Prometheus, Node Exporter, and Grafana Setup Documentation

1. Prometheus Setup

Installing Prometheus

```bash
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/
```

Configuring Prometheus Service

Create a systemd service file:

```bash
sudo vim /etc/systemd/system/prometheus.service
```

Add the following content:

```ini
[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

```

### Starting Prometheus

```bash

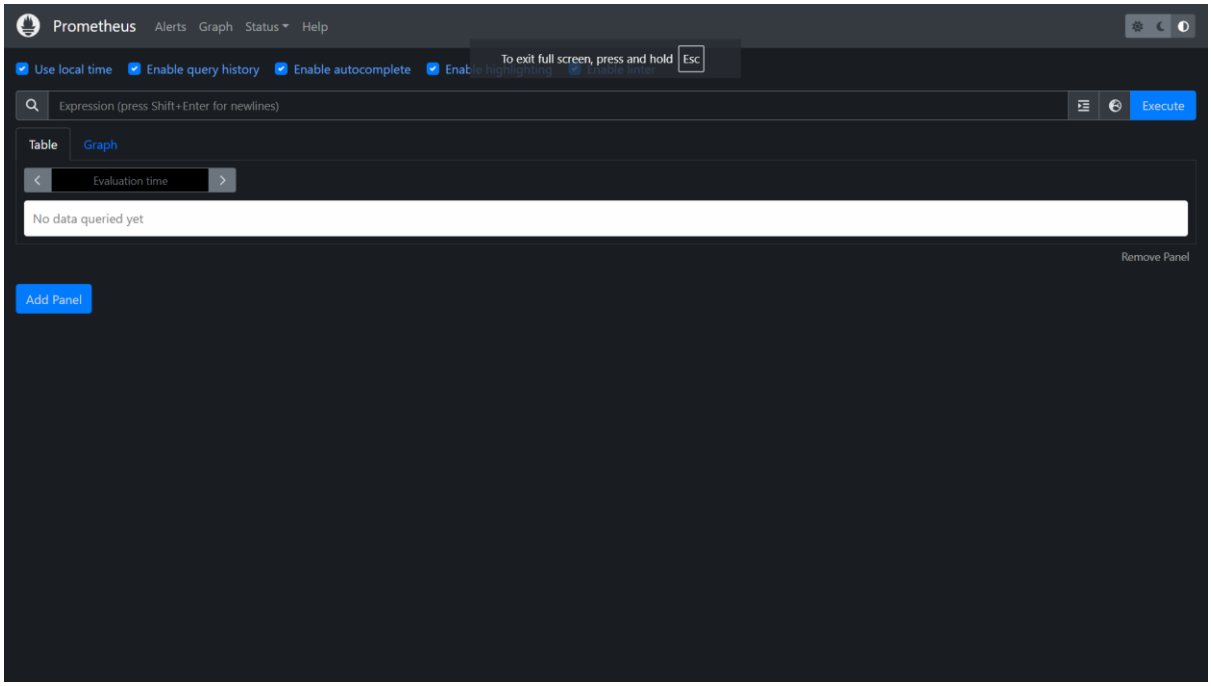
sudo systemctl enable prometheus

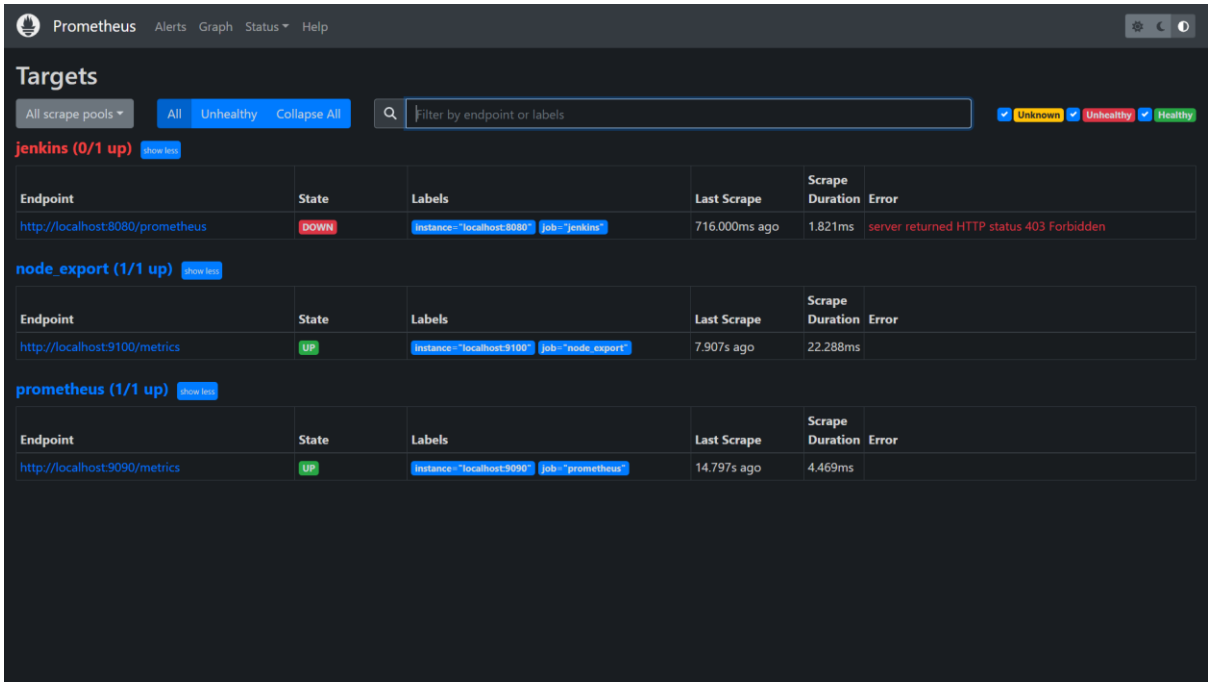
sudo systemctl start prometheus

sudo systemctl status prometheus

journalctl -u prometheus -f --no-pager

