# GRAFANA

## What is Grafana?

Grafana is open source visualization and analytics software. It allows you to query, visualize, alert on, and explore your metrics no matter where they are stored.
It provides you with tools to turn your time-series database (TSDB) data into beautiful graphs and visualizations.

Things you might want to do with your Grafana database:

- Explore Metrics and Logs
    - Explore your data through ad-hoc queries and dynamic drilldown. Split view and compare different time ranges, queries and data sources side by side.
- Alerts
    - If you're using Grafana alerting, then you can have alerts sent through a number of different alert notifiers, including: PagerDuty, SMS, email, VictorOps, OpsGenie or Slack
- Import dashboards and plugins
    - Discover hundreds of dashboards and plugins in the official library. Thanks to the passion and momentum of community members, new ones are added every week
- Authentication
    - Grafana supports different authentication methods, such as LDAP and OAuth, and allows you to map users to organizations.
- Provisioning
    - While it's easy to click, drag and drop to create a single dashboard, power users in need of many dashboards will want to automate the setup with a script. You can script anything in Grafana.

SOURCE: https://grafana.com/docs/grafana/latest/guides/what-is-grafana/

## Getting started

### Install Grafana

- docker run -d -p 3000:3000 grafana/grafana

### Log in for the first time

1. Open your web browser and go to http://localhost:3000/. 3000 is the default HTTP port that Grafana listens to if you haven't configured a different port.
2. On the login page, type admin for the username and password
3. Change your password.

### Create a dashboard

1. Click **New dashboard**
2. Click **Add Query**. Grafana creates a basic graph panel with the Random Walk scenario.
3. Save your dashboard. Click the **Save dashboard** icon in the top corner of the screen.

SOURCE: https://grafana.com/docs/grafana/latest/guides/getting_started/

## FEATURES

### PANELS

The panel is the basic visualization building block in Grafana. Each panel has a Query Editor specific to the data source selected in the panel. The query editor allows you to extract the perfect visualization to display on the panel.
There are a wide variety of styling and formatting options for each panel. Panels can be dragged and dropped and rearranged on the Dashboard. They can also be resized.
Panels:

- Graph
- Table
- Stat
- Gauge
- Bar Gauge
- Logs
- Singlestat
- Alert List
- …

## GRAPH PANEL

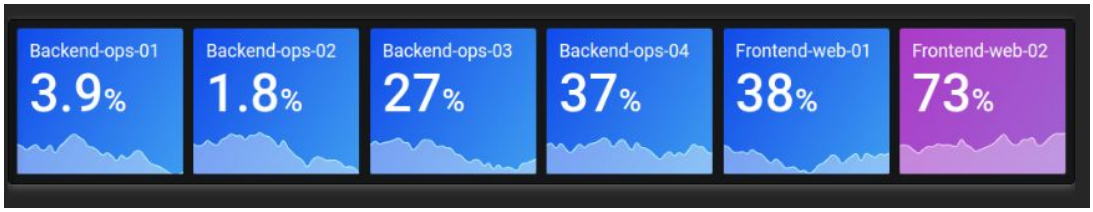
Allows you to graph as manjy metrics and series as you want.


## TABLE PANEL

The table panel is very flexible, supporting both multiple modes for time series as well as for table, annotation and raw JSON data. It also provides date formatting and valu formatting and coloring options.


## STAT PANEL

The stat panel is designed to show a big single stat values with an optional graph sparkline. You can control background or value color using thresholds.

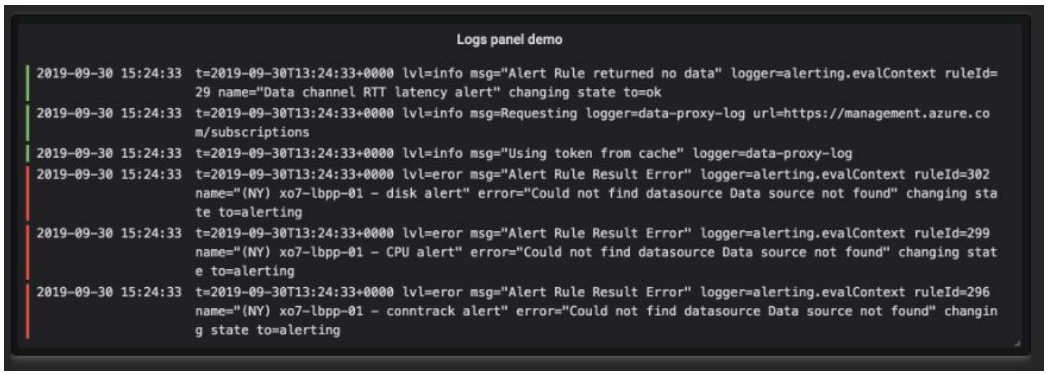



## GAUGE

The Gauge is a single value panel that can repeat a gauge for every series, column or row.

