Monitoring Kubernetes Cluster on AWS EKS using Prometheus & Grafana

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I recently set up full-stack monitoring for my EKS cluster using Prometheus and Grafana, deployed via Helm.

Here's a step-by-step summary of the process:

Pre-requisites:

- EKS Cluster (already up and running)
- Helm 3 installed
- EC2 instance configured with kubectl access to the EKS cluster

Implementation Steps:

1. Add Helm Repositories:

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

2. Create Prometheus Namespace:

```
kubectl create namespace prometheus
```

3. Install kube-prometheus-stack:

```
helm install stable prometheus-community/kube-prometheus-stack -n prometheus
```

4. Verify Deployment:

```
kubectl get pods -n prometheus
kubectl get svc -n prometheus
```

5. Expose Prometheus & Grafana (Change ClusterIP to LoadBalancer):

```
kubectl edit svc stable-kube-prometheus-sta-prometheus -n prometheus
```

```
kubectl edit svc stable-grafana -n prometheus
```

6. Get External URLs:

```
kubectl get svc -n prometheus
```

7. Access Grafana UI:

Username: admin

Password: prom-operator

8. Import Kubernetes Monitoring Dashboard:

Click + on the left panel Import ID: 12740 Prometheus as data source Import

Your monitoring stack is now live! Prometheus is collecting metrics and Grafana visualizes them.

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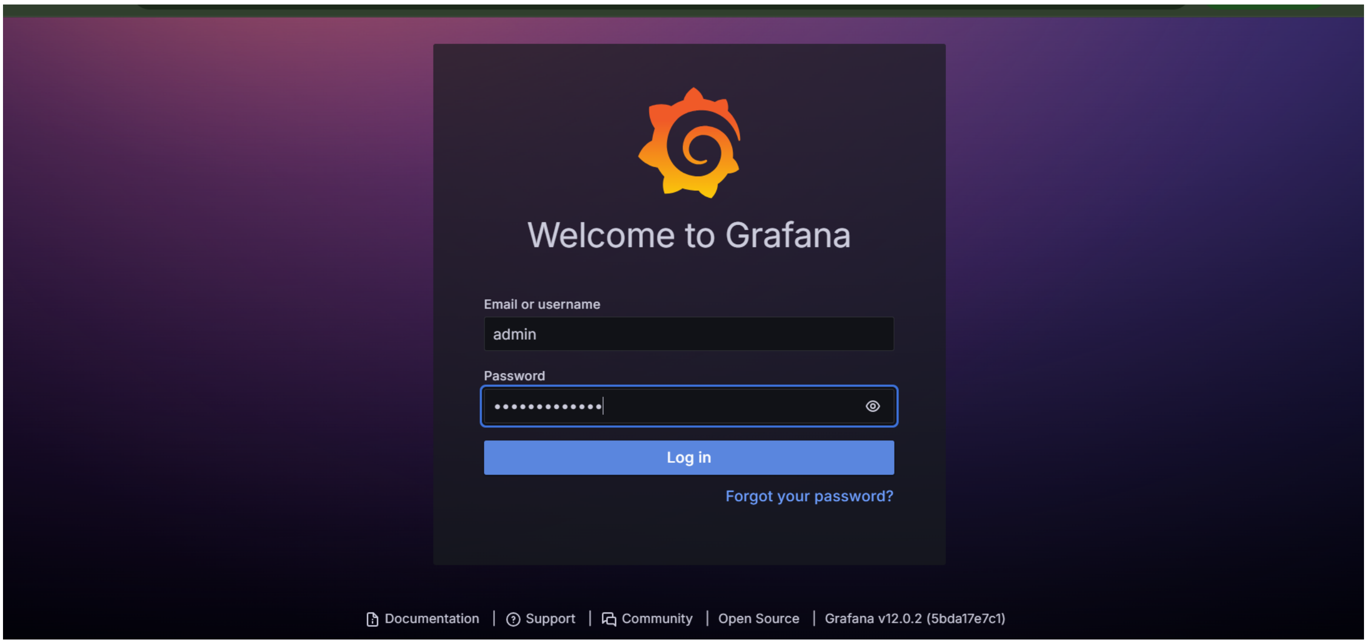
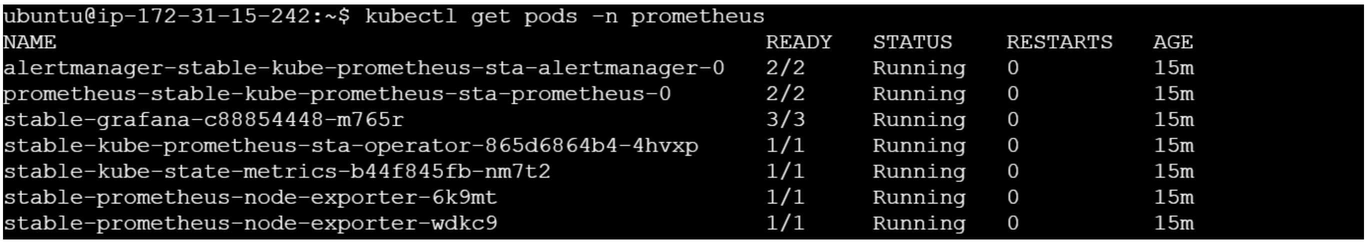


