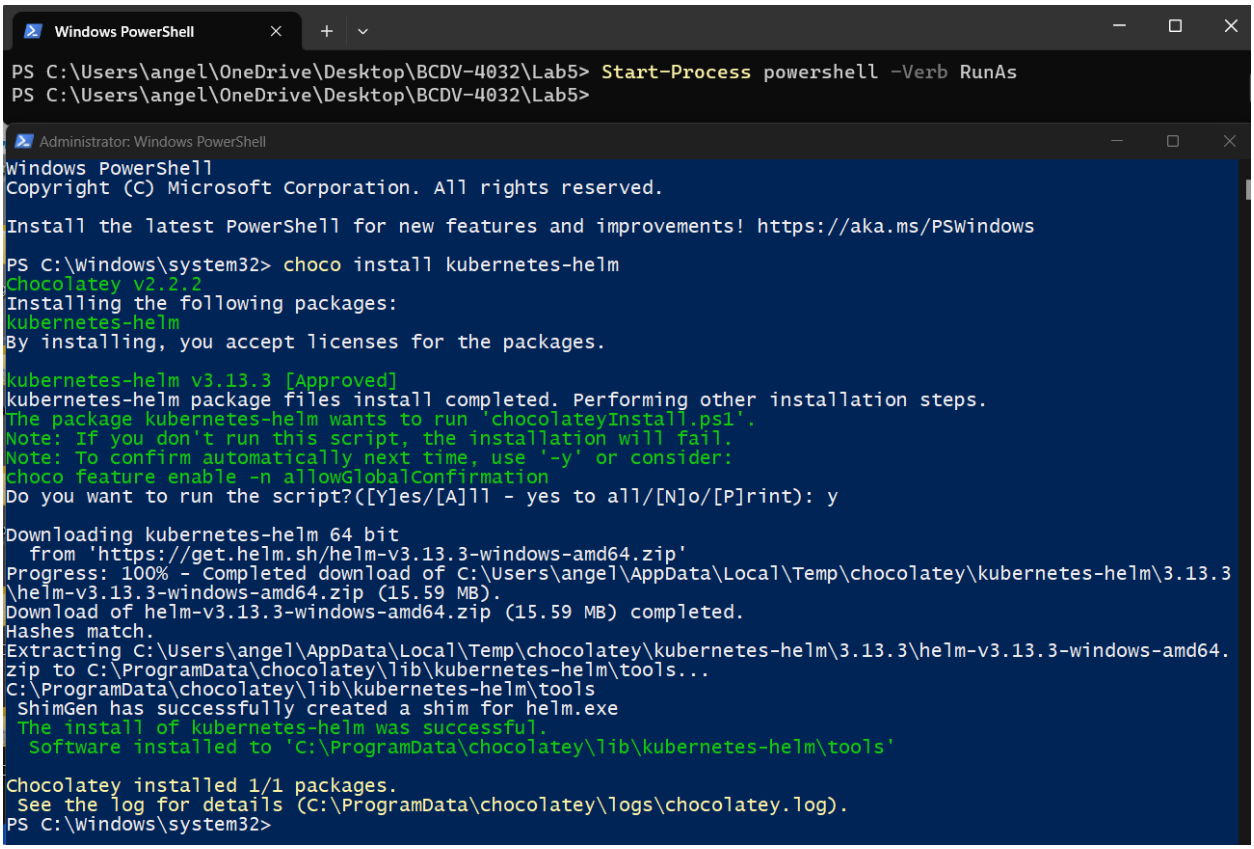
Student: ANGEL EFRAIN ORDONEZ GONZALEZ **Professor: Keerthi Nelaturu**

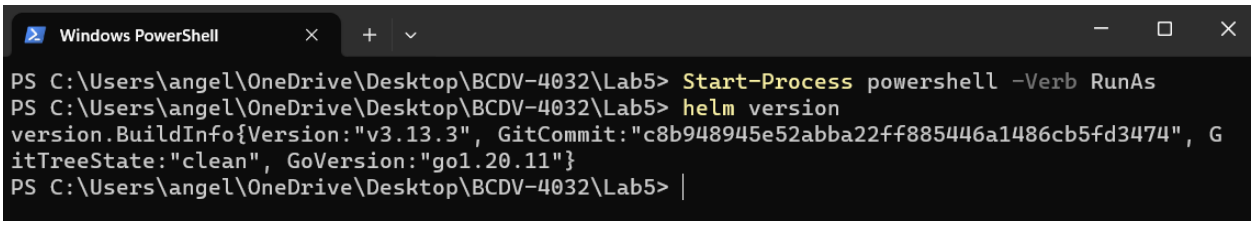
ID Number: 101483544 **BCDV 4032 Building Scalable Blockchain Apps**

Lab 5

Instructions

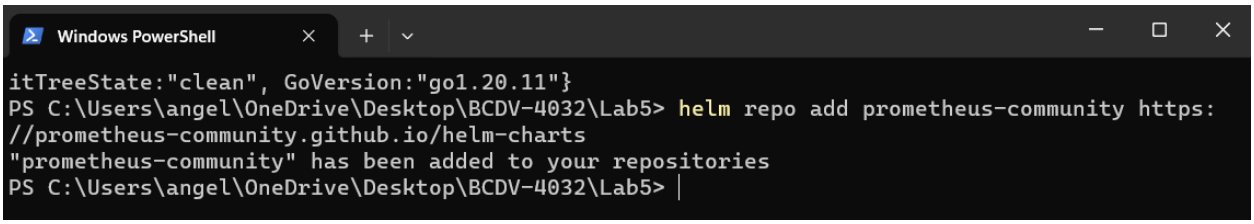
Before all, we need to install Helm, as we are in windows.





