Lesson 04 Demo 04

Creating a Grafana Dashboard Using PromQL Queries to Visualize Specific Application Metrics

Objective: To demonstrate the process of creating a Grafana dashboard using PromQL queries for visualizing specific application metrics

Tools required: Linux operating system

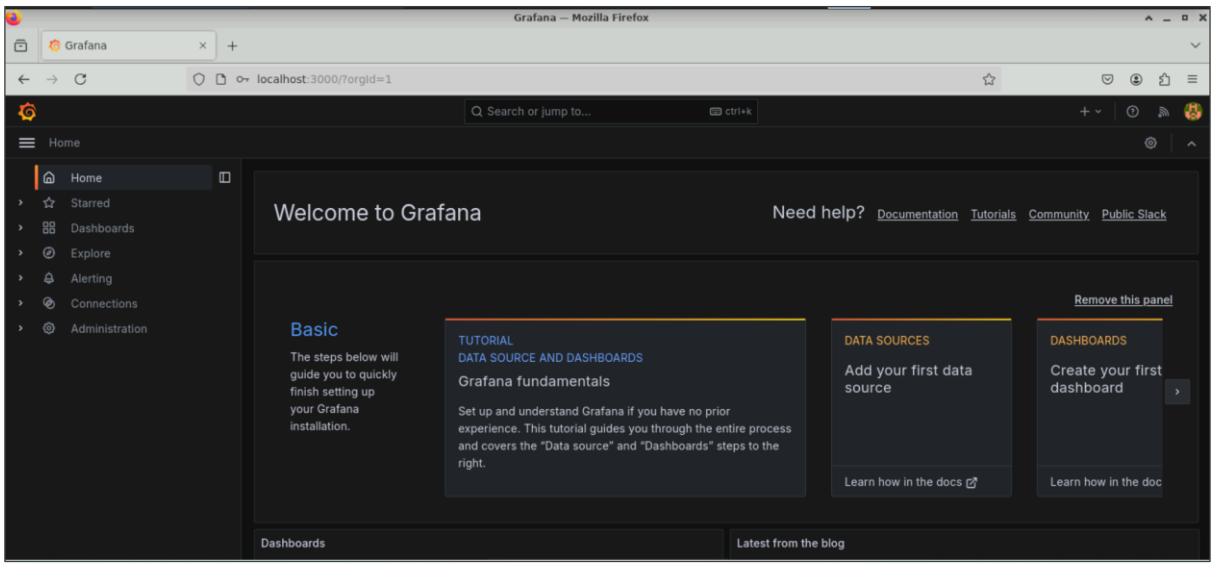
Prerequisites: Refer to Demo 01 of Lesson 04 for Grafana installation and Demo 02 of Lesson 04 for configuring Prometheus as a data source

Steps to be followed:

1. Create a new dashboard in Grafana to add visualizations
2. Use PromQL queries to visualize the metrics collected

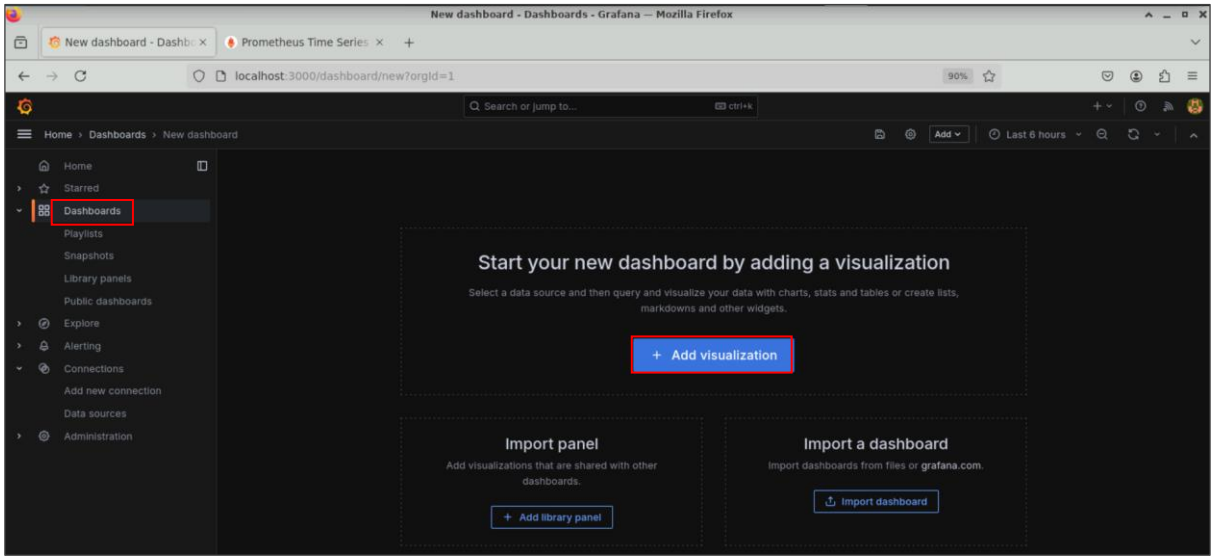
Step 1: Create a new dashboard in Grafana to add visualizations

