

MONITORING

KUBERNETES CRONJOBS

SCOTT BALDWIN

@SCOTTSBALDWIN

DEMO BOOTSTRAP

```
minikube start  
eval $(minikube docker-env)  
helm init
```





HELM INSTALL
STABLE/PROMETHEUS
STABLE/KUBE-STATE-METRICS
STABLE/GRAFANA

LOAD UP PROMETHEUS

```
export PROM POD NAME=$( \  
    kubectl get pods \  
    -l "app=prometheus,component=server" \  
    -o jsonpath=".items[0].metadata.name" \  
)
```

```
kubectl port-forward $PROM POD NAME 9090
```

HTTP://LOCALHOST:9090

The screenshot shows the Prometheus user interface. At the top, there is a header with the Prometheus logo and a menu icon. Below the header, there is a checkbox labeled "Enable query history". A large input field is labeled "Expression (press Shift+Enter for newlines)". Below the input field is a blue button labeled "Execute". To the right of the execute button is a dropdown menu with the option "- insert metric at cursor -". Underneath the execute button are two tabs: "Graph" (which is selected) and "Console". Below the tabs is a table with two columns: "Element" and "Value". The "Element" column contains the text "no data". On the far right of the interface, there is a blue link labeled "Remove Graph".

LOAD UP ALERT MANAGER

```
export ALERT_POD_NAME=$( \  
    kubectl get pods \  
    -l "app=prometheus,component=alertmanager" \  
    -o jsonpath="{.items[0].metadata.name}" \  
)
```

```
kubectl port-forward $ALERT_POD_NAME 9093
```

