DevOps Day-6

Prometheus is an open-source system monitoring and alerting toolkit originally built at SoundCloud. It is now a standalone open source project . Prometheus joined the Cloud Native Computing Foundation in 2016 as the second hosted project, after Kubernetes.

Features,

1. a multi-dimensional data model with time series data identified by metric name and key/value pairs

2. PromQL, a flexible query language to leverage this dimensionality

3. no reliance on distributed storage; single server nodes are autonomous

4. time series collection happens via a pull model over HTTP

5. pushing time series is supported via an intermediary gateway

6. targets are discovered via service discovery or static configuration

7. multiple modes of graphing and dashboarding support

Prometheus Installation:

Username Creation:

```
sudo useradd \
--system \
--no-create-home \
--shell /bin/false Prometheus
```

Commands:

```
wget https://github.com/prometheus/prometheus/releases/download/v2.47.1/prometheus-2.47.1.linux-amd64.tar.gz

tar -xvf prometheus-2.47.1.linux-amd64.tar.gz

sudo mkdir -p /data /etc/prometheus

cd prometheus-2.47.1.linux-amd64/
```

```
sudo mv prometheus promtool /usr/local/bin/
sudo mv consoles/ console_libraries/ /etc/prometheus/
sudo mv prometheus.yml /etc/prometheus/prometheus.yml
sudo chown -R prometheus:prometheus /etc/prometheus/ /data/
cd
rm -rf prometheus-2.47.1.linux-amd64.tar.gz
prometheus --version
sudo vim /etc/systemd/system/prometheus.service
```

Prometheus.sevice:

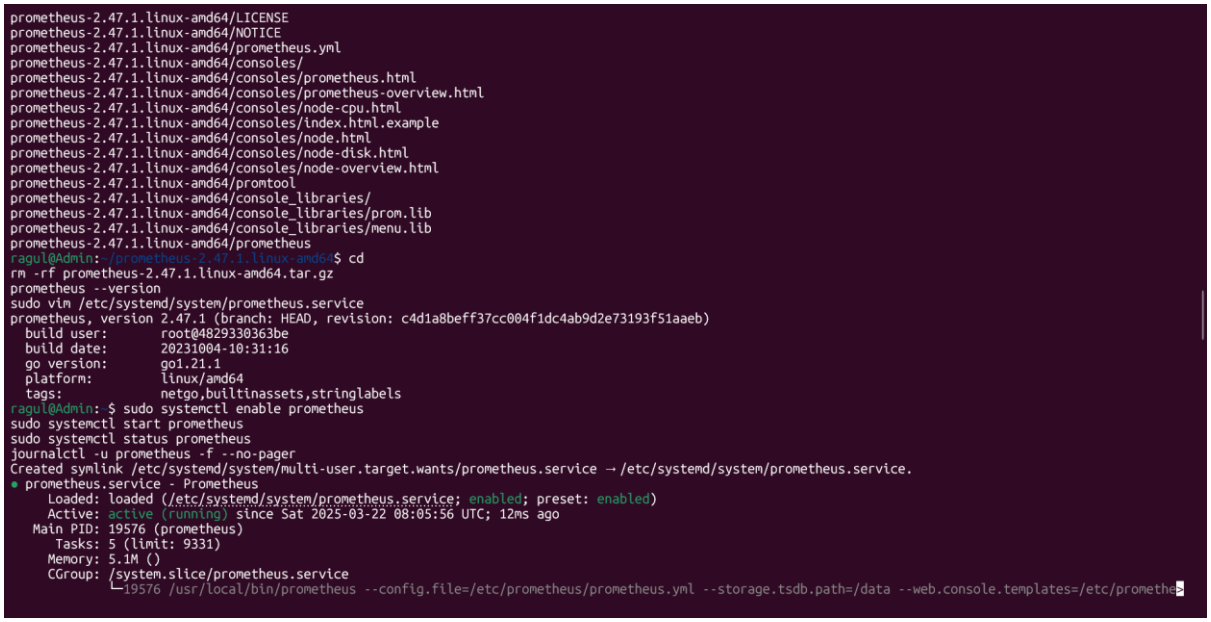
```
[Unit]
Description=Prometheus
Wants=network-online.target
After=network-online.target
StartLimitIntervalSec=500
StartLimitBurst=5
[Service]
User=prometheus
Group=prometheus
Type=simple
Restart=on-failure
RestartSec=5s
ExecStart=/usr/local/bin/prometheus \
  --config.file=/etc/prometheus/prometheus.yml \
  --storage.tsdb.path=/data \
  --web.console.templates=/etc/prometheus/consoles \
  --web.console.libraries=/etc/prometheus/console_libraries \
```

