Project -3

Integrate Grafana with Linux Server for high cpu utilization and create a graph in Grafana

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INTRODUCTION

In modern IT infrastructure, real-time monitoring and visualization of system performance is crucial. This project focuses on integrating **Grafana**, an open-source analytics and visualization tool, with a **Linux server running on AWS EC2**. The aim is to monitor **CPU utilization** using **Prometheus** and **Node Exporter**, collect metrics, and visualize them on a dynamic Grafana dashboard.
By doing so, system administrators and developers can track resource usage, detect bottlenecks, and ensure system reliability. This setup also introduces students to industry-level monitoring practices using open-source technologies on cloud infrastructure.

WHAT IS GRAFANA

Grafana is an open-source data visualization and monitoring tool used to analyze and display metrics from various data sources like Prometheus, InfluxDB, Graphite, MySQL, and more. It allows users to create interactive dashboards with real-time graphs, charts, and alerts to monitor the health and performance of systems, applications, and infrastructure.

Grafana is widely used in DevOps and IT operations for:

- Monitoring server resources (CPU, memory, disk usage)
- Observing cloud services and Kubernetes clusters
- Alerting on performance issues
- Creating custom dashboards for business analytics

With its user-friendly interface and plugin support, Grafana is a powerful tool for converting complex data into insightful visualizations.