## LOGS PANEL

The logs panel shows log lines from data sources that support logs, ex. Elastic, Influx, and Loki. Typically you would use this panel next to a graph panel to display the log output of a related process.




## SINGLESTAT PANEL

The Singlestat panel allows you to show the one main summary stat of a SINGLE series. It reduces the series into a single number (by looking at the max, min, average, or sum of values in the series).Singlestat also provides thresholds to color the stat or the Panel background.It can also translate the single number into a text value and show a sparkline summary of the series.


## ALERT LIST PANEL

The alert list panel allows you to display your dashboards alerts. The list can be configured to show current state or recent state changes.

SOURCE: https://grafana.com/docs/grafana/latest/features/panels/panels/

## DASHBOARD FEATURES - SHARING A PANEL

Click a panel title to open the panel menu, then click share in the panel menu to open the Share Panel dialog. Here you have access to a link that will take you to exacty this panel with the current time range and selected template variables. Below are ways to share a panel.

### 1. DIRECT LINK RENDERED IMAGE

You also get a link to render a PNG image of the panel. Useful if you want to share an image of the panel.

Example of a link to a server-side rendered PNG:

https://play.grafana.org/d/000000012/grafana-play-home?orgId

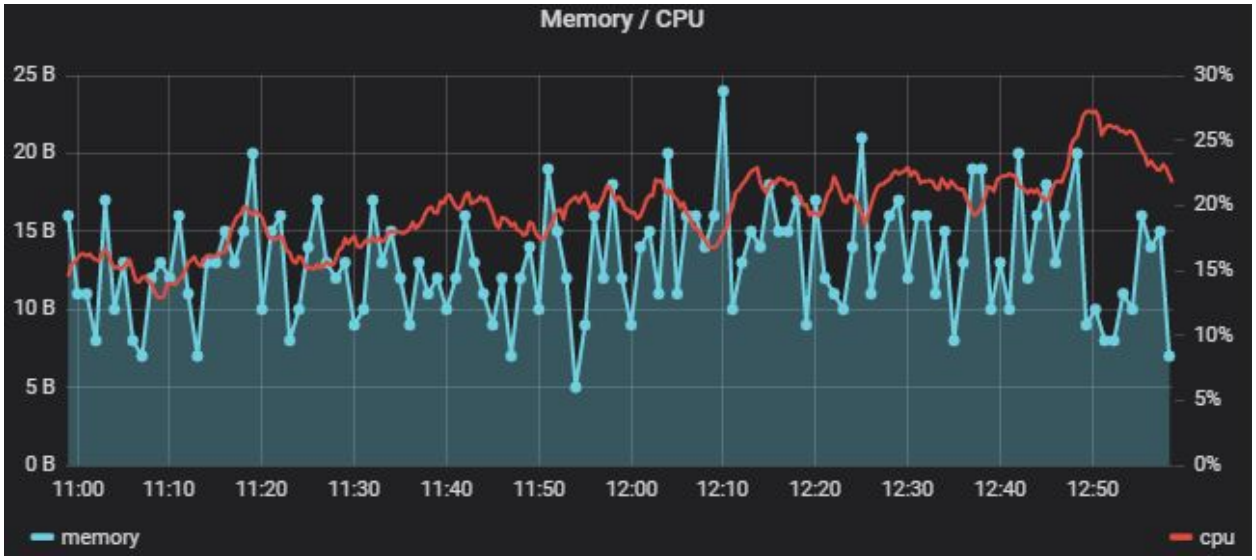
### 2. EMBED PANEL

You can embed a panel using an iframe on another web site. This tab will show you the html that you need to use.

