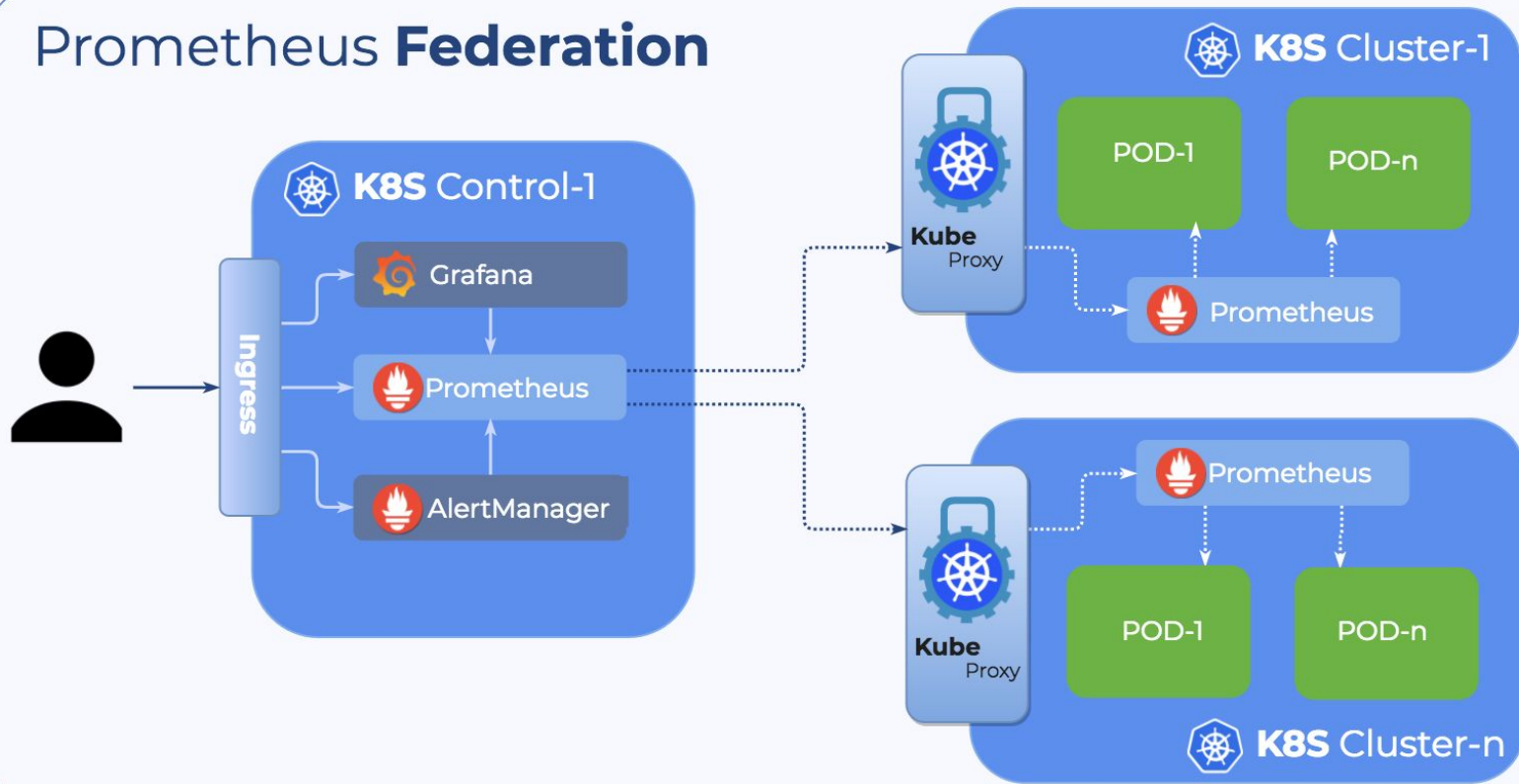
TYPE spark_79ef988408c14743af0bccd2d404e791_1_executor_filesystem_file_read_bytes gauge
spark_79ef988408c14743af0bccd2d404e791_1_executor_filesystem_file_read_bytes{instance="10.40.0.3",job="spark-79ef988408c14743af0bccd2d404e791",number="1",role="executor"} 0 1519224695487



executor_filesystem_file_read_bytes{instance="10.40.0.3",job="spark-79ef988408c14743af0bccd2d404e791",number="1",role="executor"} 0 1519224695487