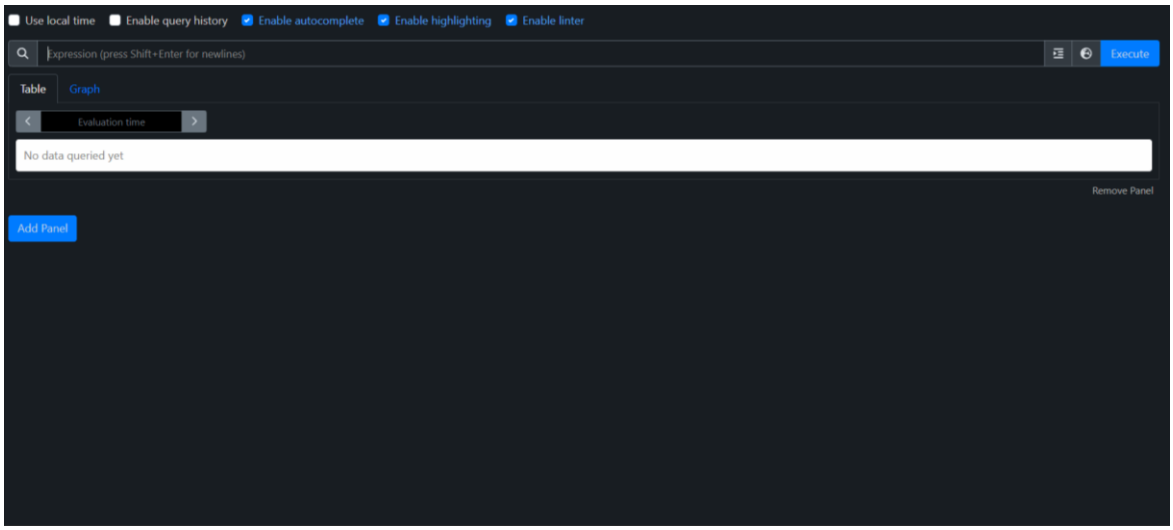
--web.listen-address=0.0.0.0:9090 \

--web.enable-lifecycle

[Install]

WantedBy=multi-user.target





Node Exporter:

Commands for installation:

sudo mv \

node_exporter-1.6.1.linux-amd64/node_exporter \

/usr/local/bin/

rm -rf node_exporter*

Node exporter file:

```
[Unit]
Description=Node Exporter
Wants=network-online.target
After=network-online.target
StartLimitIntervalSec=500
StartLimitBurst=5
[Service]
User=node_exporter
Group=node_exporter
Type=simple
Restart=on-failure
RestartSec=5s
ExecStart=/usr/local/bin/node_exporter \
   --collector.logind
[Install]
WantedBy=multi-user.target
```

Service check : sudo systemctl enable node_exporter

sudo systemctl start node_exporter

sudo systemctl status node_exporter

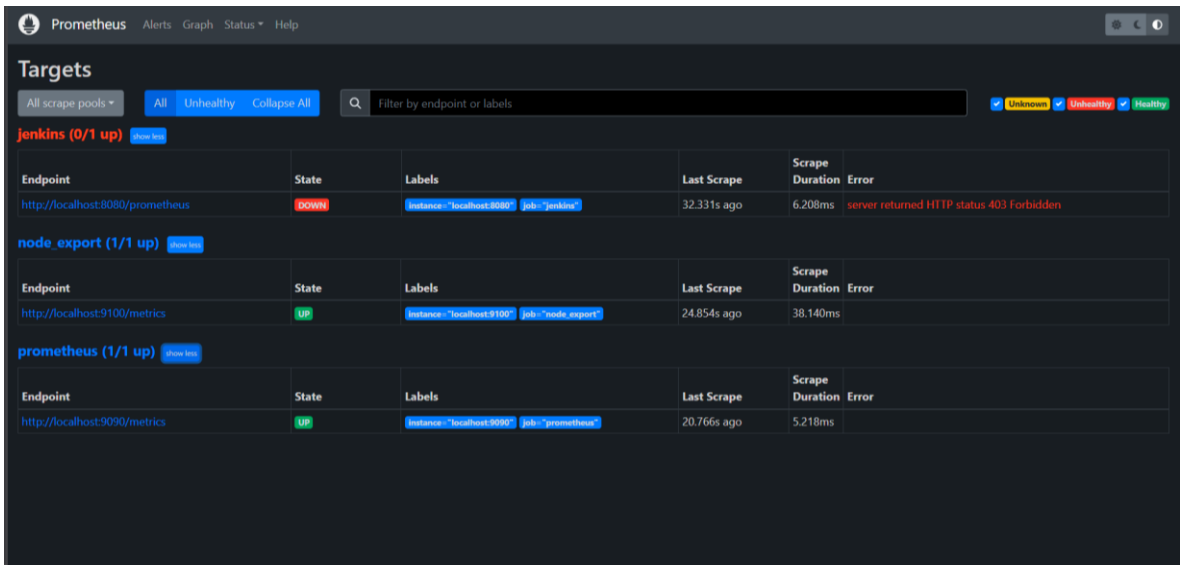
journalctl -u node_exporter -f --no-pager

```
Need to get 139 MB of archives.
After this operation, 533 MB of additional disk space will be used.
Get:1 https://packages.grafana.com/oss/deb stable/main amd64 grafana amd64 11.5.2 [139 MB]
Get:2 http://archive.ubuntu.com/ubuntu noble/universe amd64 musl amd64 1.2.4-2 [416 kB]
Fetched 139 MB in 41s (3390 kB/s)
Selecting previously unselected package musl:amd64.
(Reading database ... 46954 files and directories currently installed.)
Preparing to unpack .../musl_1.2.4-2_amd64.deb ...
Unpacking musl:amd64 (1.2.4-2) ...
Selecting previously unselected package grafana.
Preparing to unpack .../grafana_11.5.2_amd64.deb ...
Unpacking grafana (11.5.2) ...
Setting up musl:amd64 (1.2.4-2) ...
Setting up grafana (11.5.2) ...
info: Selecting UID from range 100 to 999 ...

info: Adding system user `grafana' (UID 107) ...
info: Adding new user `grafana' (UID 107) with group `grafana' ...
info: Not creating home directory `/usr/share/grafana'.
### NOT starting on installation, please execute the following statements to configure grafana to start automatically using systemd
 sudo /bin/systemctl daemon-reload
 sudo /bin/systemctl enable grafana-server
### You can start grafana-server by executing
 sudo /bin/systemctl start grafana-server
Processing triggers for man-db (2.12.0-4build2) ...
Synchronizing state of grafana-server.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable grafana-server
Created symlink /etc/systemd/system/multi-user.target.wants/grafana-server.service → /usr/lib/systemd/system/grafana-server.service.
● grafana-server.service - Grafana instance
     Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabled; preset: enabled)
     Active: active (running) since Sat 2025-03-22 08:15:39 UTC; 13ms ago
       Docs: http://docs.grafana.org
   Main PID: 22598 ((grafana))
      Tasks: 1 (limit: 9331)
     Memory: 256.0K ()
     CGroup: /system.slice/grafana-server.service
             └─22598 "(grafana)"

Mar 22 08:15:39 Admin systemd[1]: Started grafana-server.service - Grafana instance.
ragul@Admin: $
```