1.1 Log in to the Grafana server from the browser using the URL **http://localhost:3000**

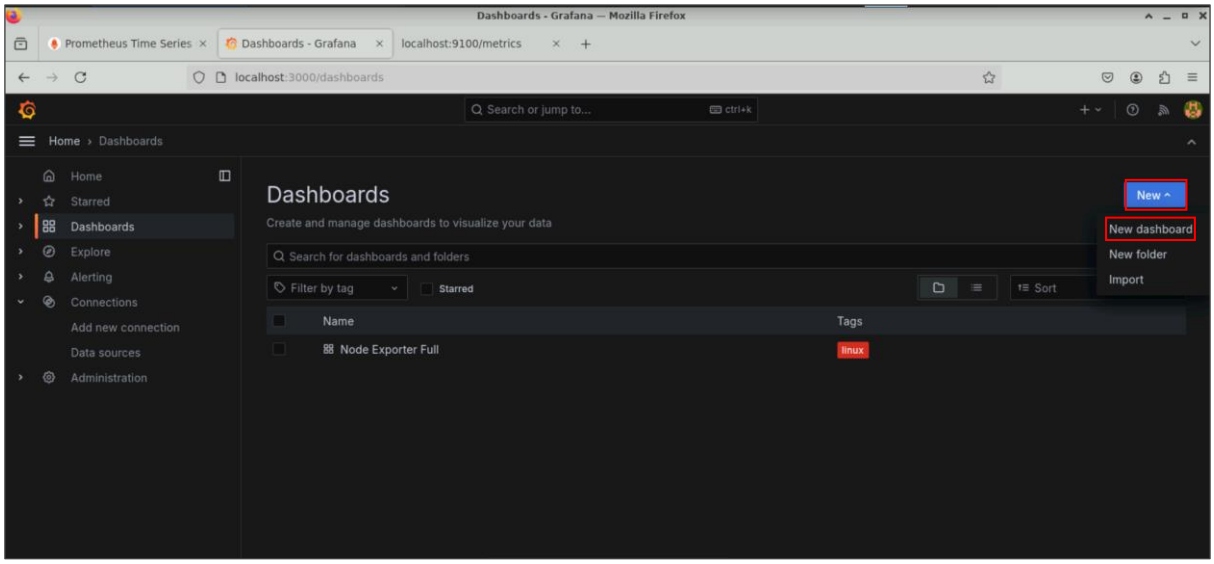


Note: Ensure that Prometheus and Node Exporter are running before starting the Grafana server

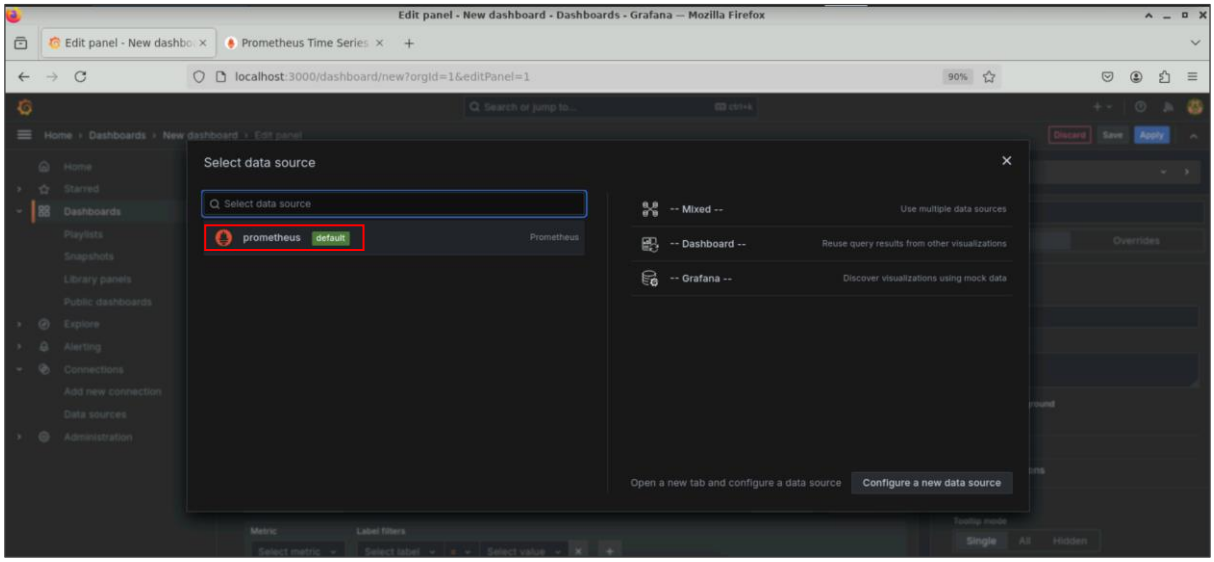
1.2 Choose **Dashboards** from the left-side menu and click **+ Add visualization**



