

Prometheus Monitoring Mixins

Using Jsonnet to Package Together
Dashboards and Alerts

Tom Wilkie @tom_wilkie
August 2018



All dashboards » [Kubernetes cluster monitoring \(via Prometheus\)](#)



Kubernetes cluster monitoring (via Prometheus) by [cjd](#)

Downloads: 10833

 DASHBOARD

Monitors Kubernetes cluster using Prometheus. Shows overall cluster CPU / Memory / Filesystem usage as well as individual pod, containers, systemd services statistics. Uses cAdvisor metrics only.
Last updated: a year ago


Overview

Revisions



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1621

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Kubernetes cluster monitoring ▾



Last 5 minutes

Refresh every 1

▾ Total usage

Cluster memory usage



Cluster CPU usage (1m avg)



Cluster filesystem usage



Used

N/A

Total

176.74 GiB

Used

N/A cores

Total

48.00 cores

Used

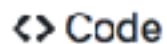
N/A

Total

N/A

```
sum(container_memory_working_set_bytes{  
    id="/",  
    kubernetes_io_hostname=~"^$Node$"  
})  
/  
sum(machine_memory_bytes{  
    kubernetes_io_hostname=~"^$Node$"  
})
```

Dashboards and alerts should not be opinionated about labels - this should be configuration.

 Code Issues 230 Pull requests 50 Insights

Branch: master ▾

etcd / Documentation / op-guide / etcd3_alert.rules.yml

 olvesh Documentation/op-guide: integer value of 1 is 100% not 1% for failing...

3 contributors



144 lines (143 sloc) | 5.63 KB



```
1  groups:
2    - name: etcd3_alert.rules
3      rules:
4        - alert: InsufficientMembers
```

<> Code

Issues 230

Pull requests 50

Insights

Documentation/op-guide: fix typo, s/member_round_trip_time/peer_round_trip_time/ #9053



Merged

gyuho merged 1 commit into coreos:master from tomwilkie:peer_round_trip_time_seconds on 20 Dec 2017

Conversation 3

Commits 1

Files changed 2



tomwilkie commented on 20 Dec 2017

Contributor



/cc @brancz

The example alerts make reference to `etcd_network_member_round_trip_time_seconds_bucket`, but the

Want:

- *configurable*
- *extensible*
- *reusable*

Configurable & Extensible

- YAML & JSON
- envsubst, m4, jinja etc
- Go, Python

```
from grafanalib.core import *

dashboard = Dashboard(
    title="Frontend Stats",
    rows=[
        Row(panels=[
            Graph(
                title="Frontend QPS",
                dataSource='My Prometheus',
                targets=[
                    Target(
                        expr='sum(irate/nginx_http_requests_total{job="default/
frontend",status=~"1.."}[1m]))',
                        legendFormat="1xx",
                        refId='A',
                    ),
                ],
            ),
        ]),
    ...
```

jsonnet

A data templating language for app and tool developers.

A simple extension of JSON.

<http://jsonnet.org/> [@sparkprime](#)

Jsonnet

Variables

Conditionals

Arithmetic

Functions

Imports

Error Propagation

JSON

Arrays

Primitives

Objects

Jsonnet Demo

Configurable & Extensible (II)

```
{  
  _config+:: {...},  
  
  grafanaDashboards+:: {  
    "dashboard-name.json": {...},  
  },  
  
  prometheusAlerts+:: [...],  
  
  prometheusRules+:: [...],  
}
```



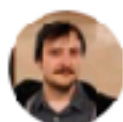
```
{  
  _config+:: {  
    // Selectors are inserted between {} in Prometheus  
    kubeStateMetricsSelector:  
    'job="default/kube-state-metrics"',  
    ...  
  },  
}
```

```
{
  prometheusAlerts+:: {
    groups+: [{
      name: 'kubernetes-apps',
      rules: [{
        alert: 'KubePodCrashLooping',
        'for': '1h',
        expr: |||
          rate(kube_pod_container_status_restarts
              {%(kubernetesMetricsSelector)s}[15m])
              > 0
        ||| % $_config,
```

...

```
groups:
  - name: kubernetes-apps
    rules:
      - alert: KubePodCrashLooping
        expr: |
          rate(kube_pod_container_status_restarts
            {job="default/kube-state-metrics"}[15m]
            > 0
        for: 1h
        ...
```

Reusable



Frederic Branczyk

@fredbrancz

Following



One morning about half a year ago I wrote to [@tom_wilkie](#) full of panic, that we would need a package manager for jsonnet for what we wanted to do. We ended up creating one 😄 github.com/jsonnet-bundle ...

Frederic Branczyk @fredbrancz

Replying to @naadirjeewa @tom_wilkie

Fun fact we created jsonnet-bundled out of necessity for the mixins. I never wanted to write a package manager 😄

5:07 PM - 6 Aug 2018

jsonnet-bundler

A jsonnet package manager.

