

# Lesson 04 Demo 01

## Setting up a Grafana Instance

**Objective:** To demonstrate the process of installing Grafana, starting the server, and configuring it for monitoring and visualizing system metrics through a dashboard

**Tools required:** Linux operating system

**Prerequisites:** Basic understanding of Linux shell and commands

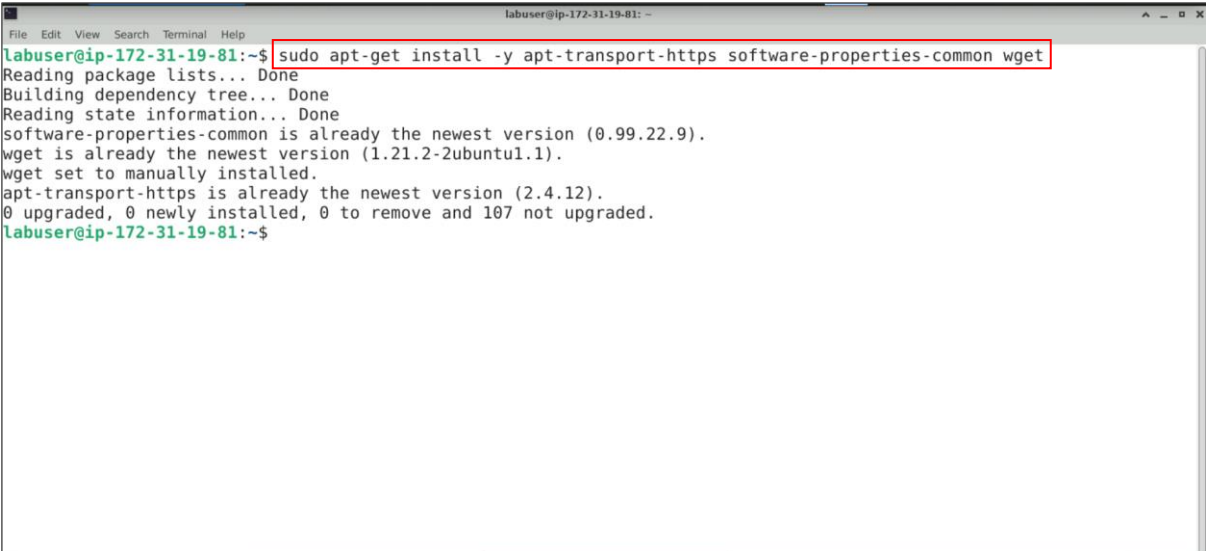
Steps to be followed:

1. Install Grafana from the APT repository
2. Start the Grafana server
3. Access the Grafana UI

### Step 1: Install Grafana from the APT repository

- 1.1 Open the terminal on the system and install the prerequisite packages for Grafana using the following command:

**sudo apt-get install -y apt-transport-https software-properties-common wget**

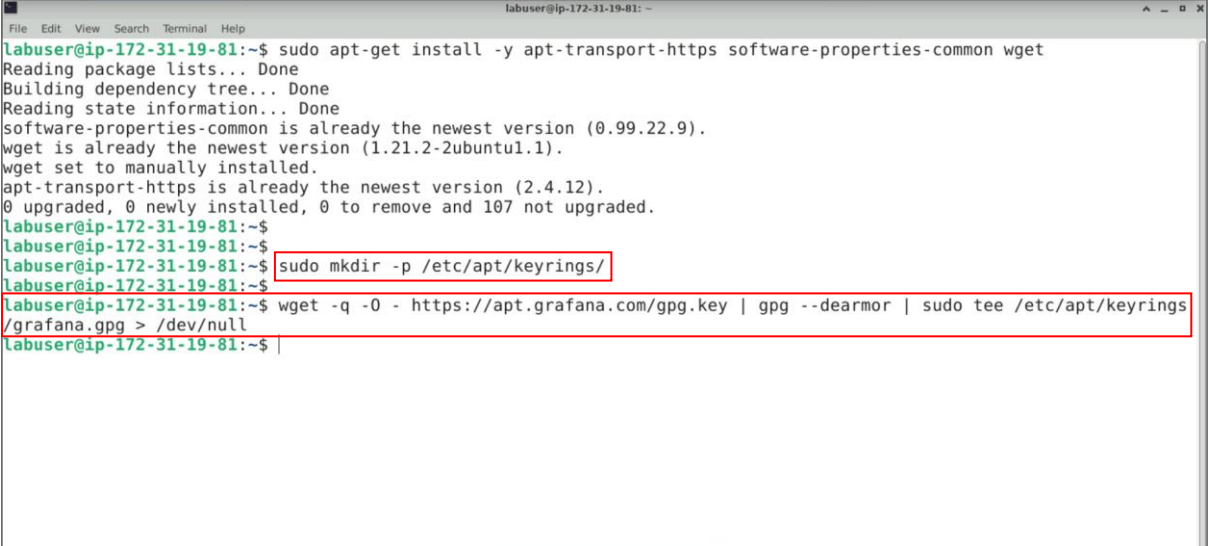


```
labuser@ip-172-31-19-81: ~$ sudo apt-get install -y apt-transport-https software-properties-common wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
software-properties-common is already the newest version (0.99.22.9).
wget is already the newest version (1.21.2-2ubuntu1.1).
wget set to manually installed.
apt-transport-https is already the newest version (2.4.12).
0 upgraded, 0 newly installed, 0 to remove and 107 not upgraded.
labuser@ip-172-31-19-81: ~$
```

