MONITORING

USING PROMETHEUS . ALERTMANAGER . GRAFANA

Why are we monitoring?

- To know when things are broken
- To know when things are about to be broken
- To get an view into the of the runtime characteristics of the environment

What are we monitoring?

- Infrastructure
  - Kubernetes Pods
  - Openstack instances
- IPDC Service Metrics (eventually)

How are we monitoring?

- Prometheus
  - Gathers metrics from cAdvisor and Node-Exporter.
  - Checks the current set of metrics available against the configured alerting rules
  - Raises an alert to Alertmanager if necessary
- Alertmanager
  - Receives alert from Prometheus and directs it to appropriate support channel
  - Slack channel / email / OIV
- Grafana
  - Displays sophisticated time-series data dashboards

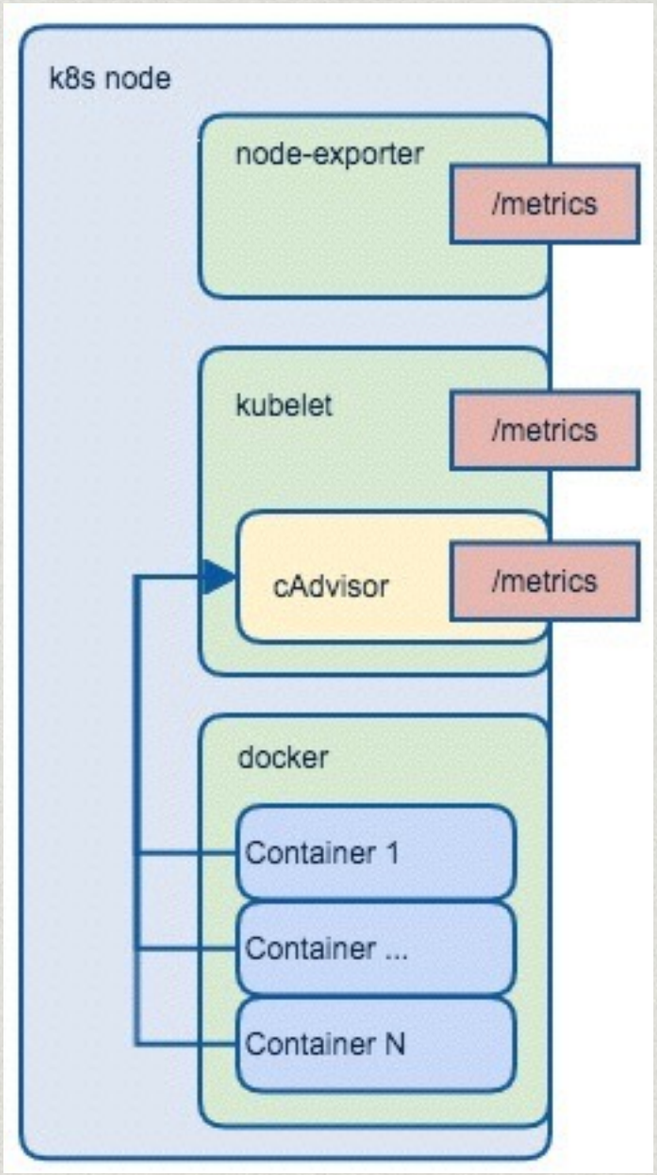
Prometheus

- Service Discovery through the kubernetes api-server
  - instantly adapts to changes in the targets we want to monitor
  - stores service discovery information in meta labels
- Relabeling
  - Sophisticated relabeling scheme to dynamically rewrite labels for a scrape target to provide a more robust query set
- Query Language
- Alerting Rules

AlertManager

- Grouping
  - Groups alerts of a similar nature together into a single alert
- Inhibition
  - suppress notifications for certain alerts if certain other alerts are already firing
- Silencing
  - simply mute alerts for a given time via a regex matcher

Exporters



- Kubernetes exports Prometheus data natively via the kubelet node agent
- cAdvisor is also embedded in kubelet and exports container metrics
- Node-Exporter exports machine metrics of OpenStack instance
- Large number official and independent third-party exporters of Prometheus metrics

Grafana

- Focuses on presenting time-series charts
  - based on specific metrics such as CPU and I/O utilization

Risks

- cAdvisor periodically loses connection with docker
- PersistentVolumes via OpenStack cinder is buggy
- Both Grafana and Prometheus would benefit from a persistent volume mount to store dashboard and time series data

Links

- https://prometheus.io/
- https://prometheus.io/docs/alerting/alertmanager/
- https://prometheus.io/docs/instrumenting/exporters/
- http://grafana.org/
- https://coreos.com/blog/prometheus-and-kubernetes-up-and-running.html