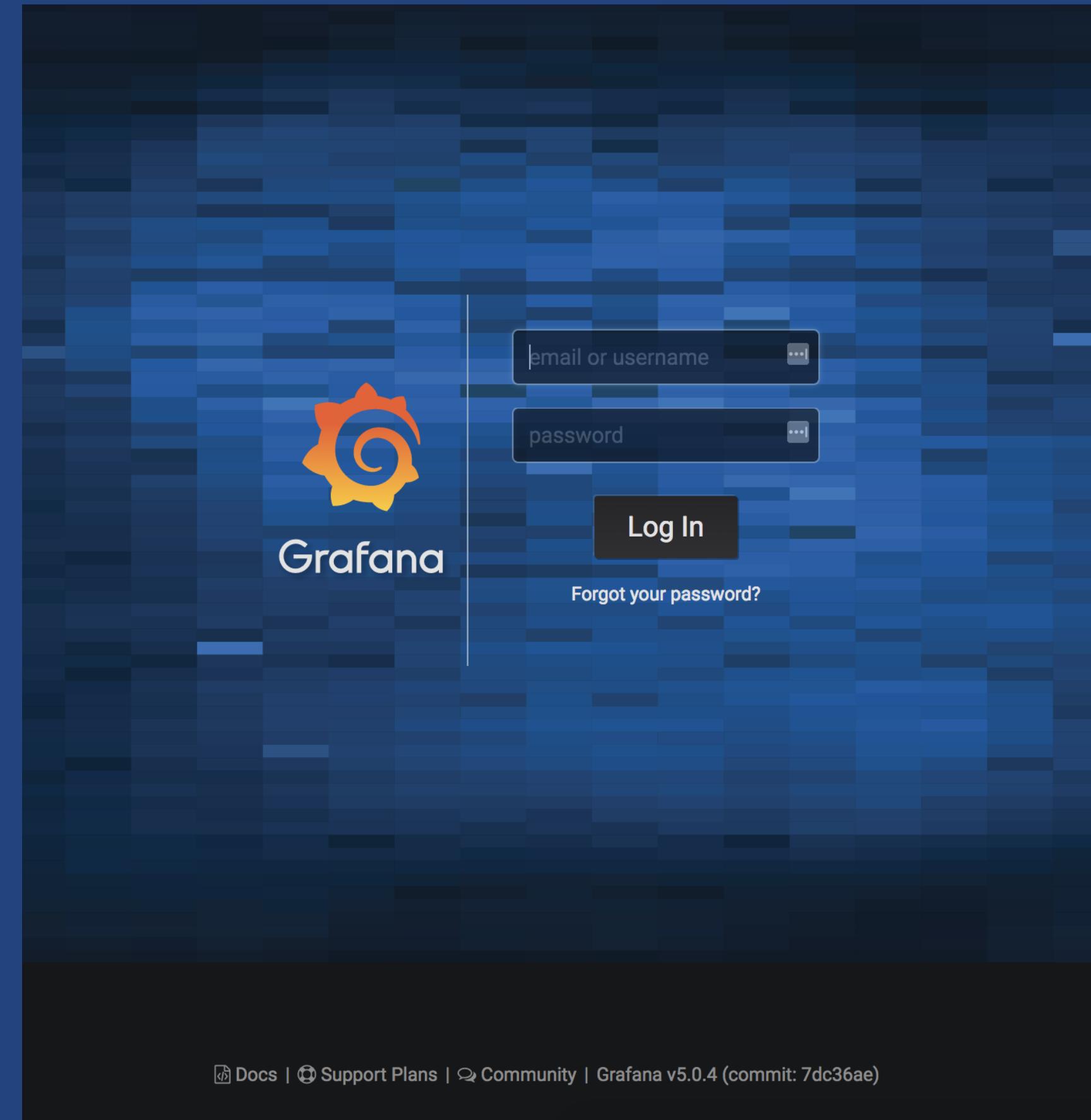
HTTP://LOCALHOST:9093

The screenshot shows the Alertmanager interface. At the top, there are navigation links: 'Alertmanager' (selected), 'Alerts' (disabled), 'Silences' (disabled), and 'Status' (disabled). Below these is a blue button labeled 'New Silence'. The main area is titled 'Alerts' with a sub-section 'Filter'. It includes buttons for 'Filter' (selected), 'Group', 'Receiver: All', and checkboxes for 'Silenced' and 'Inhibited'. A text input field is present with a placeholder 'Custom matcher, e.g. env="production"' and a '+' button. At the bottom, a yellow banner displays the message 'No alerts found'.

LOAD UP GRAFANA

```
export GRAFANA_POD_NAME=$( \  
    kubectl get pods \  
    -l "app=grafana" \  
    -o jsonpath=".items[0].metadata.name" \  
)  
  
kubectl port-forward $GRAFANA_POD_NAME 3000
```