**Note:** These steps describe installing Grafana from the **APT repository**. Grafana can also be installed by downloading a **.deb** package or a binary **.tar.gz** file.

- 1.2 Execute the following commands to create a directory for keyrings and import Grafana's GPG key:

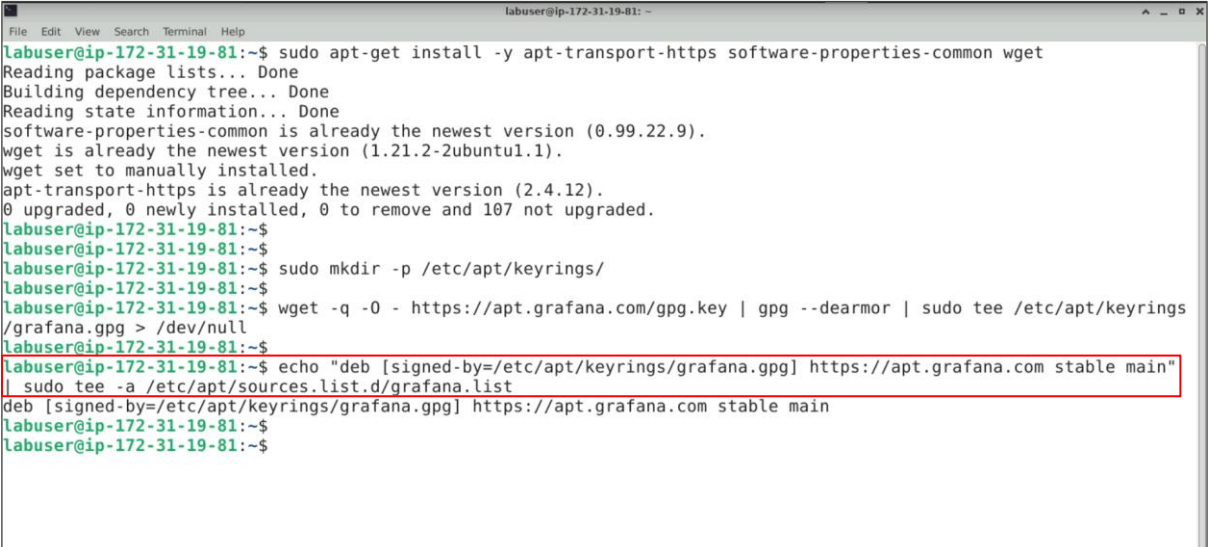
```
sudo mkdir -p /etc/apt/keyrings/  
wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee  
/etc/apt/keyrings/grafana.gpg > /dev/null
```



```
labuser@ip-172-31-19-81:~$ sudo apt-get install -y apt-transport-https software-properties-common wget  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
software-properties-common is already the newest version (0.99.22.9).  
wget is already the newest version (1.21.2-2ubuntu1.1).  
wget set to manually installed.  
apt-transport-https is already the newest version (2.4.12).  
0 upgraded, 0 newly installed, 0 to remove and 107 not upgraded.  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ sudo mkdir -p /etc/apt/keyrings/  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null  
labuser@ip-172-31-19-81:~$
```

- 1.3 Execute the following command to add a stable Grafana repository to the system's APT sources list:

```
echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com  
stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
```