Reload Promotheus: curl -X POST http://localhost:9090/-/reload



Grafana:

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

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 -a /etc/apt/sources.list.d/grafana.list

sudo apt-get update

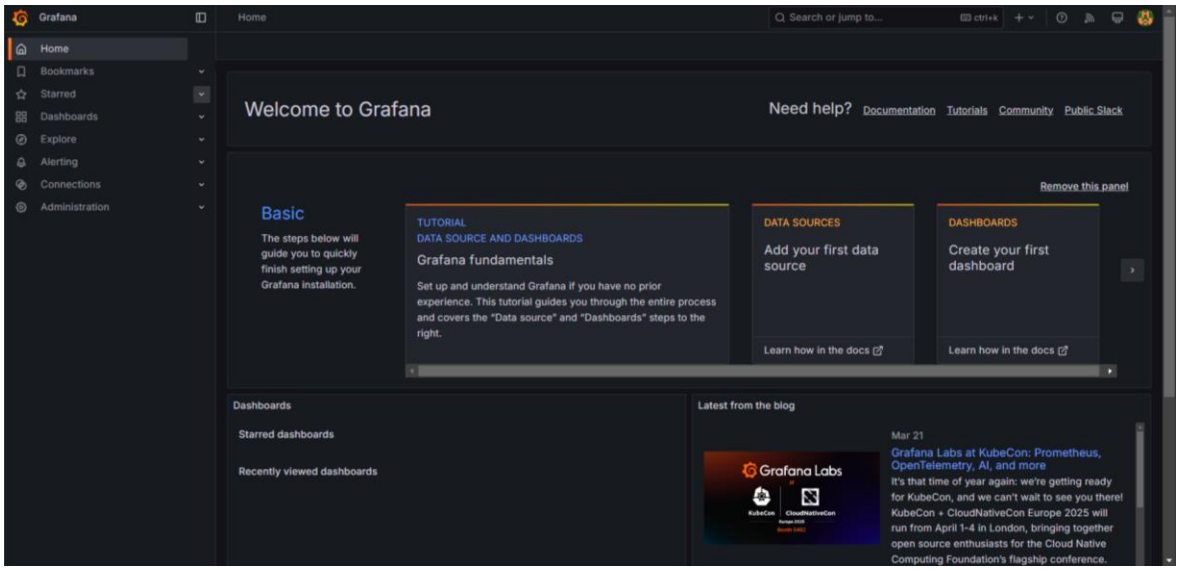