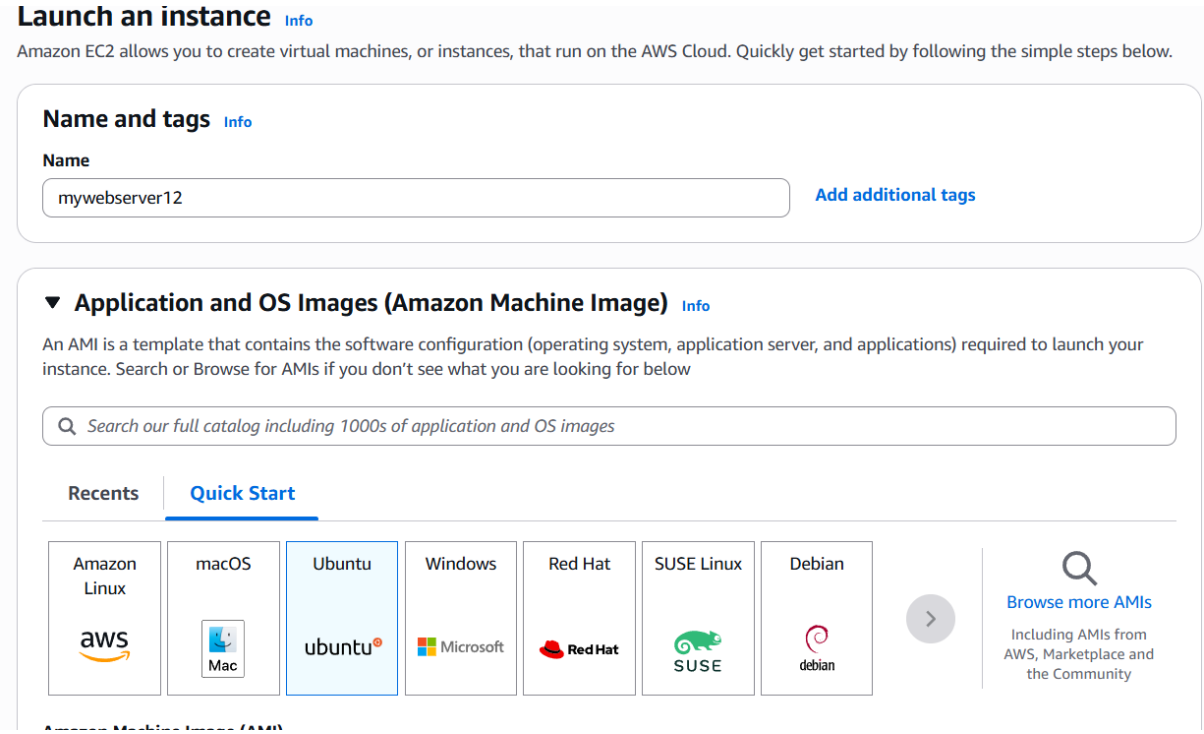
- **Step-by-Step Setup**

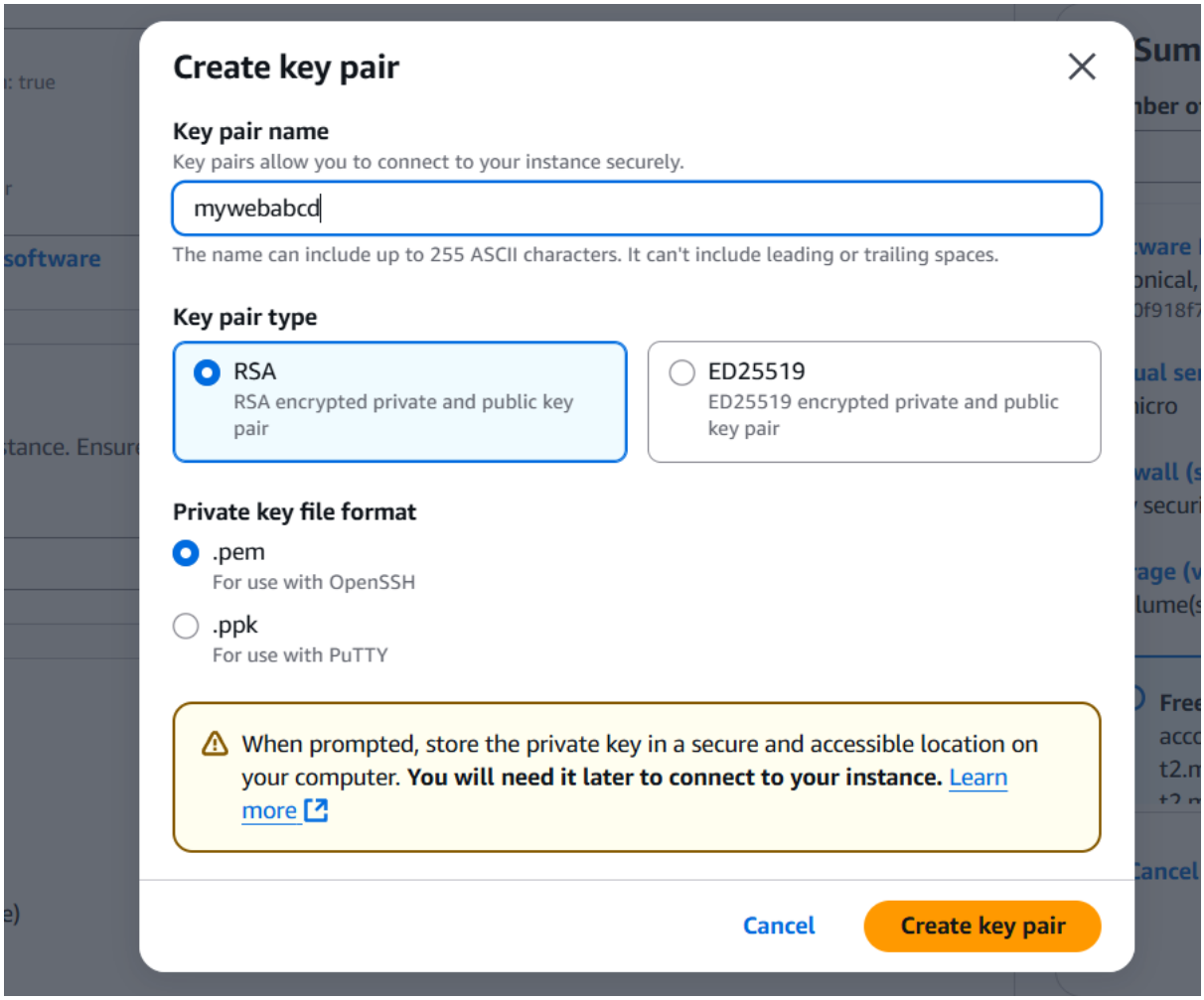
1.launch instance.

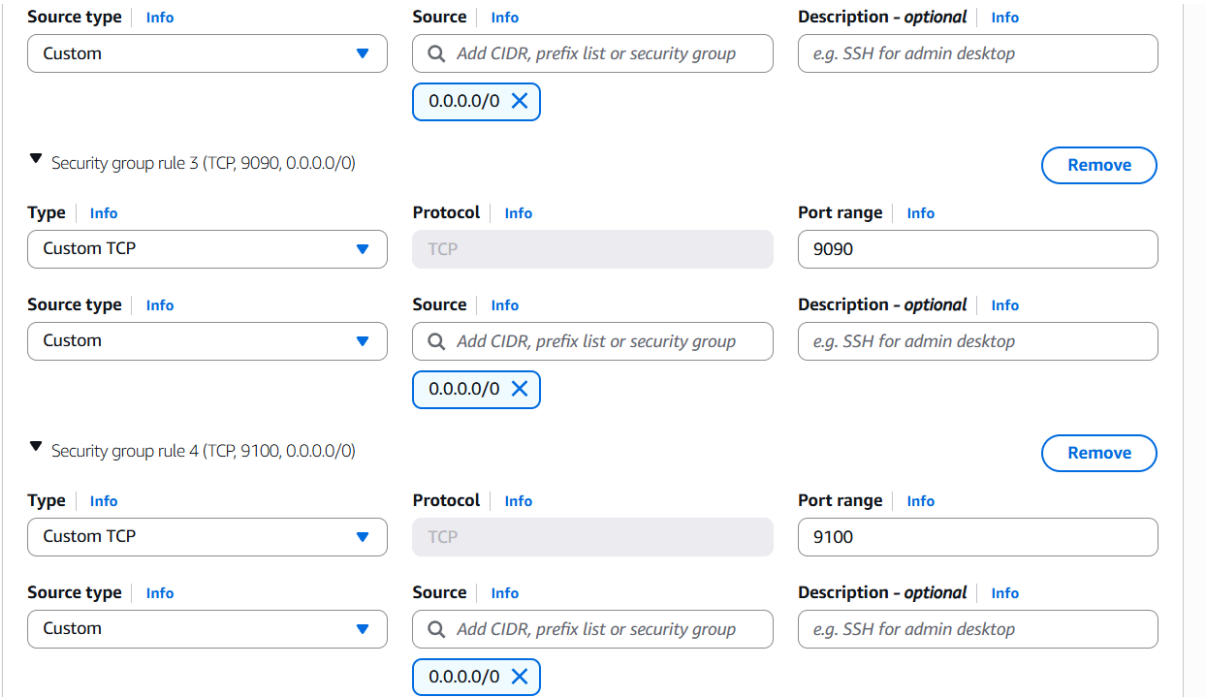
- Choose Ubuntu 22.04 LTS.
- Select an instance type (t2.micro for testing).
- Create or use a key pair (use .ppk if using PuTTY).
- Open ports in Security Group:
  - SSH (22)
  - HTTP (80)
  - Custom TCP 3000 (Grafana)
  - Custom TCP 9090 (Prometheus)
  - Custom TCP 9100 (Node Exporter)

2. Connect to EC2 Using PuTTY

Use the public IP of the EC2 instance and connect using PuTTY with the .ppk private key.

