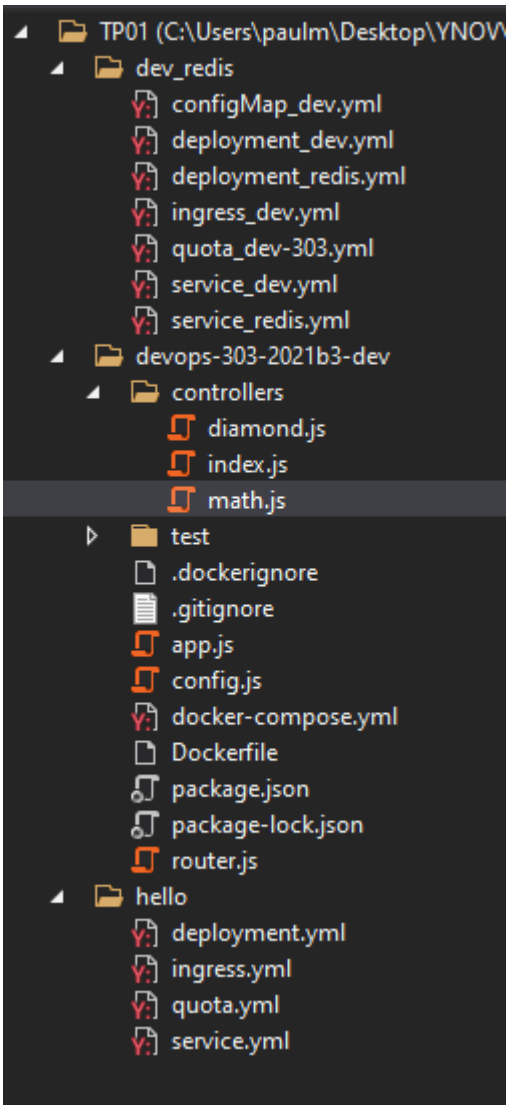
RENDU DEVOPS

Dans cette présentation, nous vous détaillerons les principales étapes pour mettre en place les différentes fonctionnalités.

Tout nous avons mis précédemment en place une séries de .yml et de Dockerfile afin d'afficher sur une page 3 hello-world.

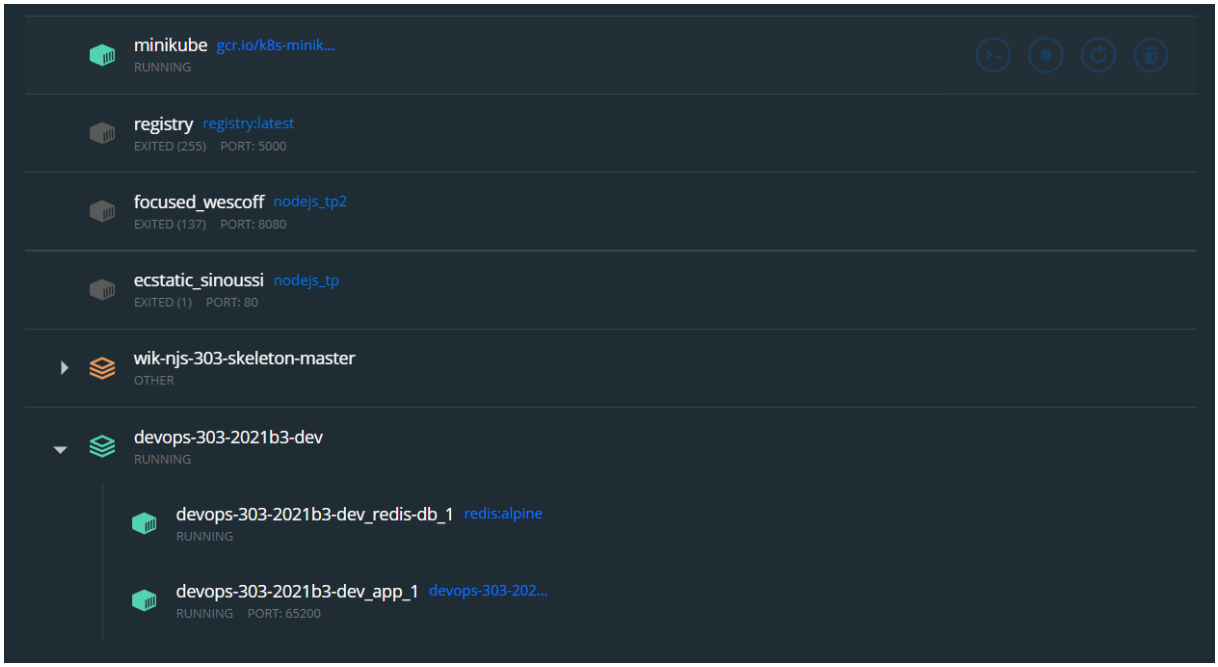
Vous pouvez retrouver les différentes configuration dans les .yml ci-joint qui regroupe d'un cotés un dossier pour redis et un pour hello qui contiennent tous les 2 :