Welcome to Grafana

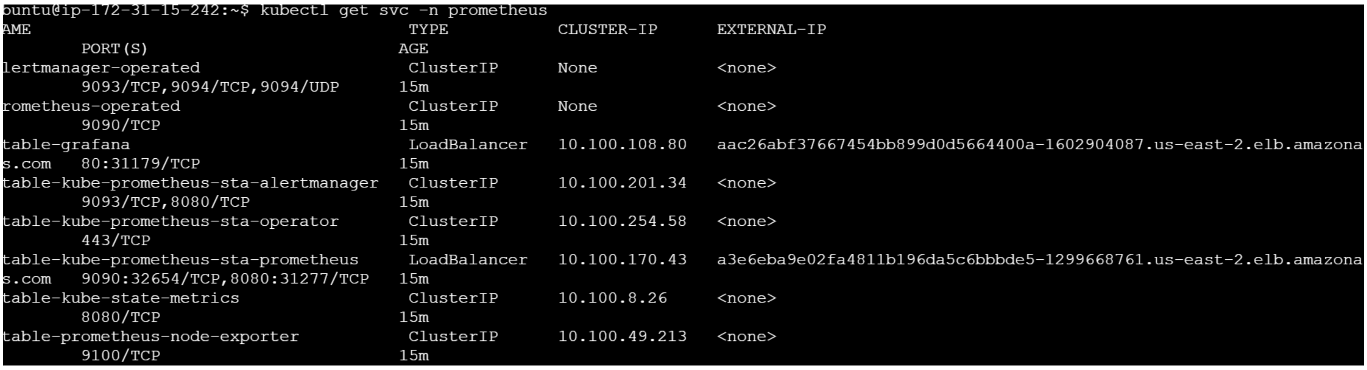
Email or username: admin

Password: •••••••••••••

Log in
Forgot your password?
Documentation | Support | Community | Open Source | Grafana v12.0.2 (5bda17e7c1)



```
ubuntu@ip-172-31-15-242:~$ kubectl get pods -n prometheus
NAME                                                    READY   STATUS    RESTARTS   AGE
alertmanager-stable-kube-prometheus-sta-alertmanager-0  2/2     Running   0          15m
prometheus-stable-kube-prometheus-sta-prometheus-0      2/2     Running   0          15m
stable-grafana-c88854448-m765r                          3/3     Running   0          15m
stable-kube-prometheus-sta-operator-865d6864b4-4hvxp    1/1     Running   0          15m
stable-kube-state-metrics-b44f845fb-nm7t2               1/1     Running   0          15m
stable-prometheus-node-exporter-6k9mt                   1/1     Running   0          15m
stable-prometheus-node-exporter-wdkc9                   1/1     Running   0          15m
```



```
buntu@ip-172-31-15-242:~$ kubectl get svc -n prometheus
AME                                         TYPE           CLUSTER-IP       EXTERNAL-IP
        PORT(S)                            AGE
lertmanager-operated                         ClusterIP      None             <none>
        9093/TCP,9094/TCP,9094/UDP         15m
rometheus-operated                           ClusterIP      None             <none>
        9090/TCP                           15m
table-grafana                                LoadBalancer   10.100.108.80    aac26abf37667454bb899d0d5664400a-1602904087.us-east-2.elb.amazona
s.com   80:31179/TCP                       15m
table-kube-prometheus-sta-alertmanager       ClusterIP      10.100.201.34    <none>
        9093/TCP,8080/TCP                  15m
table-kube-prometheus-sta-operator           ClusterIP      10.100.254.58    <none>
        443/TCP                            15m
table-kube-prometheus-sta-prometheus         LoadBalancer   10.100.170.43    a3e6eba9e02fa4811b196da5c6bbbde5-1299668761.us-east-2.elb.amazona
s.com   9090:32654/TCP,8080:31277/TCP      15m
table-kube-state-metrics                     ClusterIP      10.100.8.26      <none>
        8080/TCP                           15m
table-prometheus-node-exporter               ClusterIP      10.100.49.213    <none>
        9100/TCP                           15m
```