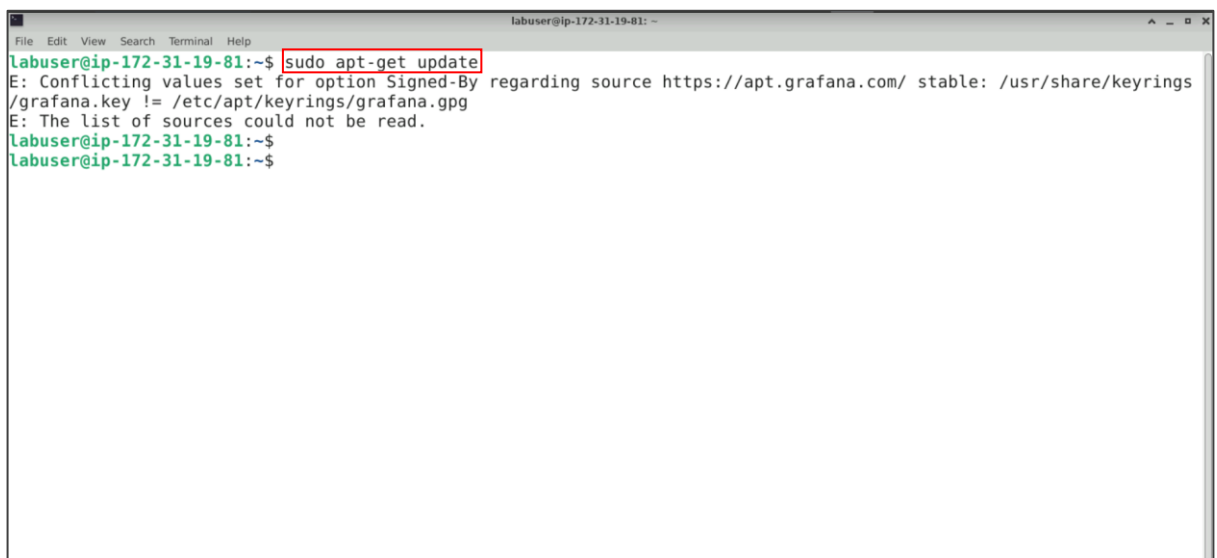
```
labuser@ip-172-31-19-81:~$ sudo apt-get install -y apt-transport-https software-properties-common wget  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
software-properties-common is already the newest version (0.99.22.9).  
wget is already the newest version (1.21.2-2ubuntu1.1).  
wget set to manually installed.  
apt-transport-https is already the newest version (2.4.12).  
0 upgraded, 0 newly installed, 0 to remove and 107 not upgraded.  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ sudo mkdir -p /etc/apt/keyrings/  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list  
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$
```

- 1.4 Execute the following command to add Grafana's beta repository to the APT sources list:
- ```
echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com beta main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
```



```
labuser@ip-172-31-19-81:~$ sudo apt-get install -y apt-transport-https software-properties-common wget
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
software-properties-common is already the newest version (0.99.22.9).
wget is already the newest version (1.21.2-2ubuntu1.1).
wget set to manually installed.
apt-transport-https is already the newest version (2.4.12).
0 upgraded, 0 newly installed, 0 to remove and 107 not upgraded.
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$ sudo mkdir -p /etc/apt/keyrings/
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$ wget -q -O - https://apt.grafana.com/gpg.key | gpg --dearmor | sudo tee /etc/apt/keyrings/grafana.gpg > /dev/null
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$ echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$ echo "deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com beta main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com beta main
labuser@ip-172-31-19-81:~$
```

- 1.5 Run the following command to update the package list to include the Grafana repositories:
- ```
sudo apt-get update
```



```
labuser@ip-172-31-19-81:~$ sudo apt-get update
E: Conflicting values set for option Signed-By regarding source https://apt.grafana.com/ stable: /usr/share/keyrings/grafana.key != /etc/apt/keyrings/grafana.gpg
E: The list of sources could not be read.
labuser@ip-172-31-19-81:~$
labuser@ip-172-31-19-81:~$
```