- Deployment
- Ingress
- Service



(pour redis les fichier sont coupé en _dev pour la partie *développement devops-303* et _redis pour mettre en place la gestion de *Bdd « redis »*).

Nous avons ci-dessous ce que cela donne dans docker.



Voici les lignes de commande principale pour mettre en place cela.

1. minikube start
2. minikube addons enable ingress
3. minikube image load devops-303-2021b3-dev_app
4. kubectl apply -f [...].yml
5. minikube service -n ingress-nginx ingress-nginx-controller

Ensuite nous devons mettre en place les ressource quotas et les namespaces.

Pour les quotas nous nous servons d'un .yml

```yaml
apiVersion: v1
kind: ResourceQuota
metadata:
  name: mem-cpu-dev
spec:
  hard:
    requests.cpu: "1"
    requests.memory: "1G"
    limits.cpu: "2"
    limits.memory: "2G"
```

```yaml
apiVersion: v1
kind: ResourceQuota
metadata:
  name: mem-cpu-hello
spec:
  hard:
    requests.cpu: "300m"
    requests.memory: "384M"
    limits.cpu: "600m"
    limits.memory: "768M"
```

A gauche pour redis et a droite pour les hello

Ensuite nous créons les namespace dans le terminal de commande avec :

- kubectl create namespace < name>

```
C:\Users\paulm>kubectl get namespace
NAME              STATUS   AGE
default           Active   41d
dev-303           Active   13d
hello-303         Active   13d
ingress-nginx     Active   33d
kube-node-lease   Active   41d
kube-public       Active   41d
kube-system       Active   41d
```

Nous mettons ensuite les composants correspondant dans les namespaces que nous pouvons visualiser via describe :

```
C:\Users\paulm>kubectl describe namespace dev-303
Name:         dev-303
Labels:       kubernetes.io/metadata.name=dev-303
Annotations:  <none>
Status:       Active

Resource Quotas
  Name:            mem-cpu-dev
  Resource         Used   Hard
  --------         ---    ---
  limits.cpu       400m   2
  limits.memory    512Mi  2G
  requests.cpu     400m   1
  requests.memory  484Mi  1G
```

Nous pouvons donc par exemple voir les pods qui le compose :

```
C:\Users\paulm>kubectl get pods -n dev-303
NAME                          READY   STATUS    RESTARTS      AGE
devops3030-5bcf54d6fc-8tz85   1/1     Running   1 (13d ago)   13d
devops3030-5bcf54d6fc-c6d2n   1/1     Running   1 (13d ago)   13d
devops3030-5bcf54d6fc-nd2c7   1/1     Running   1 (13d ago)   13d
redis-leader-587d9df6ff-jbf2h   1/1     Running   1 (13d ago)   13d

C:\Users\paulm>kubectl get pods -n prometheus
NAME                                                     READY   STATUS    RESTARTS   AGE
alertmanager-prometheus-kube-prometheus-alertmanager-0   2/2     Running   0          3m29s
prometheus-grafana-74b9c448f6-nnxhj                      2/2     Running   0          3m32s
prometheus-kube-prometheus-operator-577bb648c5-7tp5s     1/1     Running   0          3m32s
prometheus-kube-state-metrics-58c5cd6ddb-rx2vb           1/1     Running   0          3m32s
prometheus-prometheus-kube-prometheus-prometheus-0       2/2     Running   0          3m28s
prometheus-prometheus-node-exporter-4zlqd                1/1     Running   0          3m32s
```