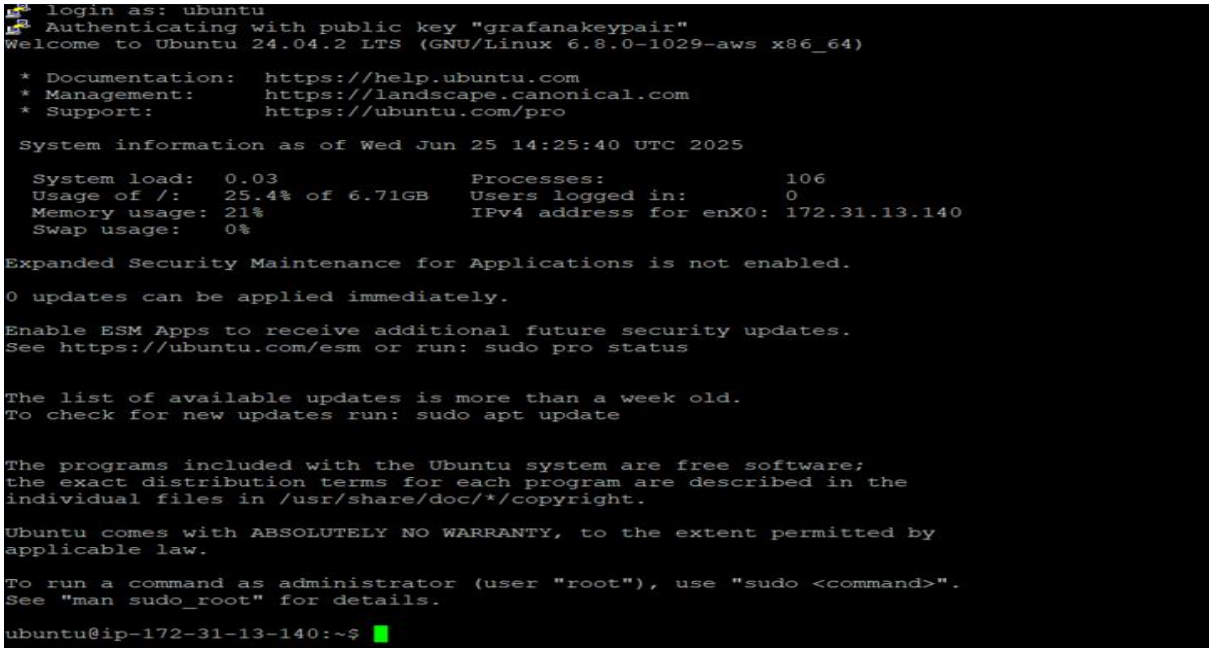






Now Launch instance

After launching the instances copy the public ip address of your instance and connect it with putty and login as :ubuntu and then press enter