```
```


Prometheus
Alerts
Graph
Status
Help
Use local time
Enable query history
Enable autocomplete
To exit full screen, press and hold
Esc
Expression (press Shift+Enter for newlines)
Execute
Table
Graph
Evaluation time
No data queried yet
Remove Panel
Add Panel


Prometheus
Alerts
Graph
Status
Help
Targets
All scrape pools
All
Unhealthy
Collapse All
Filter by endpoint or labels
Unknown
Unhealthy
Healthy
jenkins (0/1 up)
show less
Endpoint
State
Labels
Last Scrape
Scrape Duration
Error
http://localhost:8080/prometheus
DOWN
instance="localhost:8080"
job="jenkins"
716.000ms ago
1.821ms
server returned HTTP status 403 Forbidden
node_export (1/1 up)
show less
Endpoint
State
Labels
Last Scrape
Scrape Duration
Error
http://localhost:9100/metrics
UP
instance="localhost:9100"
job="node_export"
7.907s ago
22.288ms
prometheus (1/1 up)
show less
Endpoint
State
Labels
Last Scrape
Scrape Duration
Error
http://localhost:9090/metrics
UP
instance="localhost:9090"
job="prometheus"
14.797s ago
4.469ms

```

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

```


```

rate(node_network_receive_bytes_total[1m])

```

```

node_load15

```


Prometheus
Alerts
Graph
Status
Help
Use local time
Enable query history
Enable autocomplete
Enable highlighting
Enable linter
node_load15
Execute
Table
Graph
Load time: 23ms
Resolution: 14s
Result series: 1
1h
End time
Res. (s)
Show Exemplars
0.25
0.20
0.15
0.10
0.05
0.00
15:05
15:10
15:15
15:20
15:25
15:30
15:35
15:40
15:45
15:50
15:55
16:00
node_load15{instance="localhost:9100", job="node_export"}
Remove Panel
Add Panel

2. Node Exporter Setup

Installing Node Exporter

```bash

wget https://github.com/prometheus/node_exporter/releases/download/v1.6.1/node_exporter-1.6.1.linux-amd64.tar.gz

tar -xvf node_exporter-1.6.1.linux-amd64.tar.gz

sudo mv node_exporter-1.6.1.linux-amd64/node_exporter /usr/local/bin/

rm -rf node_exporter*
```

Configuring Node Exporter Service

Create a systemd service file:

```bash

sudo vim /etc/systemd/system/node_exporter.service
```

Add the following content:

```ini

[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

```

### Starting Node Exporter

```bash

sudo systemctl enable node_exporter

sudo systemctl start node_exporter

sudo systemctl status node_exporter

journalctl -u node_exporter -f --no-pager

```


```

3. Prometheus Configuration File

Modify Prometheus configuration:

```bash
sudo vim /etc/prometheus/prometheus.yml
```