1. Install Prometheus

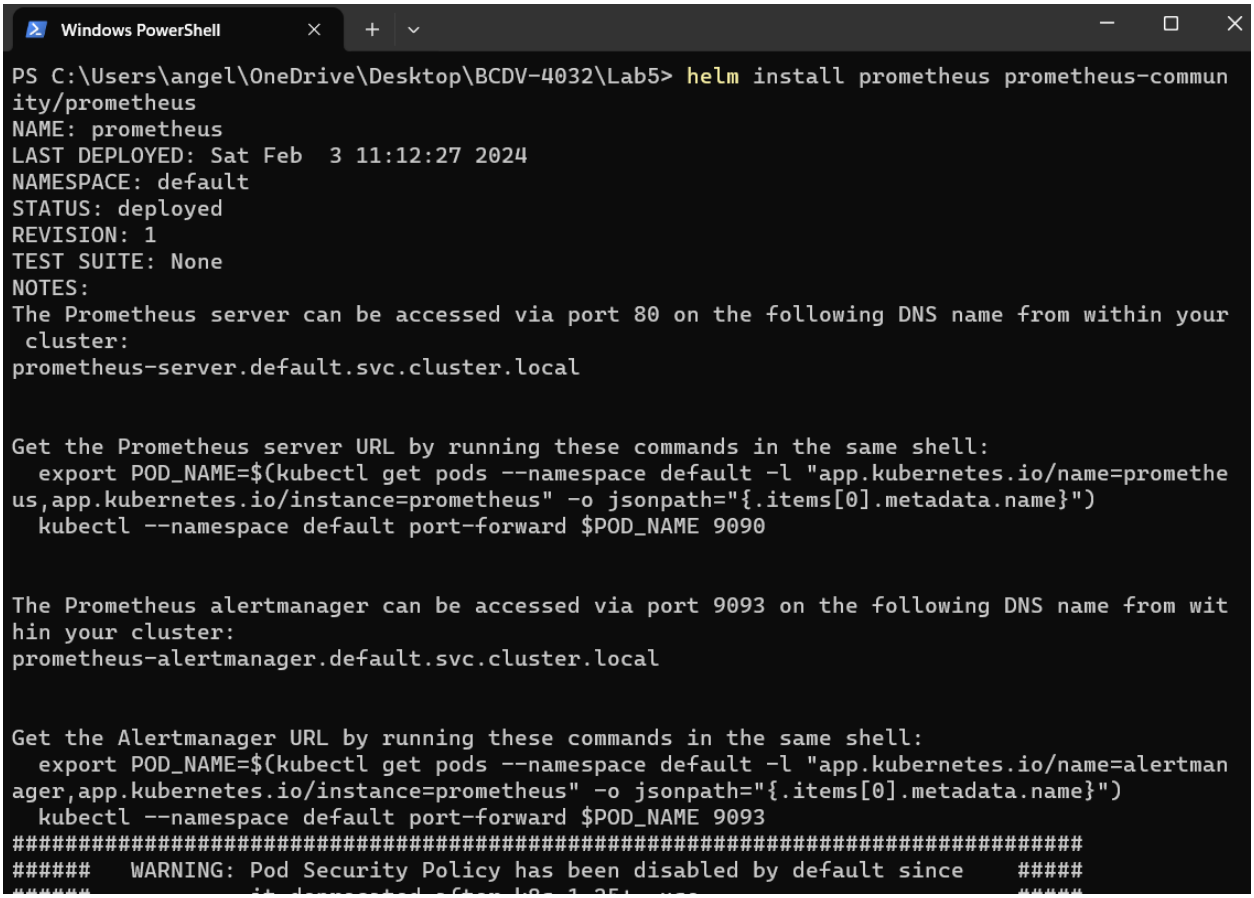
helm repo add prometheus-community https://prometheus-community.github.io/helm-charts



helm repo update

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> 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!⎈
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5>
```

helm install prometheus prometheus-community/prometheus



kubectl get pods

kubectl get svc

```
Windows PowerShell
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl get pods
NAME                                            READY   STATUS    RESTARTS   AGE
prometheus-alertmanager-0                       1/1     Running   0          28s
prometheus-kube-state-metrics-745b475957-q7n7q  1/1     Running   0          28s
prometheus-prometheus-node-exporter-l77rw       1/1     Running   0          28s
prometheus-prometheus-pushgateway-6ccd698d79-s8gkb   1/1     Running   0          28s
prometheus-server-5c99dfc547-z2w5s              1/2     Running   0          28s
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl get svc
NAME                                 TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
kubernetes                           ClusterIP   10.96.0.1        <none>        443/TCP    12m
prometheus-alertmanager              ClusterIP   10.111.21.132    <none>        9093/TCP   37s
prometheus-alertmanager-headless     ClusterIP   None             <none>        9093/TCP   37s
prometheus-kube-state-metrics        ClusterIP   10.105.60.9      <none>        8080/TCP   37s
prometheus-prometheus-node-exporter  ClusterIP   10.99.68.218     <none>        9100/TCP   37s
prometheus-prometheus-pushgateway    ClusterIP   10.100.102.207   <none>        9091/TCP   37s
prometheus-server                    ClusterIP   10.96.146.148    <none>        80/TCP     37s
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5>
```

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

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl expose service prometheus-server --type=Node
Port --target-port=9090 --name=prometheus-server-ext
service/prometheus-server-ext exposed
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5>
```

kubectl get svc

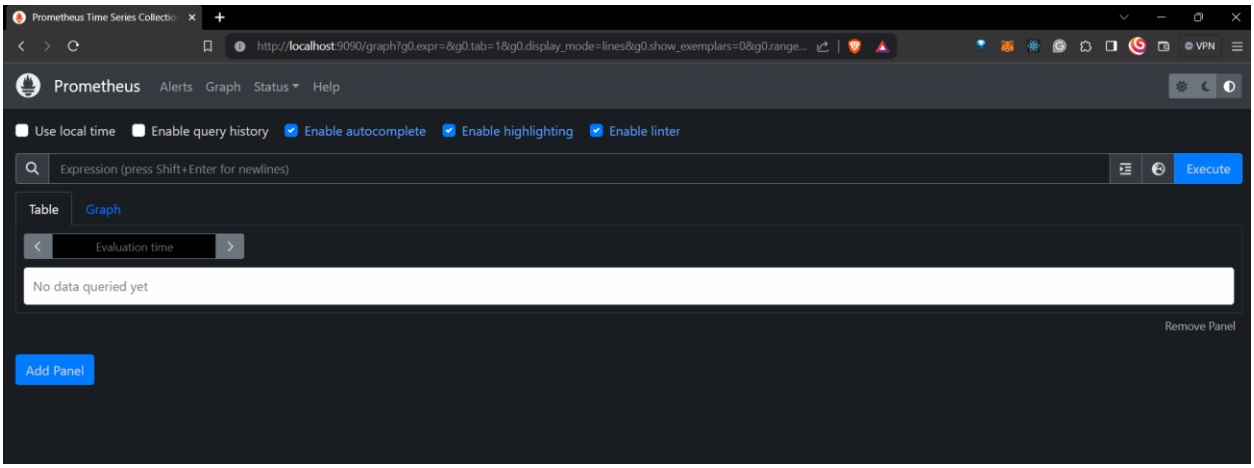
```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl get svc
NAME                                 TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
kubernetes                           ClusterIP   10.96.0.1        <none>        443/TCP        13m
prometheus-alertmanager              ClusterIP   10.111.21.132    <none>        9093/TCP       103s
prometheus-alertmanager-headless     ClusterIP   None             <none>        9093/TCP       103s
prometheus-kube-state-metrics        ClusterIP   10.105.60.9      <none>        8080/TCP       103s
prometheus-prometheus-node-exporter  ClusterIP   10.99.68.218     <none>        9100/TCP       103s
prometheus-prometheus-pushgateway    ClusterIP   10.100.102.207   <none>        9091/TCP       103s
prometheus-server                    ClusterIP   10.96.146.148    <none>        80/TCP         103s
prometheus-server-ext                NodePort    10.102.240.152   <none>        80:31007/TCP   15s
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5>
```

