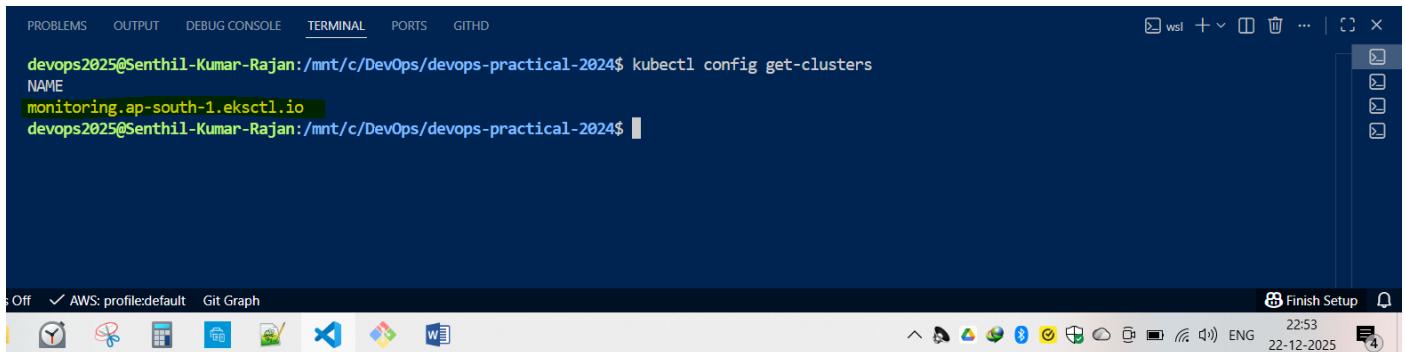


# **Application Monitoring with Prometheus & Grafana**

SK

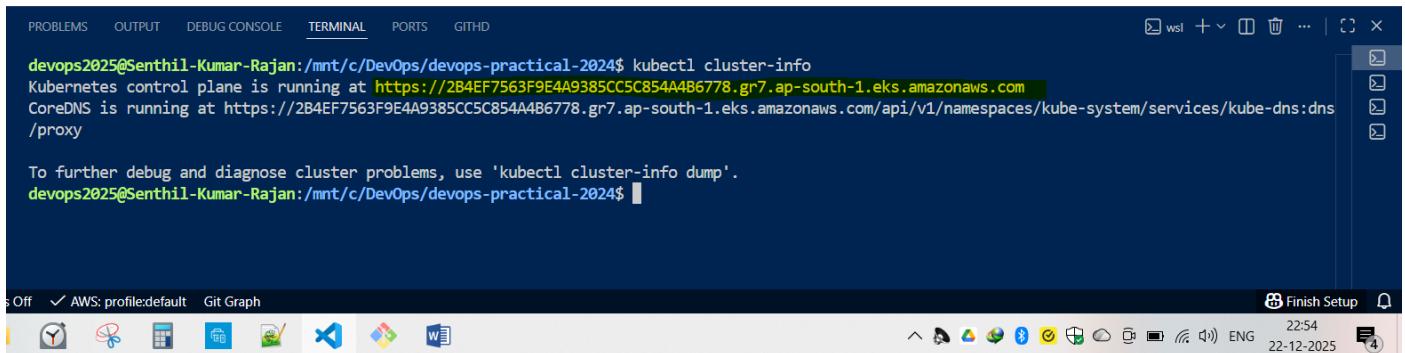
## Provisioned an Amazon EKS cluster using the AWS CLI:



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITHD
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024$ kubectl config get-clusters
NAME
monitoring.ap-south-1.eksctl.io
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024$
```

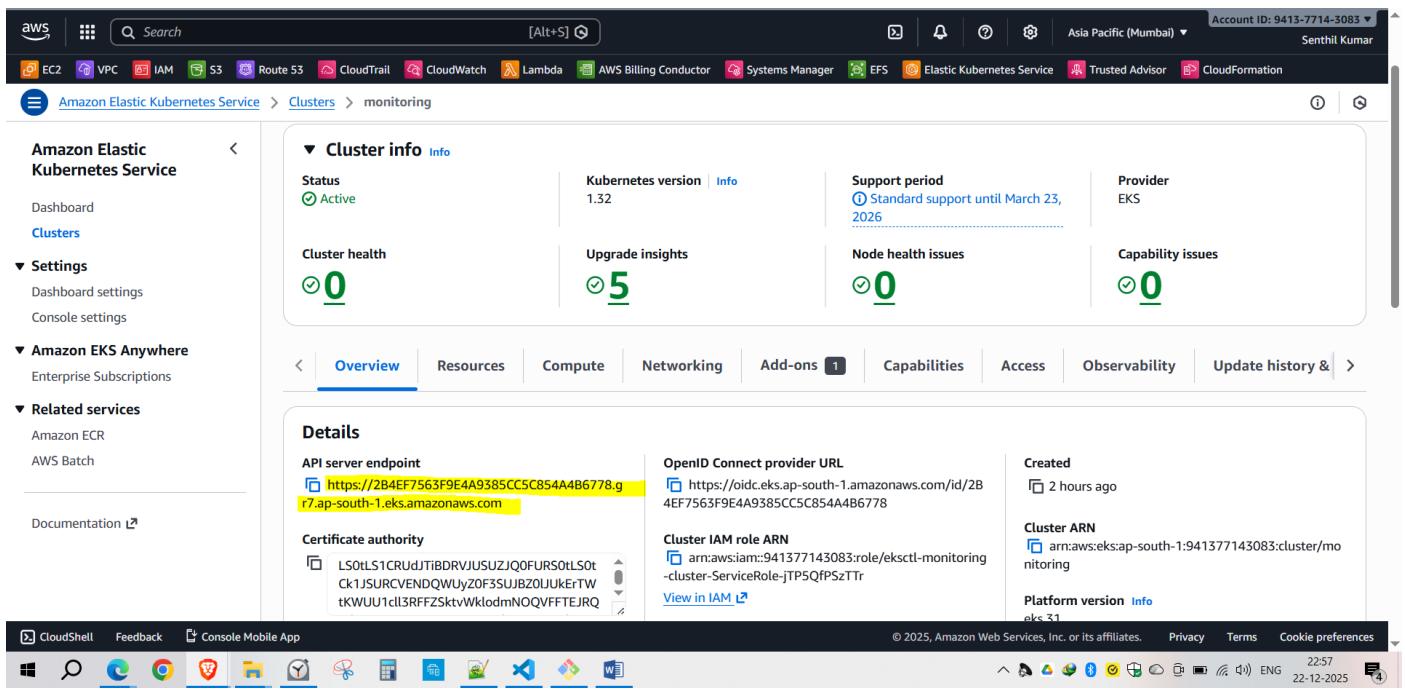
The screenshot shows a WSL terminal window titled 'TERMINAL'. The command 'kubectl config get-clusters' was run, and it returned a single entry: 'monitoring.ap-south-1.eksctl.io'. The terminal window has a dark blue background with white text. The top bar includes tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected), 'PORTS', and 'GITHD'. The bottom bar shows various icons for file operations and system status.

## EKS Cluster Information:



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITHD
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024$ kubectl cluster-info
Kubernetes control plane is running at https://2B4EF7563F9E4A9385CC5C854A4B6778.gr7.ap-south-1.eks.amazonaws.com
CoreDNS is running at https://2B4EF7563F9E4A9385CC5C854A4B6778.gr7.ap-south-1.eks.amazonaws.com/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy
To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024$
```

The screenshot shows a WSL terminal window titled 'TERMINAL'. The command 'kubectl cluster-info' was run, providing information about the Kubernetes control plane and CoreDNS. It includes URLs for both and a note to use 'kubectl cluster-info dump' for further debugging. The terminal window has a dark blue background with white text. The top bar includes tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (selected), 'PORTS', and 'GITHD'. The bottom bar shows various icons for file operations and system status.



The screenshot shows the AWS CloudWatch interface for the 'monitoring' cluster. On the left, there's a navigation sidebar with 'Amazon Elastic Kubernetes Service', 'Clusters' (selected), 'Settings', 'Amazon EKS Anywhere', 'Related services', and 'Documentation'. The main content area is titled 'Cluster info' and shows the following details:

Status	Kubernetes version	Support period	Provider
Active	1.32	Standard support until March 23, 2026	EKS

Below this, there are sections for 'Cluster health' (0 issues), 'Upgrade insights' (5 issues), 'Node health issues' (0 issues), and 'Capability issues' (0 issues). At the bottom, there are tabs for 'Overview' (selected), 'Resources', 'Compute', 'Networking', 'Add-ons', 'Capabilities', 'Access', 'Observability', and 'Update history &'. The 'Details' section provides API server endpoint (<https://2B4EF7563F9E4A9385CC5C854A4B6778.gr7.ap-south-1.eks.amazonaws.com>), OpenID Connect provider URL (<https://oidc.eks.ap-south-1.amazonaws.com/id/2B4EF7563F9E4A9385CC5C854A4B6778>), Cluster IAM role ARN ([arn:aws:iam::941377143083:role/eksctl-monitoring-cluster-ServiceRole-jTP5QfPszTTr](#)), and Platform version (eks-3.1).

## GitOps-Based Application Deployment on EKS cluster with ArgoCD:

The screenshot shows the ArgoCD application dashboard. A modal window displays the details for the 'bank-app' application in the 'default' project. The application is labeled as 'Healthy' and 'Synced'. It was created at 12/22/2025 22:49:08 and last sync'd at the same time. The repository is https://github.com/semever24/goldencat-bank-. The target revision is HEAD, path is k8s, destination is k8s-user@monitoring.ap-south-1.eksctl.io, and the namespace is monitoring. The modal includes buttons for SYNC, REFRESH, and DELETE.

The screenshot shows the ArgoCD application details tree for the 'bank-app' application. The tree view shows the deployment pipeline from the 'bank-app' application to its components: 'bank-app-service', 'mysql-service', 'bank-app-deployment', and 'mysql'. The 'bank-app-deployment' component is currently active, showing a deployment named 'bank-app-deployment-74fb...'. This deployment has two pods: 'bank-app-deployment-74fb...' and 'bank-app-deployment-74fb...'. Below these are two MySQL pods: 'mysql-bf8d59d5f-n9slx' and 'mysql-bf8d59d5f-n9slx'. The tree view also shows the sync status, which is 'Sync OK' to HEAD (03a5563), and the last sync occurred 10 minutes ago. The sync status is also indicated as 'Synced' in the main application details area.