Add the following content:

```yaml
scrape_configs:
  - job_name: node_export
    static_configs:
      - targets: ["localhost:9100"]


  - job_name: 'jenkins'
    metrics_path: '/prometheus'
    static_configs:
      - targets: ['<jenkins-ip>:8080']
```

Reload Prometheus configuration:

```bash
promtool check config /etc/prometheus/prometheus.yml
curl -X POST http://localhost:9090/-/reload
```

```
# my global config
global:
  scrape_interval: 15s # Set the scrape interval to every 15 seconds. Default is every 1 minute.
  evaluation_interval: 15s # Evaluate rules every 15 seconds. The default is every 1 minute.
  # scrape_timeout is set to the global default (10s).

# Alertmanager configuration
alerting:
  alertmanagers:
    - static_configs:
        - targets:
          # - alertmanager:9093

# Load rules once and periodically evaluate them according to the global 'evaluation_interval'.
rule_files:
  # - "first_rules.yml"
  # - "second_rules.yml"

# A scrape configuration containing exactly one endpoint to scrape:
# Here it's Prometheus itself.
scrape_configs:
  # The job name is added as a label `job=<job_name>` to any timeseries scraped from this config.
  - job_name: "prometheus"

    # metrics_path defaults to '/metrics'
    # scheme defaults to 'http'.

    static_configs:
      - targets: ["localhost:9090"]


  - job_name: node_export

    static_configs:
      - targets: ["localhost:9100"]
  - job_name: 'jenkins'

    metrics_path: '/prometheus'
    static_configs:
      - targets: ["localhost:8080"]
~
~
~
~
~
                                                                                40,19         All
```