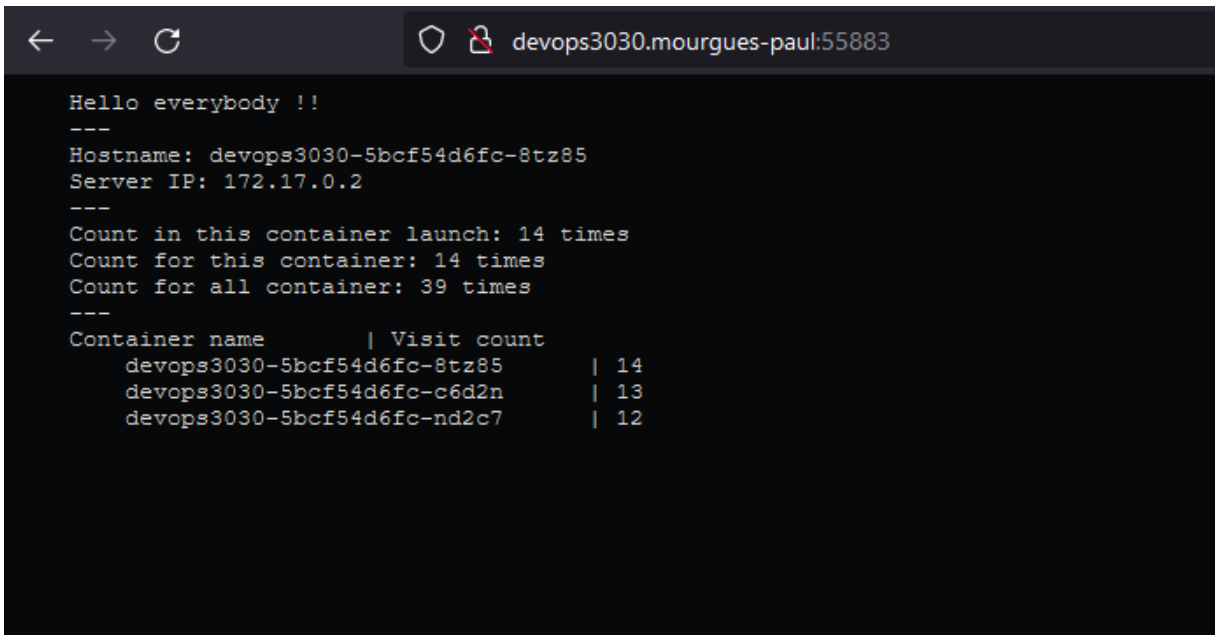
Ensuite nous faisons des configmap :

```yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: config-dev-303
  namespace: dev-303
data:
  PORT: "8884"
  REDIS_PORT: "6379"
  REDIS_HOST: "redis-leader"
```

Quant nous relançons cela dans le terminal

```
C:\Windows\system32>minikube service -n ingress-nginx ingress-nginx-controller
|---------------|--------------------------|-------------|---------------------------|
|   NAMESPACE   |           NAME           | TARGET PORT |            URL            |
|---------------|--------------------------|-------------|---------------------------|
| ingress-nginx | ingress-nginx-controller | http/80     | http://192.168.49.2:32667 |
|               |                          | https/443   | http://192.168.49.2:30752 |
|---------------|--------------------------|-------------|---------------------------|
* Tunnel de démarrage pour le service ingress-nginx-controller.
|---------------|--------------------------|-------------|-------------------------|
|   NAMESPACE   |           NAME           | TARGET PORT |          URL            |
|---------------|--------------------------|-------------|-------------------------|
| ingress-nginx | ingress-nginx-controller |             | http://127.0.0.1:63803 |
|               |                          |             | http://127.0.0.1:63804 |
|---------------|--------------------------|-------------|-------------------------|
```