Example:

```
<iframe src="https://snapshot.raintank.io/dashboard-solo/snapshot/y7zwi2bZ7FcoTlB93WN7yWO4aMiz3pZb?from=1493369923321&to=1493377123321&panelId=4" width="650" height="300" frameborder="0"></iframe>
```

Below there should be an interactive Grafana graph embedded in an iframe:



## DASHBOARD JSON

A dashboard in Grafana is represented by a JSON object, which stores metadata of its dashboard. Dashboard metadata includes dashboard properties, metadata form panel, template variable,s panel queries etc.
To view the JSON of a dashboard, follow the steps mentioned below:

1. Go to a dashboard
2. Click on Manage dashboard menu on the top navigation bar
3. Select View JSON from the dropdown menu

SOURCE: https://grafana.com/docs/grafana/latest/features/dashboard/dashboards/

## DATA SOURCES

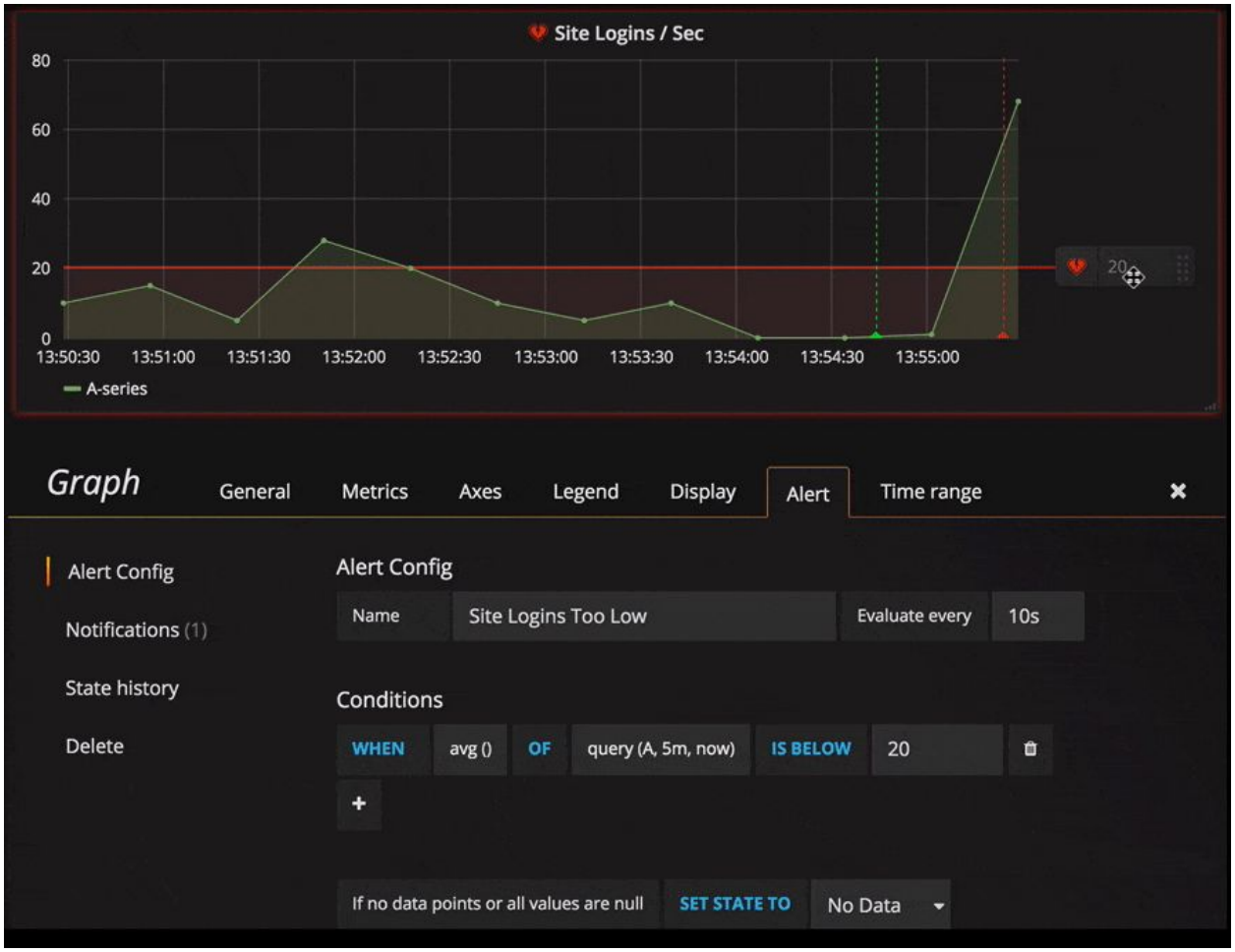
Grafana supports many different storage backends for your time series data (data source). Each data source has a specific Query Editor that is customized for the features and capabilities that the particular data source exposes.
The following data sources are officially supported:
AWS Cloudwatch, Azure Monitor, Elasticsearch, Google stackdriver, Graphite, InfluxDB, Loki, Microsoft SQL Server, MySQL, OpenTSDB, PostgreSQL, Prometheus, …

SOURCE: https://grafana.com/docs/grafana/latest/features/datasources/

## ALERTING

Alerting in Grafana allows you to attach rules to your dashboard panels. When you save the dashboard Grafana will extract the alert rules into a separate alert rule storage and schedule them for evaluation.

