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Dashboards-as-Code

easy to ship, easy to get wrong

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Shipping a dashboard is a pull request now

1

Write a script

or the JSON itself

2

Commit the output

reviewed like any code

3

Label a ConfigMap

grafana_dashboard: "1"

4

The sidecar loads it

live in Grafana, no clicking

344

lines of script

→

3,723

lines of JSON

three dashboards,
one pull request

Caveat 1: the empty join

kube-state-metrics only exports the Kubernetes labels you allowlist, so Prometheus doesn’t drown. Our dashboards joined on one we hadn’t listed.

Running pods	Replica mismatch	Restarts (1h)	OOMKills (24h)
No data	0	0	0
`no fallback`	`OR vector(0)`	`OR vector(0)`	`OR vector(0)`

CHECK

`0` next to "No data" means an empty join, not a broken query. Run it without the join.

FIX

Ship the allowlist entry in the same PR as the dashboard that joins on it.

Caveat 2: every series, twice

For about five minutes after kube-state-metrics restarts, the old pod's samples are still inside the query's lookback window.

```
kube_pod_info{pod="api-7f9c", instance="ksm-old"}   still in the lookback window
kube_pod_info{pod="api-7f9c", instance="ksm-new"}   after the restart
```

the join errors

`many-to-many matching not allowed`

the sum doubles

`no error, just ×2`

CHECK

Errors or doubled numbers right after an exporter restart or rollout.

FIX

Collapse lookups to the labels you join on:

```
max by (namespace, pod) (kube_pod_info)
```

Caveat 3: valid JSON, ignored

Grafana loads JSON the UI would never write. Some of it just doesn't run.

```
{
  "namespace": "AWS/AmazonMQ",
  "metricName": "CpuUtilization",
+ "queryMode": "Metrics",
+ "metricQueryType": 0,
+ "metricEditorMode": 0,
+ "matchExact": true
}
```

0 errors

0 data points

without the four **+** lines

CHECK

Build a panel in the UI, export it, diff against yours.

FIX

Generate from a UI-exported template, not from memory.

Review it like code, because it is

The dashboard and everything it depends on are one change.

Open Add service overview dashboards #1234

ONE PULL REQUEST

`scripts/build-dashboards.ts`	the generator
`dashboards/*.json`	what it emits
`kube-state-metrics/values.yaml`	the labels they join on

CAUGHT IN REVIEW

- ✎ sum of ratios: divides per pod first, so the panel shows N× the real ratio
- ✎ panel says "headroom", the query computes utilization

thanks.

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cwoebker.com/talks/dashboards-as-code