<https://github.com/jsonnet-bundler/jsonnet-bundler>



```
$ go get github.com/jsonnet-bundler/jsonnet-bundler/cmd/
```

```
$ jb init
```

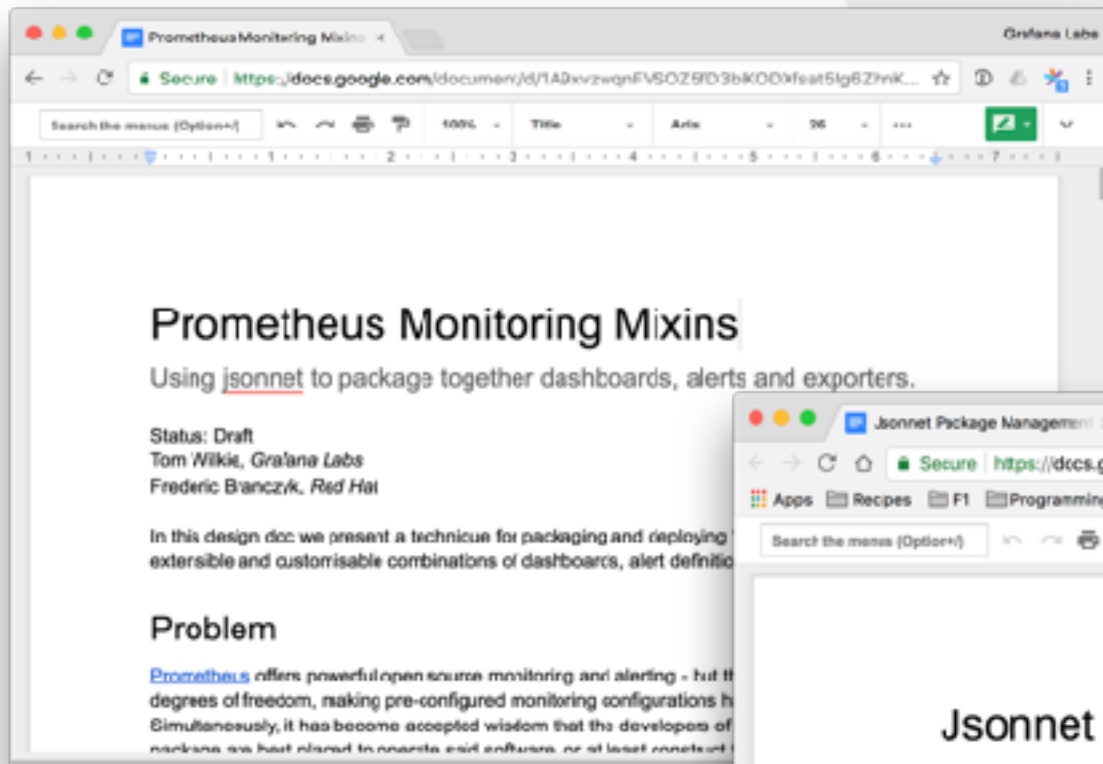
```
$ jb install github.com/kubernetes-monitoring/kubernetes-  
Cloning into 'vendor'...
```

```
$ $ tree vendor
```

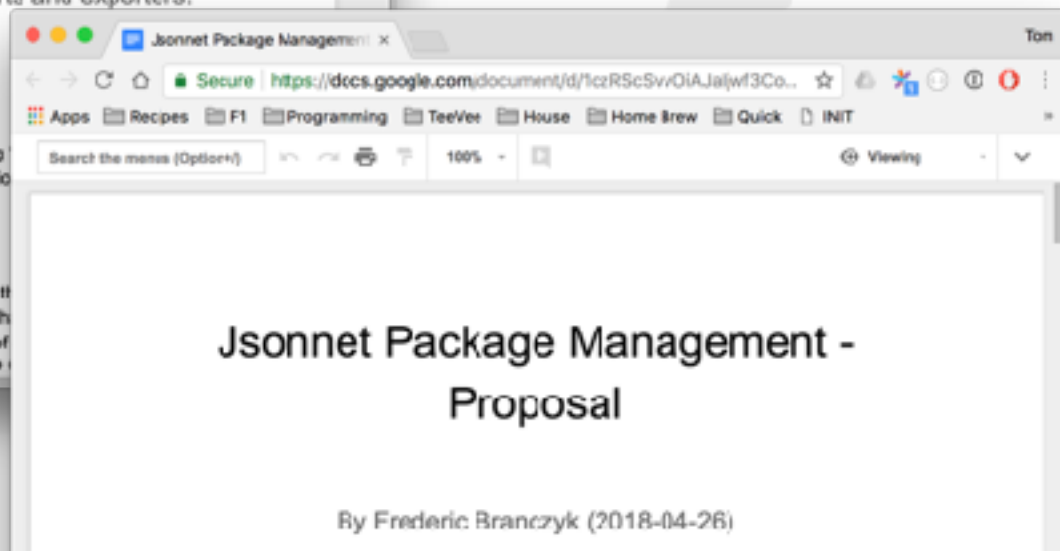
```
vendor
```

```
├── grafonnet  
│   └── ...  
└── kubernetes-mixin  
    └── ...
```