1.3 Click on **New** and select **New dashboard** to add a visualization

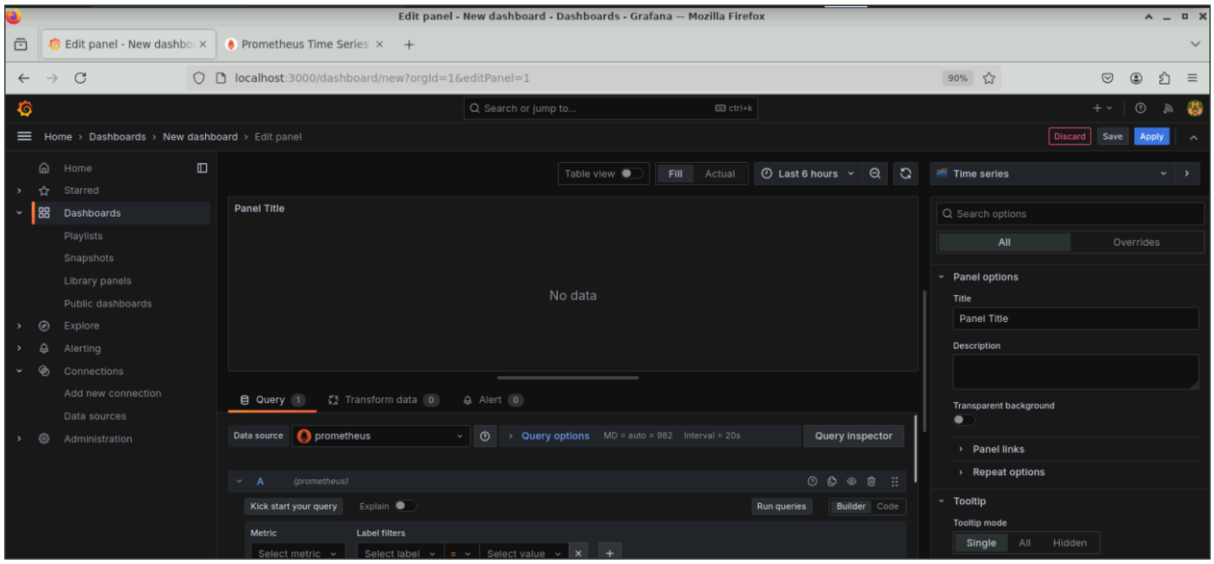


1.4 Select **prometheus** as the data source

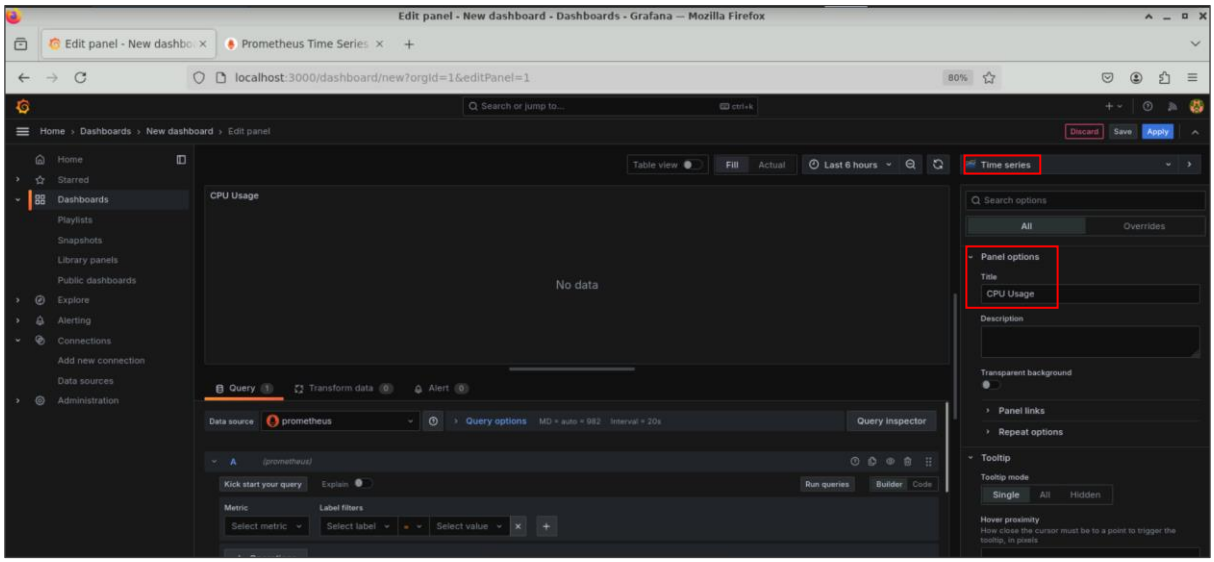


Note: Ensure that Prometheus is already configured as a data source

The dashboard will appear as shown below:

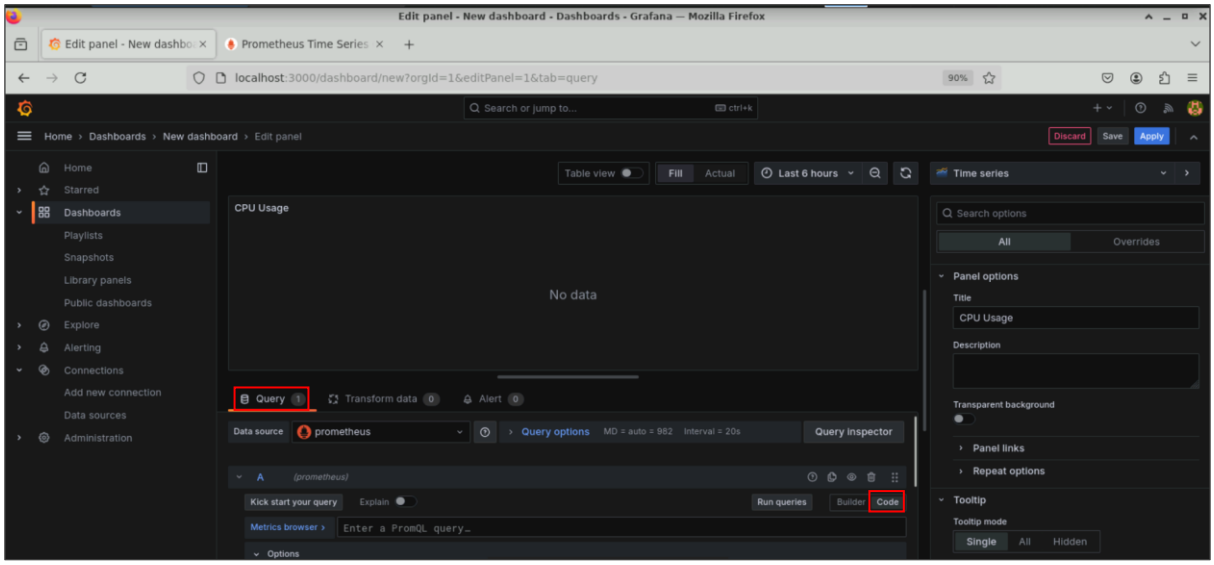


1.5 Select **Time Series** as the panel type and change the **Title** of the panel to **CPU Usage** under **Panel options**



