Install Helm (Reference: How to set Git Upstream For a Respository and a Branch):
Download the binary using wget
`wget -O helm.tar.gz <get link from github release Releases · helm/helm >`

Untar the downloaded file
`tar -zxvf helm.tar.gz`

Move the helm executable to the bin directory.
`sudo mv linux-amd64/helm /usr/local/bin/helm`

Validate by executing the helm command
`helm`

```
[ronslim@ansiblec ~]$ wget -O helm.tar.gz https://get.helm.sh/helm-v3.17.3-linux-amd64.tar.gz
--2025-05-09 06:11:42--  https://get.helm.sh/helm-v3.17.3-linux-amd64.tar.gz
Resolving get.helm.sh (get.helm.sh)... 13.107.246.73, 2620:1ec:bdf::73
Connecting to get.helm.sh (get.helm.sh)|13.107.246.73|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 17491989 (17M) [application/x-tar]
Saving to: 'helm.tar.gz'

helm.tar.gz                                         100%[=========================================

2025-05-09 06:11:44 (20.8 MB/s) - 'helm.tar.gz' saved [17491989/17491989]

[ronslim@ansiblec ~]$ tar -zxvf helm.tar.gz
linux-amd64/
linux-amd64/LICENSE
linux-amd64/helm
linux-amd64/README.md
```

```
[ronslim@ansiblec ~]$ ls -lrt /usr/local/bin/helm
-rwxr-xr-x. 1 ronslim ronslim 58155160 Apr 10 01:49 /usr/local/bin/helm
[ronslim@ansiblec ~]$
```

```
[ronslim@ansiblec ~]$ helm
The Kubernetes package manager

Common actions for Helm:

- helm search:    search for charts
- helm pull:      download a chart to your local directory to view
- helm install:   upload the chart to Kubernetes
- helm list:      list releases of charts

Environment variables:

| Name                                | Description
|-------------------------------------|-------------------------------
| $HELM_CACHE_HOME                    | set an alternative location for s
| $HELM_CONFIG_HOME                   | set an alternative location for s
| $HELM_DATA_HOME                     | set an alternative location for s
| $HELM_DEBUG                         | indicate whether or not Helm is r
```

Pre-requisite Prometheus and Grafana Install:
Helm already installed
Minikube already started

Install Prometheus (Reference: Prometheus and Grafana setup in Minikube):

Add prometheus repository

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

Install provided Helm chart for Prometheus

```
helm install prometheus prometheus-community/prometheus
```

```
[ronslim@ansiblec ~]$ helm repo add prometheus-community https://prometheus-community.github.io/helm-charts
"prometheus-community" has been added to your repositories
[ronslim@ansiblec ~]$ helm install prometheus prometheus-community/prometheus
NAME: prometheus
LAST DEPLOYED: Fri May  9 06:22:00 2025
NAMESPACE: default
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
The Prometheus server can be accessed via port 80 on the following DNS name from within your cluster:
prometheus-server.default.svc.cluster.local


Get the Prometheus server URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=prometheus,app.kubernetes.io/instance=prometheus" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9090


The Prometheus alertmanager can be accessed via port 9093 on the following DNS name from within your cluster:
prometheus-alertmanager.default.svc.cluster.local


Get the Alertmanager URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=alertmanager,app.kubernetes.io/instance=prometheus" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9093
#################################################################################
######   WARNING: Pod Security Policy has been disabled by default since    #####
######            it deprecated after k8s 1.25+. use                        #####
######            (index .Values "prometheus-node-exporter" "rbac"          #####
###### .          "pspEnabled") with (index .Values                         #####
######            "prometheus-node-exporter" "rbac" "pspAnnotations")       #####
######            in case you still need it.                                #####
#################################################################################


The Prometheus PushGateway can be accessed via port 9091 on the following DNS name from within your cluster:
prometheus-prometheus-pushgateway.default.svc.cluster.local


Get the PushGateway URL by running these commands in the same shell:
  export POD_NAME=$(kubectl get pods --namespace default -l "app=prometheus-pushgateway,component=pushgateway" -o jsonpath="{.items[0].metadata.name}")
  kubectl --namespace default port-forward $POD_NAME 9091

For more information on running Prometheus, visit:
https://prometheus.io/
```

Expose the prometheus-server service via NodePort

```
kubectl expose service prometheus-server --type=NodePort --target-port=9090 --name=prometheus-server-np
```