Et que nous allons sur internet avec le bon name et le bon port nous obtenons cela :



Nous passons ensuite à la partie faite chez soi, à savoir **prometheus & Grafana**

Tout d'abord nous installons helm :

- choco install kubernetes-helm

Puis avec helm nous installons ensuite prometheus

```
C:\Users\paulm>helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
"prometheus-community" has been added to your repositories

C:\Users\paulm>helm repo update
Hang tight while we grab the latest from your chart repositories...
...Successfully got an update from the "prometheus-community" chart repository
Update Complete. □Happy Helming!□

C:\Users\paulm>helm install prometheus prometheus-community/kube-prometheus-stack
W1128 18:34:06.482829   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.485992   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.489178   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.492371   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.495002   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.497627   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:06.500261   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:07.707063   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:08.141043   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.863714   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.911621   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:12.913217   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:14.690461   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:15.121971   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
W1128 18:34:19.173198   17024 warnings.go:70] policy/v1beta1 PodSecurityPolicy is deprecated in v1.21+, unavailable in v1.25+
NAME: prometheus
LAST DEPLOYED: Sun Nov 28 18:34:05 2021
NAMESPACE: default
STATUS: deployed
REVISION: 1
NOTES:
kube-prometheus-stack has been installed. Check its status by running:
  kubectl --namespace default get pods -l "release=prometheus"

Visit https://github.com/prometheus-operator/kube-prometheus for instructions on how to create & configure Alertmanager and Prometheus instances using the Operator.

C:\Users\paulm>kubectl create namespace prometheus
namespace/prometheus created
```

Nous regardons les events afin de voir quoi utiliser ensuite :

```
C:\Users\paulm>kubectl get events -A
NAMESPACE   LAST SEEN   TYPE     REASON      OBJECT                                                  MESSAGE
default     12m         Normal   Scheduled   pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Successfully assigned default/alertmanager-prometheus-kube-prometheus-alertmanag
er-0 to minikube
default     12m         Normal   Pulling     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Pulling image "quay.io/prometheus/alertmanager:v0.23.0"
default     12m         Normal   Pulled      pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Successfully pulled image "quay.io/prometheus/alertmanager:v0.23.0" in 17.776144
8s
default     12m         Normal   Created     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Created container alertmanager
default     12m         Normal   Started     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Started container alertmanager
default     12m         Normal   Pulling     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Pulling image "quay.io/prometheus-operator/prometheus-config-reloader:v0.52.0"
default     12m         Normal   Pulled      pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Successfully pulled image "quay.io/prometheus-operator/prometheus-config-reloade
r:v0.52.0" in 21.8777802s
default     12m         Normal   Created     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Created container config-reloader
default     12m         Normal   Started     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Started container config-reloader
default     6m17s       Normal   Killing     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Stopping container alertmanager
default     6m17s       Normal   Killing     pod/alertmanager-prometheus-kube-prometheus-alertmanager-0   Stopping container config-reloader
```

Reinstallation des packages grafana (se referer a la ligne suivante) :

```
mourguesp@DESKTOP-H7OAME7:~/kube-prometheus$ wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add -
OK
mourguesp@DESKTOP-H7OAME7:~/kube-prometheus$ sudo add-apt-repository "deb https://packages.grafana.com/oss/deb stable main"
Hit:1 http://archive.ubuntu.com/ubuntu focal InRelease
Get:2 https://packages.grafana.com/oss/deb stable InRelease [12.1 kB]
Get:3 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:5 http://archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:6 https://packages.grafana.com/oss/deb stable/main amd64 Packages [26.2 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1026 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [191 kB]
Get:10 http://security.ubuntu.com/ubuntu focal-security/main amd64 c-n-f Metadata [9072 B]
Get:11 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [526 kB]
Get:12 http://security.ubuntu.com/ubuntu focal-security/restricted Translation-en [75.4 kB]
Get:13 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 c-n-f Metadata [528 B]
Get:14 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [663 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:16 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [111 kB]
Get:17 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [12.9 kB]
Get:18 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [21.9 kB]
Get:19 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [4948 B]
Get:20 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [540 B]
```