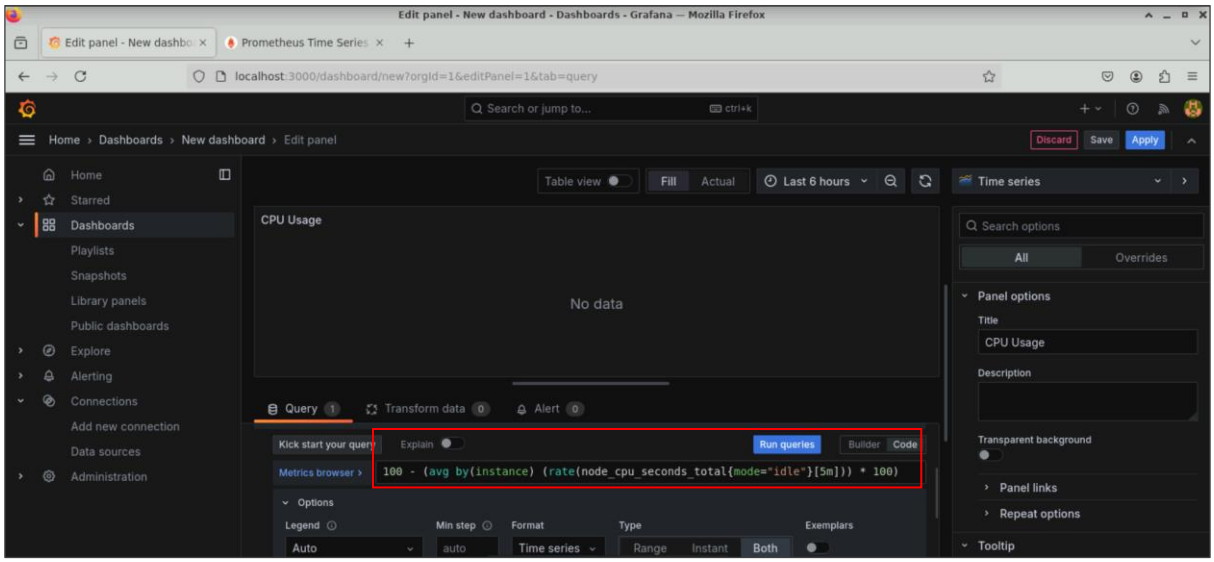
Step 2: Use PromQL queries to visualize the metrics collected