## All monitoring and application related cluster resources reside in the "monitoring" namespace:

```
devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024$ kubectl get all -n monitoring
NAME                                         READY   STATUS    RESTARTS   AGE
pod/alertmanager-monitoring-kube-prometheus-alertmanager-0   2/2     Running   0          34m
pod/argocd-application-controller-0           1/1     Running   0          3h4m
pod/argocd-applicationset-controller-7d4b744f5f-28cmw       1/1     Running   0          3h4m
pod/argocd-dex-server-6858c98bb-8f9pn         1/1     Running   0          3h4m
pod/argocd-notifications-controller-558dd9b8b7-q7f84       1/1     Running   0          3h4m
pod/argocd-redis-f64746fd4-pwnv8            1/1     Running   0          3h4m
pod/argocd-repo-server-6d8fd4b5d7-k6n47        1/1     Running   0          3h4m
pod/argocd-server-7d49b58b5-tqxhf          1/1     Running   0          3h4m
pod/bank-app-deployment-74fbc74c4f-rwqvr       1/1     Running   2 (98m ago) 98m
pod/bank-app-deployment-74fbc74c4f-z4wwc       1/1     Running   2 (98m ago) 98m
pod/blackbox-exporter-5b6b8df9c-h6f4t         1/1     Running   0          25m
pod/monitoring-grafana-7988b5b99-fknz1        3/3     Running   0          3m20s
pod/monitoring-kube-prometheus-operator-67fdb54dd6-b5c25   1/1     Running   0          34m
pod/monitoring-kube-state-metrics-7f575674-k7nwt       1/1     Running   0          34m
pod/monitoring-prometheus-node-exporter-48jbm       1/1     Running   0          34m
pod/monitoring-prometheus-node-exporter-wxdtq       1/1     Running   0          34m
pod/mysql-bf8d59d5f-n9slx                      1/1     Running   0          98m
pod/prometheus-monitoring-kube-prometheus-0        2/2     Running   0          34m

NAME                                PORT(S)           AGE   TYPE      CLUSTER-IP      EXTERNAL-IP
service/alertmanager-operated      9093/TCP,9094/TCP,9094/UDP 34m  ClusterIP  None           <none>
service/argocd-applicationset-controller 7000/TCP 3h4m  ClusterIP  10.100.247.103  <none>
service/argocd-dex-server          5556/TCP,5557/TCP 3h4m  ClusterIP  10.100.202.129  <none>
service/argocd-redis              6379/TCP 3h4m  ClusterIP  10.100.179.224  <none>
service/argocd-repo-server         8081/TCP 3h4m  ClusterIP  10.100.61.87   <none>
service/argocd-server             80/TCP,443/TCP 3h4m  ClusterIP  10.100.116.76   <none>
service/bank-app-service          aws.com:80:31464/TCP 98m  LoadBalancer  10.100.217.125  aeab6ac8ada4543feb3178950dfce76b-2032251247.ap-south-1.elb.amazonaws
service/blackbox-exporter          9115/TCP 25m   ClusterIP  10.100.26.135  <none>

Off  ✓ AWS: profile:default  Git Graph  ⚙ Finish Setup  00:28  23-12-2025
```

NAME	PORT(S)	AGE	TYPE	CLUSTER-IP	EXTERNAL-IP
service/alertmanager-operated	9093/TCP,9094/TCP,9094/UDP	34m	ClusterIP	None	<none>
service/argocd-applicationset-controller	7000/TCP	3h4m	ClusterIP	10.100.247.103	<none>
service/argocd-dex-server	5556/TCP,5557/TCP	3h4m	ClusterIP	10.100.202.129	<none>
service/argocd-redis	6379/TCP	3h4m	ClusterIP	10.100.179.224	<none>
service/argocd-repo-server	8081/TCP	3h4m	ClusterIP	10.100.61.87	<none>
service/argocd-server	80/TCP,443/TCP	3h4m	ClusterIP	10.100.116.76	<none>
service/bank-app-service	aws.com:80:31464/TCP	98m	LoadBalancer	10.100.217.125	aeab6ac8ada4543feb3178950dfce76b-2032251247.ap-south-1.elb.amazonaws
service/blackbox-exporter	9115/TCP	25m	ClusterIP	10.100.26.135	<none>
service/monitoring-grafana	80/TCP	34m	ClusterIP	10.100.121.69	<none>
service/monitoring-kube-prometheus-alertmanager	9093/TCP,8080/TCP	34m	ClusterIP	10.100.152.38	<none>
service/monitoring-kube-prometheus-operator	443/TCP	34m	ClusterIP	10.100.136.98	<none>
service/monitoring-kube-prometheus-prometheus	9090/TCP,8080/TCP	34m	ClusterIP	10.100.64.202	<none>
service/monitoring-kube-state-metrics	8080/TCP	34m	ClusterIP	10.100.3.129	<none>
service/monitoring-prometheus-node-exporter	9100/TCP	34m	ClusterIP	10.100.43.237	<none>
service/mysql-service	3306/TCP	98m	ClusterIP	10.100.199.147	<none>
service/prometheus-operated	9090/TCP	34m	ClusterIP	None	<none>