- **After this step run all these commands :-**

SUDO APT UPDATE &&SUDO APT UPGRADE -Y

2. WGET -Q -O - HTTPS://PACKAGES.GRAFANA.COM/GPG.KEY | SUDO APT-KEY ADD -

3. ECHO "DEB HTTPS://PACKAGES.GRAFANA.COM/OSS/DEB STABLE MAIN" | SUDO TEE /ETC/APT/SOURCES.LIST.D/GRAFANA.LIST

4. SUDO APT-GET INSTALL -Y APT-TRANSPORT-HTTPS

SUDO APT-GET INSTALL -Y SOFTWARE-PROPERTIES-COMMON WGET

WGET -Q -O - HTTPS://PACKAGES.GRAFANA.COM/GPG.KEY | SUDO APT-KEY ADD -

ECHO "DEB HTTPS://PACKAGES.GRAFANA.COM/OSS/DEB STABLE MAIN" | SUDO TEE /ETC/APT/SOURCES.LIST.D/GRAFANA.LIST

SUDO APT-GET UPDATE

SUDO APT-GET INSTALL GRAFANA

5. SUDOSYSTEMCTL DAEMON-REEXEC

SUDOSYSTEMCTL START GRAFANA-SERVER

SUDOSYSTEMCTL ENABLE GRAFANA-SERVER

6. LS /LIB/SYSTEMD/SYSTEM/GRAFANA-SERVER.SERVICE

7. SUDO APT REMOVE GRAFANA

SUDO APT UPDATE

SUDO APT INSTALL GRAFANA

8. SUDO APT UPDATE &&SUDO APT UPGRADE –

9. WGET -Q -O - HTTPS://PACKAGES.GRAFANA.COM/GPG.KEY | SUDO APT-KEY ADD -

10. ECHO "DEB HTTPS://PACKAGES.GRAFANA.COM/OSS/DEB STABLE MAIN" | SUDO TEE /ETC/APT/SOURCES.LIST.D/GRAFANA.LIST

11. SUDO APT UPDATE

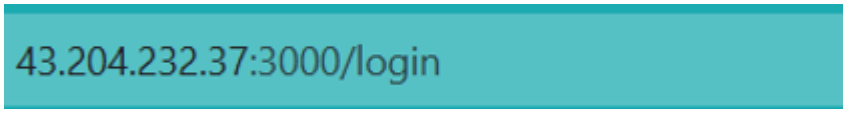
12. SUDO APT INSTALL GRAFANA -Y

13. SUDOSYSTEMCTL START GRAFANA-SERVER

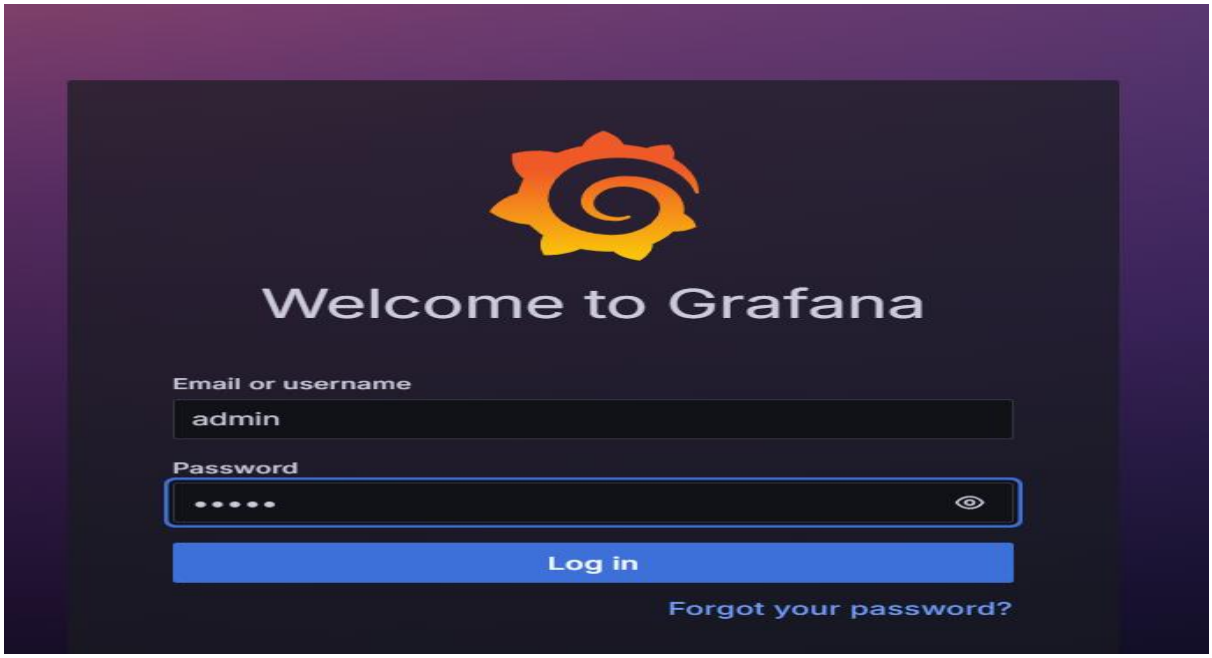
14. SUDOSYSTEMCTL ENABLE GRAFANA-SERVER

15. SUDOSYSTEMCTL STATUS GRAFANA-SERVER

- **copy your instance's public ip address and place that ip with port range 3000 in your browser .**

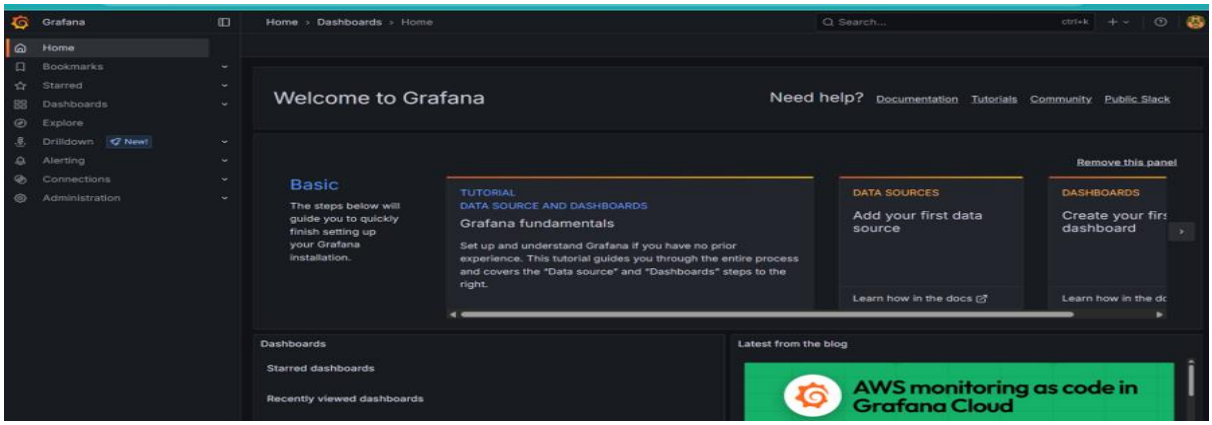


- **After putting ip with port range you'll get this Grafana interface.**

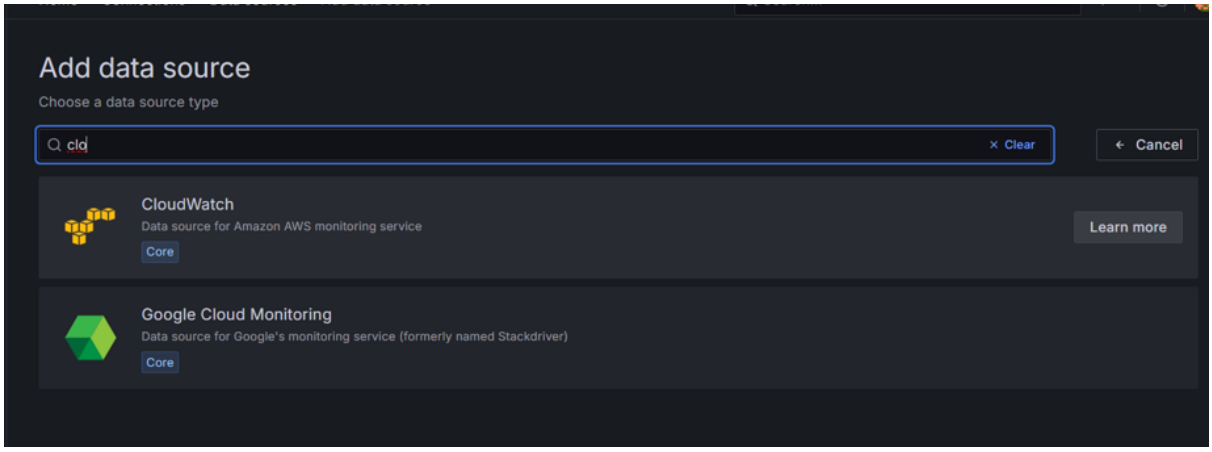


- **For making account in Grafana you've to write Admin in "email or username" and "password" both.**