minikube ip

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> minikube ip
W0203 13:13:35.245963   36696 main.go:291] Unable to resolve the current Docker CLI context "default": context "default"
: context not found: open C:\Users\angel\.docker\contexts\meta\37a8eec1ce19687d132fe29051dca629d164e2c4958ba141d5f4133a3
3f0688f\meta.json: The system cannot find the path specified.
192.168.49.2
```

kubectl port-forward prometheus-server-5c99dfc547-z2w5s 9090

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl port-forward prometheus-server-5c99dfc547-z2w5s 9090
Forwarding from 127.0.0.1:9090 -> 9090
Forwarding from [::1]:9090 -> 9090
```



2. Install Grafana

Submission - Screenshot of installation output.

helm install grafana grafana/grafana

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> helm install grafana grafana/grafana
NAME: grafana
LAST DEPLOYED: Sat Feb  3 13:22:40 2024
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:
```

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

```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl expose service grafana --type=NodePort --target-port=3000  --
name=grafana-ext
service/grafana-ext exposed
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5>
```

kubectl get secret --namespace default grafana -o jsonpath="{.data.admin-password}" | ForEach-Object {[System.Text.Encoding]::UTF8.GetString([System.Convert]::FromBase64String($_))}

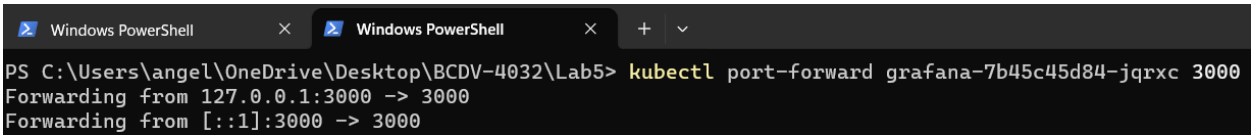
```
PS C:\Users\angel\OneDrive\Desktop\BCDV-4032\Lab5> kubectl get secret --namespace default grafana -o jsonpath="{.data.admi
n-password}" | ForEach-Object {[System.Text.Encoding]::UTF8.GetString([System.Convert]::FromBase64String($_))}
0mO7IXDiRBY4FceSnWebfoKYeEyFURKqeMmEtYLO
```

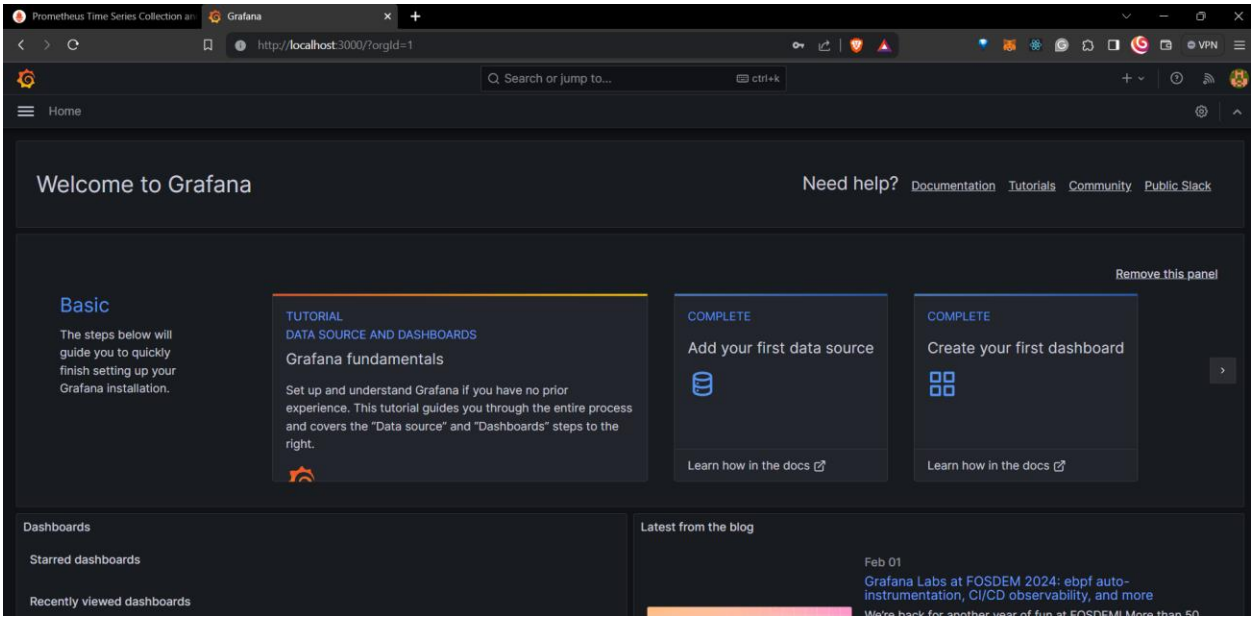
Now, with this password it is possible to enter to Grafanam with the username admin.

admin

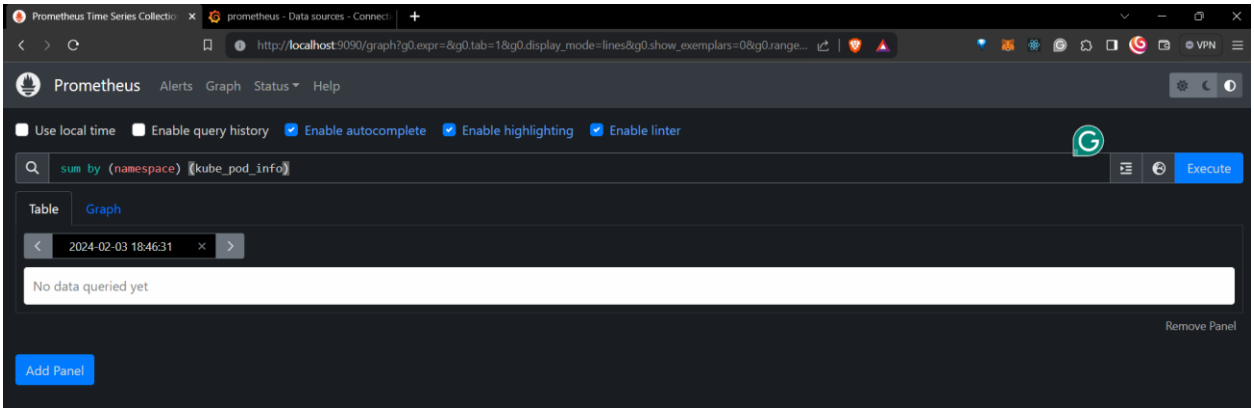
0mO7IXDiRBY4FceSnWebfoKYeEyFURKqeMmEtYLO

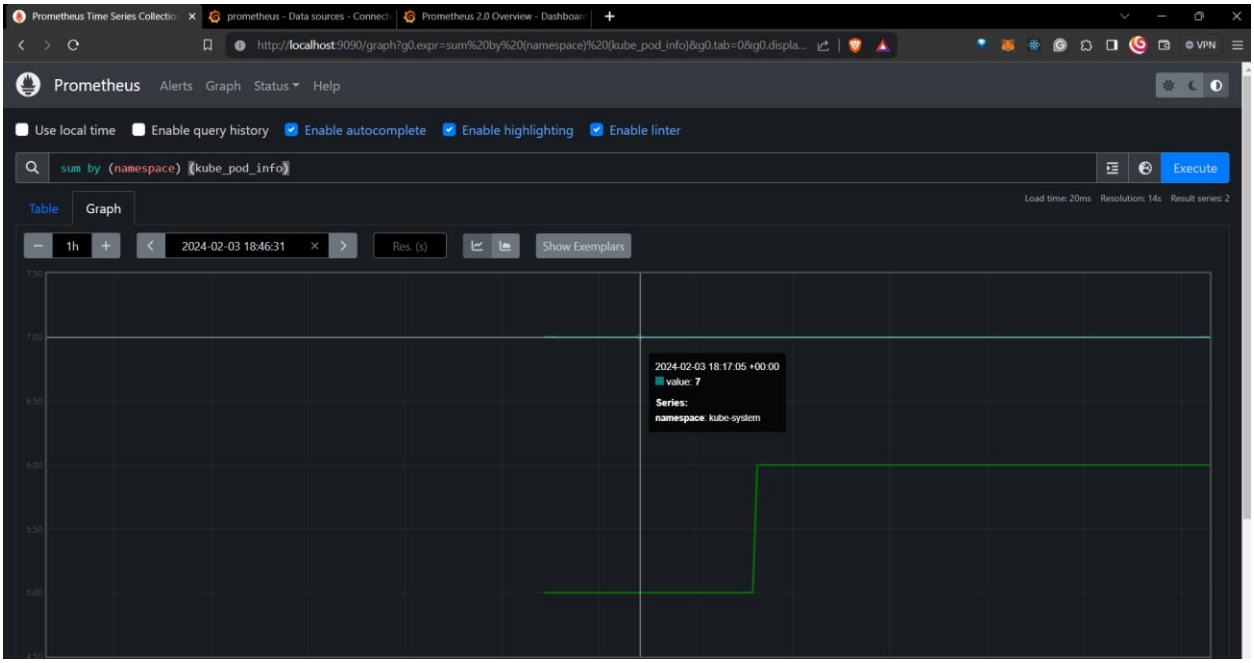
kubectl port-forward grafana-7b45c45d84-jqrxc 3000

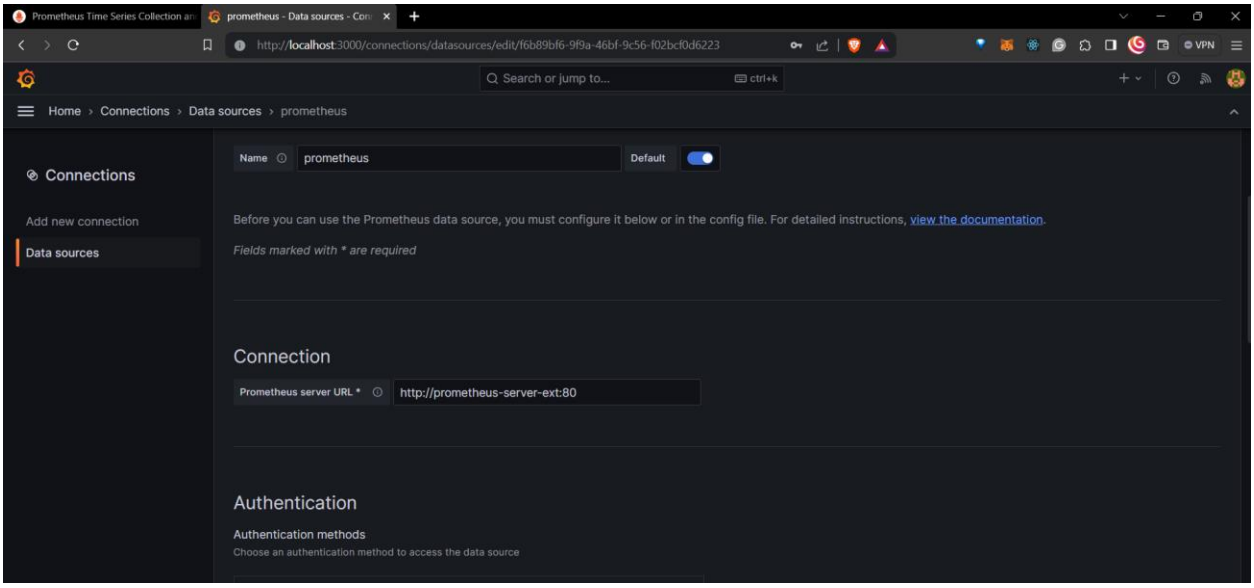




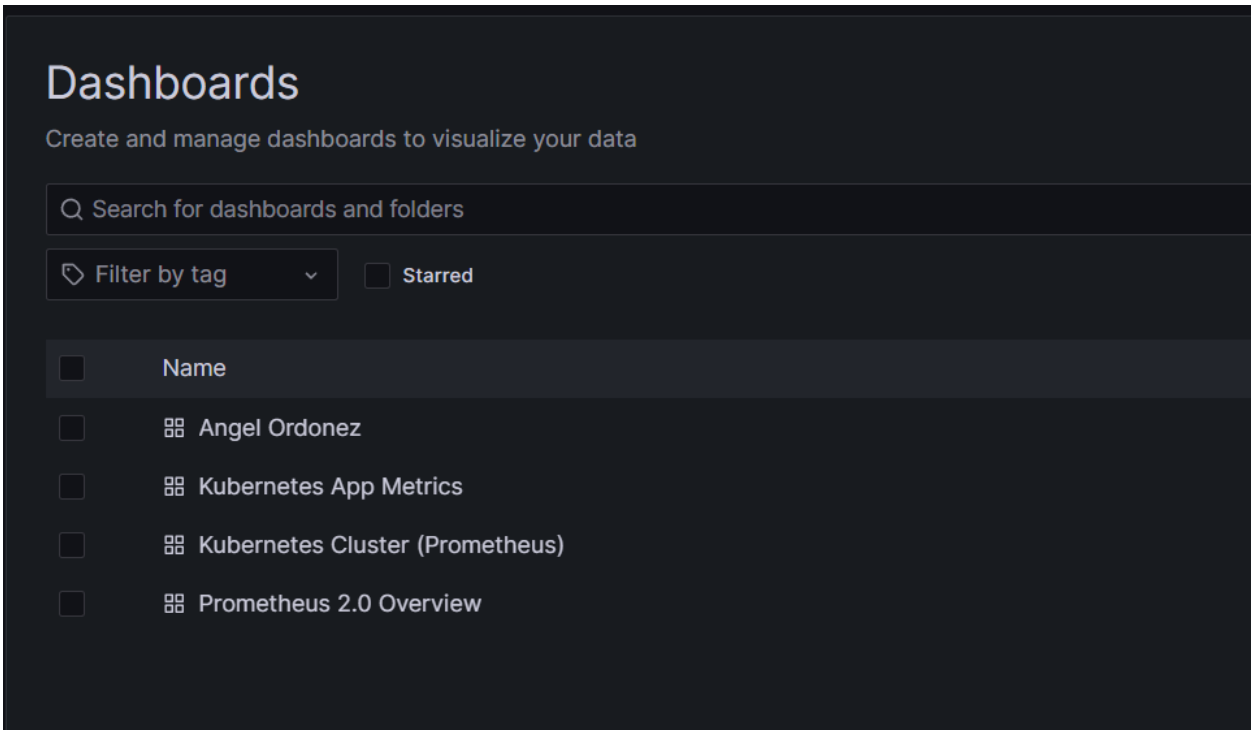
3. Connect Prometheus as Data source to Grafana