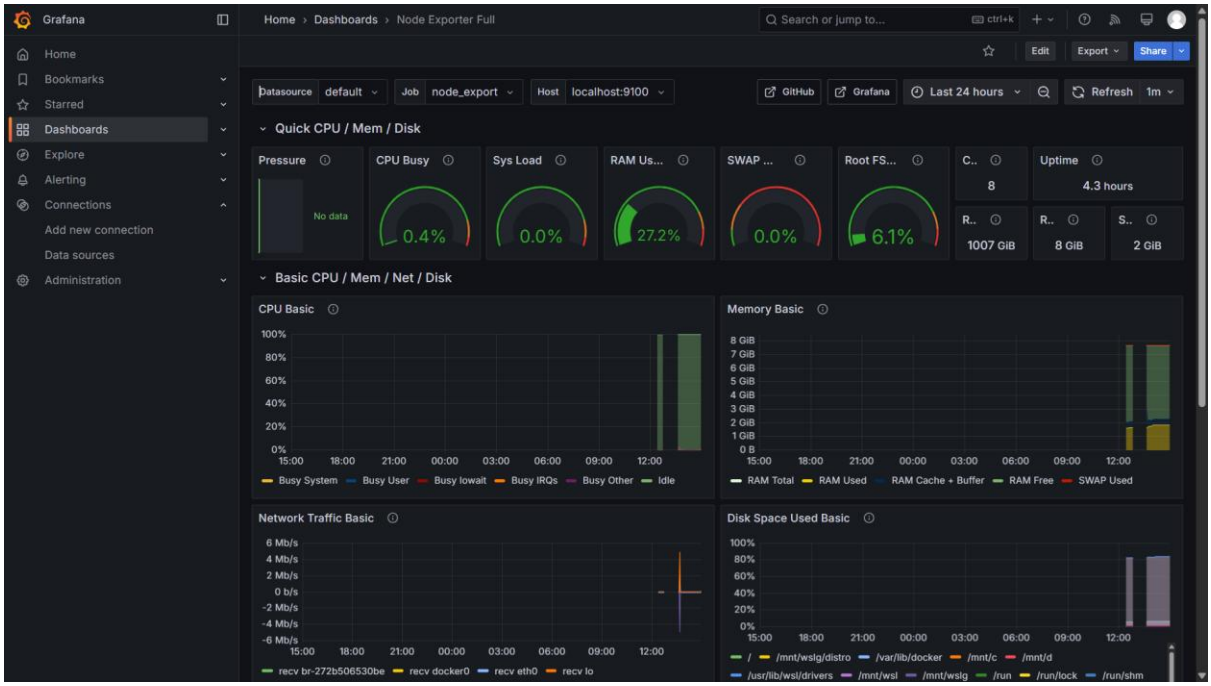
4. Grafana Setup

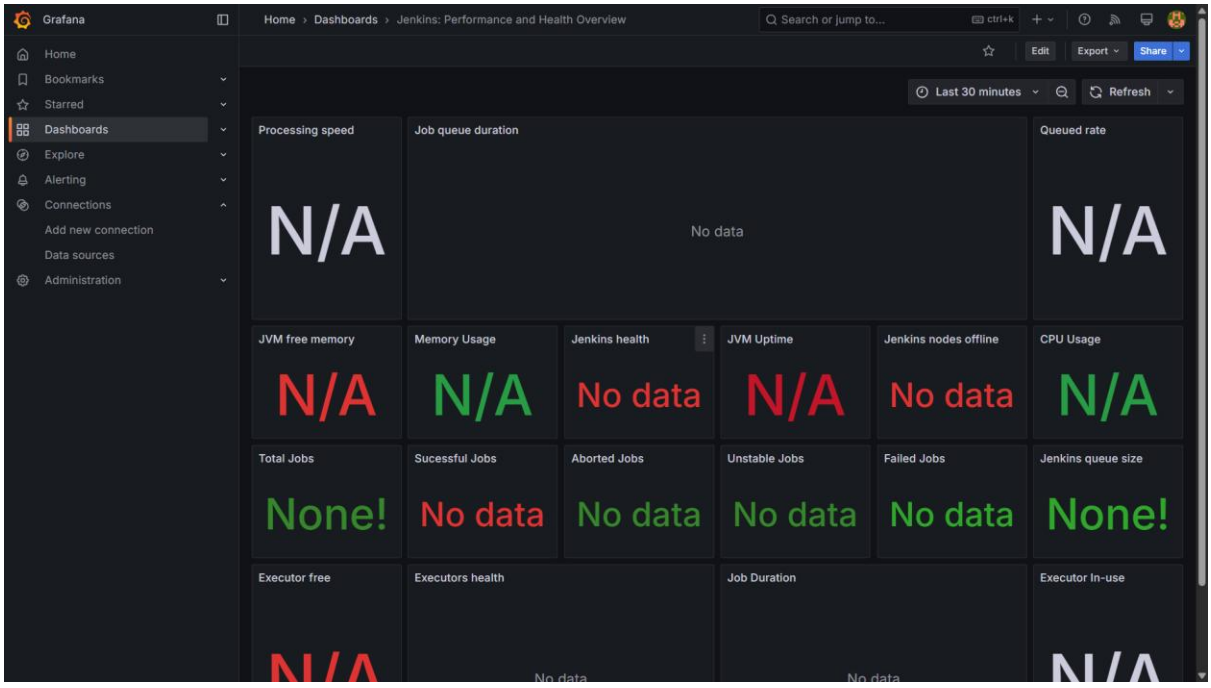
Installing Grafana

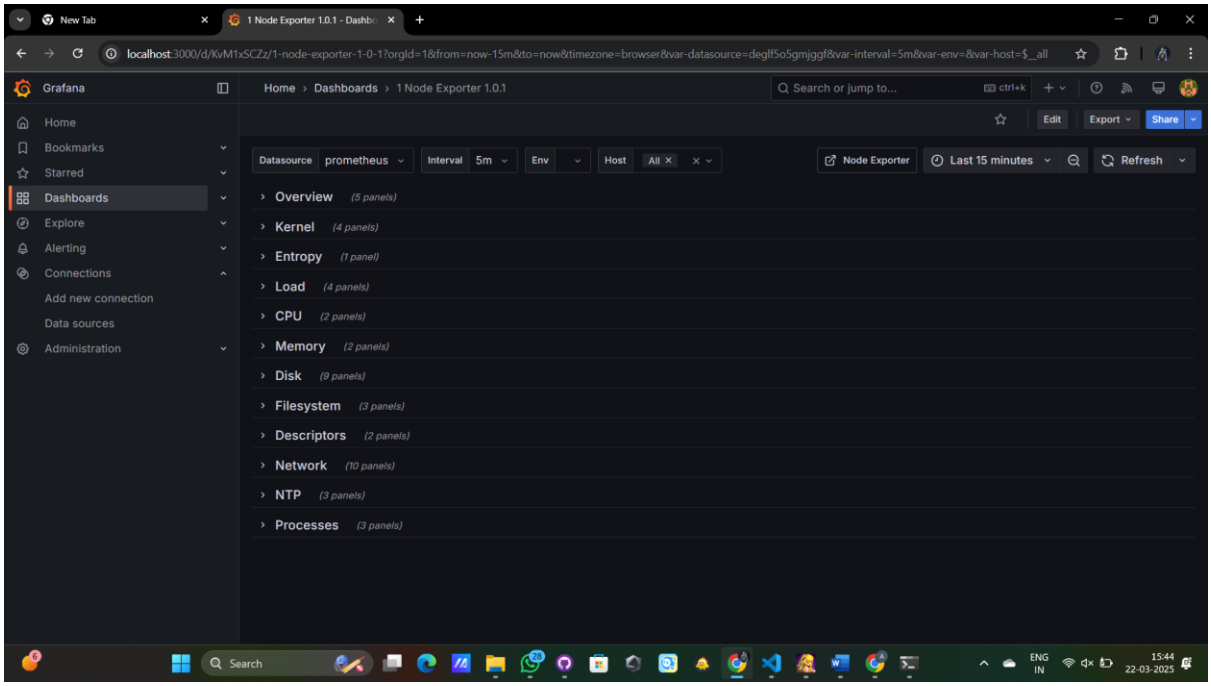
```bash
sudo apt-get install -y apt-transport-https software-properties-common