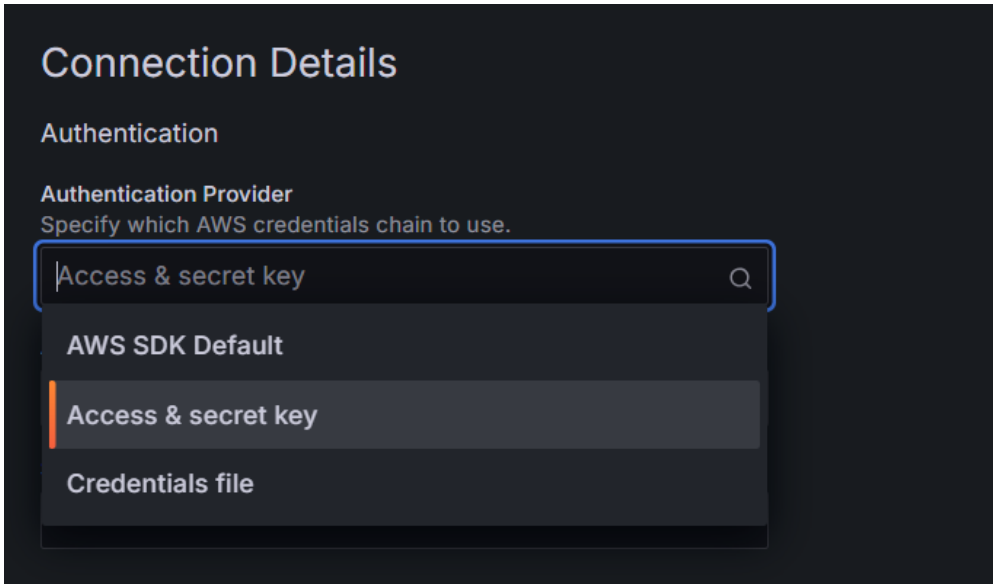
- **After this it'll suggest you to create a new password and after that your main Grafana page will be open.**



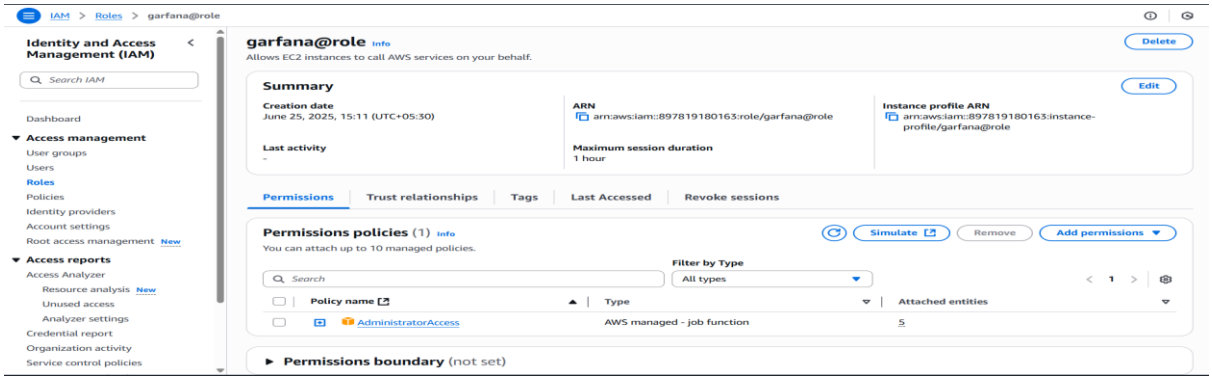
- **Now go to connections on the left and data source.**
- **Click on the add data source.**
- **Search cloud watch and open it**