2.1 Under **Query**, click on the **Code** button to display the expression bar for entering queries

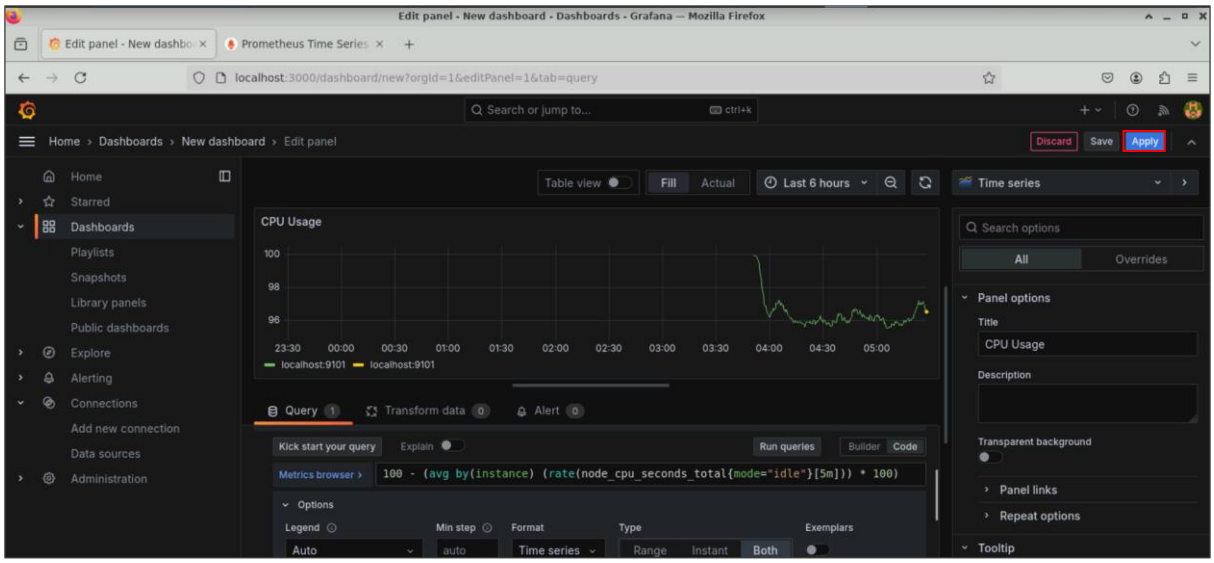


2.2 Enter the following query and click **Run queries** to execute it:

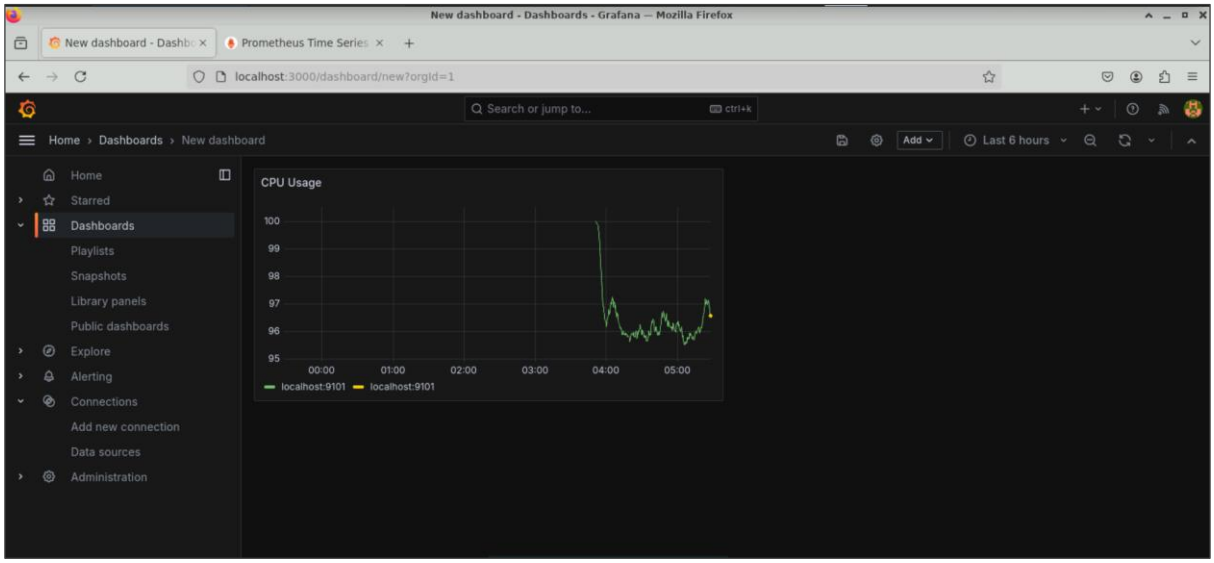
100 - (avg by(instance) (rate(node_cpu_seconds_total{mode="idle"}[5m])) * 100)



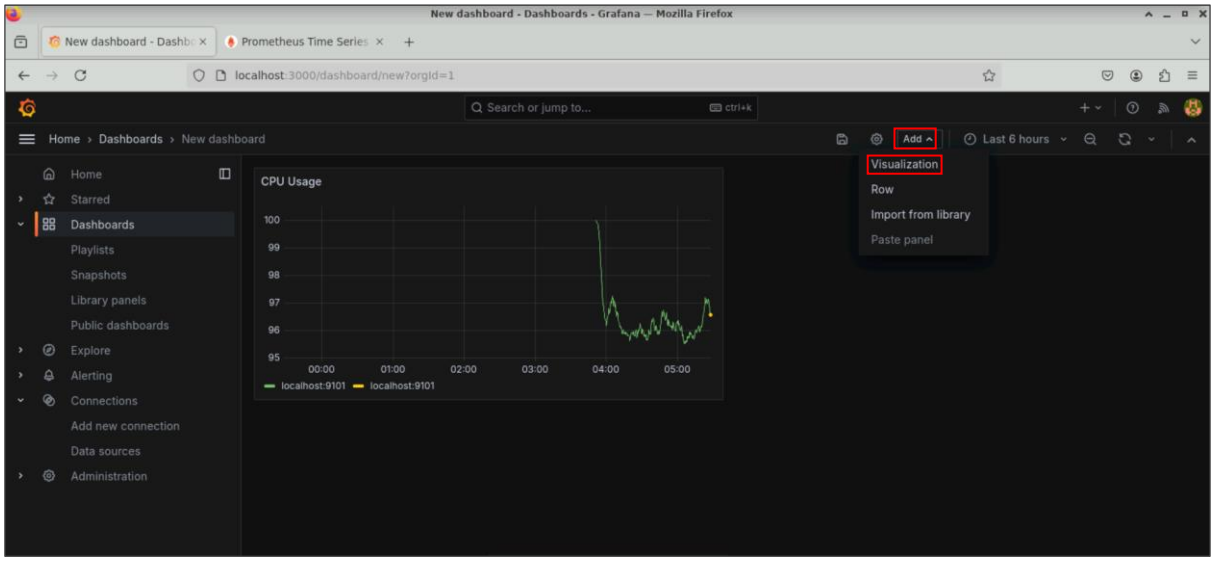
2.3 Click **Apply** to save this panel to the dashboard