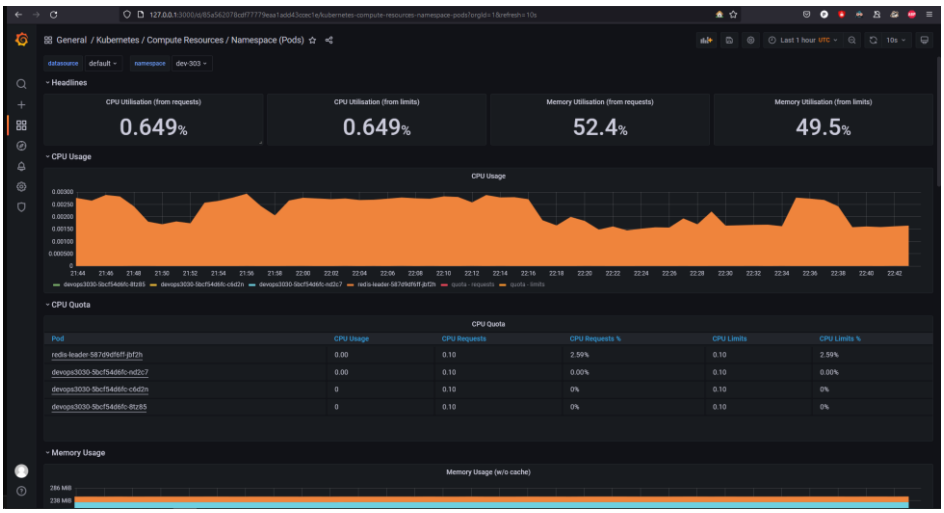
Ayant eu un probleme de connexion avec grafana, nous avons essayé de redefinir les MDP :