NAME	DESIRED	CURRENT	READY	UP-TO-DATE	AVAILABLE	NODE SELECTOR	AGE

```
s Off  ✓ AWS: profile:default  Git Graph  ⚙ Finish Setup  00:29  23-12-2025
```

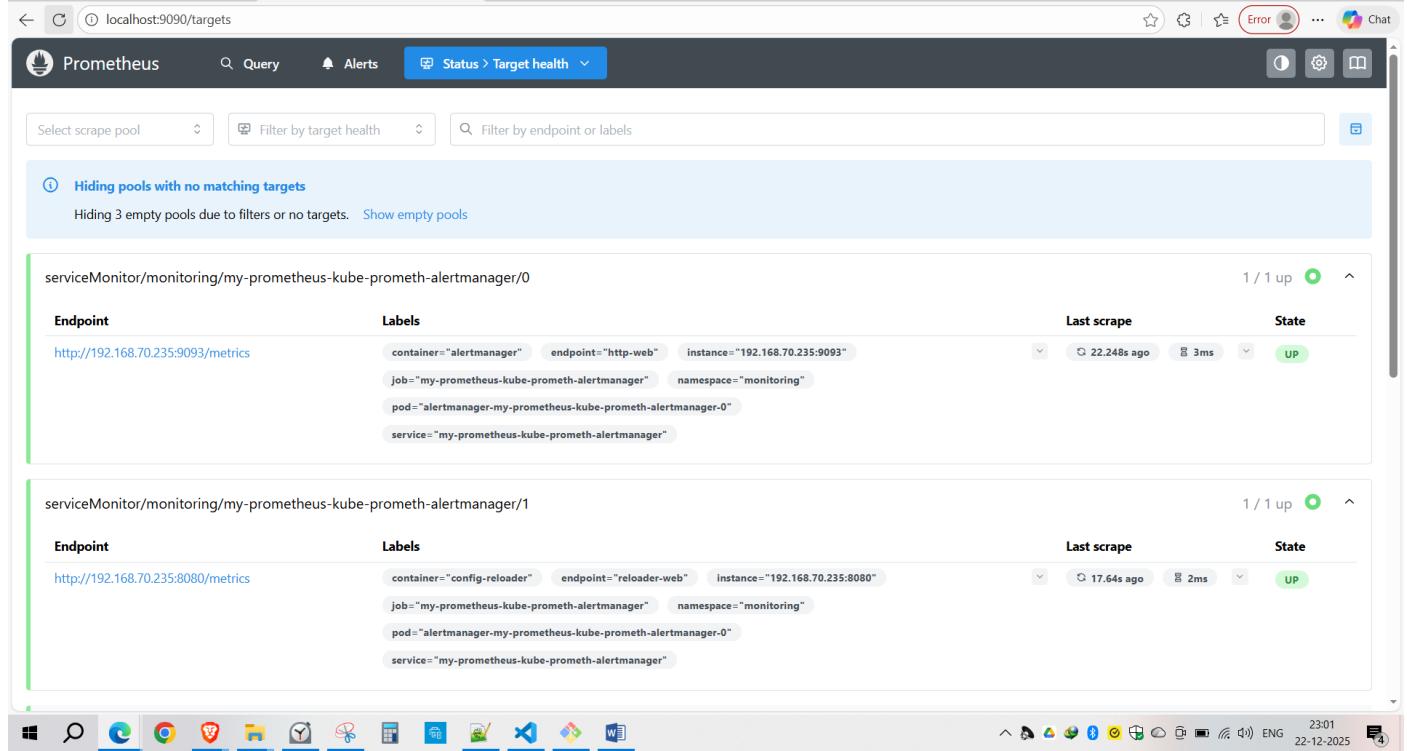
NAME	DESIRED	CURRENT	READY	UP-TO-DATE	AVAILABLE	NODE SELECTOR	AGE			
daemonset.apps/monitoring-prometheus-node-exporter	2	2	2	2	2	kubernetes.io/os=linux	34m			
<hr/>										
NAME	READY	UP-TO-DATE	AVAILABLE	AGE						
deployment.apps/argocd-applicationset-controller	1/1	1	1	3h4m						
deployment.apps/argocd-dex-server	1/1	1	1	3h4m						
deployment.apps/argocd-notifications-controller	1/1	1	1	3h4m						
deployment.apps/argocd-redis	1/1	1	1	3h4m						
deployment.apps/argocd-repo-server	1/1	1	1	3h4m						
deployment.apps/argocd-server	1/1	1	1	3h4m						
deployment.apps/bank-app-deployment	2/2	2	2	98m						
deployment.apps/blackbox-exporter	1/1	1	1	25m						
deployment.apps/monitoring-grafana	1/1	1	1	34m						
deployment.apps/monitoring-kube-prometheus-operator	1/1	1	1	34m						
deployment.apps/monitoring-kube-state-metrics	1/1	1	1	34m						
deployment.apps/mysql	1/1	1	1	98m						
NAME	DESIRED	CURRENT	READY	AGE						
replicaset.apps/argocd-applicationset-controller-7d4b744f5f	1	1	1	3h4m						
replicaset.apps/argocd-dex-server-6858c98bb	1	1	1	3h4m						
replicaset.apps/argocd-notifications-controller-558dd9b8b7	1	1	1	3h4m						
replicaset.apps/argocd-redis-f64746fd4	1	1	1	3h4m						
replicaset.apps/argocd-repo-server-6d8fd4b5d7	1	1	1	3h4m						
replicaset.apps/argocd-server-7d49b5b5	1	1	1	3h4m						
replicaset.apps/bank-app-deployment-74fbc74c4f	2	2	2	98m						
replicaset.apps/blackbox-exporter-5b6bb8fd9c	1	1	1	25m						
replicaset.apps/monitoring-grafana-599fd467c	0	0	0	34m						
replicaset.apps/monitoring-grafana-7988b5b99	1	1	1	3m20s						
replicaset.apps/monitoring-kube-prometheus-operator-67fdb54dd6	1	1	1	34m						
replicaset.apps/monitoring-kube-state-metrics-7f575674	1	1	1	34m						
replicaset.apps/mysql-bf8d59d5f	1	1	1	98m						
NAME	READY	AGE								
statefulset.apps/alertmanager-monitoring-kube-prometheus-alertmanager	1/1	34m								
statefulset.apps/argocd-application-controller	1/1	3h4m								
statefulset.apps/prometheus-monitoring-kube-prometheus-prometheus	1/1	34m								