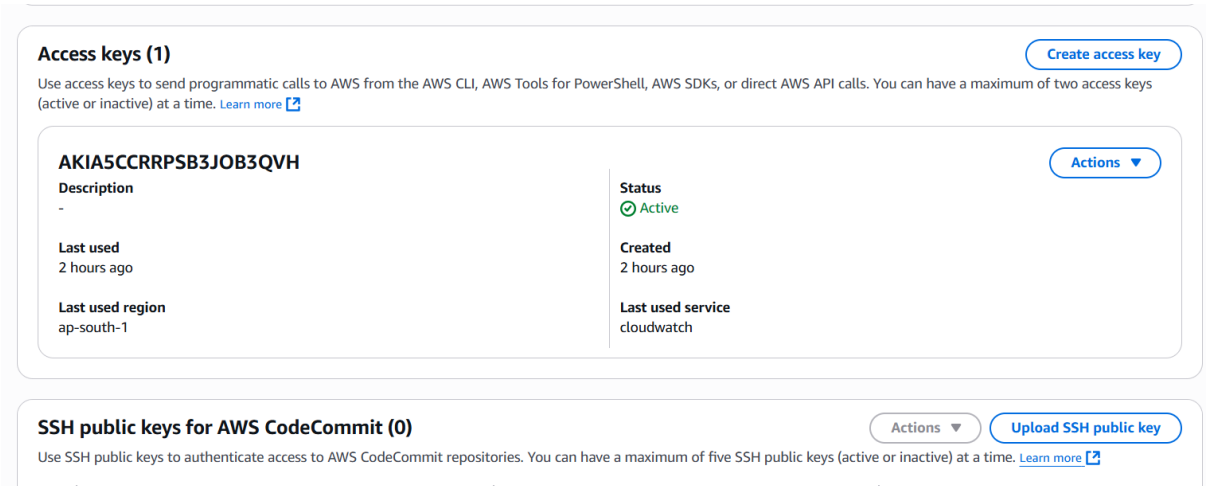
- **In connection details:-**

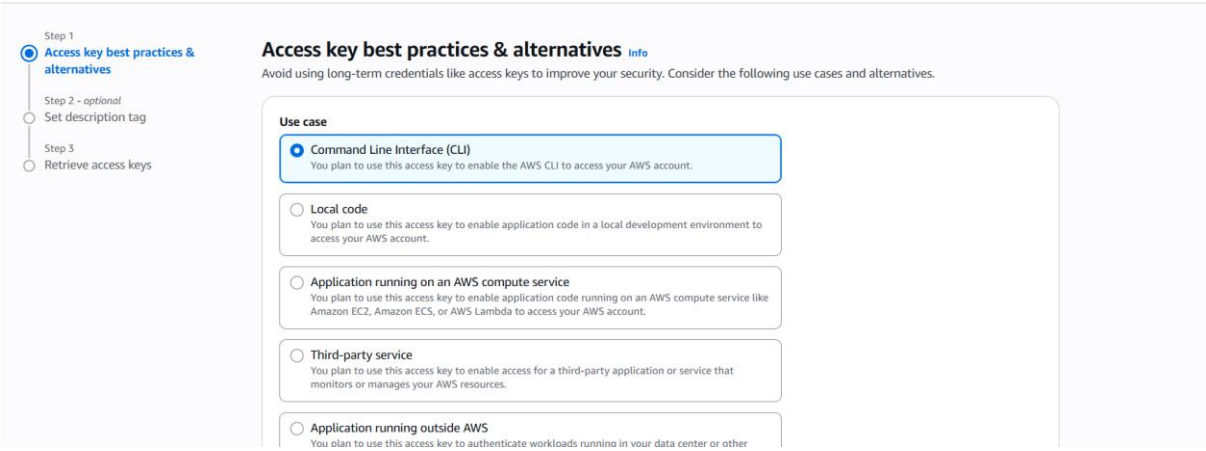


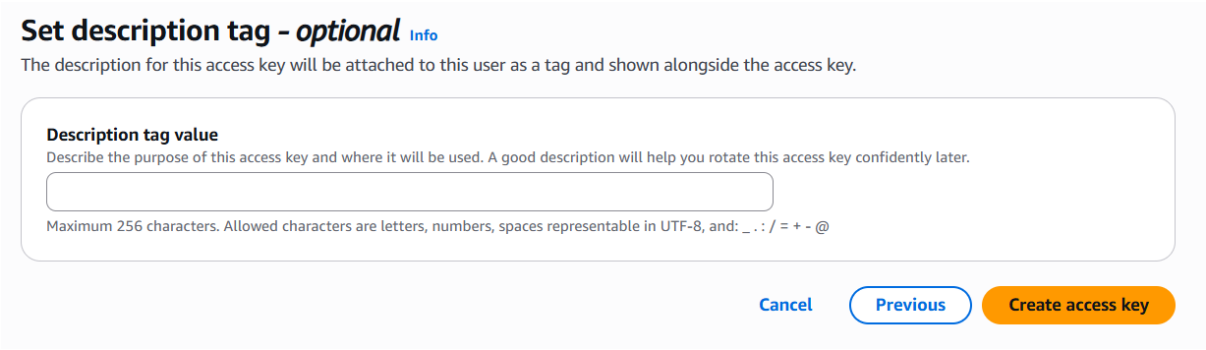
- **Now go to the IAM if you are aiam user and go to your user id if you are a root user then make your own user.**



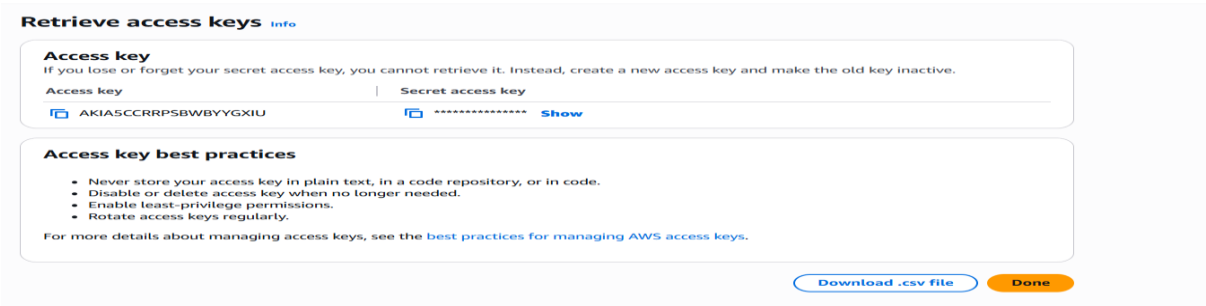
- **Now go to security credentials**
- **Create on access key**