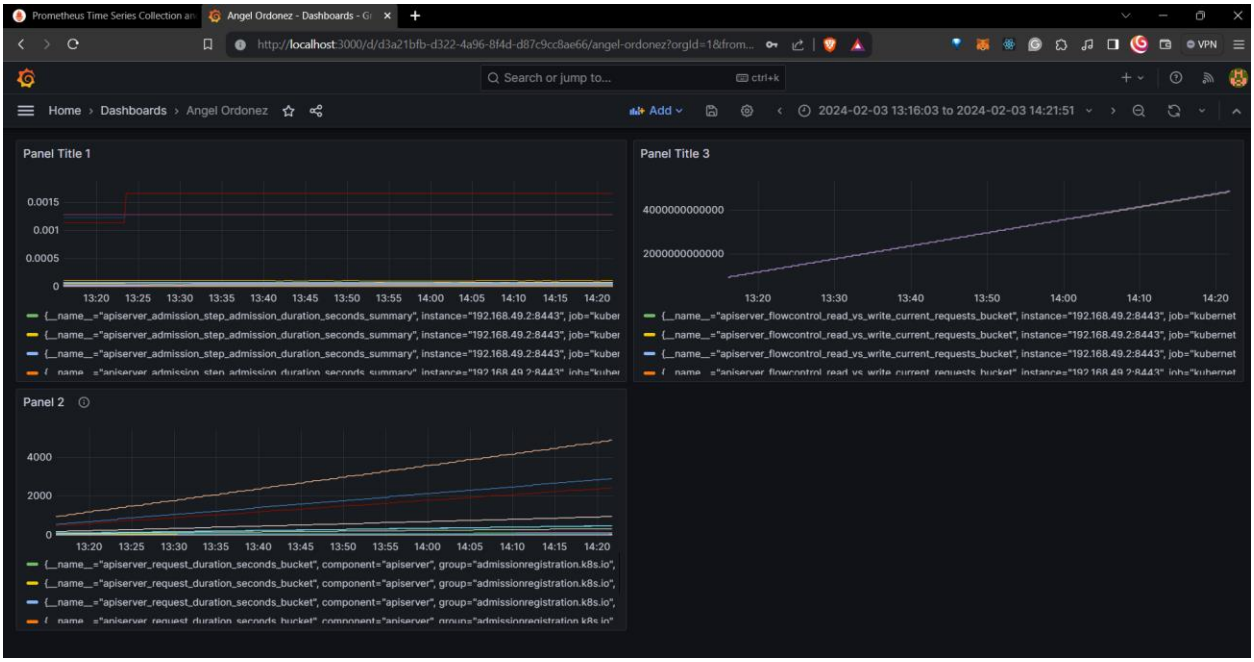




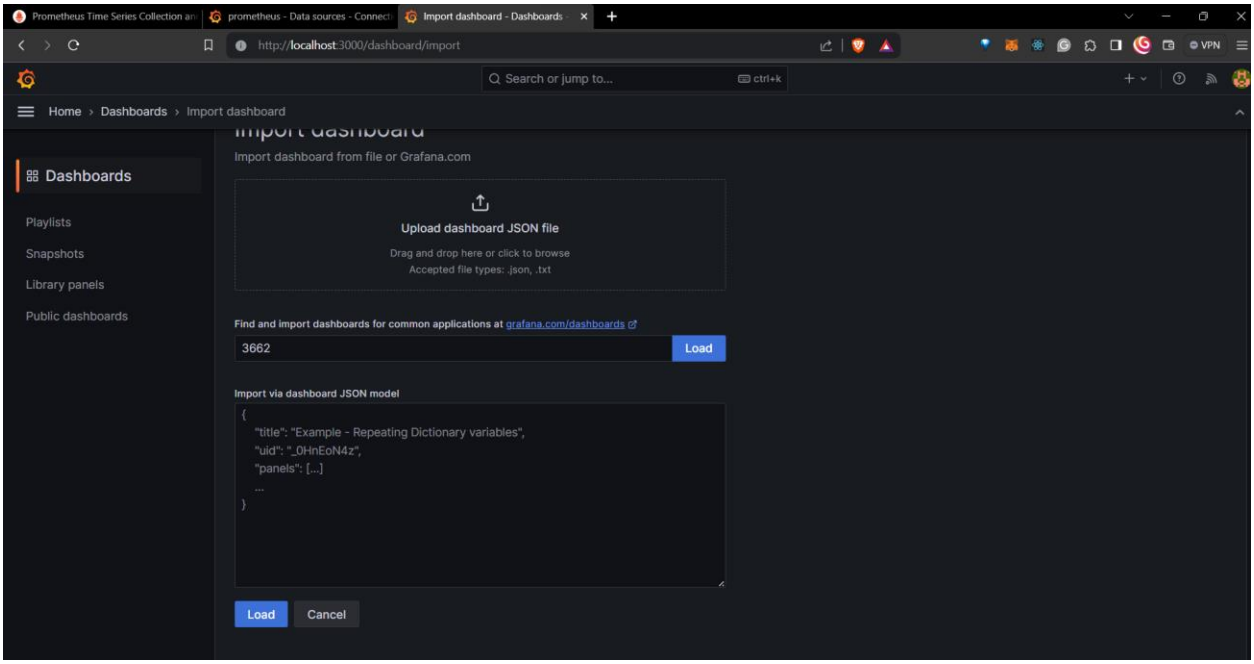


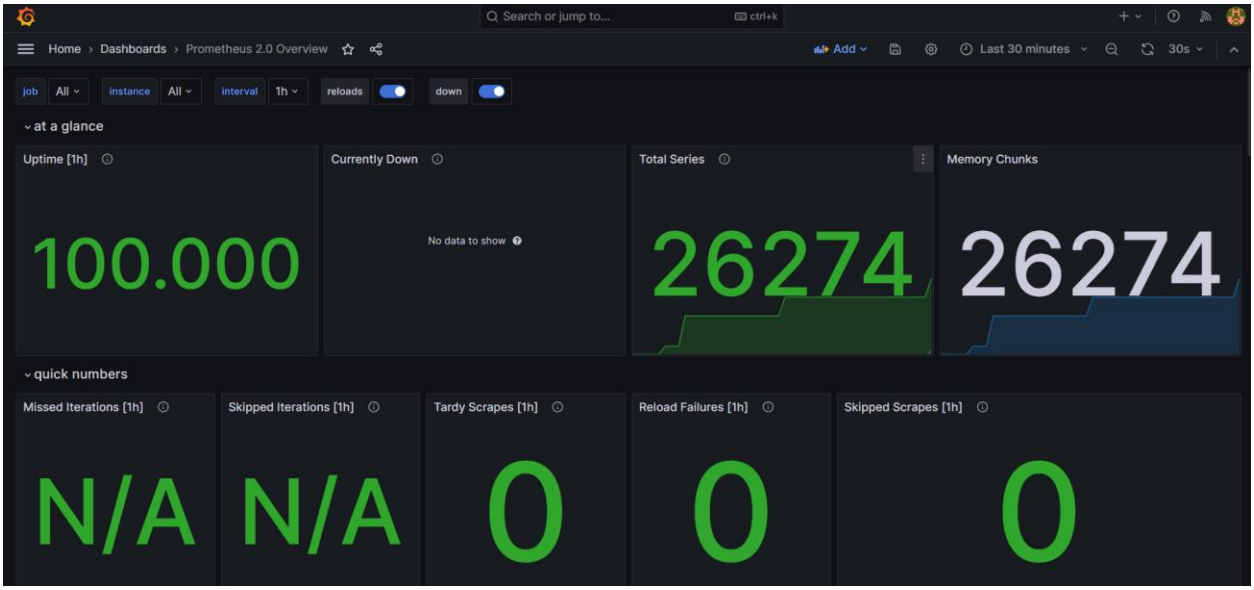
4. **Create a custom dashboard with 3 visualizations of your choice displaying information about the minikube kubernetes cluster running on your system.**

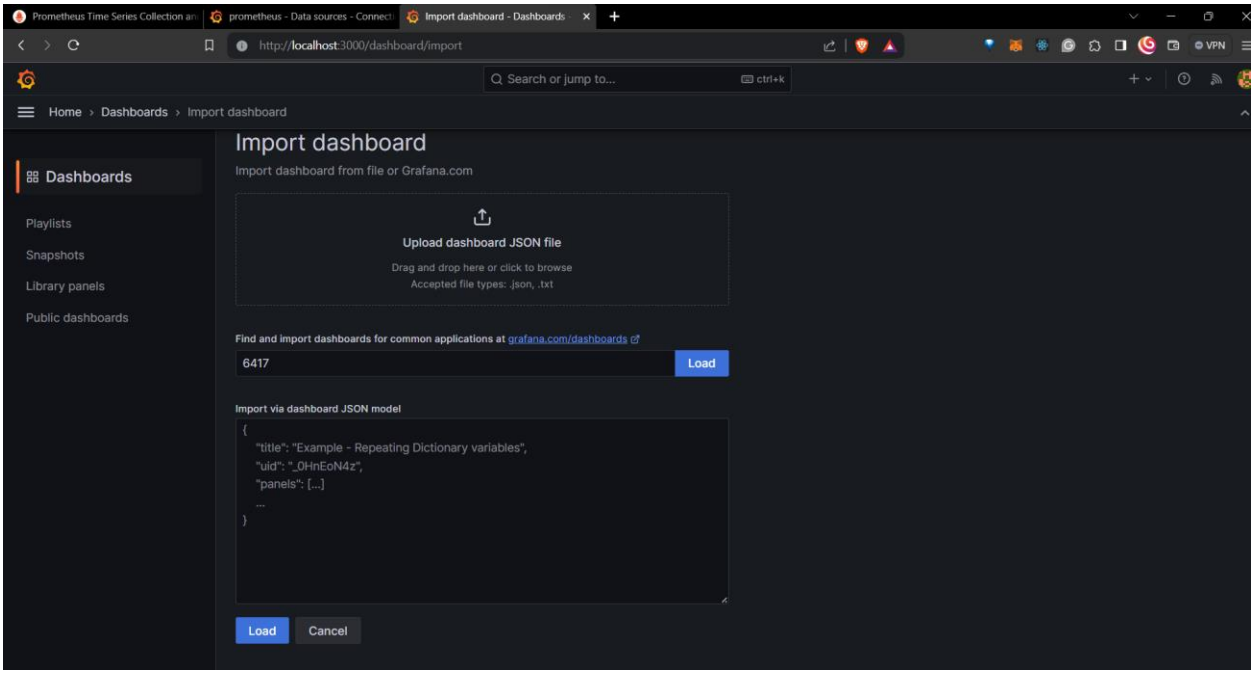


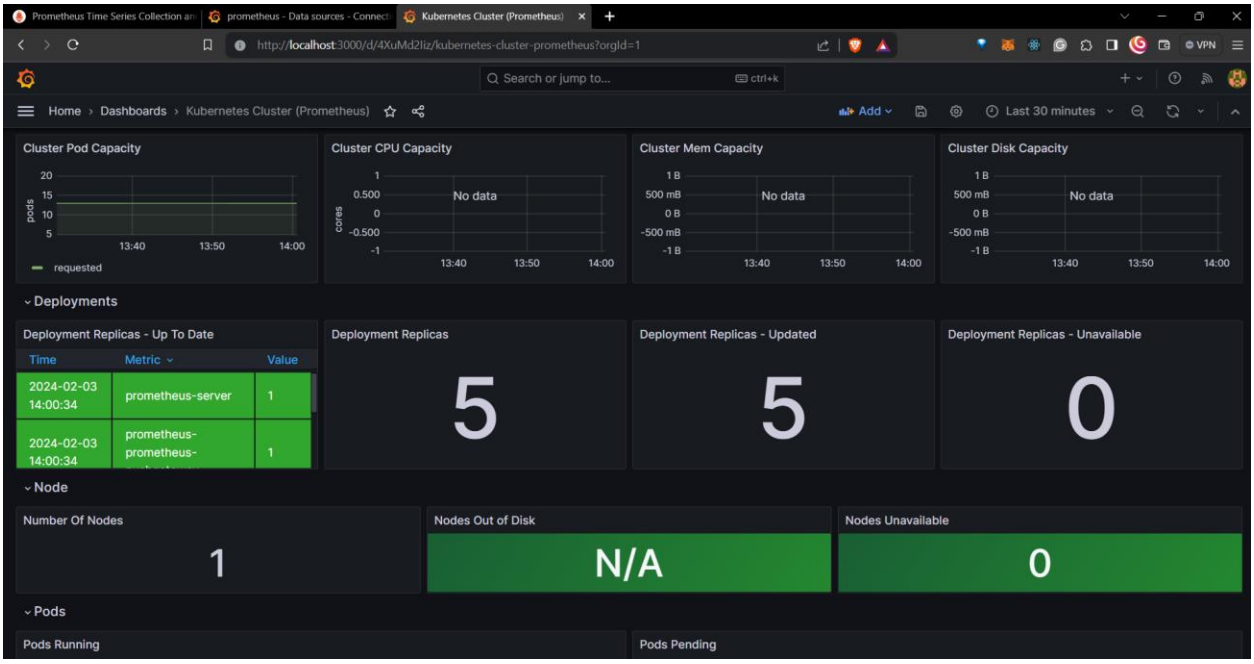


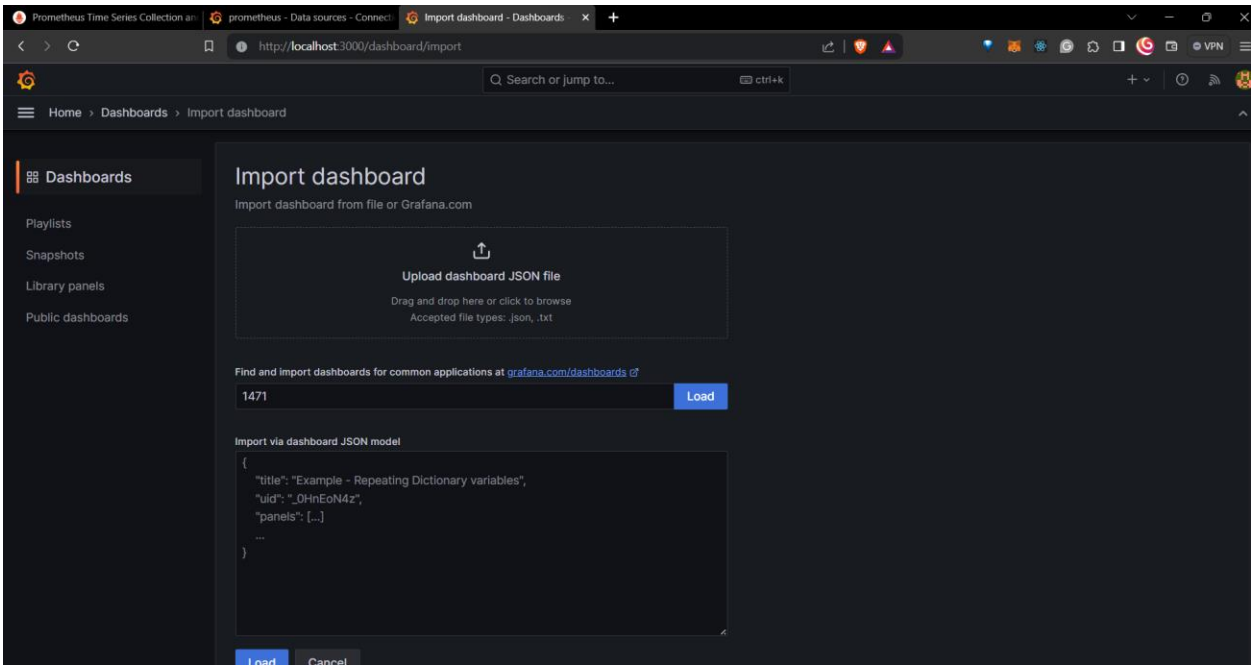
Import Dashboard from 3662 ID.


Prometheus Time Series Collection an
prometheus - Data sources - Connecti
Import dashboard - Dashboards
http://localhost:3000/dashboard/import
Search or jump to...
ctrl+k
Home › Dashboards › Import dashboard
Dashboards
Playlists
Snapshots
Library panels
Public dashboards
Import dashboard from file or Grafana.com
Upload dashboard JSON file
Drag and drop here or click to browse
Accepted file types: .json, .txt
Find and import dashboards for common applications at grafana.com/dashboards
3662
Load
Import via dashboard JSON model
{
"title": "Example - Repeating Dictionary variables",
"uid": "_0HnEoN4z",
"panels": [...]
...
}
Load