**Note:** A conflict error may occur during the update after adding the repository.

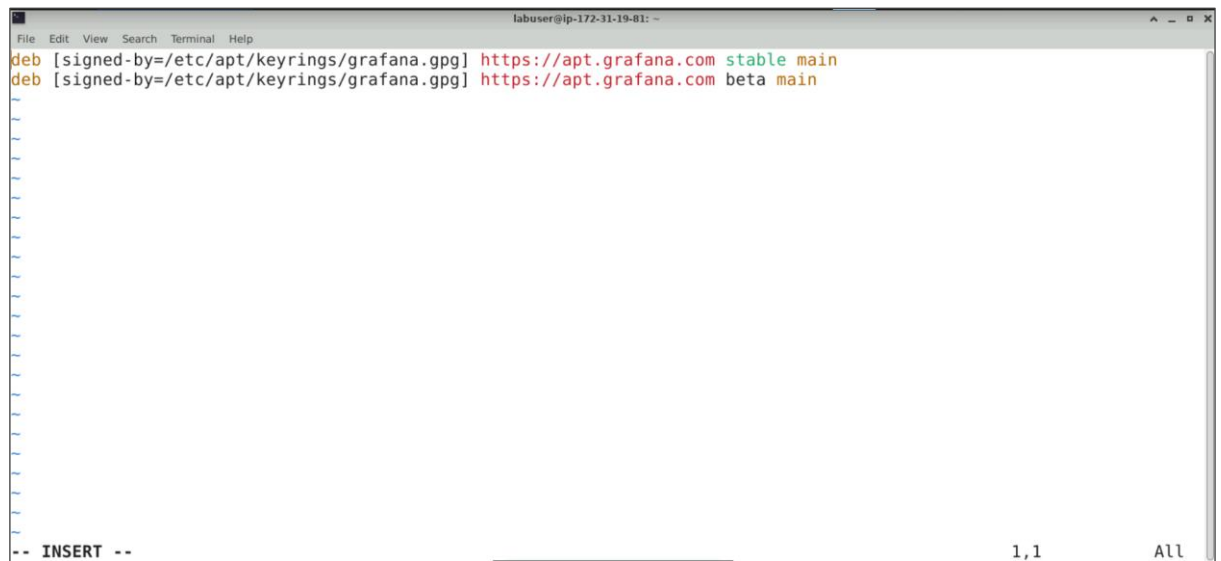
- ```
sudo rm /usr/share/keyrings/grafana.key
sudo vim /etc/apt/sources.list.d/grafana.list
```

Remove the first line containing **grafana.key**; keep the remaining lines that include **grafana.gpg**, then save and exit the file

```
labuser@ip-172-31-19-81: ~
File Edit View Search Terminal Help
deb [signed-by=/usr/share/keyrings/grafana.key] https://apt.grafana.com stable main
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com beta main

"/etc/apt/sources.list.d/grafana.list" 3L, 246B 1.1 All
```

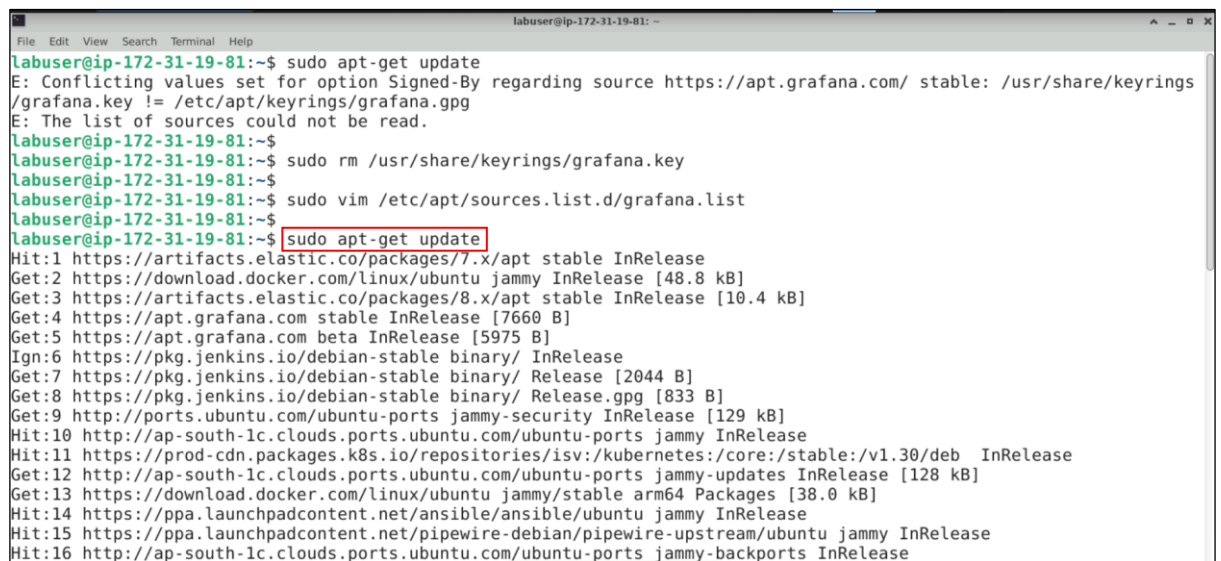
The **grafana.list** file should look like this:



```
labuser@ip-172-31-19-81: ~  
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com stable main  
deb [signed-by=/etc/apt/keyrings/grafana.gpg] https://apt.grafana.com beta main  
  
-- INSERT --
```

- 1.8 Execute the following command to update the package list once the grafana.list file is updated:

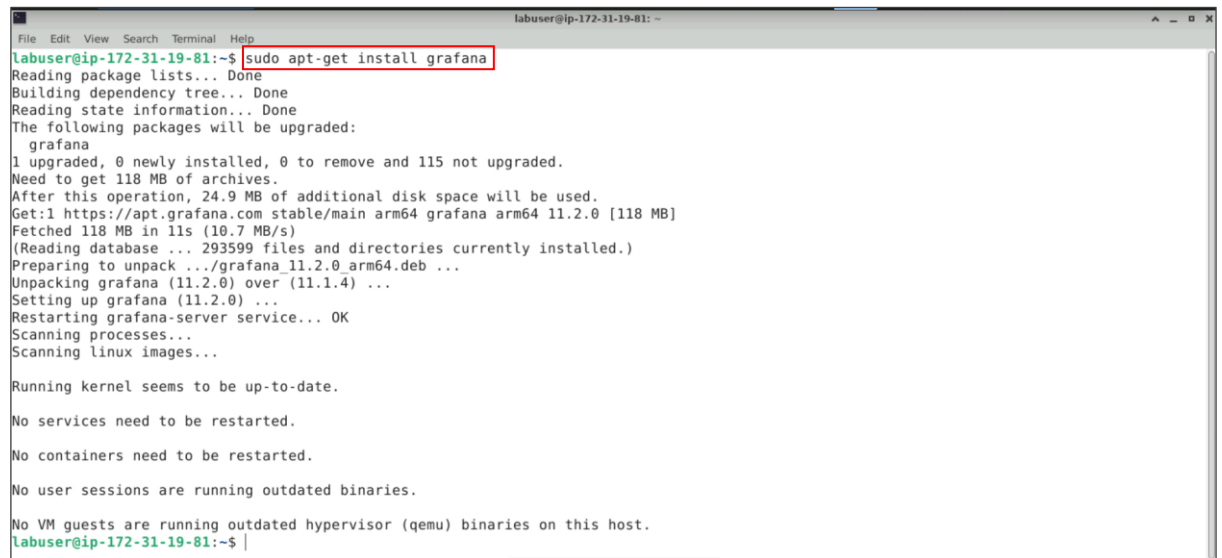
**sudo apt-get update**



```
labuser@ip-172-31-19-81: ~  
labuser@ip-172-31-19-81:~$ sudo apt-get update  
E: Conflicting values set for option Signed-By regarding source https://apt.grafana.com/ stable: /usr/share/keyrings  
/grafana.key != /etc/apt/keyrings/grafana.gpg  
E: The list of sources could not be read.  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ sudo rm /usr/share/keyrings/grafana.key  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ sudo vim /etc/apt/sources.list.d/grafana.list  
labuser@ip-172-31-19-81:~$  
labuser@ip-172-31-19-81:~$ sudo apt-get update  
Hit:1 https://artifacts.elastic.co/packages/7.x/apt stable InRelease  
Get:2 https://download.docker.com/linux/ubuntu jammy InRelease [48.8 kB]  
Get:3 https://artifacts.elastic.co/packages/8.x/apt stable InRelease [10.4 kB]  
Get:4 https://apt.grafana.com stable InRelease [7660 B]  
Get:5 https://apt.grafana.com beta InRelease [5975 B]  
Ign:6 https://pkg.jenkins.io/debian-stable binary/ InRelease  
Get:7 https://pkg.jenkins.io/debian-stable binary/ Release [2044 B]  
Get:8 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [833 B]  
Get:9 http://ports.ubuntu.com/ubuntu-ports jammy-security InRelease [129 kB]  
Hit:10 http://ap-south-1c.clouds.ports.ubuntu.com/ubuntu-ports jammy InRelease  
Hit:11 https://prod-cdn.packages.k8s.io/repositories/isv/kubernetes:/core:/stable:/v1.30/deb InRelease  
Get:12 http://ap-south-1c.clouds.ports.ubuntu.com/ubuntu-ports jammy-updates InRelease [128 kB]  
Get:13 https://download.docker.com/linux/ubuntu jammy/stable arm64 Packages [38.0 kB]  
Hit:14 https://ppa.launchpadcontent.net/ansible/ansible/ubuntu jammy InRelease  
Hit:15 https://ppa.launchpadcontent.net/pipewire-debian/pipewire-upstream/ubuntu jammy InRelease  
Hit:16 http://ap-south-1c.clouds.ports.ubuntu.com/ubuntu-ports jammy-backports InRelease
```

- 1.9 Using the following command, install the Grafana open-source edition from the repository:

**sudo apt-get install grafana**



```
labuser@ip-172-31-19-81:~$ sudo apt-get install grafana
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be upgraded:
  grafana
1 upgraded, 0 newly installed, 0 to remove and 115 not upgraded.
Need to get 118 MB of archives.
After this operation, 24.9 MB of additional disk space will be used.
Get:1 https://apt.grafana.com stable/main arm64 grafana arm64 11.2.0 [118 MB]
Fetched 118 MB in 11s (10.7 MB/s)
(Reading database ... 293599 files and directories currently installed.)
Preparing to unpack .../grafana_11.2.0_arm64.deb ...
Unpacking grafana (11.2.0) over (11.1.4) ...
Setting up grafana (11.2.0) ...
Restarting grafana-server service... OK
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
labuser@ip-172-31-19-81:~$
```