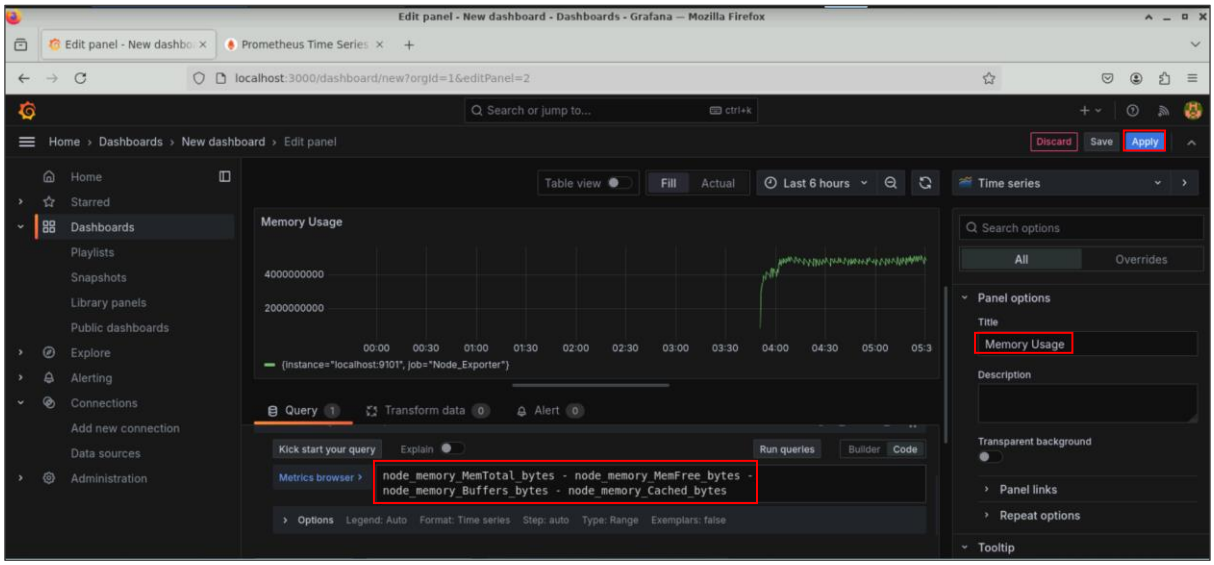
The **CPU Usage** panel will appear on the dashboard as shown below:



2.4 Click **Add** and then select **Visualization** to execute the query and add a new panel to the dashboard



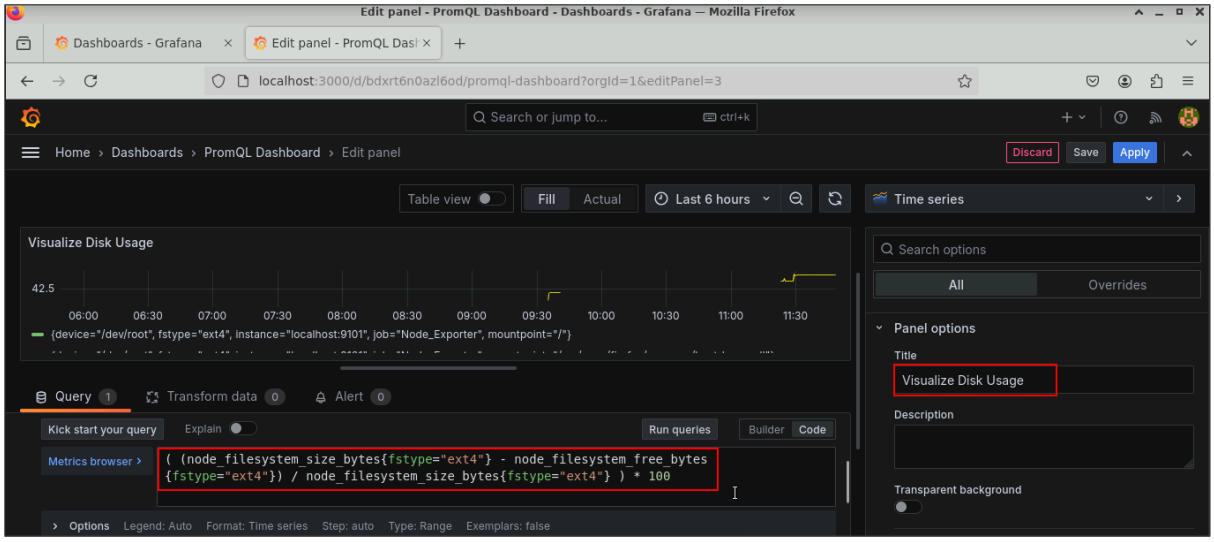
2.5 Execute the following query, observe the graph, and then save this panel with the name **Memory Usage** by clicking on the **Apply** button:
node_memory_MemTotal_bytes - node_memory_MemFree_bytes - node_memory_Buffers_bytes - node_memory_Cached_bytes



The dashboard now consists of two panels:

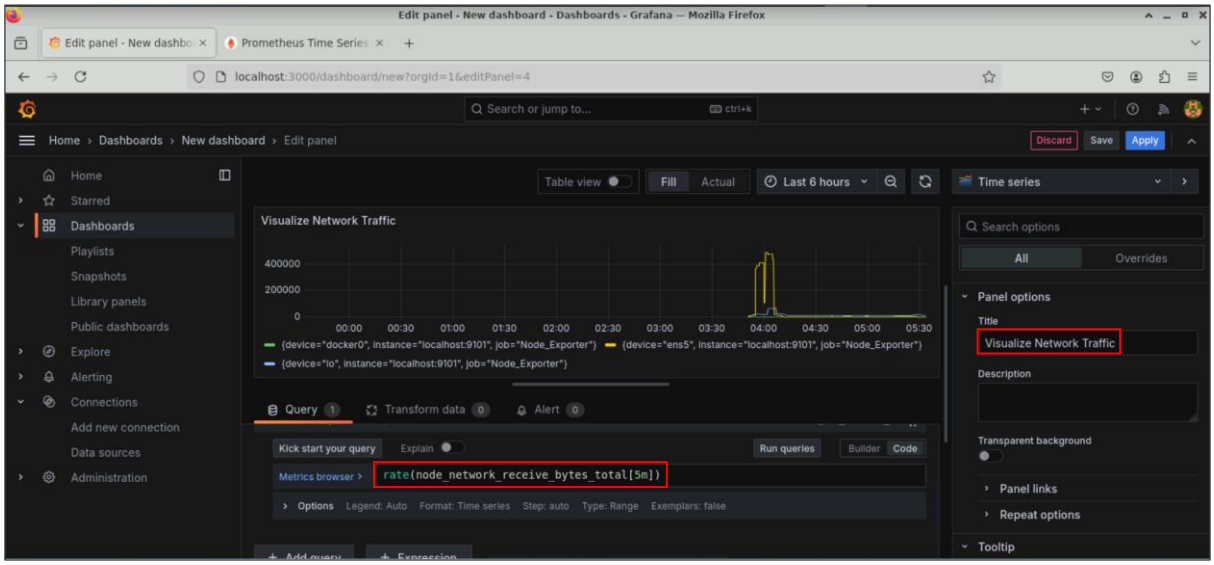
2.6 Add a panel, execute the following query, and save it as **Visualize Disk Usage**:

((node_filesystem_size_bytes{fstype="ext4"} - node_filesystem_free_bytes{fstype="ext4"}) / node_filesystem_size_bytes{fstype="ext4"}) * 100

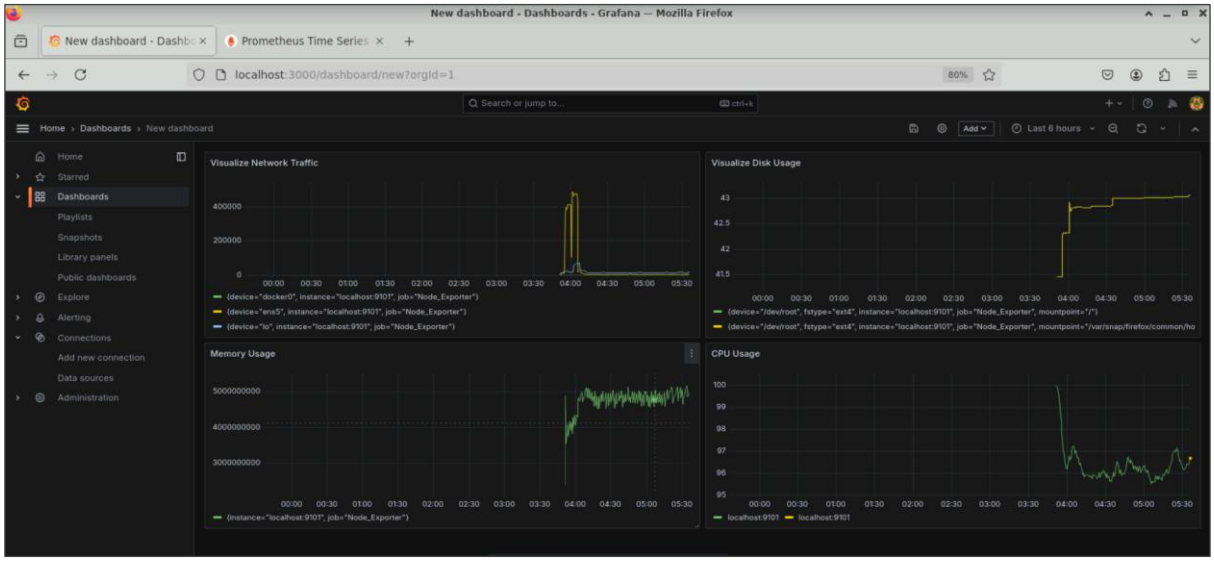


2.7 Add one more panel, execute the following query, and save it as **Visualize Network Traffic**:

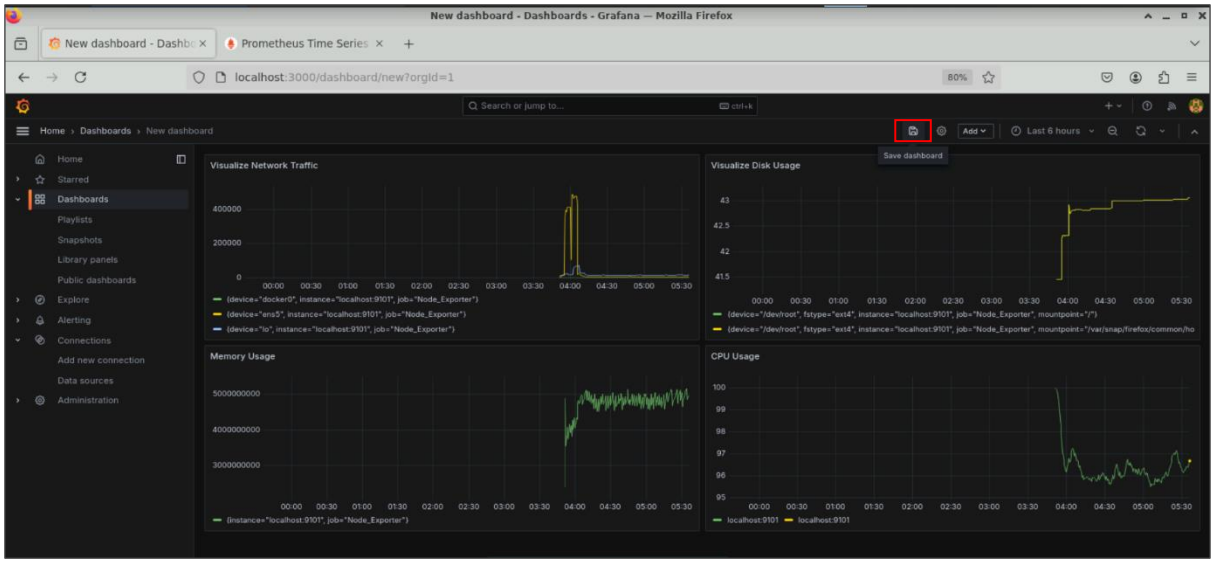
rate(node_network_receive_bytes_total[5m])