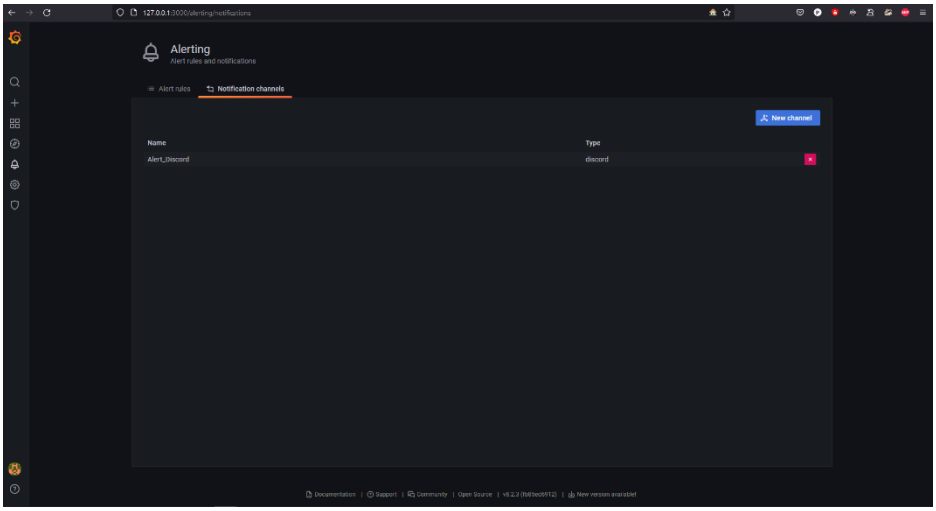
```
mourguesp@DESKTOP-H7OAME7:~/kube-prometheus$ sudo apt install grafana
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  grafana
0 upgraded, 1 newly installed, 0 to remove and 88 not upgraded.
Need to get 67.3 MB of archives.
After this operation, 225 MB of additional disk space will be used.
Get:1 https://packages.grafana.com/oss/deb stable/main amd64 grafana amd64 8.2.5 [67.3 MB]
Fetched 67.3 MB in 9s (7668 kB/s)
Selecting previously unselected package grafana.
(Reading database ... 32230 files and directories currently installed.)
Preparing to unpack .../grafana_8.2.5_amd64.deb ...
Unpacking grafana (8.2.5) ...
Setting up grafana (8.2.5) ...
Adding system user `grafana' (UID 112) ...
Adding new user `grafana' (UID 112) with group `grafana' ...
Not creating home directory `/usr/share/grafana'.
### NOT starting on installation, please execute the following statements to configure grafana to start automatically using systemd
 sudo /bin/systemctl daemon-reload
 sudo /bin/systemctl enable grafana-server
### You can start grafana-server by executing
 sudo /bin/systemctl start grafana-server
Processing triggers for systemd (245.4-4ubuntu3.11) ...
mourguesp@DESKTOP-H7OAME7:~/kube-prometheus$ sudo apt install grafana-cli
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package grafana-cli
mourguesp@DESKTOP-H7OAME7:~/kube-prometheus$ sudo grafana-cli admin reset-admin-password admin
WARN[11-28|19:49:28] falling back to legacy setting of 'min_interval_seconds'; please use the configuration option in the `unified_alerting` section if Grafana 8 alerts are enabled. logger=settings
WARN[11-28|19:49:28] falling back to legacy setting of 'min_interval_seconds'; please use the configuration option in the `unified_alerting` section if Grafana 8 alerts are enabled. logger=settings
INFO[11-28|19:49:28] Config loaded from                       logger=settings file=/usr/share/grafana/conf/defaults.ini
INFO[11-28|19:49:28] Config loaded from                       logger=settings file=/etc/grafana/grafana.ini
INFO[11-28|19:49:28] Config overridden from command line      logger=settings arg="default.paths.data=/var/lib/grafana"
INFO[11-28|19:49:28] Config overridden from command line      logger=settings arg="default.paths.logs=/var/log/grafana"
INFO[11-28|19:49:28] Config overridden from command line      logger=settings arg="default.paths.plugins=/var/lib/grafana/plugins"
INFO[11-28|19:49:28] Config overridden from command line      logger=settings arg="default.paths.provisioning=/etc/grafana/provisioning"
INFO[11-28|19:49:28] Path Home                                logger=settings path=/usr/share/grafana
```

Une fois que le problème a été résolu (le MDP était prom-operator à la place de admin) grafana se lance :

```
C:\Users\paulm>kubectl port-forward -n prometheus prometheus-grafana-74b9c448f6-nnxhj 3000
Forwarding from 127.0.0.1:3000 -> 3000
Forwarding from [::1]:3000 -> 3000
Handling connection for 3000
E1128 19:54:46.077615    2672 portforward.go:372] error copying from remote stream to local connection: readfrom tcp4 127.0.0.1:3000->127.0.0.1:58379: write tcp4 127.0.0.1:3000->127.0.0.1:58379: wsasend: An esta
blished connection was aborted by the software in your host machine.
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
Handling connection for 3000
```

Nous pouvons accéder a l'interface afin de pouvoir voir différentes statistiques et mettre en place des alertes (ici un bot discord)





Voici (en meilleure qualité que sur les screen) la liste des commandes effectué pour arriver au résultat:

kubectl get rs

kubectl get namespace

kubectl describe namespace dev-303

helm repo add prometheus-community https://prometheus-community.github.io/helm-charts

helm install prometheus prometheus-community/kube-prometheus-stack --namespace=prometheus

helm install prometheus prometheus-community/kube-prometheus-stack

```
kubectl get events -A

kubectl describe pods -n prometheus

kubectl get pods -n prometheus

git clone https://github.com/prometheus-operator/kube-prometheus.git

wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add -

sudo add-apt-repository "deb https://packages.grafana.com/oss/deb stable main"

sudo apt install grafana

sudo grafana-cli admin reset-admin-password admin

kubectl port-forward -n prometheus prometheus-grafana-74b9c448f6-nnxhj 3000
```

Nous nous somme retrouver coincé à cette étape la avec RBAC donc c'est ici que ce termine notre travail.