# Grafana

- The Grafana Kubernetes App allows you to monitor your Kubernetes cluster's performance
- It includes 4 dashboards, Cluster, Node, Pod/Container and Deployment.
- It allows for the automatic deployment of the required Prometheus exporters and a default scrape config to use with your in cluster Prometheus deployment.
- The metrics collected are high-level cluster and node stats as well as lower level pod and container stats
- Use the high-level metrics to alert on and the low-level metrics to troubleshoot.

## Requirements

1. Currently only has support for **Prometheus**
2. For automatic deployment of the exporters, then Kubernetes 1.6 or higher is required.
3. Grafana 5.0.0+

## Features

- The app uses Kubernetes tags to allow you to filter pod metrics. Kubernetes clusters tend to have a lot of pods and a lot of pod metrics. The Pod/Container dashboard leverages the pod tags so you can easily find the relevant pod or pods.
- Easy installation of exporters, either a one click deploy from Grafana or detailed instructions to deploy them manually them with kubectl (also quite easy!)
- Cluster level metrics that are not available in Heapster, like CPU Capacity vs CPU Usage.

## Cluster Metrics

- Pod Capacity/Usage
- Memory Capacity/Usage
- CPU Capacity/Usage
- Disk Capacity/Usage
- Overview of Nodes, Pods and Containers

### Node Metrics

- CPU
- Memory Available
- Load per CPU
- Read IOPS
- Write IOPS
- %Util
- Network Traffic/second
- Network Packets/second
- Network Errors/second

### Pod/Container Metrics

- Memory Usage
- Network Traffic
- CPU Usage
- Read IOPS
- Write IOPS

# Installation

## Grafana Tool Version

1. Grafana OSS
2. Grafana Enterprise

## Installation inside as per SERVER OS:

https://grafana.com/docs/grafana/latest/installation/

## Plugin installton

```
grafana-cli plugins install kubernetes-app
```

- ❖ Restart your Grafana server.
- ❖ Log into your Grafana instance.
- ❖ Navigate to the Plugins section, found in the Grafana main menu.
  Click the Apps tabs in the Plugins section and select the newly installed Kubernetes app. To enable the app, click the Config tab and click on the Enable button.

# Grafana Features

**Note:** You must restart Grafana for any configuration changes to take effect

## 1.Grafana for Administration Part:

**Config file locations**

*Do not* change `defaults.ini`! Grafana defaults are stored in this file. Depending on your OS, make all configuration changes in either `custom.ini` or `grafana.ini`.

- Default configuration from `$WORKING_DIR/conf/defaults.ini`
- Custom configuration from `$WORKING_DIR/conf/custom.ini`

| | | |
|---|---|---|
| Configure Docker Image | Security | Authentication |
| Permissions | Grafana CLI | Internal Metrics |
| Provisioning | Setup for High Availability | Troubleshooting |

## 2. Manage User

| | |
|---|---|
| Add and Remove User | Enable / Disable User |
| Add or remove team | Add or remove from team |

## 3.Panel

I. Before you apply transformations, all of the following must be true:

   You have entered a query and returned data from a data source.

II. You have applied a visualization that supports queries, such as:

- 1.Bar gauge 2.Gauge 3. Graph 4. Heatmap 5. Logs
- Stat 7. Table

| | | |
|---|---|---|
| Transformation | Field Config Options | Panel Editor |
| Visualizations | CalculationsList | |

## 4.Grafana for DATA sources

| | | |
|---|---|---|
| **Aws CloudWatch** | **Google Stack Driver** | **Influx DB** |
| **Graphite** | **MS Server** | **Loki** |
| **Postgresql** | **My SQL** | **Open TSDB** |
| **Testdata** | **Prometheus** | |
| **Elasticsearch** | **Azure Monitor** | |

## 5.Dashboard

| | | |
|---|---|---|
| Annotations | Folders | Playlist |
| Search | Sharing a Dashboard | Sharing Pannel |
| Time Range Control | Export Import | Navigation Links |
| Data Links | Dashboard Version History | Keyboard Shortcut |
| Json Model | Reporting | Script DashBoard |