sudo apt-get -y install grafana

sudo systemctl enable grafana-server

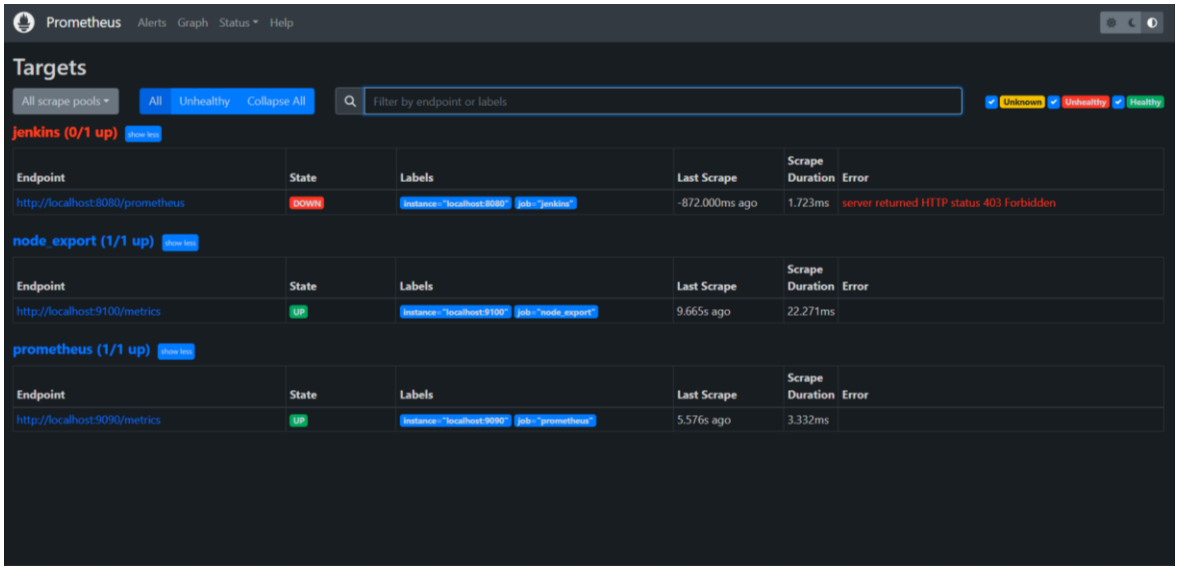
sudo systemctl start grafana-server

sudo systemctl status grafana-server

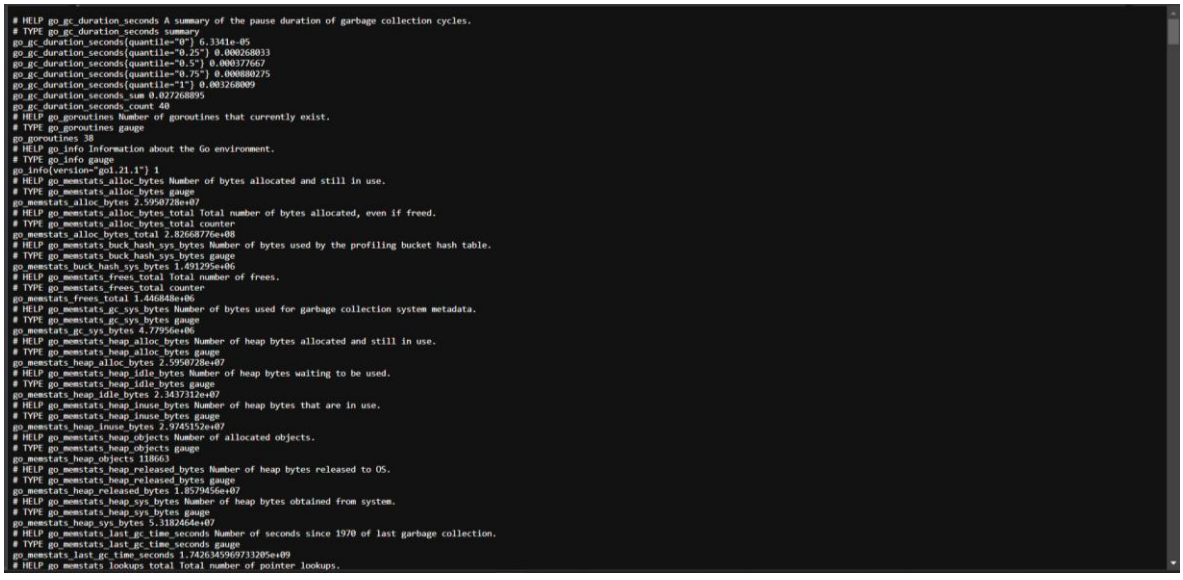
Grafana UI:



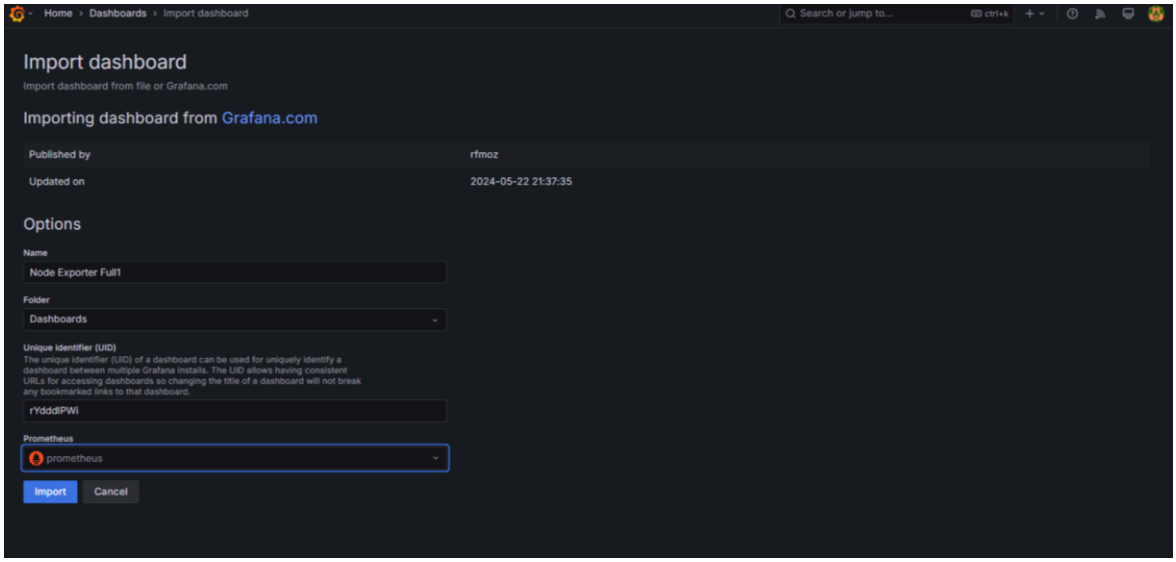
Status in promethues:



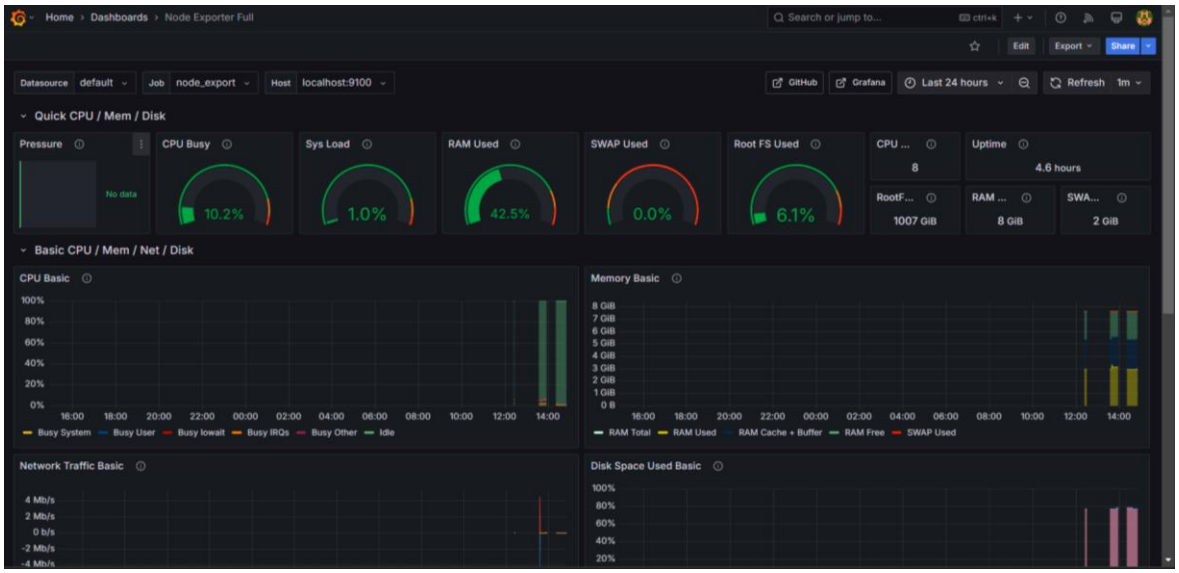
Metrics in Prometheus:

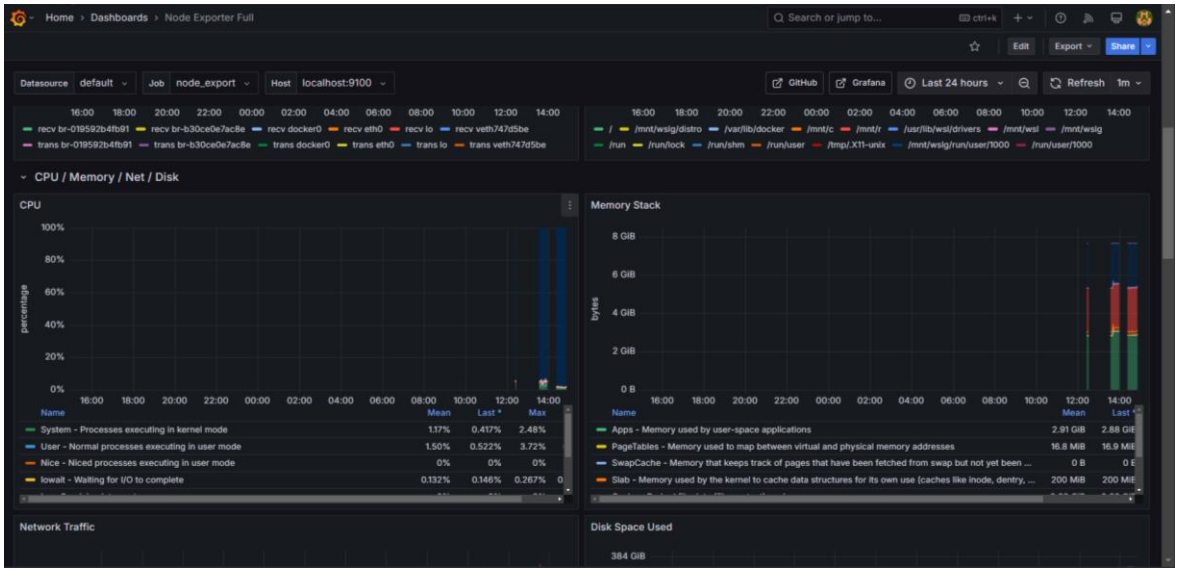


Node Exporter:

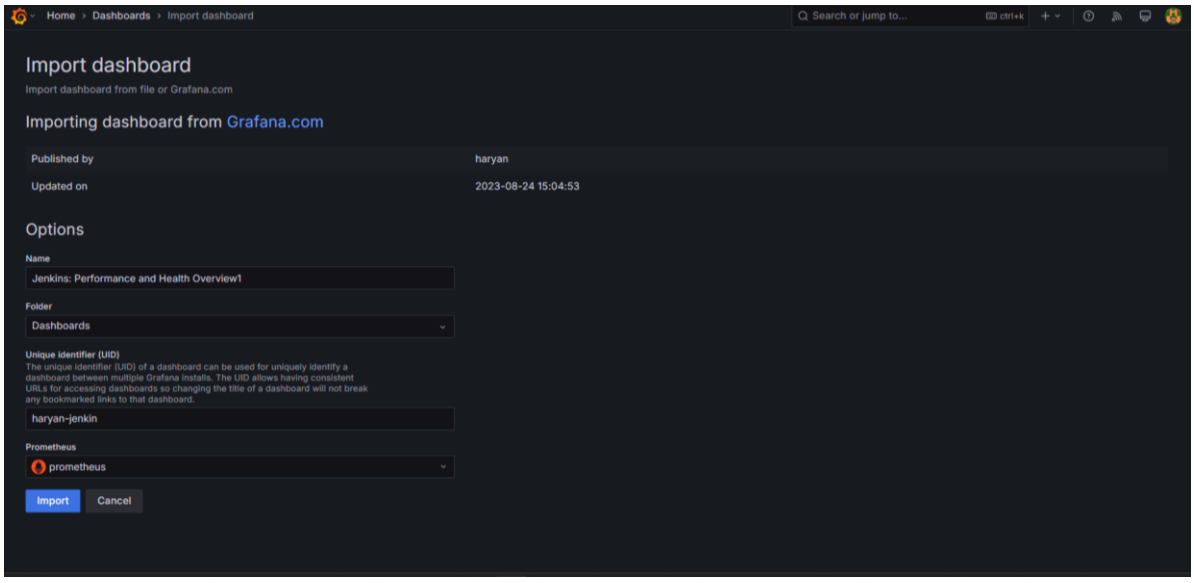

Home › Dashboards › Import dashboard
Search or jump to...
Import dashboard
Import dashboard from file or Grafana.com
Importing dashboard from Grafana.com
Published by
rfmoz
Updated on
2024-05-22 21:37:35
Options
Name
Node Exporter Full1
Folder
Dashboards
Unique identifier (UID)
The unique identifier (UID) of a dashboard can be used for uniquely identify a dashboard between multiple Grafana installs. The UID allows having consistent URLs for accessing dashboards so changing the title of a dashboard will not break any bookmarked links to that dashboard.
rYddlPWi
Prometheus
prometheus
Import
Cancel

Dashboard:

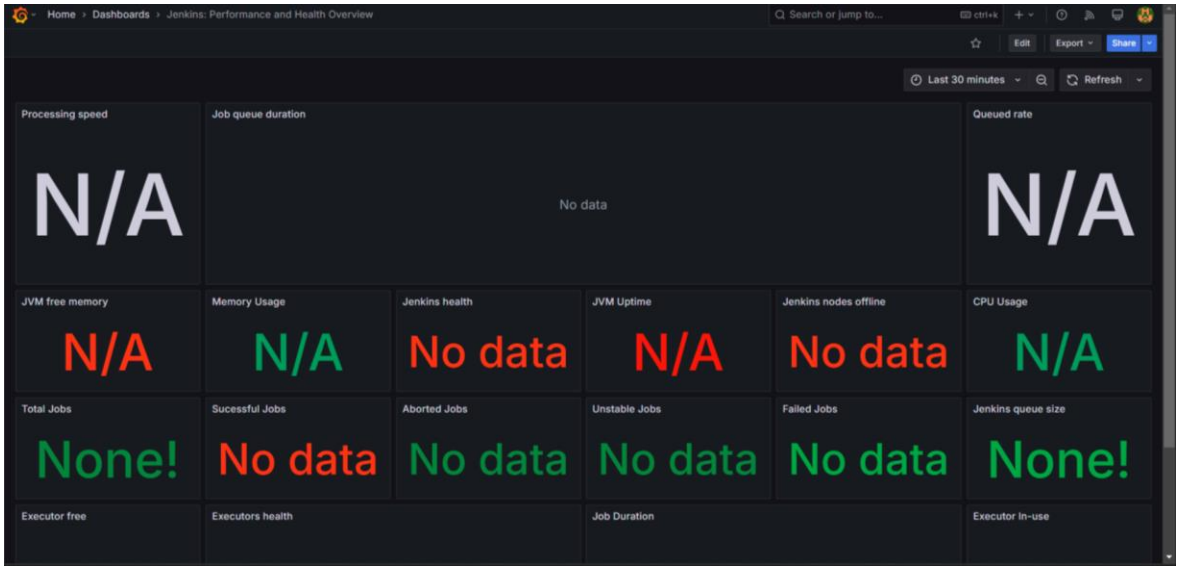

Home › Dashboards › Node Exporter Full
Search or jump to...
Edit
Export
Share
Datasource default
Job node_export
Host localhost:9100
GitHub
Grafana
Last 24 hours
Refresh 1m
Quick CPU / Mem / Disk
Pressure
No data
CPU Busy
10.2%
Sys Load
1.0%
RAM Used
42.5%
SWAP Used
0.0%
Root FS Used
6.1%
CPU ...
8
Uptime
4.6 hours
RootF...
1007 GiB
RAM ...
8 GiB
SWA...
2 GiB
Basic CPU / Mem / Net / Disk
CPU Basic
Busy System
Busy User
Busy Iowait
Busy IRQs
Busy Other
Idle
Memory Basic
RAM Total
RAM Used
RAM Cache + Buffer
RAM Free
SWAP Used
Network Traffic Basic
Disk Space Used Basic



