



## What is Prometheus?

Prometheus is free of cost software that is used to monitor events and Alerting tools. It helps to record live metrics in a timestamp series database using Http model with n number of queries and real-time alerting

### Prometheus Monitoring setup :

We can monitor full Kubernetes cluster end to end with Prometheus

The Prometheus stack includes:

1. Prometheus
2. Alertmanager
3. Kube-state-metrics
4. node-exporter
5. Grafana

## Grafana

Grafana is an open-source solution for running data analytics, pulling up metrics that make sense of the massive amount of data & to monitor our apps with the help of cool customizable dashboards.

### What is Prometheus Node Exporter?

Node exporter is an official Prometheus exporter for capturing all the Linux system-related metrics.

It collects all the hardware and Operating System level metrics that are exposed by the kernel.

You can use the node exporter to collect the system metrics from all your Linux systems. Check this [article](#) on node monitoring using node-exporter.

### What Can we alert using alert manager?

Component Down (API Server, Kubelet, Node exporter, Alertmanager and Prometheus, etc..)

Pod alerts ( Crashloopbackoff, Pending, Not ready)

Workload controller alerts ( Replicas Mismatch, DaemonSet NotScheduled, DaemonSet MisScheduled, Job Failed, and Long-running Jobs)

Resources alerts ( Cpu overcommit, Memory overcommit, Quota exceeded)

Persistent Volume alerts

Kube API error and Client alerts

Prometheus configuration error alerts

### Steps to deploy Prometheus stack

1. Use the ready Helm Chart to deploy Prometheus stack

<https://artifacthub.io/packages/helm/prometheus-community/kube-prometheus-stack>

2. Once it deployed edit the service type either in the chart or using kubernets edit command
3. Get the User name and password of Grafana using

```
$ kubectl get secret --namespace prometheus prometheus-grafana -o yaml
```

Decrypt the username and password using below command

```
echo "<username>" | base64 -d
```

```
echo "<password>" | base64 -d
```

4. Login to Grafana with username and password
5. Import suitable Grafana template

Ex. <https://grafana.com/grafana/dashboards/6417>  
<https://grafana.com/grafana/dashboards/315>