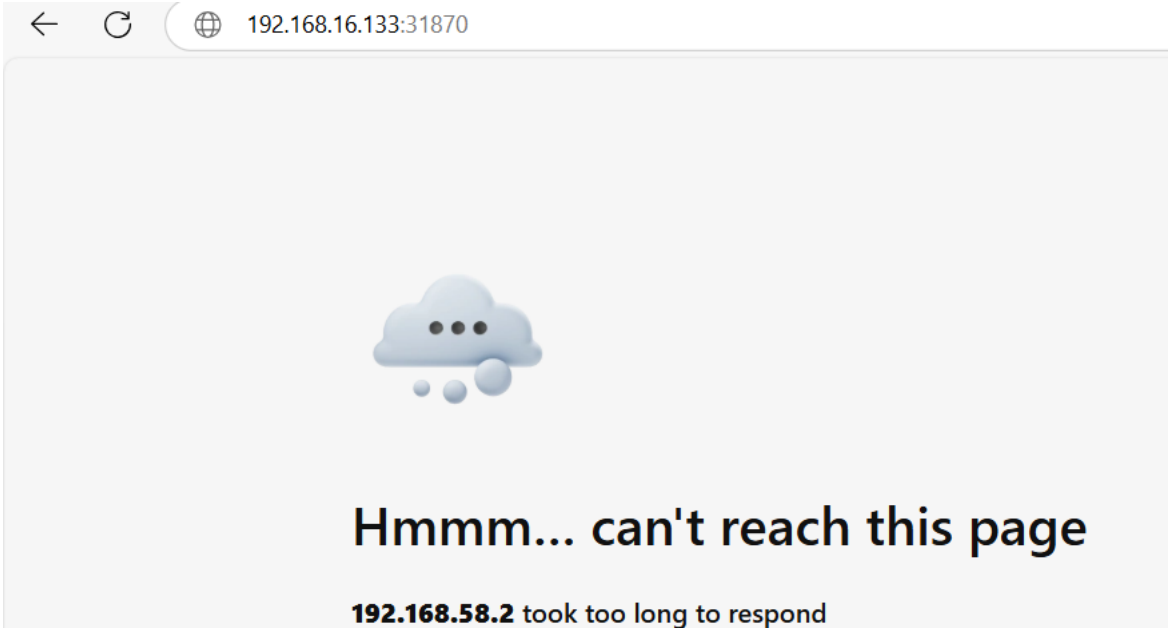
```
[ronslim@ansiblec ~]$ kubectl expose service prometheus-server --type=NodePort --target-port=9090 --name=prometheus-server-np
service/prometheus-server-np exposed
```

Get prometheus service

```
kubectl get svc prometheus-server-np
```

```
NAME                    TYPE       CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
prometheus-server-np    NodePort   10.102.228.100   <none>        80:31870/TCP   99s
```

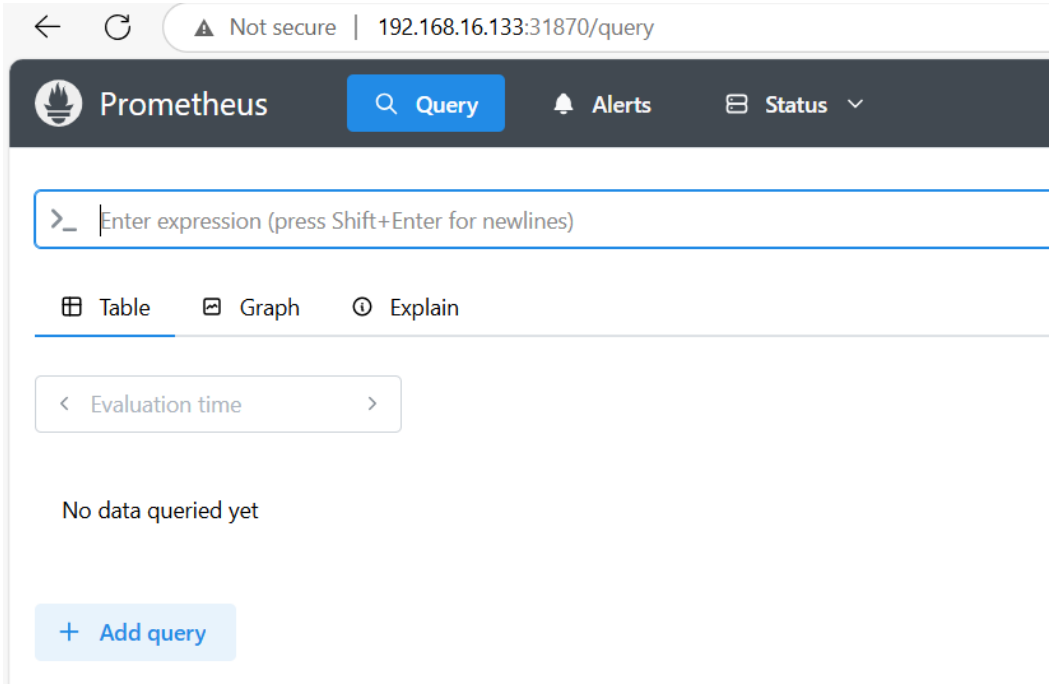
Try accessing the Prometheus via http://<VM IP>/:<NodePort> (e.g. http://192.168.16.133:31870). Notice that the Prometheus is not yet accessible outside VM browser.