HTTP://LOCALHOST:3000



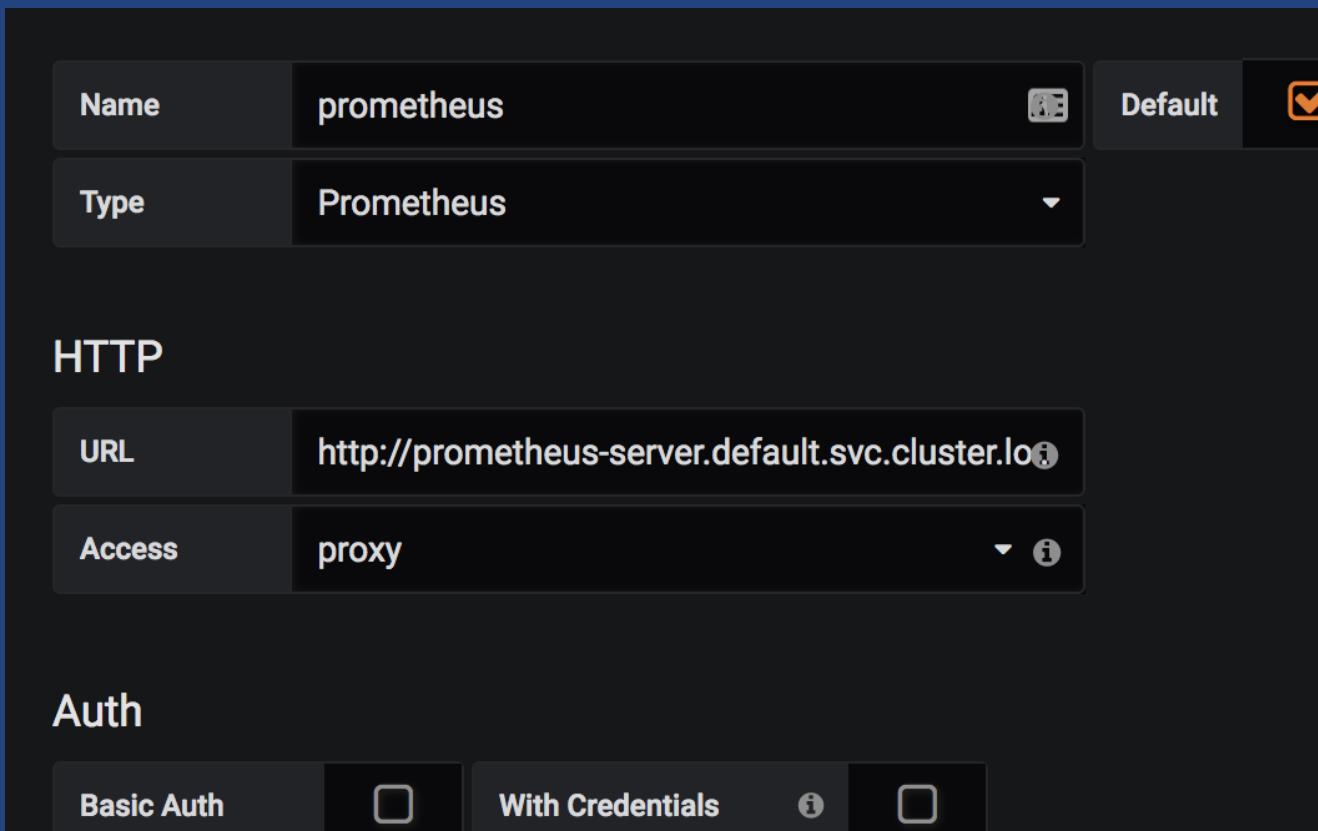
GRAFANA LOGIN

```
kubectl get secret grafana \  
-o jsonpath=".data.admin-password" | \  
base64 --decode ; echo
```

USERNAME: ADMIN

PASSWORD: PGOTZVIYS7VIFX6D8LOLBUCCJLISSLTXVJAUGXI

WIRE UP GRAFANA Datasource



HTTP://PROMETHEUS-SERVER.DEFAULT.SVC.CLUSTER.LOCAL

WIRE UP ALERT MANAGER

Edit Notification Channel

Name	alert manager
Type	Prometheus Alertmanager ▾
Send on all alerts	<small>i</small> <input type="checkbox"/>
Include image	<small>i</small> <input checked="" type="checkbox"/>

Alertmanager settings

Url	http://prometheus-alertmanager.default.svc.cluster.local
-----	---

HTTP://PROMETHEUS-ALERTMANAGER.DEFAULT.SVC.CLUSTER.LOCAL



CRONJOB DESTINED FOR FAILURE

```
apiVersion: batch/v1beta1
kind: CronJob
...
spec:
  schedule: "*/5 * * * *"
  ...
  jobTemplate:
    ...
    spec:
      backoffLimit: 0
      template:
        ...
        spec:
          containers:
            - name: devopsdays-demo
              command:
                - /bin/false
              image: alpine
              restartPolicy: Never
```

CREATE THE CRONJOB

```
$ kubectl apply -f cronjob.yaml  
cronjob.batch "devopsdays-demo" created
```

```
$ kubectl get cronjob  
NAME          SCHEDULE      SUSPEND      ACTIVE      LAST SCHEDULE   AGE  
devopsdays-demo    */5 * * * *  False        0           55s          2m
```

```
$ kubectl get job  
NAME          DESIRED      SUCCESSFUL   AGE  
devopsdays-demo-1525298400  1            0           1m
```

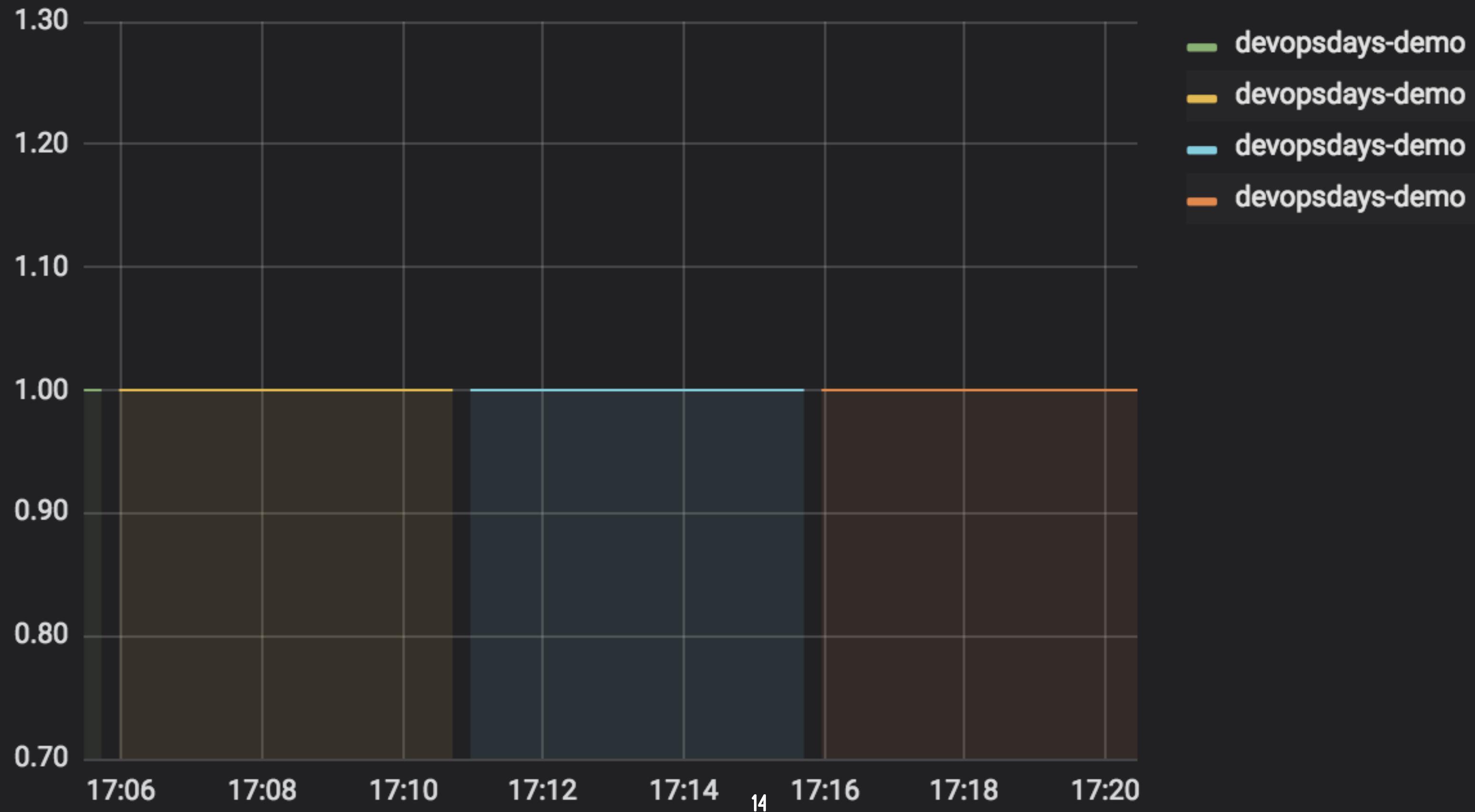
```
$ kubectl get pod -l cronjob=devopsdays-demo  
NAME          READY     STATUS    RESTARTS   AGE  
devopsdays-demo-1525298400-7lsnf  0/1       Error      0          2m
```

KUBE-STATE-METRICS ADD-ON IS MAGIC

PROMETHEUS QUERY

```
clamp_max(label_replace(label_replace(  
    max(  
        kube_job_status_start_time * ON(exported_job) GROUP_RIGHT() kube_job_labels{label_cronjob!=""}  
    ) BY (exported_job, label_cronjob)  
    == ON(label_cronjob) GROUP_LEFT()  
    max(  
        kube_job_status_start_time * ON(exported_job) GROUP_RIGHT() kube_job_labels{label_cronjob!=""}  
    ) BY (label_cronjob),  
    "job", "$1", "exported_job", "(.+)", "cronjob", "$1", "label_cronjob", "(.+)", 1  
)  
* ON(job) GROUP_LEFT()  
label_replace(label_replace(  
    (kube_job_status_failed != 0),  
    "job", "$1", "exported_job", "(.+)", "cronjob", "$1", "label_cronjob", "(.+)"  
)
```

Cronjob Failures



Graph

General

Metrics

Axes

Legend

Display

Alert

Time range

Alert Config

Alert Config

Notifications (0)

Name

Cronjob Failures alert

Evaluate every

60s

State history

Conditions

Delete

WHEN

sum ()

OF

query (A, 5m, now)

IS ABOVE

0



If no data or all values are null

SET STATE TO

Ok



If execution error or timeout

SET STATE TO

Alerting



Graph

General

Metrics

Axes

Legend

Display

Alert

Time range

Alert Config

Notifications

Notifications (1)

Send to

bell alert manager x



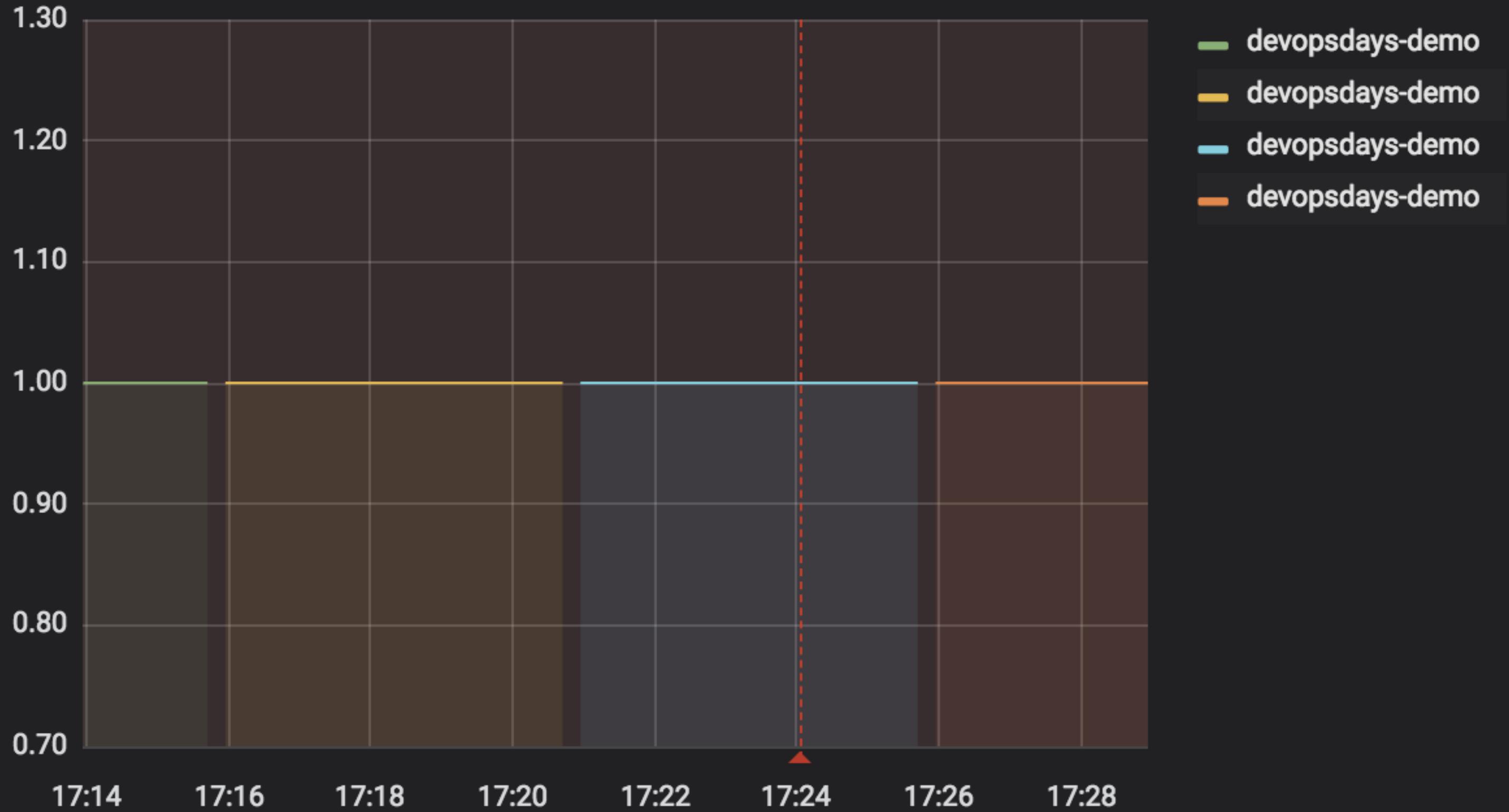
State history

Delete

Message

Your cronjob failed!

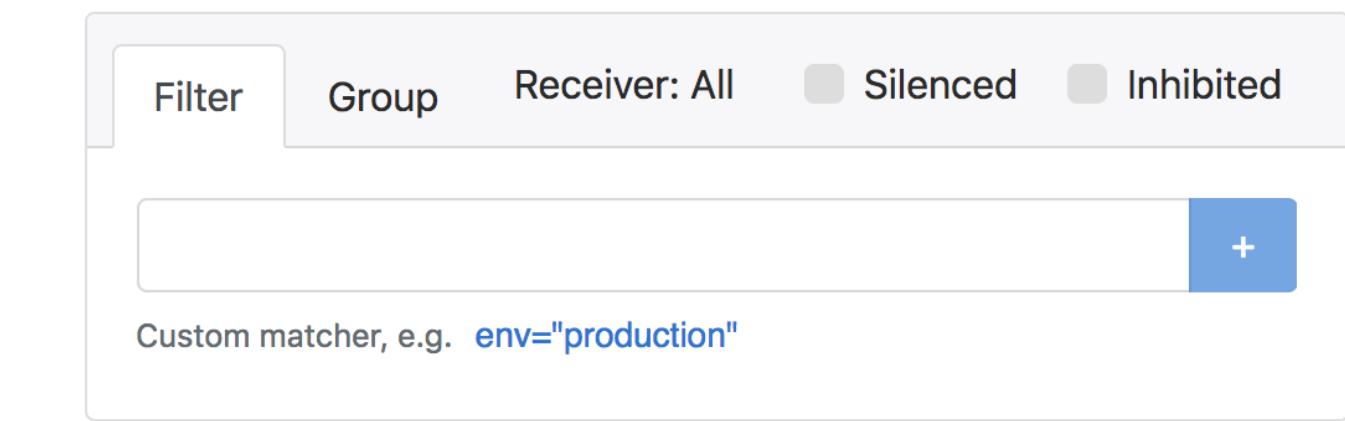
💔 Cronjob Failures



ALERT MANAGER

Filter Group Receiver: All Silenced Inhibited

+ Custom matcher, e.g. `env="production"`



`alertname="Cronjob Failures alert"` +

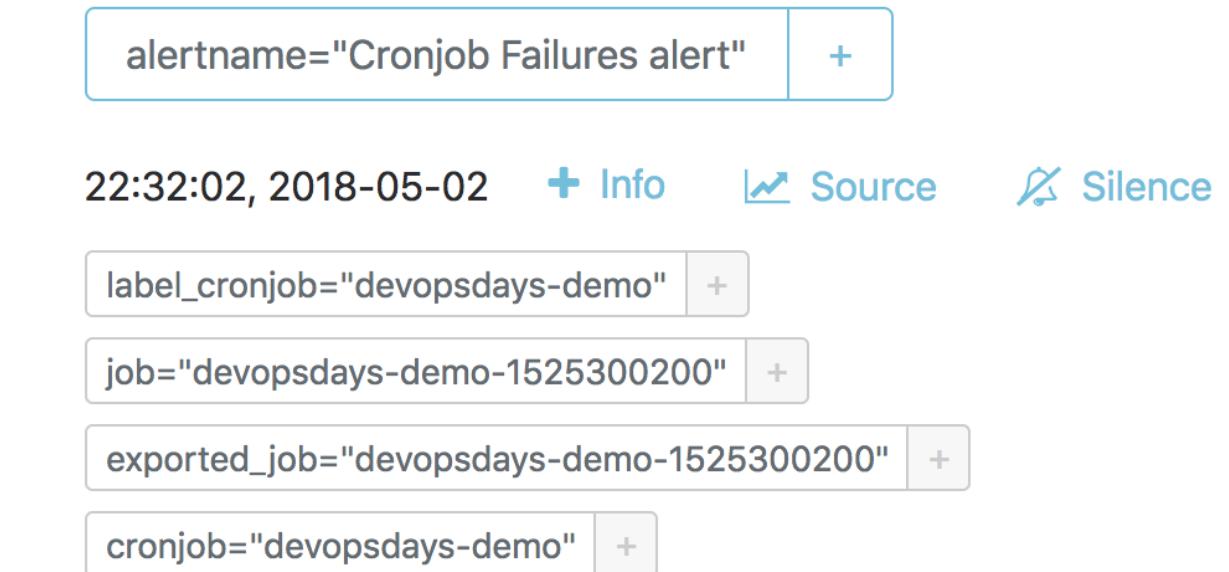
22:32:02, 2018-05-02 [+ Info](#) [Source](#) [Silence](#)