devops2025@senthil-Kumar-Rajan:/mnt/c/DevOps/devops-practical-2024\$

Off AWS: profile:default Git Graph

Finish Setup 00:29 23-12-2025

## Application metrics are collected by Prometheus:



The screenshot shows the Prometheus UI at [localhost:9090/targets](http://localhost:9090/targets). It displays two sections of targets:

- serviceMonitor/monitoring/my-prometheus-kube-prometh-alertmanager/0**: Shows one endpoint (<http://192.168.70.235:9093/metrics>) with labels: container="alertmanager", endpoint="http-web", instance="192.168.70.235:9093", job="my-prometheus-kube-prometh-alertmanager", namespace="monitoring", pod="alertmanager-my-prometheus-kube-prometh-alertmanager-0", service="my-prometheus-kube-prometh-alertmanager". Last scrape was 22.248s ago, state is UP.
- serviceMonitor/monitoring/my-prometheus-kube-prometh-alertmanager/1**: Shows one endpoint (<http://192.168.70.235:8080/metrics>) with labels: container="config-reloader", endpoint="reloader-web", instance="192.168.70.235:8080", job="my-prometheus-kube-prometh-alertmanager", namespace="monitoring", pod="alertmanager-my-prometheus-kube-prometh-alertmanager-0", service="my-prometheus-kube-prometh-alertmanager". Last scrape was 17.64s ago, state is UP.

Windows 10 Taskbar icons and system status bar showing 23:01 22-12-2025

## Grafana dashboard to visualize application health status:

The screenshot shows the Grafana home page at [localhost:3000/](http://localhost:3000/). The left sidebar includes links for Bookmarks, Starred, Dashboards, Explore, Drilldown, Alerting, Connections, and Administration. The main area features a "Welcome to Grafana" panel with sections for "Basic", "TUTORIAL DATA SOURCE AND DASHBOARDS", "Grafana fundamentals", and "COMPLETE Add your first data source" and "COMPLETE Create your first dashboard". Below this is a "Dashboards" section listing "Starred dashboards" and "Recently viewed dashboards", along with links for "Alertmanager / Overview" and "Dashboards". A "Latest from the blog" section displays a card for "CAN data analysis with Grafana Assistant". The bottom navigation bar includes icons for Windows, search, and various applications.

## kube-prometheus-stack configured default dashboards for application health monitoring:

The screenshot shows the "Dashboards" page at [localhost:3000/dashboards](http://localhost:3000/dashboards). The left sidebar highlights "Dashboards". The main area lists several dashboards under "Name" and "Tags": "Alertmanager / Overview" (tags: alertmanager-mixin), "CoreDNS" (tags: coredns, dns), "etcd" (tags: etcd-mixin), "Grafana Overview" (tags: kubernetes-mixin), "Kubernetes / API server" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Multi-Cluster" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Cluster" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Namespace (Pods)" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Namespace (Workloads)" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Node (Pods)" (tags: kubernetes-mixin), "Kubernetes / Compute Resources / Pod" (tags: kubernetes-mixin), and "Kubernetes / Compute Resources / Workload" (tags: kubernetes-mixin). The bottom navigation bar includes icons for Windows, search, and various applications.

Screenshot of the Grafana Dashboards page:

The left sidebar shows navigation links: Home, Bookmarks, Starred, Dashboards (selected), Explore, Drilldown, Alerting, Connections, Add new connection, Data sources, and Administration.