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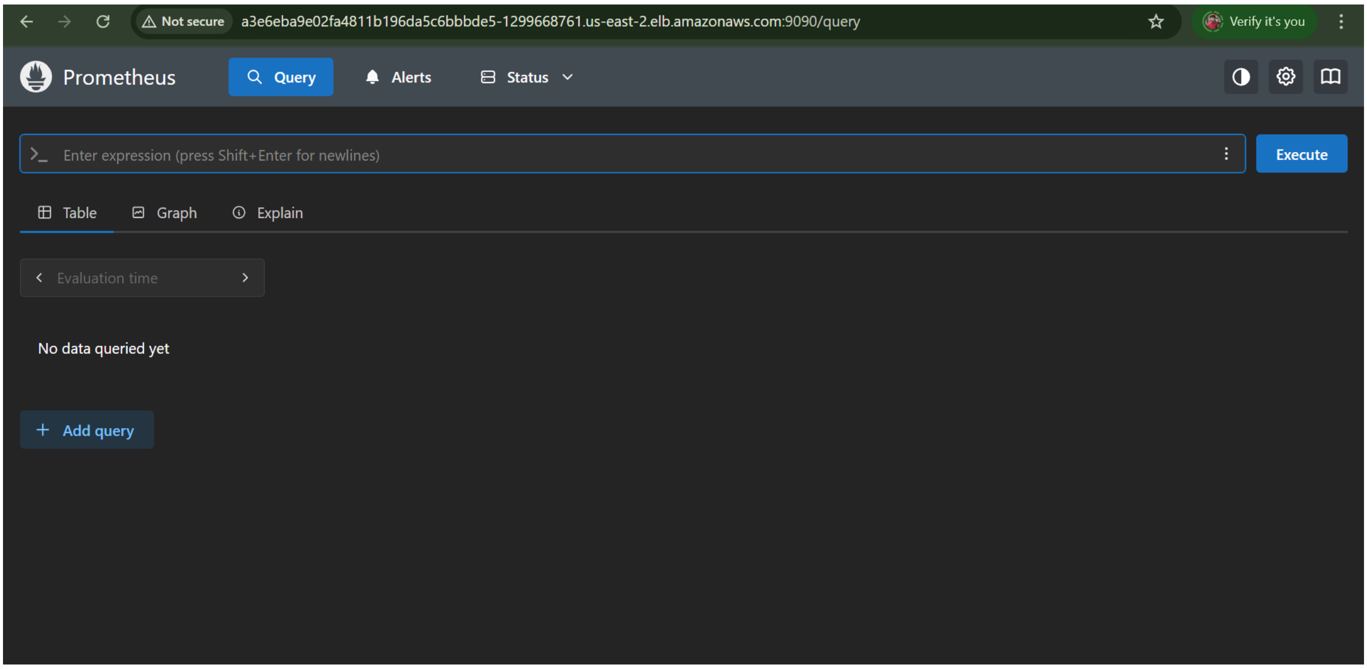
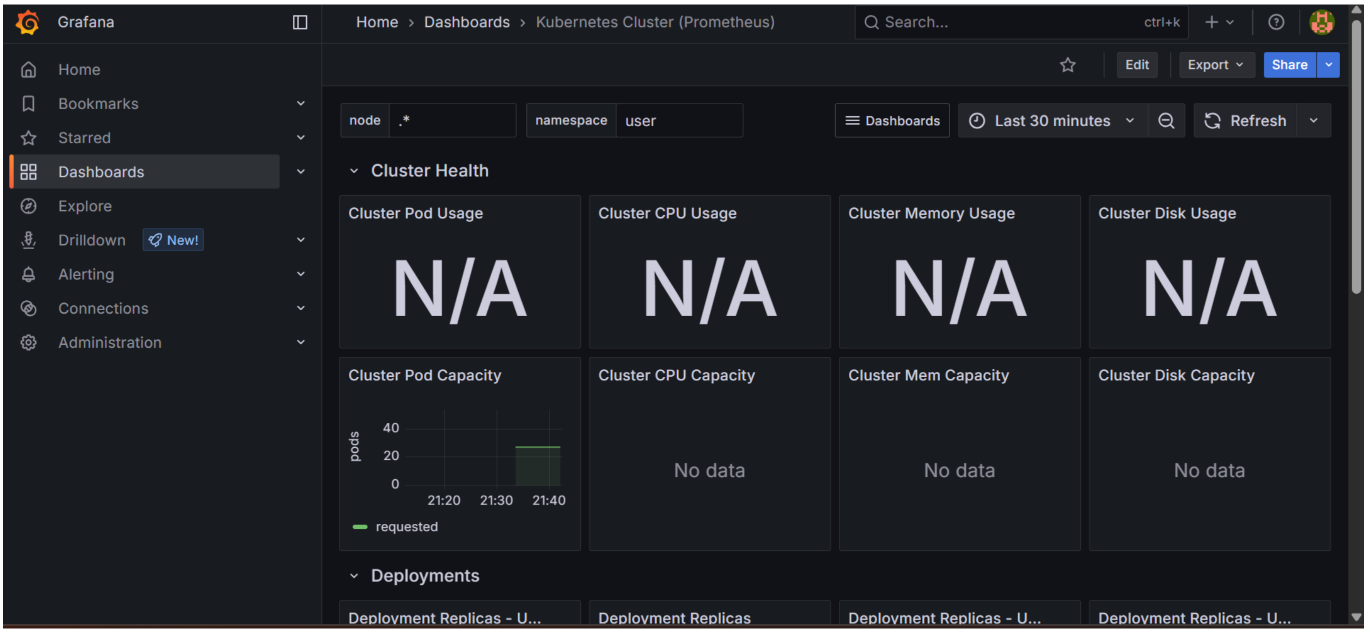


Not secure a3e6eba9e02fa4811b196da5c6bbbde5-1299668761.us-east-2.elb.amazonaws.com:9090/query

Enter expression (press Shift+Enter for newlines)

Evaluation time

No data queried yet



Home › Dashboards › Kubernetes Cluster (Prometheus)

node .*

namespace user

Last 30 minutes

Cluster Health

Cluster Pod Usage: N/A

Cluster CPU Usage: N/A

Cluster Memory Usage: N/A

Cluster Disk Usage: N/A

Cluster Pod Capacity

Cluster CPU Capacity: No data

Cluster Mem Capacity: No data

Cluster Disk Capacity: No data

Deployments

Deployment Replicas - U...

Deployment Replicas

Deployment Replicas - U...

Deployment Replicas - U...