Cancel


Search or jump to...
ctrl+k
Home › Dashboards › Prometheus 2.0 Overview
Add
Last 30 minutes
30s
job
All
instance
All
interval
1h
reloads
down
at a glance
Uptime [1h]
100.000
Currently Down
No data to show
Total Series
26274
Memory Chunks
26274
quick numbers
Missed Iterations [1h]
N/A
Skipped Iterations [1h]
N/A
Tardy Scrapes [1h]
0
Reload Failures [1h]
0
Skipped Scrapes [1h]
0


Prometheus Time Series Collection an
prometheus - Data sources - Connecti
Import dashboard - Dashboards
http://localhost:3000/dashboard/import
Search or jump to...
ctrl+k
Home › Dashboards › Import dashboard
Import dashboard
Import dashboard from file or Grafana.com
Dashboards
Playlists
Snapshots
Library panels
Public dashboards
Upload dashboard JSON file
Drag and drop here or click to browse
Accepted file types: .json, .txt
Find and import dashboards for common applications at grafana.com/dashboards
6417
Load
Import via dashboard JSON model
{
"title": "Example - Repeating Dictionary variables",
"uid": "_0HnEoN4z",
"panels": [...]
...
}
Load
Cancel


Prometheus Time Series Collection an
prometheus - Data sources - Connecti
Kubernetes Cluster (Prometheus)
http://localhost:3000/d/4XuMd2liz/kubernetes-cluster-prometheus?orgId=1
Search or jump to...
ctrl+k
Home › Dashboards › Kubernetes Cluster (Prometheus)
Add
Last 30 minutes
Cluster Pod Capacity
pods
requested
Cluster CPU Capacity
cores
No data
Cluster Mem Capacity
No data
Cluster Disk Capacity
No data
Deployments
Deployment Replicas - Up To Date
Time
Metric
Value
2024-02-03 14:00:34
prometheus-server
1
Deployment Replicas
5
Deployment Replicas - Updated
5
Deployment Replicas - Unavailable
0
Node
Number Of Nodes
1
Nodes Out of Disk
N/A
Nodes Unavailable
0
Pods
Pods Running
Pods Pending


Prometheus Time Series Collection and
prometheus - Data sources - Connecti
Import dashboard - Dashboards
http://localhost:3000/dashboard/import
Search or jump to...
ctrl+k
Home › Dashboards › Import dashboard
Dashboards
Playlists
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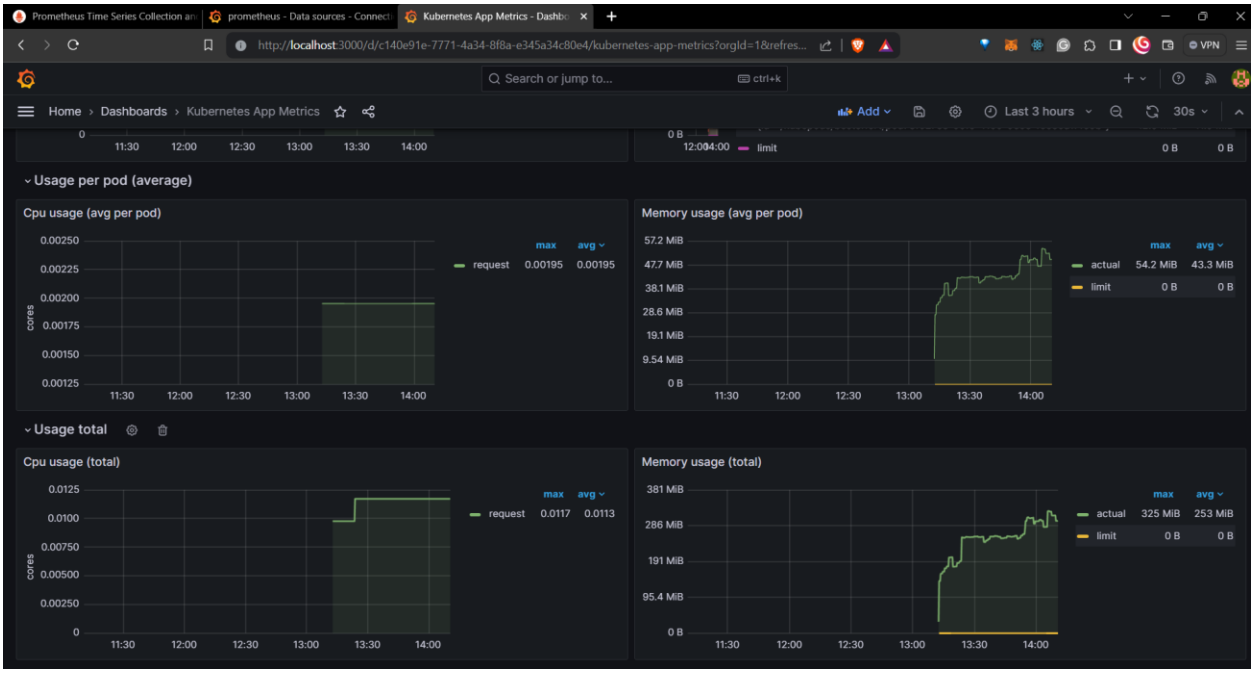
Import dashboard
Import dashboard from file or Grafana.com
Upload dashboard JSON file
Drag and drop here or click to browse