<https://goo.gl/JMxwC3>



<https://goo.gl/JocRm6>



...since KubeCon

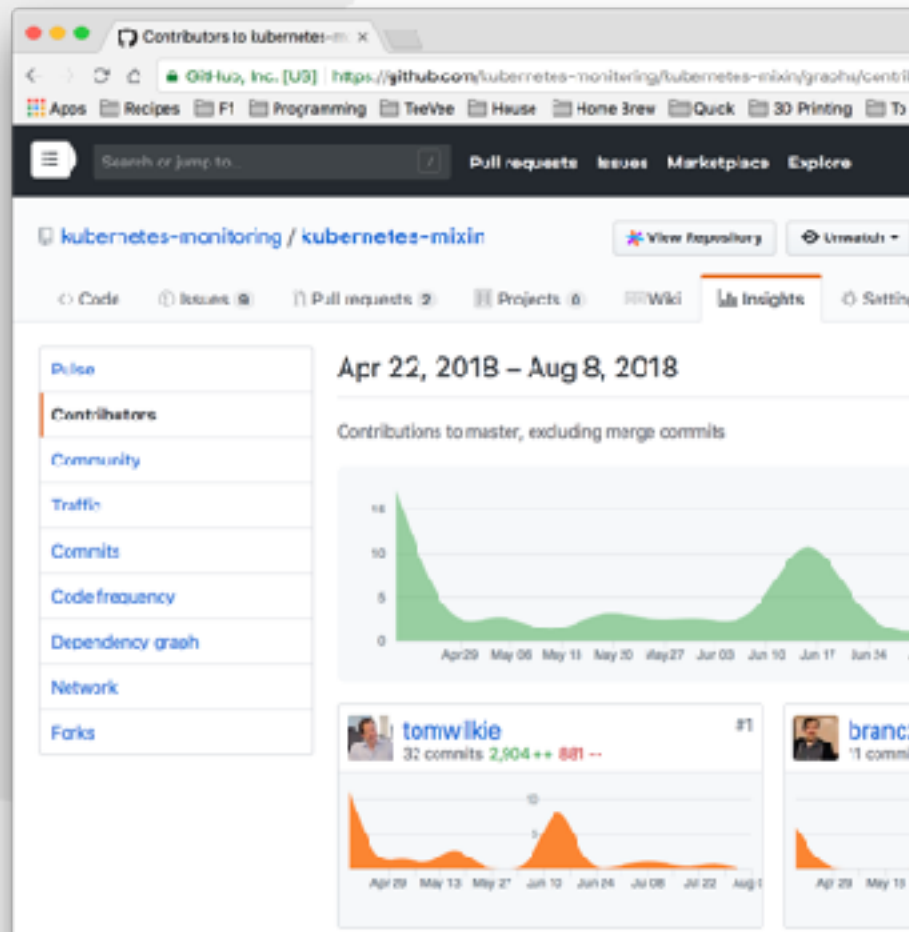
Application	Mixin
CoreOS Etcd	github.com/coreos/etcd/pull/9640
Hashicorp Consul	github.com/kausalco/public/consul-mixin
Hashicorp Vault	github.com/grapeshot/vault_exporter/vault-mixin
Kubernetes	github.com/kubernetes-monitoring/kubernetes-mixin

Now up to 9 contributors.

@metalmatze became a committer.

Contributions from Google, MongoDB,
San Diego Supercomputer Centre.

Used in all future versions of OpenShift.



But wait! We have new mixins...

Prometheus mixin:

<https://github.com/prometheus/prometheus/pull/4474>

node_exporter mixin:

https://github.com/prometheus/node_exporter/pull/941

And...



Aleš Komárek @ales_komarek · Aug 7

My first extra-terrestrial @PrometheusIO exporter with data from NASA SWPC. Mixins for alarm definitions and @grafana dashboard are included. Here the fun ends, some alarms mean harm, some alarms mean death. Check code at github.com/cznewt/nasa-sw...



Thanks for listening. Questions?

Tom Wilkie @tom_wilkie
May 2018

Photo credits:

<https://unsplash.com/photos/dmkmrNptMpw>

<https://unsplash.com/photos/nlMYrApFE7s>

