**Monitoring Docker Container using Prometheus and Grafana**

To monitor docker container using Prometheus and Grafana we need a server were docker is installed and containers are present.

**Prerequisite: -**

* Basic overview of Prometheus & Grafana
* AWS account
* A server with Docker installed on it and some containers also

What is Prometheus?

Prometheus is an open-source monitoring tool mainly used for metrics monitoring, event monitoring, alert configuration, etc. Prometheus is designed to monitor targets, server, databases, standalone virtual machines etc. Prometheus uses a powerful query language called “PromQL”**.**

Prometheus configuration file and components:

* prometheus.yml:- It is the configuration file for Prometheus where we can do all the changes regarding the configuration of Prometheus.
* Promtool:- It is the command-line utility tool used to verify the configuration of Prometheus.
* PromQL:- It is the strong query language used by Prometheus.

What is Grafana?  
Grafana is free and open-source visualization tool that provides various dashboards, charts, graphs, alerts for the particular data source. Grafana allows us to query, visualize, explore metrics and set alerts for the data sources. We can also create our own dynamic dashboard for visualization and monitoring. We can save the dashboards and share it with other members also. We can also import external dashboards.

**Steps to install Prometheus**

**Step –1 :** https://prometheus.io/download/

<https://github.com/prometheus/prometheus/releases/download/v2.41.0/prometheus-2.41.0.linux-amd64.tar.gz> (Use this URL to download the tar file of Prometheus)

**Step –2:** tar –xvf https://prometheus.io/download/ <version>-amd.tar.gz

**We are installing Prometheus as service so to run the prometheus as a service follow the following step**

**Step –1**: cd / prometheus-2.18.1.linux-amd64

**Step –2**: mkdir –p /usr/local/bin/prometheus

**Step –3:** cp –r . /usr/local/bin/prometheus

To run any file as a service we need a service file for Prometheus we will create a service file for prometheus

**Step -4:** vi /etc/sytemd/system/prometheus.service

Paste this inside the service file

[Unit]

Description=Prometheus Service

After=network.target

[Service]

Type=simple

ExecStart=/usr/local/bin/prometheus/prometheus --config.file=/usr/local/bin/prometheus/prometheus.yml

[Install]

WantedBy=multi-user.target

Now the service file is created you can start prometheus using the following command .

Sudo service prometheus start

Sudo service prometheus status

**Steps to install Grafana**

**Step –1** Download the GPG key and add it to the list of trusted keys.

wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add –

**Step 2**: Now you have to add it to the Grafana repository.

sudo add-apt-repository "deb https://packages.grafana.com/oss/deb stable main"

**Step 3**: Once it has been added, we need to update the ART cache and continue the installation of Grafana.

sudo apt update

**Step 4:** sudo apt install grafana

Note : If you get this error at the end of the installation:

apt -fix-broken install

**Step 5**: After the installation, add grafana to the autostart and start the Grafana daemon itself.

sudo systemctl enable grafana-server

sudo systemctl start grafana-server

sudo systemctl status grafana-server

**Steps to Configure monitoring steps for docker container**

We will go to the docker machine were docker is installed (need to be a root user)

**Step 1**: vi /etc/docker/daemon.jason(is the file is not there you need to create the file)

Add these lines

{

"metrics-addr" : "0.0.0.0:9323",

"experimental" :true

}

**To check the jason file is valid we need to restart the docker**

systemctl restart docker

systemctl sataus docker

**To check the metrics which is exposed by the docker we need to go to browser**

**<server-ip>:9323/metrics**

**You will see all the metrics related to our docker**

**Now we need to access the metrics in the prometheus**

We need to go to the machine were prometheus is installed and make the changes in prometheus.yml file.

We need to add the job name and add the target in prometheus.yml file

Add the below line in vi /usr/local/bin/prometheus/prometheus.yml

- job\_name: "docker\_metrics"

# metrics\_path defaults to '/metrics'

# scheme defaults to 'http'.

static\_configs:

- targets: ["<machine\_ip>:9323"]

If this work properly you can go to prometheus and navigate to target and you can see your machine docker-metrics target there.

**Now for good visualization we will push the Prometheus data to Grafana**

**Login detail for grafana is default -**

**Userid** –admin

**Passoword**- admin

**Step 1** : Create a Data source for you grafana

This is the home page of you grafana . Click on **Add your first data source.**

**Step 2**: Select prometheus from the list

**Step 3:** Enter the required detail of your prometheus

When you will click in save and delete a pop-up will come Data source is working.

**Step 4** : Click on Add new panel

**Step 5:** Once you get inside the panel fill the required details and save the pannel

**Step 6**: Once you save the panel you can see the visualization of your docker container

**Step** 7 : Name you Dashboard and Save it .