Accepted file types: .json, .txt
Find and import dashboards for common applications at grafana.com/dashboards
1471
Load
Import via dashboard JSON model
{
"title": "Example - Repeating Dictionary variables",
"uid": "_0HnEoN4z",
"panels": [...]
...
}
Load
Cancel


Prometheus Time Series Collection and
prometheus - Data sources - Connecti
Kubernetes App Metrics - Dashbo
http://localhost:3000/d/c140e91e-7771-4a34-8f8a-e345a34c80e4/kubernetes-app-metrics?orgId=1&refres...
Search or jump to...
ctrl+k
Home › Dashboards › Kubernetes App Metrics
Add
Last 3 hours
30s
11:30 12:00 12:30 13:00 13:30 14:00
limit
0 B
Usage per pod (average)
Cpu usage (avg per pod)
0.00250
0.00225
0.00200
0.00175
0.00150
0.00125
cores
max avg
request 0.00195 0.00195
Memory usage (avg per pod)
57.2 MiB
47.7 MiB
38.1 MiB
28.6 MiB
19.1 MiB
9.54 MiB
0 B
max avg
actual 54.2 MiB 43.3 MiB
limit 0 B 0 B
Usage total
Cpu usage (total)
0.0125
0.0100
0.00750
0.00500
0.00250
0
cores
max avg
request 0.0117 0.0113
Memory usage (total)
381 MiB
286 MiB
191 MiB
95.4 MiB
0 B
max avg
actual 325 MiB 253 MiB
limit 0 B 0 B