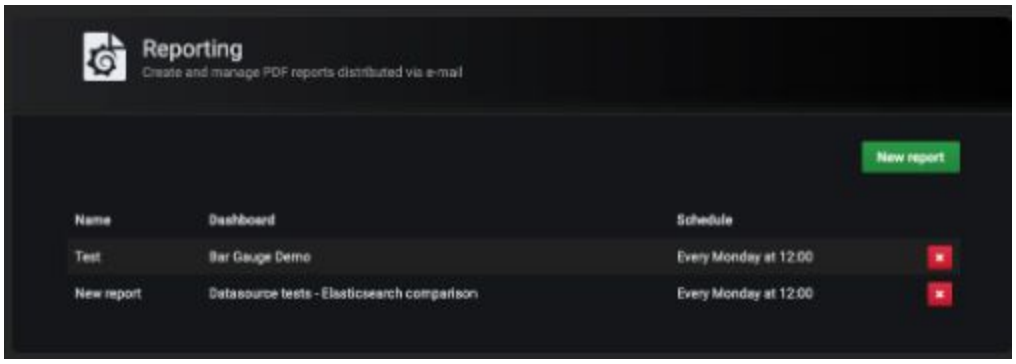
In the alert tab of the graph panel you can configure how often the alert rule should be evaluated and the conditions that need to be met for the alert to change state and trigger its notifications.




SOURCE: https://grafana.com/docs/grafana/latest/alerting/rules/

## REPORTING

Reporting allows you to generate PDFs from any of your dashboards and have them sent out to interested parties on a schedule.




SOURCE: https://grafana.com/docs/grafana/latest/features/reporting/

# KIBANA

In today's digital world when a person uses the term "Big Data", the first thing which comes to mind is the sea of data that humans, social networks, and IoT devices are generating. But we often miss the big data deluge that is getting generated by servers, cloud infrastructure applications, and web-based business tools across the globe. Daily, these systems are generating tons of data in their logs. These log datasets are crucial to properly monitor these systems. But a person cannot monitor and analyze such huge amounts of log data in raw format manually. This is where data visualization tools can be a big help. Log data visualization dashboards can be useful for monitoring server and application logs to make an IT team more efficient.
Grafana and Kibana are some of the best visualization tools available in the market.

Kibana is the visualization tool of the very popular ELK stack. ELK stack is a collection of 3 open-sourced tools: Elasticsearch, Logstach and Kibana. The ELK stack is used for end-to-end log management and monitoring solutions for Elasticsearch data.
Kibana which is the 'K' of ELK stack, is used for visualizing and analyzing the log data in Elasticsearch. Kibana does not support integration with any other data source and works only with Elasticsearch.

# KIBANA vs GRAFANA

## VISUALIZATION

Grafana is more popular for producing beautiful and visually appealing graphs and dashboards and is more customizable and flexible when compared to Kibana.
Kibana is easier to set up.

## INTEGRATION WITH DATA SOURCES

Grafana officially supports integration with 14 data sources like: MySQL, Graphite, InfluxDB, PostgreSQL, Prometheus etc.
With its ability to connect to any REST API, the total number of possible data sources is limitless.
Kibana supports only integration with Elasticsearch.

## LOG SEARCH AND ANALYSIS

While doing some analysis or debugging you may need to search through the logs.
Kibana support querying on text data.
This support is not currently present in Grafana and is seen as major drawback of choosing that platform.

## PROACTIVE ALERTS

A crucial aspect of monitoring sensitive systems is to detect certain issues proactively so that action can be taken in advance before it leads to severe consequences.
Grafana has bult-in features for raising alerts against a set of rules that can be deined by us.
Kibana however does not offer support for Alerts out of the box. It instead requires 3rd party integration to enable Alerts.

SOURCE: https://www.knowi.com/blog/grafana-vs-kibana/