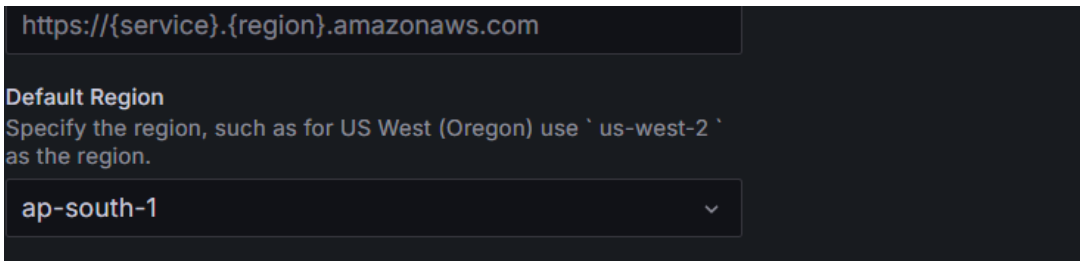




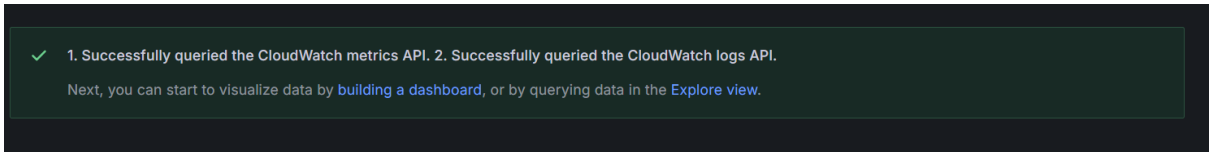
- **Click on create access key :-**



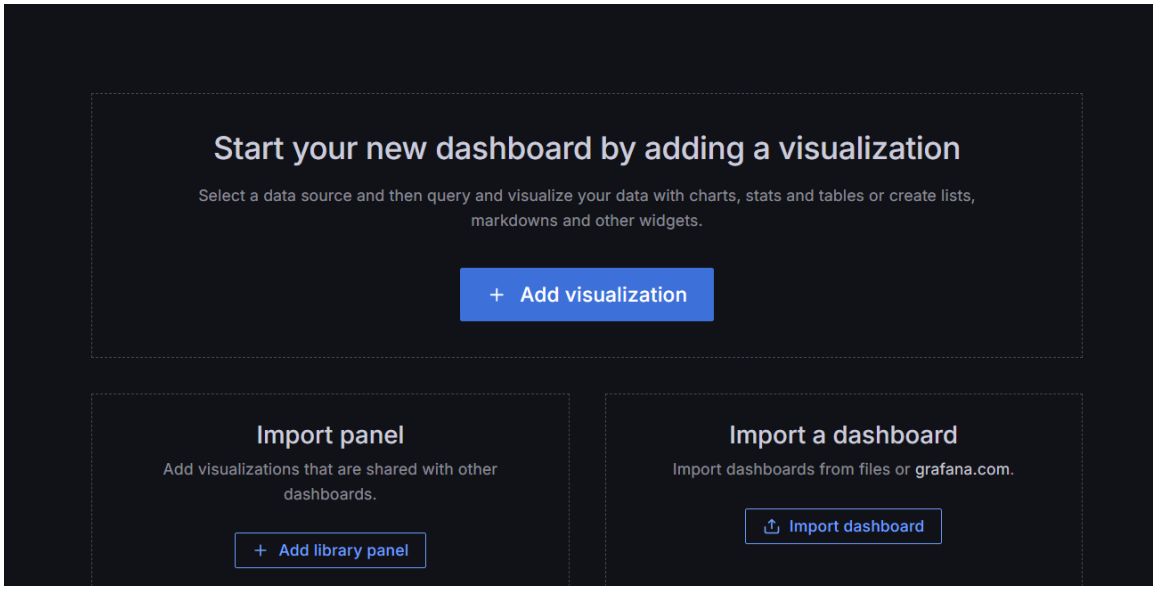
- **Now your access key and secret access key is created copy them and paste it and choose region what you choose in the instance**



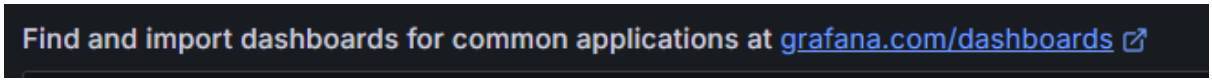
- **Now click on save and test:-**



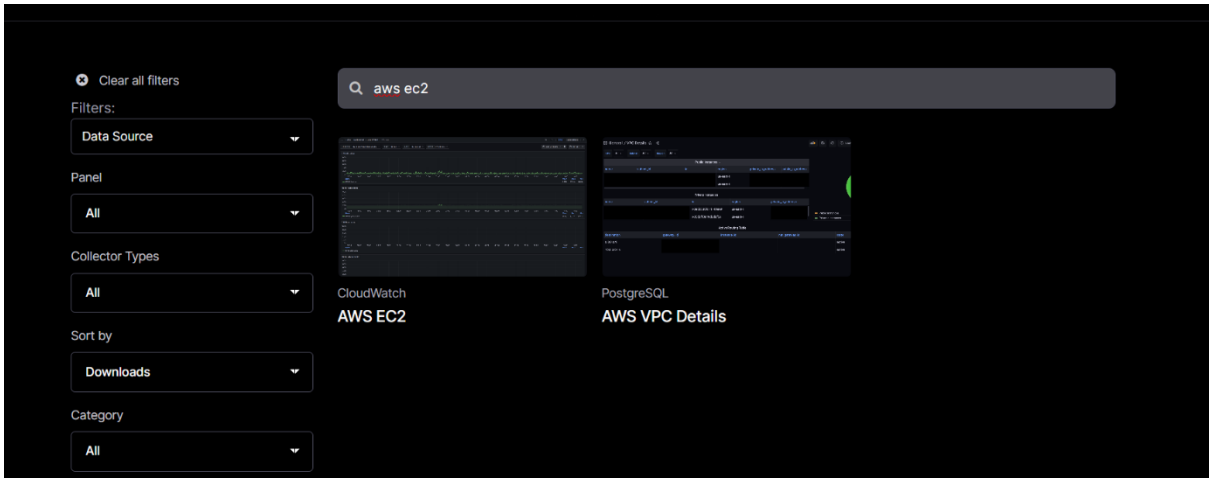
- **Now next step is we've to go to home and click on dashboard.**