The main content area displays a list of dashboards with their names and tags:

Name	Tags
Kubernetes / Networking / Cluster	kubernetes-mixin
Kubernetes / Networking / Namespace (Pods)	kubernetes-mixin
Kubernetes / Networking / Namespace (Workload)	kubernetes-mixin
Kubernetes / Networking / Pod	kubernetes-mixin
Kubernetes / Networking / Workload	kubernetes-mixin
Kubernetes / Persistent Volumes	kubernetes-mixin
Kubernetes / Proxy	kubernetes-mixin
Kubernetes / Scheduler	kubernetes-mixin
Node Exporter / AIX	node-exporter-mixin
Node Exporter / MacOS	node-exporter-mixin
Node Exporter / Nodes	node-exporter-mixin
Node Exporter / USE Method / Cluster	node-exporter-mixin

Bottom status bar: Windows taskbar, system icons, and timestamp (23:14 22-12-2025).

## Prometheus dashboard:

Screenshot of the Prometheus Overview dashboard in Grafana:

The left sidebar shows navigation links: Home, Bookmarks, Starred, Dashboards (selected), Explore, Drilldown, Alerting, Connections, Add new connection, Data sources, and Administration.

The main content area shows Prometheus Stats and Discovery sections:

**Prometheus Stats:**

Time	Instance	Job	Version	Count
2025-12-22 18:28:52	192.168.105.47:9090	monitoring-kube-prometheus-prc	3.8.1	1.00

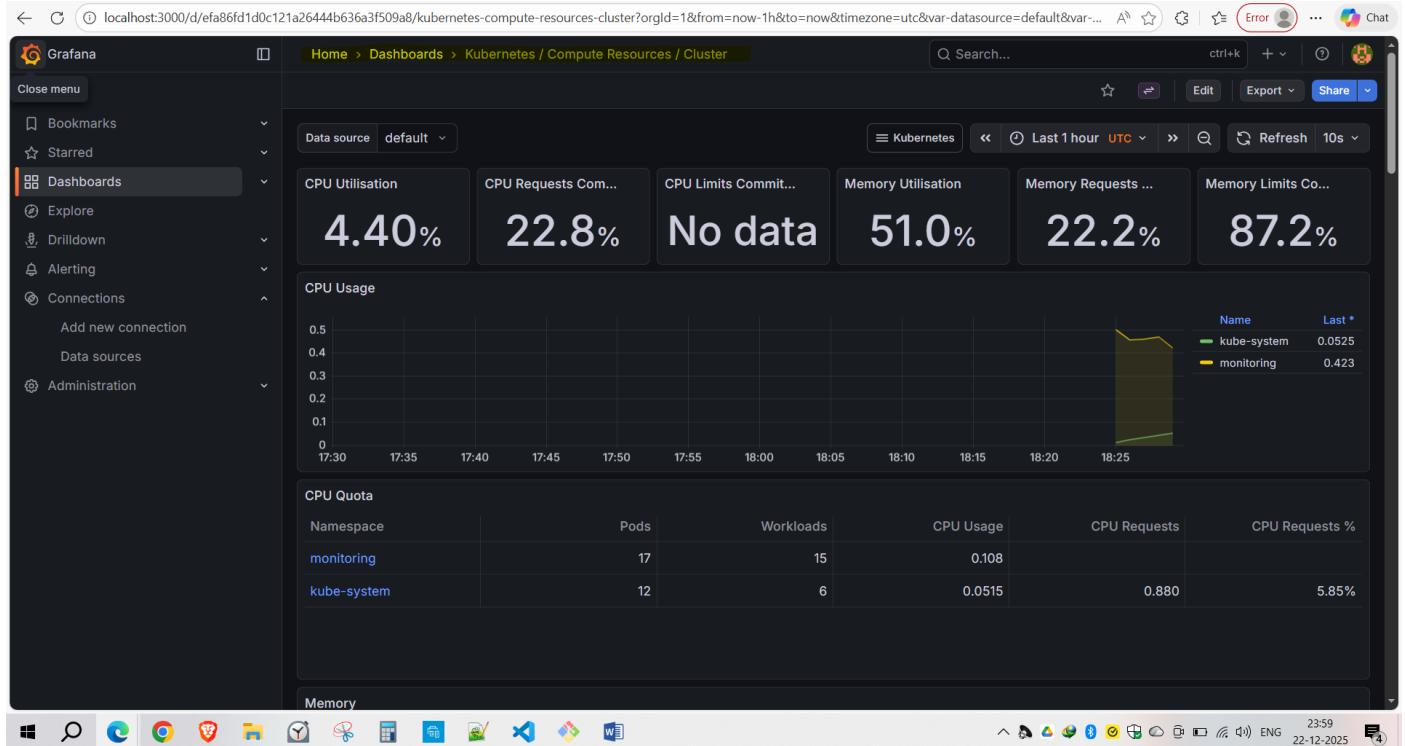
**Discovery:**

Target Sync chart showing metrics for monitoring-kube-prometheus:192.168.105.47:9090:serviceMonitor/monitoring/ and monitoring-kube-prometheus:192.168.105.47:9090:serviceMonitor/monitoring/.

Targets chart showing the count of targets over time, with a green bar at the end of the chart.

Bottom status bar: Windows taskbar, system icons, and timestamp (23:59 22-12-2025).