Jenkins Overview:



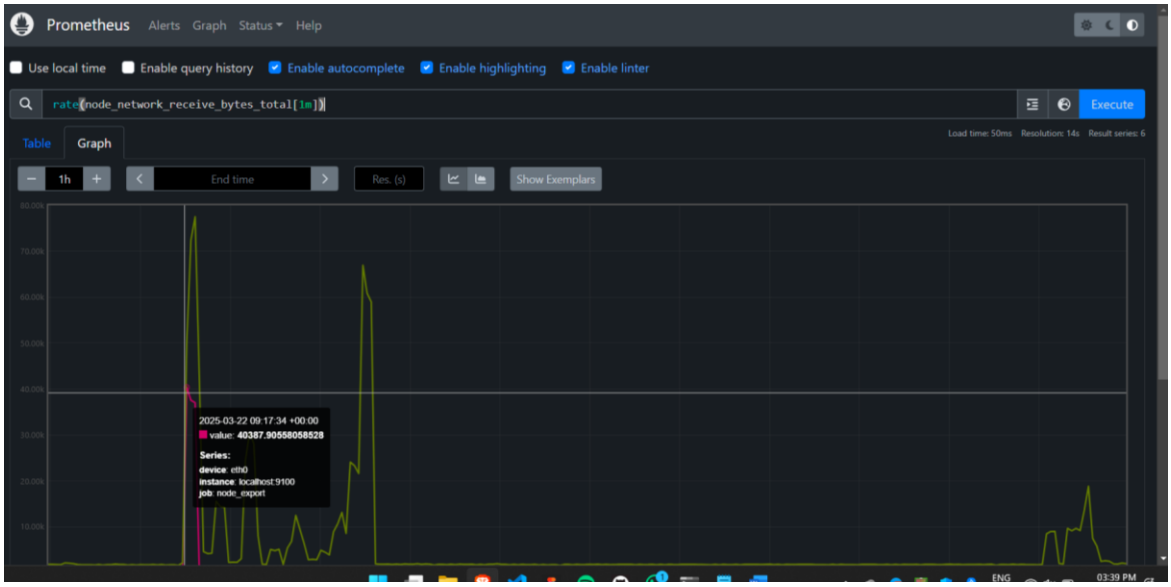
Dashboard:



Prometheus analysis:

rate(node_cpu_seconds_total{mode="system"}[1m])

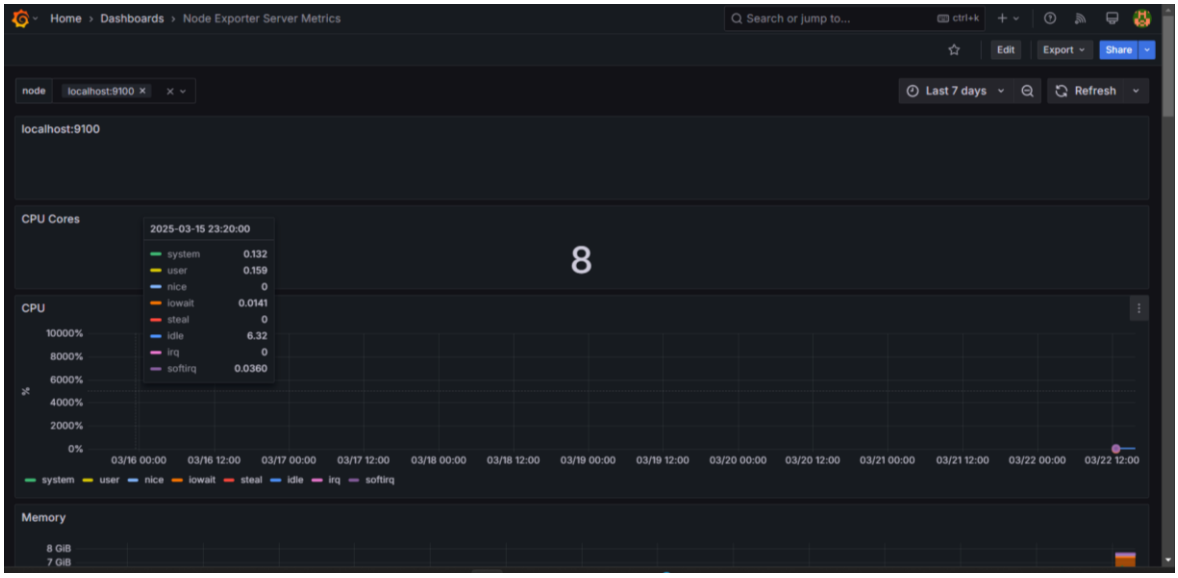
rate(node_network_receive_bytes_total[1m])