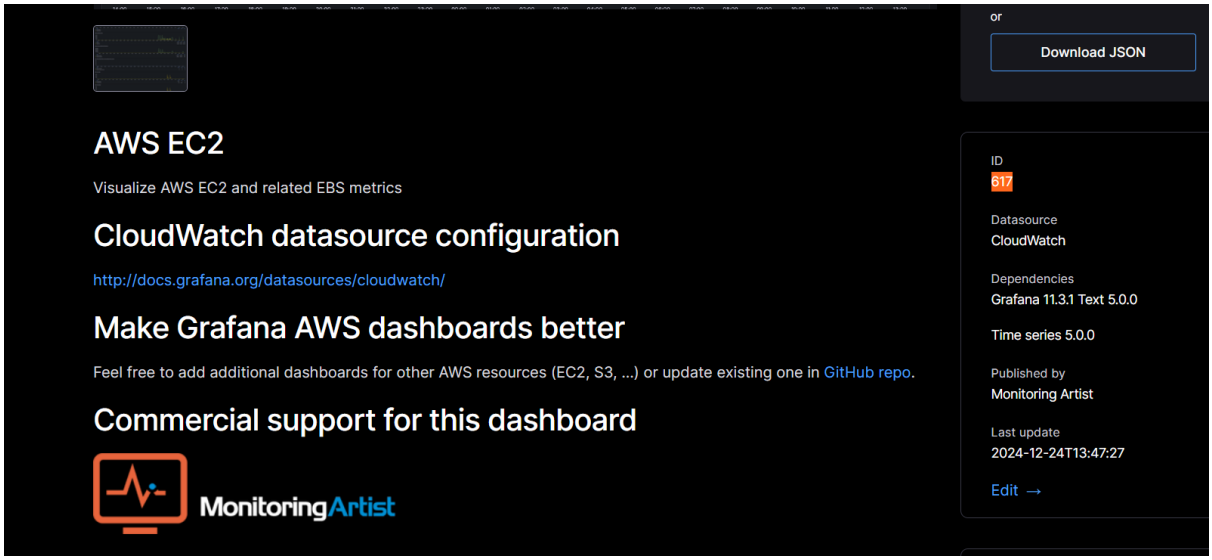


- **Click on import dashboard**

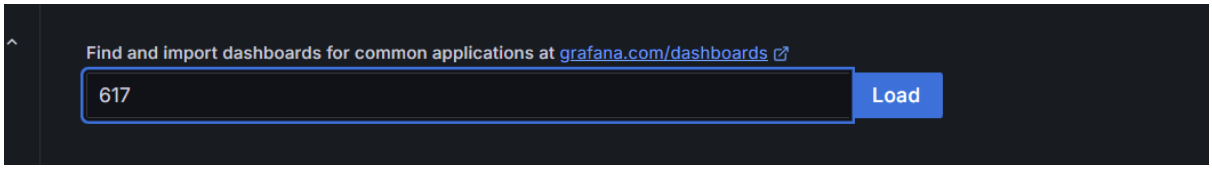


- **Now click on grafana.com/dashboards**
- **Search AWS EC2 and open it.**

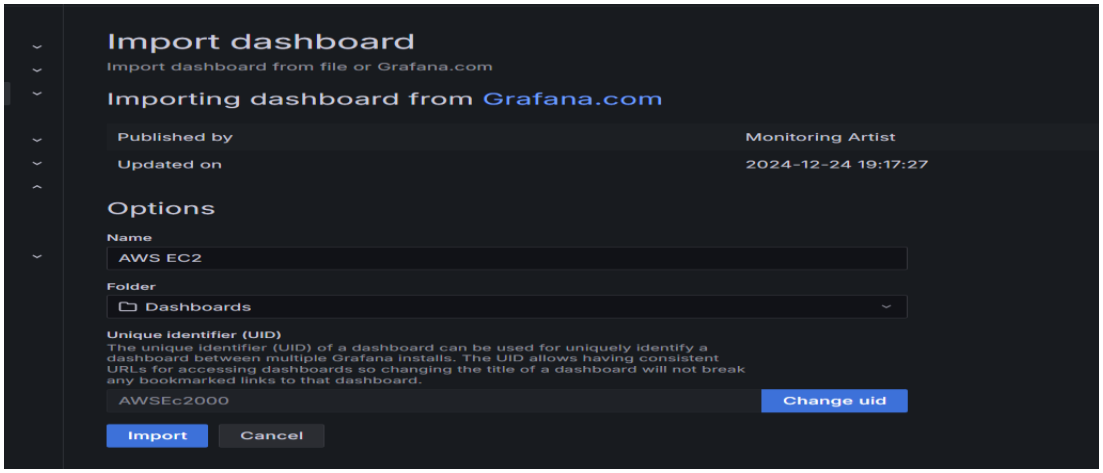




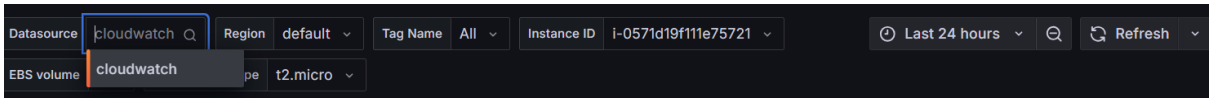
- **Now copy the "id number" and place it in dashboard.**



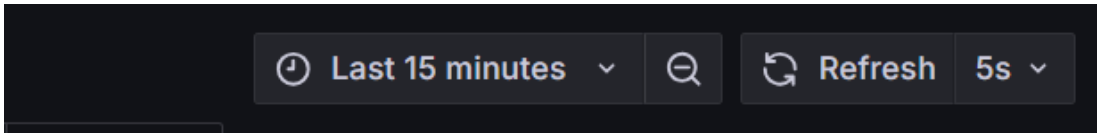
And after pasting id number tap on load this interface will appear



- **Now click on import and put cloudwatch in your datasource**



- **Region: ap-south1**
- **Tag-name: your instance name**
- **Choose refresh time 5 seconds and time last 15 minutes.**



- **Your grafana's interface will appear soon:-**