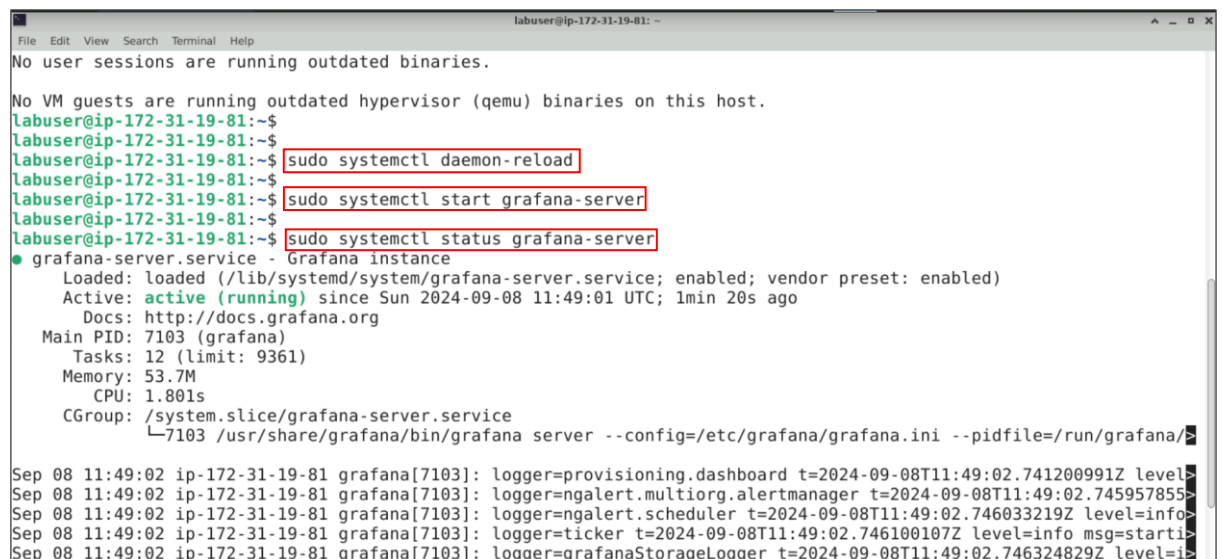
## Step 2: Start the Grafana server

- 2.1 Execute the following commands to reload the system manager configuration, start the Grafana server, and check its status:

**sudo systemctl daemon-reload**

**sudo systemctl start grafana-server**

**sudo systemctl status grafana-server**



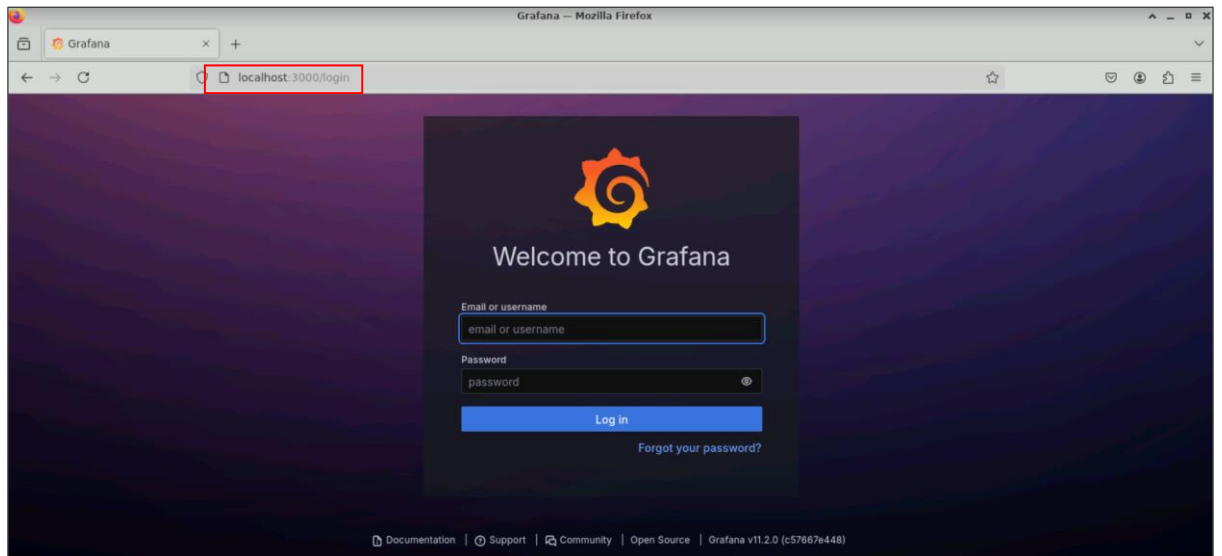
```
labuser@ip-172-31-19-81:~$ sudo systemctl daemon-reload
labuser@ip-172-31-19-81:~$ sudo systemctl start grafana-server
labuser@ip-172-31-19-81:~$ sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
   Loaded: loaded (/lib/systemd/system/grafana-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2024-09-08 11:49:01 UTC; 1min 20s ago
     Docs: http://docs.grafana.org
    Main PID: 7103 (grafana)
      Tasks: 12 (limit: 9361)
     Memory: 53.7M
        CPU: 1.801s
    CGroup: /system.slice/grafana-server.service
            └─7103 /usr/share/grafana/bin/grafana server --config=/etc/grafana/grafana.ini --pidfile=/run/grafana/

Sep 08 11:49:02 ip-172-31-19-81 grafana[7103]: logger=provisioning.dashboard t=2024-09-08T11:49:02.741200991Z level=info>
Sep 08 11:49:02 ip-172-31-19-81 grafana[7103]: logger=ngalert.multiorg.alertmanager t=2024-09-08T11:49:02.745957855Z level=info>
Sep 08 11:49:02 ip-172-31-19-81 grafana[7103]: logger=ngalert.scheduler t=2024-09-08T11:49:02.746033219Z level=info>
Sep 08 11:49:02 ip-172-31-19-81 grafana[7103]: logger=ticker t=2024-09-08T11:49:02.746100107Z level=info msg=startup>
Sep 08 11:49:02 ip-172-31-19-81 grafana[7103]: logger=grafanaStorageLogger t=2024-09-08T11:49:02.746324829Z level=info>
```