Then port-forward to access the site in the new terminal window.
Kubectl port-forward –address localhost,<VM IP> service/<Prometheus service> <NodePort>:80
e.g kubectl port-forward --address localhost,192.168.16.133 service/prometheus-server-np 31870:80

```
[ronslim@ansiblec ~]$ kubectl port-forward --address localhost,192.168.16.133 service/prometheus-server-np 31870:80
Forwarding from 127.0.0.1:31870 -> 9090
Forwarding from 192.168.16.133:31870 -> 9090
Forwarding from [::1]:31870 -> 9090
```

Try accessing the Prometheus again via http://<VM IP>/:<NodePort> (e.g. http://192.168.16.133:31870). Notice that the Prometheus is now accessible outside VM Browser.



Install Grafana (Reference: Prometheus and Grafana setup in Minikube):

Add Rafana Helm Repo

```
helm repo add grafana https://grafana.github.io/helm-charts
```

Install Grafana Chart

```
helm install grafana grafana/grafana
```

```
[ronslim@ansiblec ~]$ helm repo add grafana https://grafana.github.io/helm-charts
"grafana" has been added to your repositories
[ronslim@ansiblec ~]$ helm install grafana grafana/grafana
NAME: grafana
LAST DEPLOYED: Sat May 10 07:43:56 2025
NAMESPACE: default
STATUS: deployed
REVISION: 1
NOTES:
1. Get your 'admin' user password by running:

   kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo


2. The Grafana server can be accessed via port 80 on the following DNS name from within your cluster:

   grafana.default.svc.cluster.local

   Get the Grafana URL to visit by running these commands in the same shell:
     export POD_NAME=$(kubectl get pods --namespace default -l "app.kubernetes.io/name=grafana,app.kubernetes.io/instance=grafana" -o jsonpath="{.items[0].metadata.name}")
     kubectl --namespace default port-forward $POD_NAME 3000

3. Login with the password from step 1 and the username: admin
#################################################################
######   WARNING: Persistence is disabled!!! You will lose your data when   #####
######            the Grafana pod is terminated.                            #####
#################################################################
[ronslim@ansiblec ~]$
```

Expose Grafana service via NodePort in order to access Grafana UI

```
kubectl expose service grafana --type=NodePort --target-port=3000 --name=grafana-np
```

Get admin password

```
kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo
```