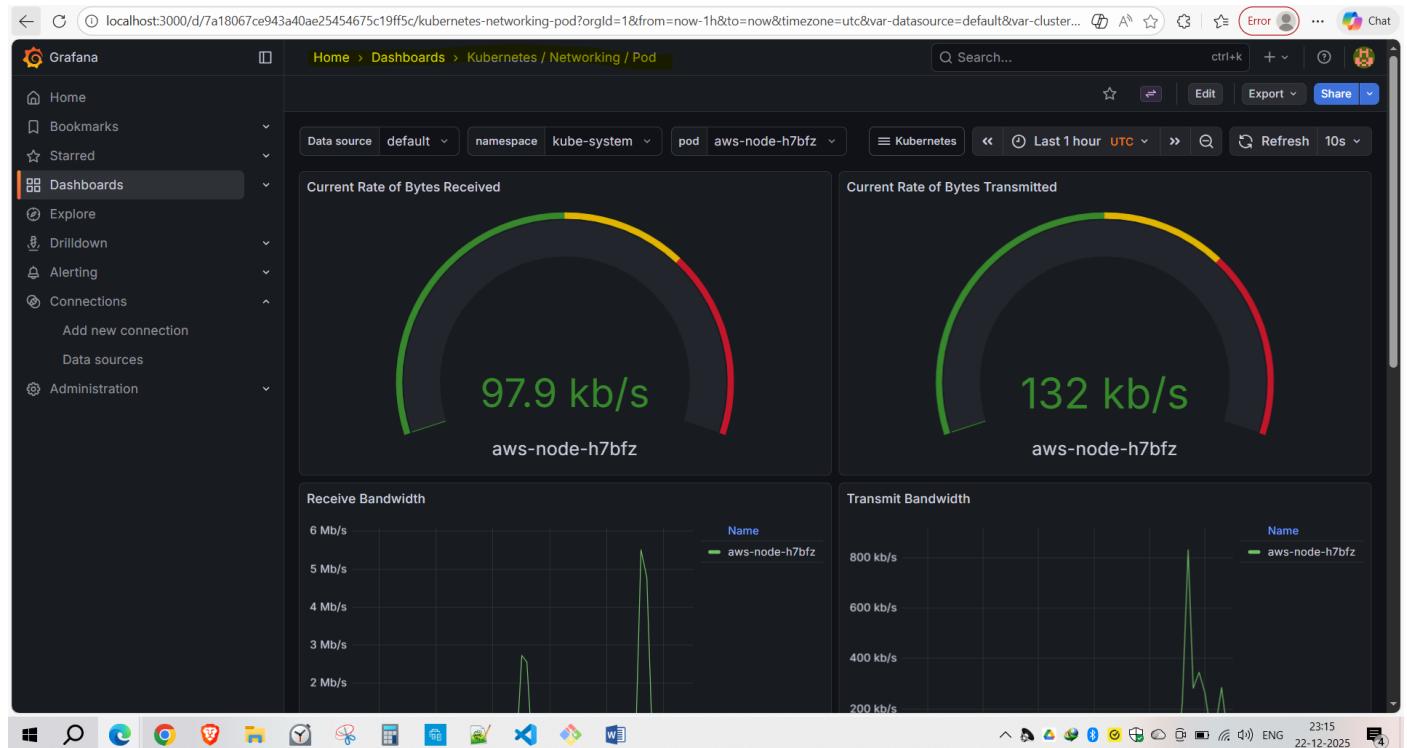
## K8s Cluster Compute Resources:



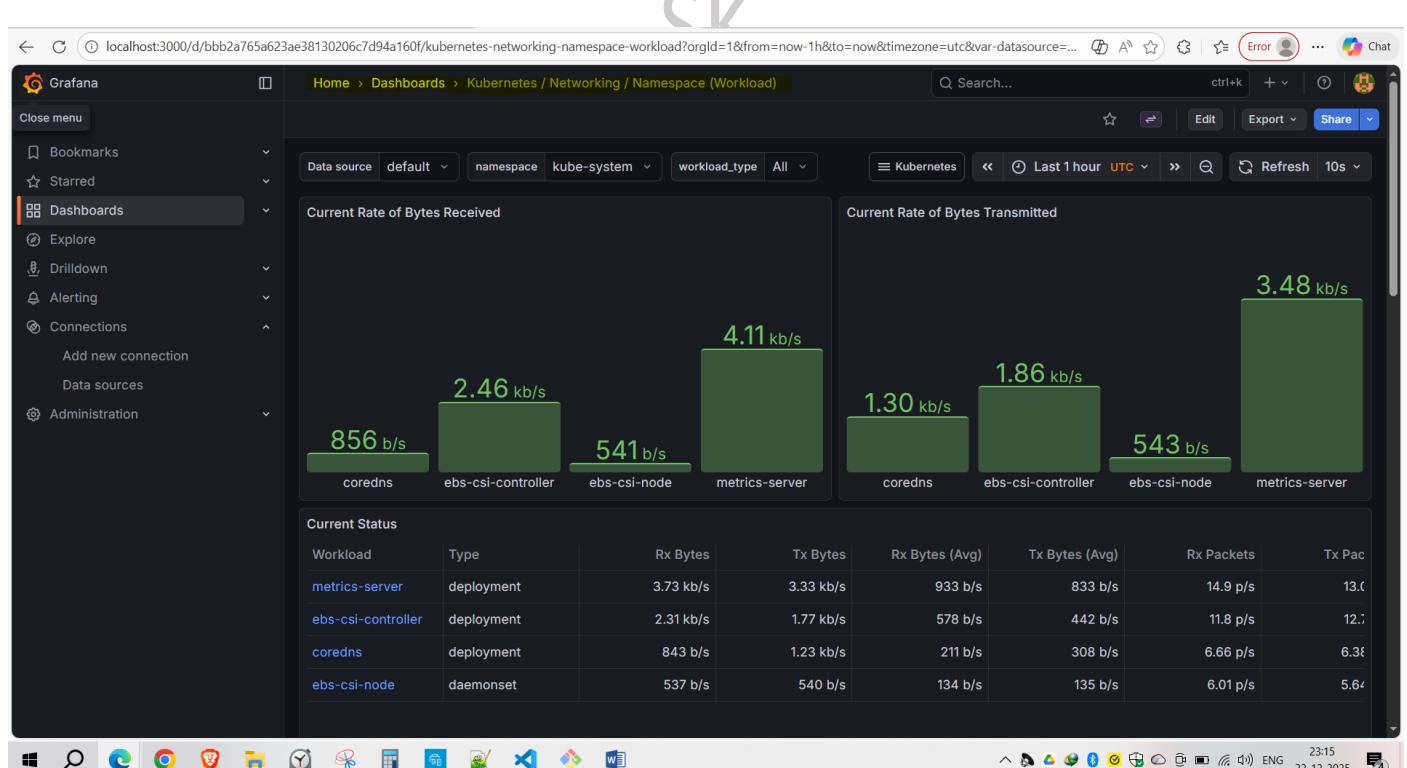
## Node Resources:



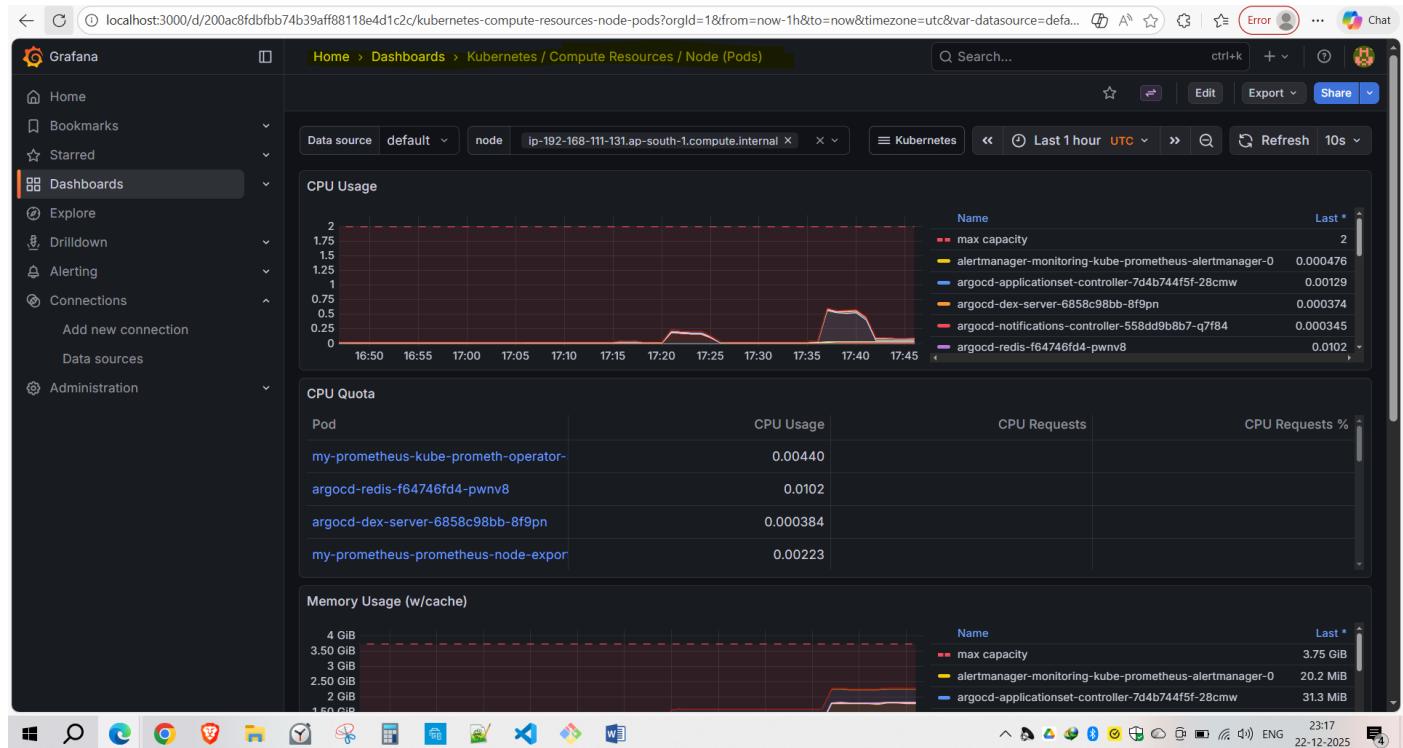
## K8s Networking Pod Resources:



## K8s Namespace Resources:



## Pod Resources for Node:



## Application deployed and accessed using a LoadBalancer URL:

