Deployment

Let's deploy Grafana to read data from Prometheus instances.

This will be simple. In our `monitoring` directory, create a new subdirectory called `grafana`, and in it we will create following files:

grafana-pvc.yaml

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: longhorn-grafana-pvc
  namespace: monitoring
spec:
  accessModes:
    - ReadWriteOnce
  storageClassName: longhorn
  resources:
    requests:
      storage: 10Gi
```

This will be our persistent storage, it's to keep the dashboards saved. As far as I understand it, Grafana does not keep the data, so we don't have to have so much space dedicated to it (mine is using like 400MB).

grafana-deployment.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    app: grafana
  name: grafana
  namespace: monitoring
spec:
  replicas: 1
  selector:
    matchLabels:
      app: grafana
  template:
    metadata:
      labels:
        app: grafana
    spec:
      containers:
      - env: []
        image: grafana/grafana:latest
        name: grafana
        ports:
        - containerPort: 3000
          name: http
        readinessProbe:
          httpGet:
            path: /api/health
            port: http
        resources:
          limits:
            cpu: 200m
            memory: 200Mi
          requests:
            cpu: 100m
            memory: 100Mi
        volumeMounts:
        - mountPath: /var/lib/grafana
          name: grafana-storage
          readOnly: false
      nodeSelector:
        node-type: worker
      securityContext:
        fsGroup: 65534
        runAsNonRoot: true
        runAsUser: 65534
      serviceAccountName: grafana
      volumes:
        - name: grafana-storage
          persistentVolumeClaim:
            claimName: longhorn-grafana-pvc
```

Fairly standard deployment, I mentioned most of the "kinks" I use before, like `nodeSelector` etc...

grafana-serviceAccount.yaml

```
apiVersion: v1
kind: ServiceAccount
metadata:
  name: grafana
  namespace: monitoring
```

Just a service account for Grafana.

grafana-service.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: grafana
  namespace: monitoring
spec:
  selector:
    app: grafana
  type: LoadBalancer
  ports:
  - name: http
    port: 3000
    targetPort: http
  loadBalancerIP: 192.168.0.236
```

Classic for us by now. I'm creating external IP for Grafana to run on 192.168.0.236, and port 3000.

Jump one folder up, and apply to the whole folder:

```
cd ..
kubectl apply -f grafana/
```

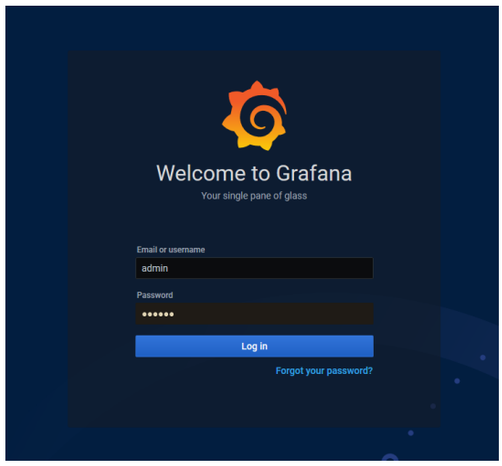
Check if grafana pod is deployed:

```
root@control01:/home/ubuntu/grafana# kubectl get pods -n monitoring
NAME                                  READY   STATUS    RESTARTS   AGE
grafana-5b799b4c8c-qzp52              1/1     Running   0          8d
.
.
.
```

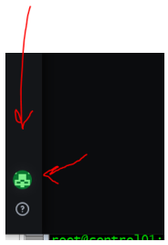
Basic setup

You should be able to connect to the IP of Grafana now.

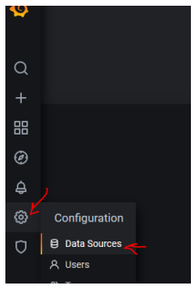
Default login and password is `admin:admin`



Then, go down and change your account name, password etc...



Next, we need to define the source where Grafana should look for data.



Click on `Add data source` and choose `Prometheus`, a new tab with settings will pop up. Set a name for your instance, for example `Prometheus-main`. This is so we can differentiate sources later. The next important value is `URL`. If you remember, back when we deployed the Prometheus file `prometheus-service-local.yaml`, we created ClusterIP, and in another file, MetalLB IP. You can choose any of them. To check look at the services:

```
root@control01:/home/ubuntu/grafana# kubectl get services -n monitoring
NAME                 TYPE           CLUSTER-IP      EXTERNAL-IP     PORT(S)             AGE
.
.
prometheus           ClusterIP      10.43.117.147   <none>          9090/TCP            14d
prometheus-external  LoadBalancer   10.43.49.187    192.168.0.235   9090:30850/TCP      14d
.
.
```

So, in the `URL` either put IP or NAME, so for example, using internal ClusterIP, entering `http://10.43.117.147:9090` should work.

At the bottom click `Save & Test`; it should check and save the data source.

Add another data source; this will be for OpenFaaS (if you have it). Same drill as above; just check your IP for OpenFaaS Prometheus.

```
root@control01:/home/ubuntu/grafana# kubectl get services -n openfaas
NAME                TYPE           CLUSTER-IP      EXTERNAL-IP     PORT(S)          AGE
.
.
prometheus          ClusterIP      10.43.238.226   <none>          9090/TCP         35d
```

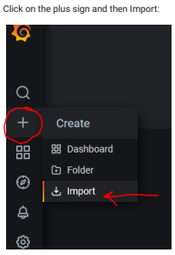
So use `10.43.238.226:9090` for `URL`, and name it Prometheus-OpenFaaS, or something that will let you know it's OpenFaaS data.

> **Note**
>
> I just noticed that both Prometheus instances have the same name for ClusterIP = `prometheus`, therefore I opt for IP instead of http://prometheus:9090, as I'm not sure if the internal DNS would mess something up.

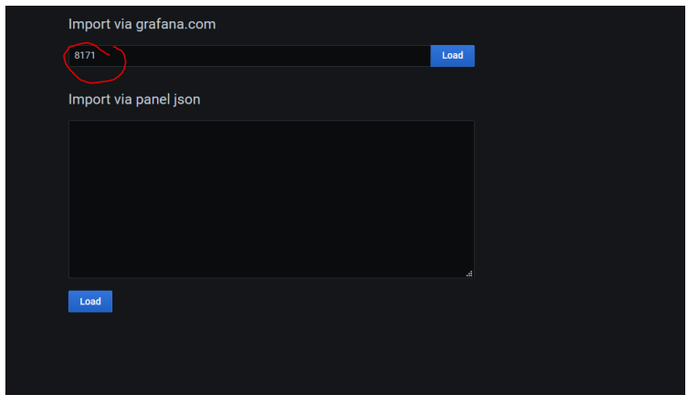
Some Graphs

My final goal is to create my own dashboard with data I want. But before we get to that, we can use an already existing collection (and later pick and choose what we want from them).

Click on the plus sign and then Import:



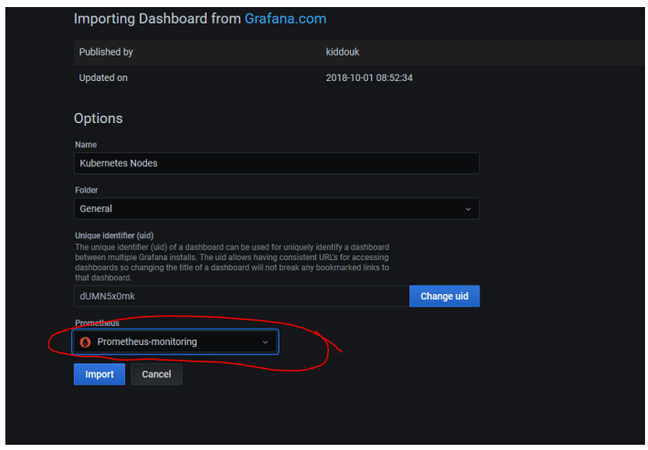
Next, type `8171` into `Import via grafana.com`.



Where did I get the ID? Well, here: Grafana Dashboard.

Click `Load`.

In the next window, name the dashboard if you like, but more importantly, choose the source for your main Prometheus instance.



Click `Import`.

Tadaaaa! Your first graphs. It should take you to them immediately, and you can choose data from a specific server on the top.

Here is a list of other dashboards that work, mostly, out of the box.

Kubernetes Kubernetes Longhorn OpenFaaS 1 OpenFaaS 2

And that's really it. In the next chapter, I look into creating my own dashboard, but until then I need to have something to drink and chill out.

Liked it ? Buy me a drink :)

Last update: May 26, 2022

Comments