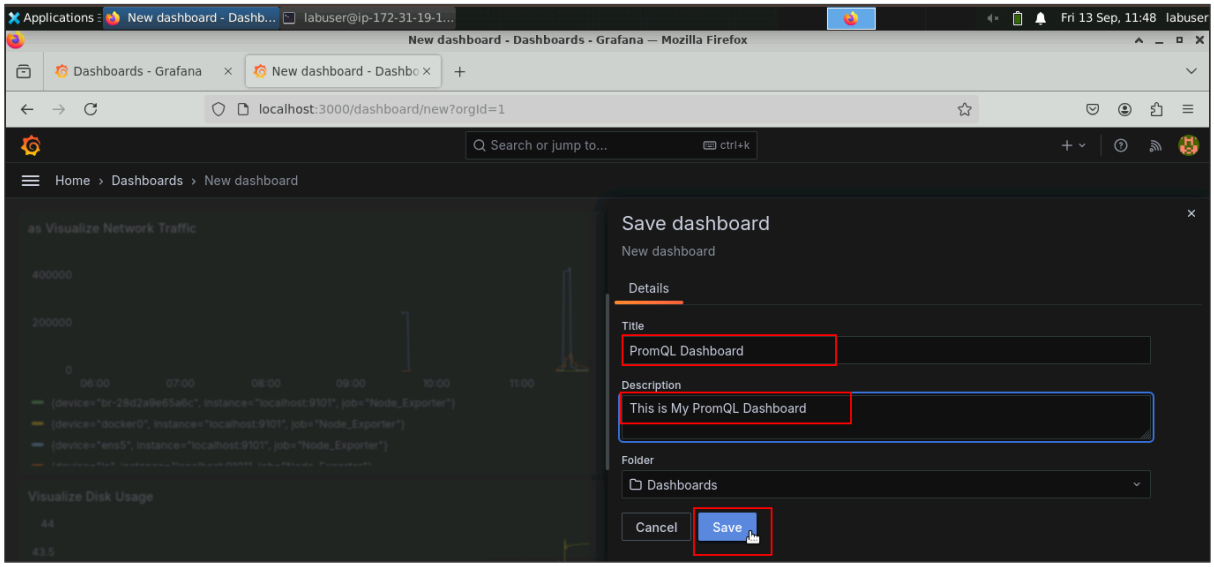
The dashboard now consists of four panels as shown below:



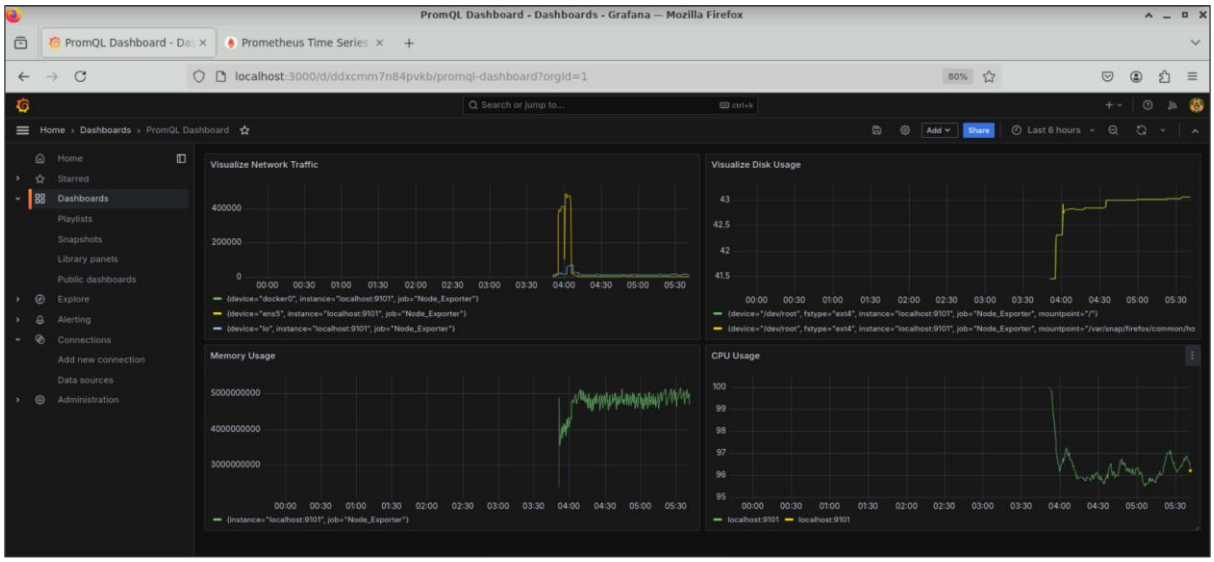
2.8 Save the dashboard by clicking on the **Save dashboard** icon



2.9 Enter the **Title** as **PromQL Dashboard** and the **Description** as **This is my PromQL Dashboard**, then click on the **Save** button



The saved dashboard will appear as shown below:



By following these steps, you have successfully created a dashboard with multiple panels using PromQL queries for visualizing key system metrics such as CPU usage, memory usage, disk usage, and network traffic.