**Note:** Press **Ctrl+C** to exit the status check

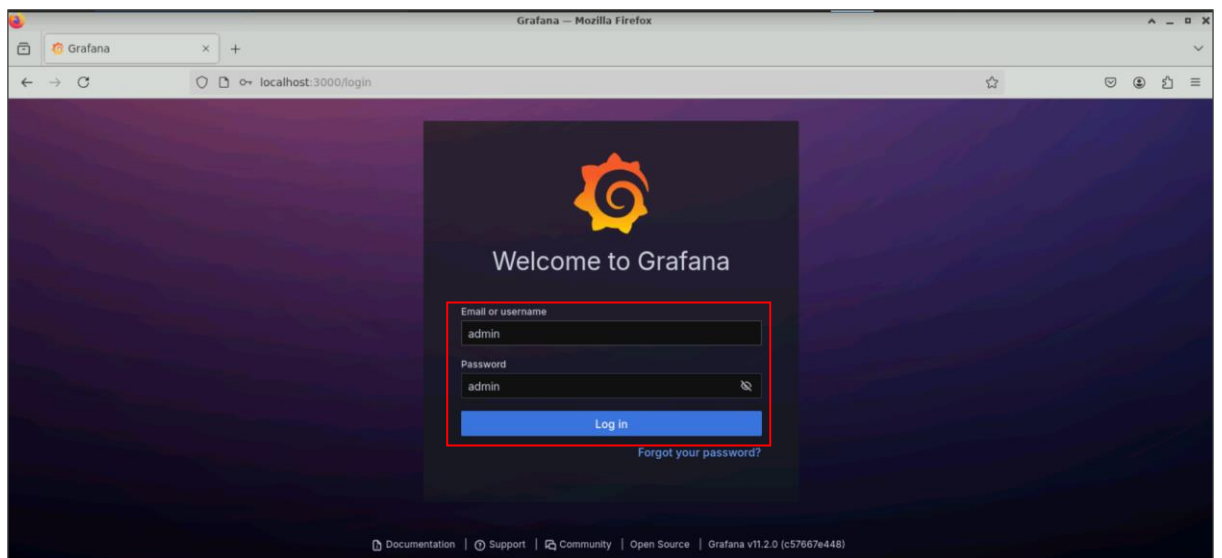
## Step 3: Access the Grafana UI

3.1 Open your preferred browser and enter the URL **http://localhost:3000**



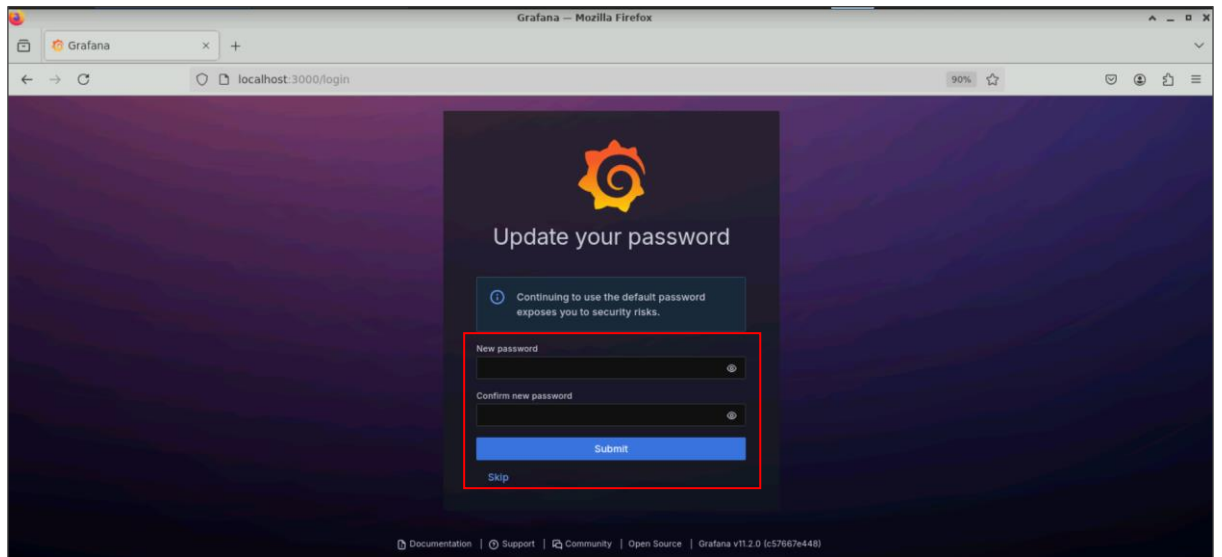
The Grafana UI will appear as shown above.

3.2 Enter **admin** as both the **Username** and **Password**, then click **Log in**

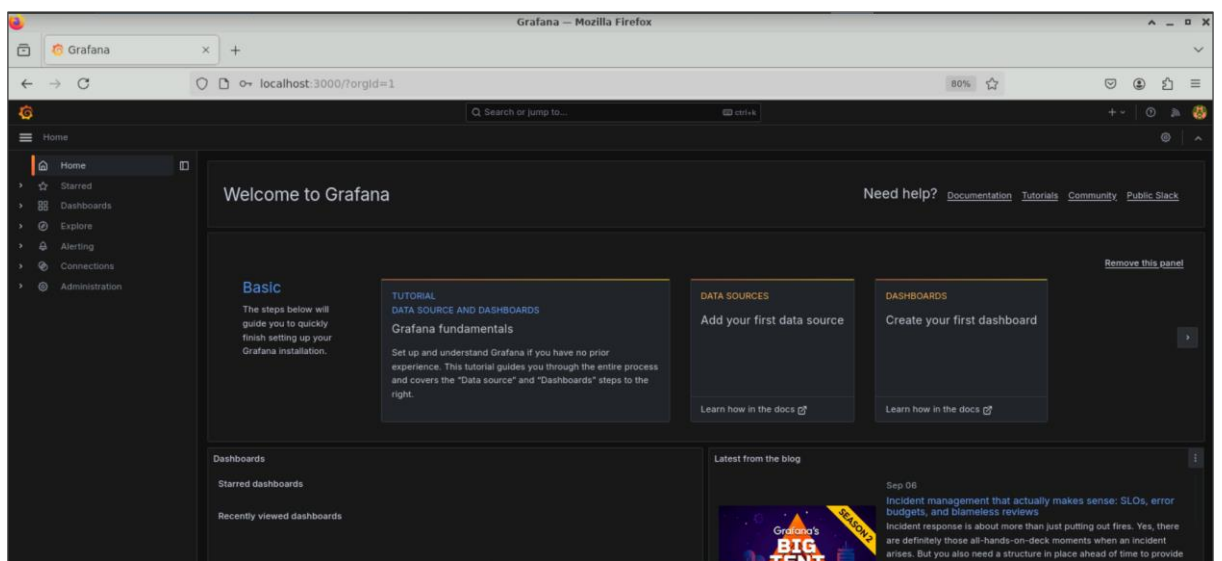




- 3.3 Once the login is successful, a prompt will appear to change the password. Change the password and submit it, or skip this step to continue using the default password



The Grafana dashboard will appear as shown below:



By following these steps, you have successfully installed Grafana from the APT repository, started the Grafana server, completed the initial setup, and accessed the Grafana dashboard to monitor and visualize system metrics.