node_load15

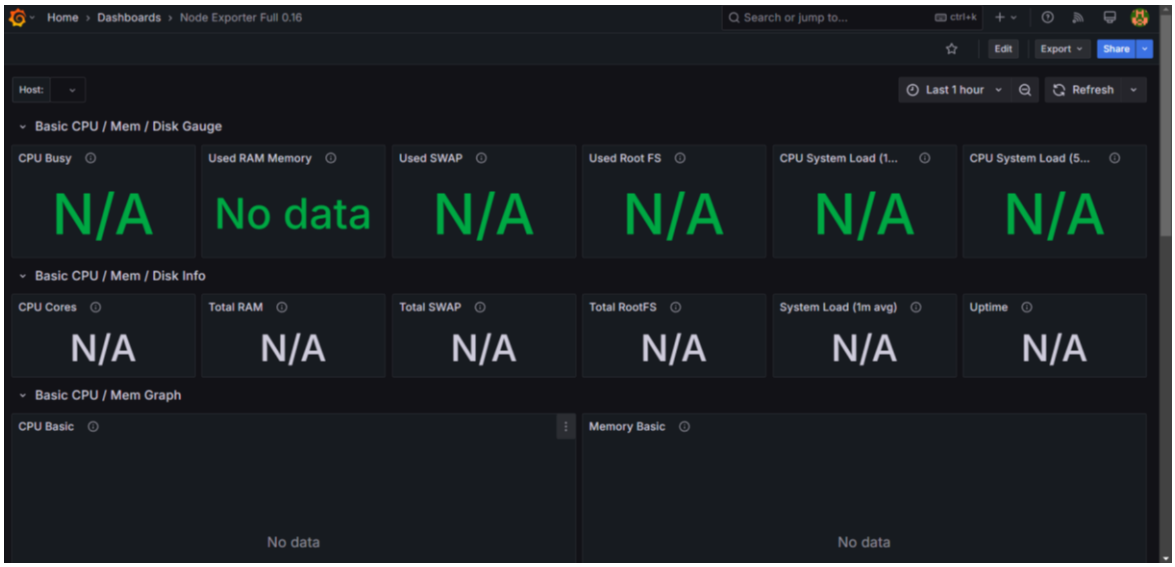
Dashboard: (405)

Node Exporter Service metrics,



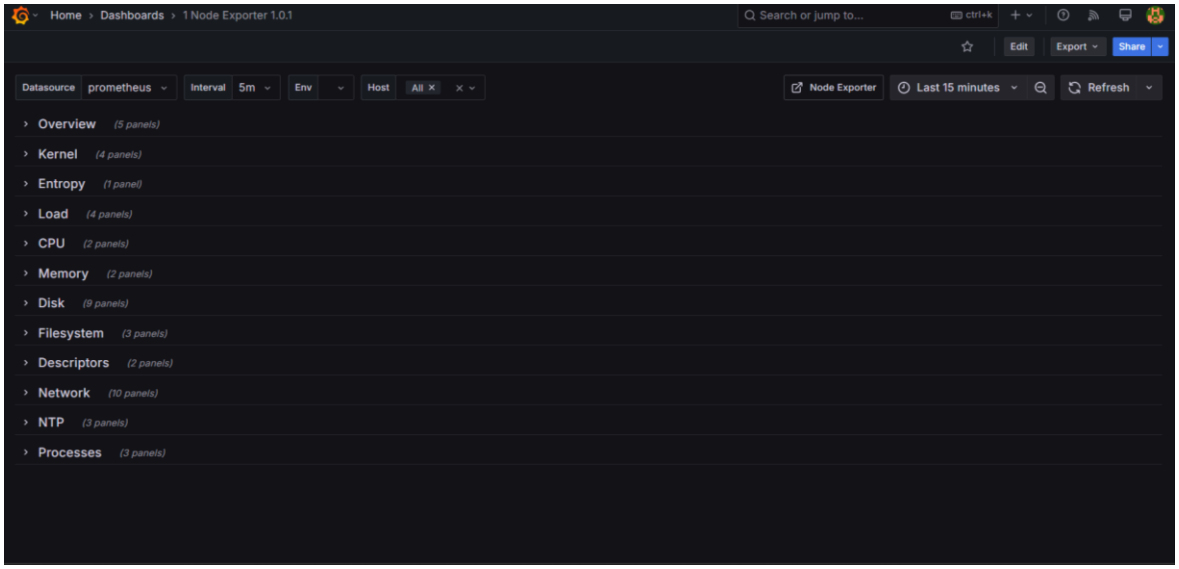
Dashboard (5174):

Node Exporter Full 0.16,



Dashboard (9096):

1 Node Exporter 1.0.1


Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
ctrl+k
Edit
Export
Share
Datasource
prometheus
Interval
5m
Env
Host
All
Node Exporter
Last 15 minutes
Refresh
Overview (5 panels)
Kernel (4 panels)
Entropy (1 panel)
Load (4 panels)
CPU (2 panels)
Memory (2 panels)
Disk (9 panels)
Filesystem (3 panels)
Descriptors (2 panels)
Network (10 panels)
NTP (3 panels)
Processes (3 panels)