Prometheus Federation

Prometheus Federation



What is Prometheus NOT

→ Not a long term / archive storage

- Federation
- Several custom solution like archive to Elasticsearch

→ Not a tracing solution

- OpenCensus - <https://opencensus.io/>
- OpenTracing - <http://opentracing.io/>
- Jaeger - <https://www.jaegertracing.io/>
- Loki (experimental Prometheus like tracing) - <https://github.com/weaveworks-experiments/loki>

Pipeline

A Next Generation **OpenShift** / **Heroku** / **Cloud Foundry** like PaaS on steroids.

A full managed runtime for enterprise software.



Pipeline



GitHub

<https://github.com/banzaicloud/pipeline>



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The Long awaited Long Term store

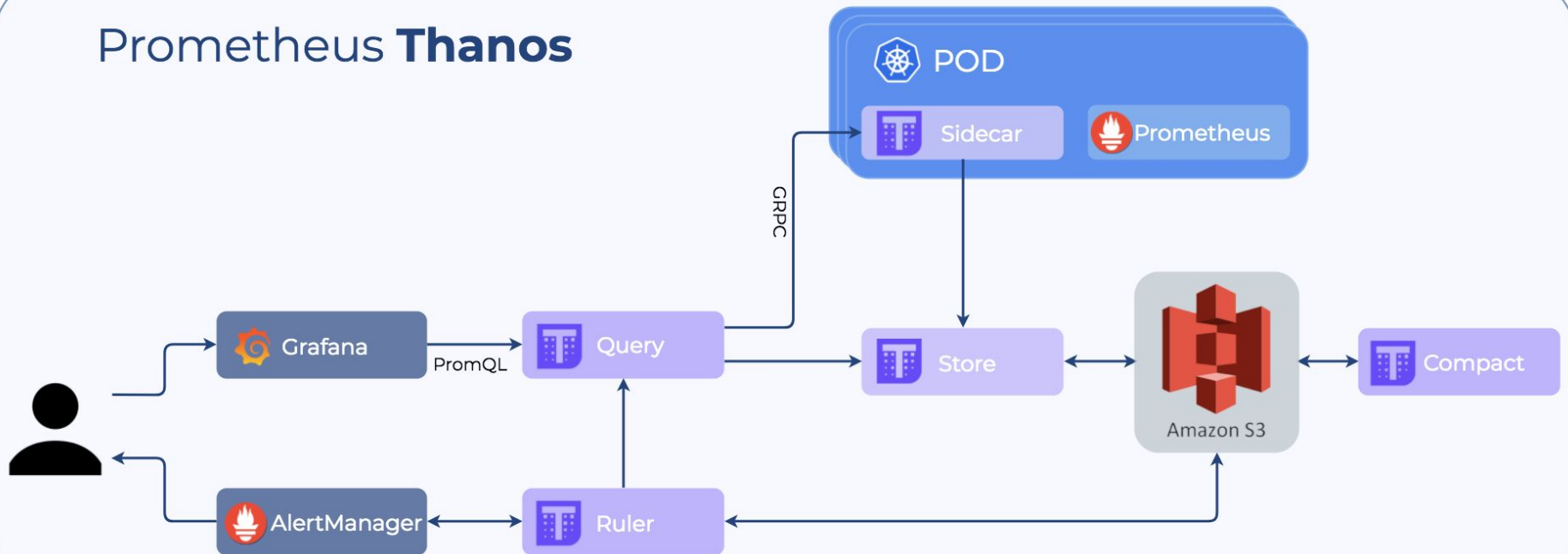


Thanos

- Highly available Prometheus setup with long term storage capabilities.
- Main Goals:
 - Global view of different clusters
 - High Availability setup for Prometheus
 - Retention / Downsampling (for long term storage)

The long awaited Long Term store

Prometheus **Thanos**



Links

- Prometheus - <https://prometheus.io/>
- Thanos slides
<https://www.slideshare.net/BartomiejPotka/thanos-global-durable-prometheus-monitoring>
- Banzai Cloud blogs
<https://banzaicloud.com/tags/prometheus/>



**Do you have any
questions?**



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