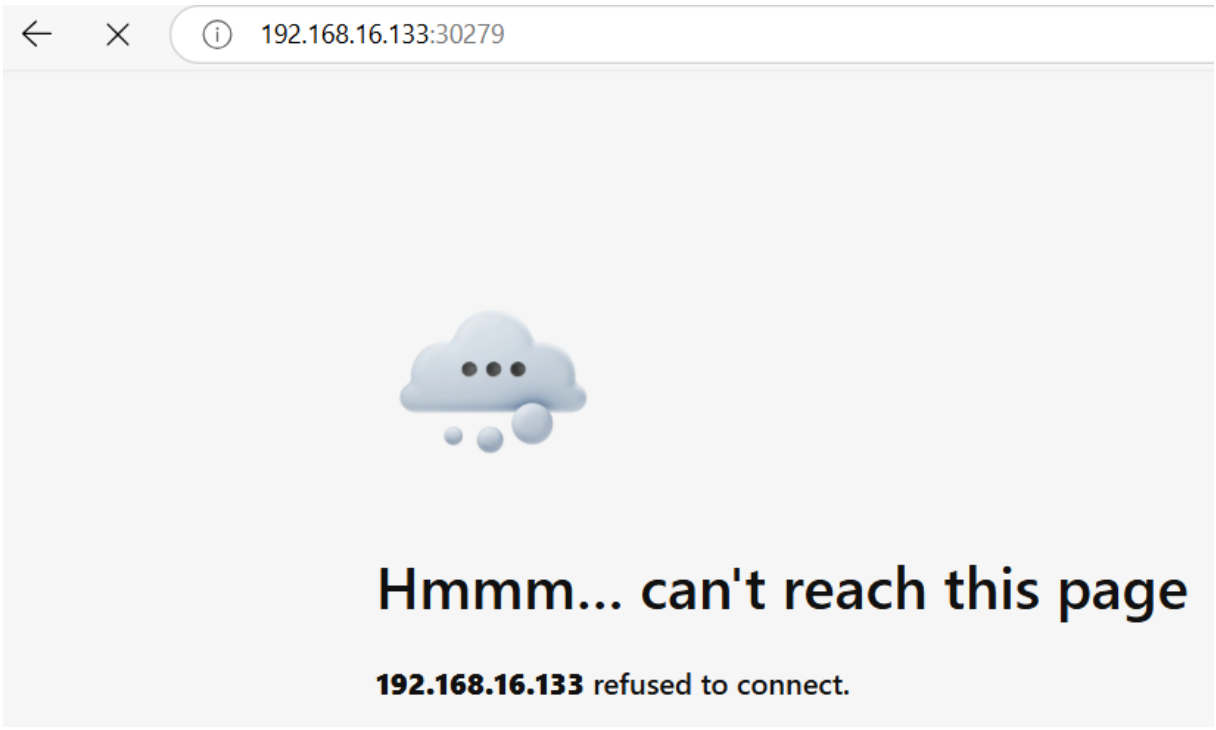
```
[ronslim@ansiblec ~]$ kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | base64 --decode ; echo
tk...
```

Check exposed grafana service especially NodePort

```
kubectl get services grafana-np
```

```
[ronslim@ansiblec ~]$ kubectl get services grafana-np
NAME         TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
grafana-np   NodePort   10.103.54.53    <none>        80:30279/TCP   5m35s
[ronslim@ansiblec ~]$
```

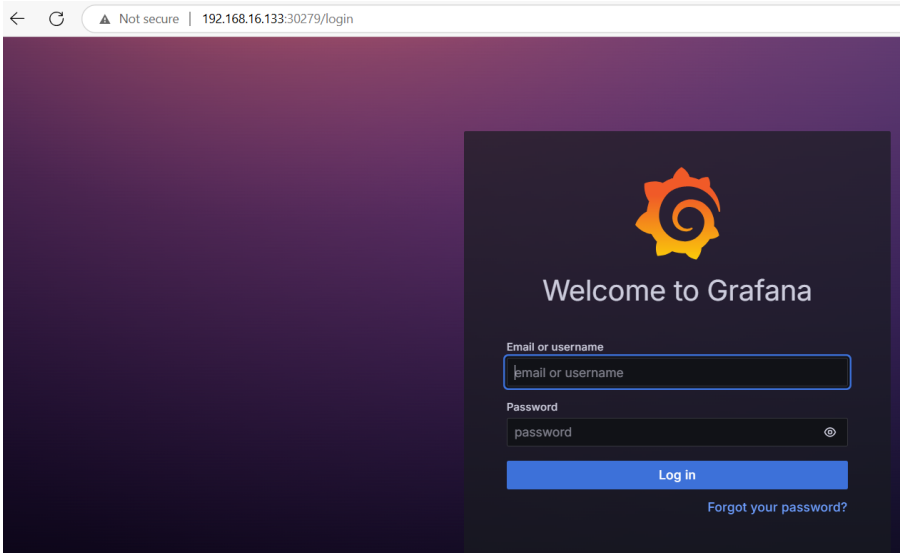
Try accessing the Grafana via http://<VM IP>/:<NodePort> (e.g. http://192.168.16.133:30279). Notice that the Grafana is not yet accessible outside VM browser.