`label_cronjob="devopsdays-demo"` +

`job="devopsdays-demo-1525300200"` +

`exported_job="devopsdays-demo-1525300200"` +

`cronjob="devopsdays-demo"` +



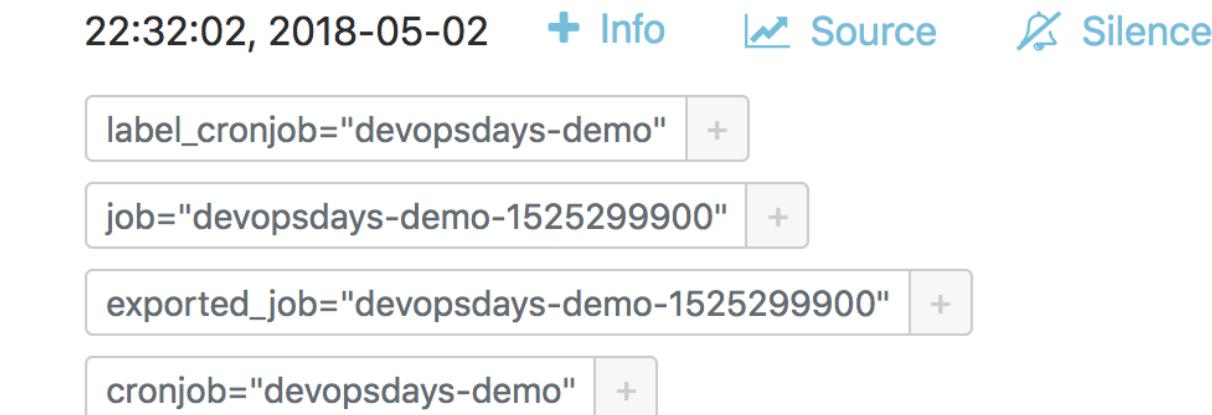
22:32:02, 2018-05-02 [+ Info](#) [Source](#) [Silence](#)

`label_cronjob="devopsdays-demo"` +

`job="devopsdays-demo-1525299900"` +

`exported_job="devopsdays-demo-1525299900"` +

`cronjob="devopsdays-demo"` +



CRONJOB DESTINED FOR SUCCESS

```
apiVersion: batch/v1beta1
kind: CronJob
...
spec:
  schedule: "*/5 * * * *"
  ...
  jobTemplate:
    ...
    spec:
      backoffLimit: 0
      template:
        ...
        spec:
          containers:
            - name: devopsdays-demo
              command:
                - /bin/true
              image: alpine
      restartPolicy: Never
```





Cronjob Failures

THE ALERTS HAVE CLEARED

devopsdays-demo
devopsdays-demo

@SCOTTSBALDWIN

HTTPS://MEDIUM.COM/@TRISTAN_96324/PROMETHEUS-K8S-CRONJOB-ALERTS-94BEE7B90511

17:32

17:34

17:36

17:38

17:40

17:42

17:44

17:46