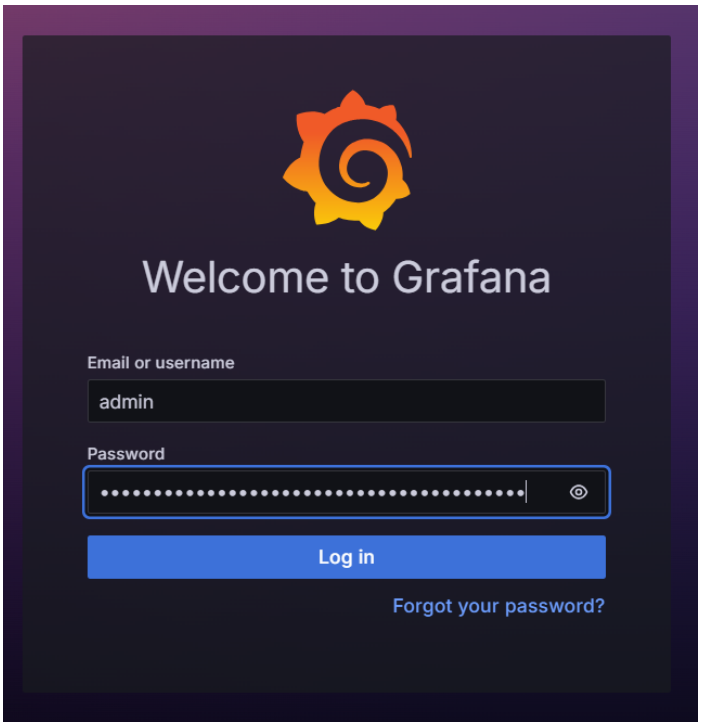
Then port-forward to access the site in the new terminal window.
Kubectl port-forward –address localhost,<VM IP> service/<grafana service> <NodePort>:80
e.g. kubectl port-forward --address localhost,192.168.16.133 service/grafana-np 30279:80

```
[ronslim@ansiblec ~]$ kubectl port-forward --address localhost,192.168.16.133 service/grafana-np 30279:80
Forwarding from 127.0.0.1:30279 -> 3000
Forwarding from 192.168.16.133:30279 -> 3000
Forwarding from [::1]:30279 -> 3000
```

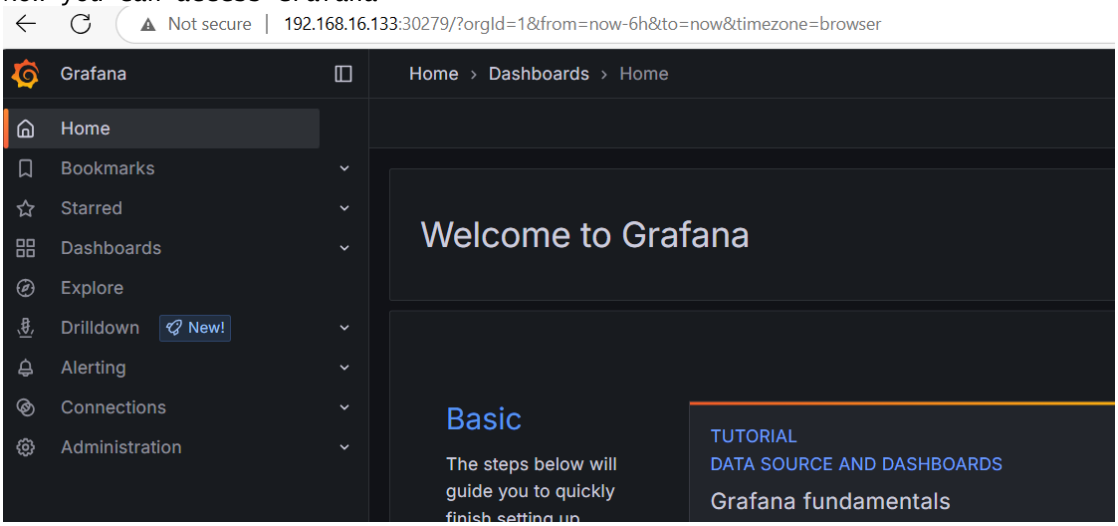
Try accessing the Grafana again via http://<VM IP>/:<NodePort> (e.g. http://192.168.16.133:30279). Notice that the Grafana is now accessible outside VM Browser.



Try to login using admin / <password from Get admin password step>

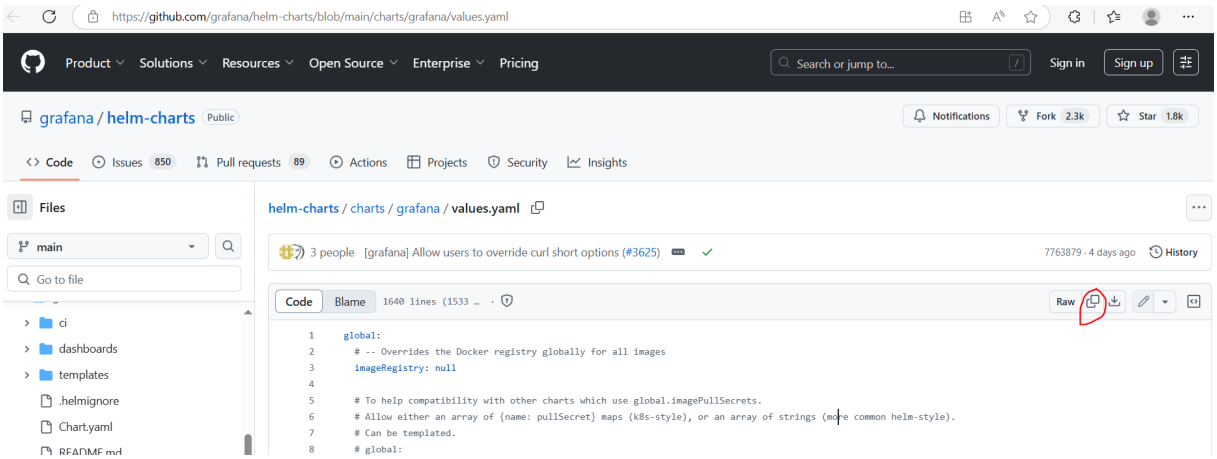


Now you can access Grafana



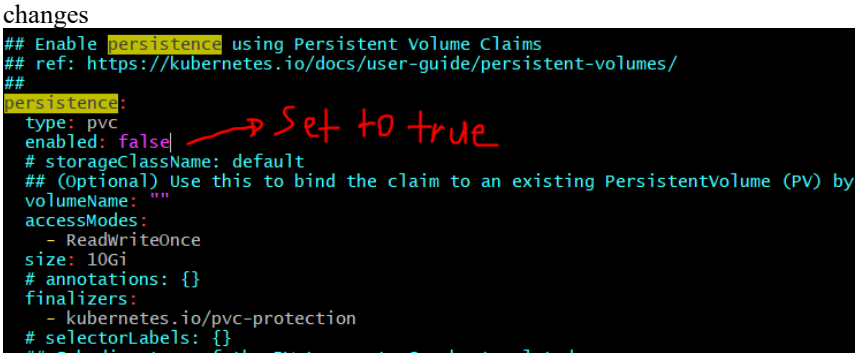
Enable Persistent Storage Grafana (Reference: [Deploy Grafana using Helm Charts | Grafana documentation])

Go to [helm-charts/charts/grafana/values.yaml at main · grafana/helm-charts · GitHub]
and click copy button

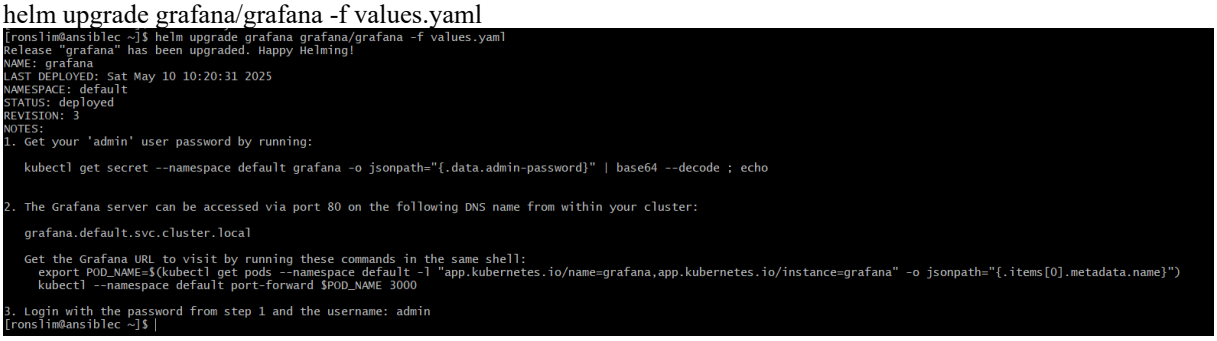


Then use cat > values.yaml or vi values.yaml to paste the code or download the file and scp to VM Server

Then Edit the values.yaml and under the section of persistence, change the enable flag from false to true and save changes



Then run to update changes
helm upgrade grafana/grafana -f values.yaml



Notice that there is no more warning that persistence is disabled