wget -q -O - https://packages.grafana.com/gpg.key | sudo apt-key add -
echo "deb https://packages.grafana.com/oss/deb stable main" | sudo tee -a /etc/apt/sources.list.d/grafana.list
sudo apt-get update
sudo apt-get -y install grafana
```

Starting Grafana

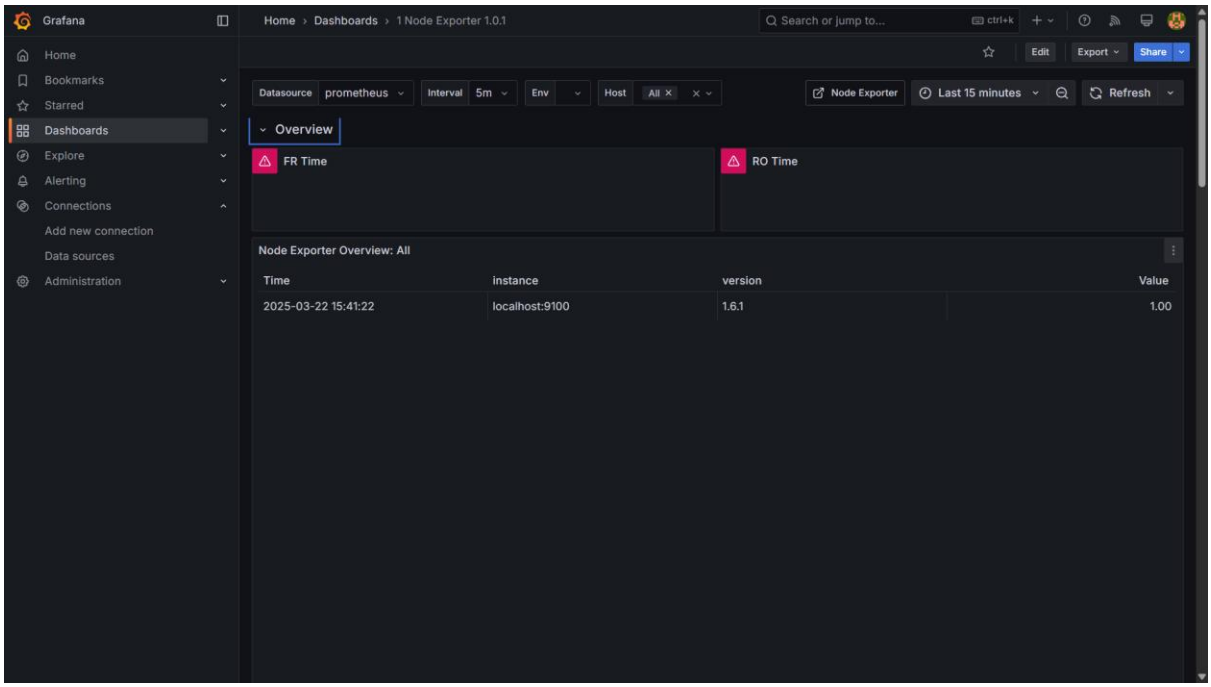
```bash
sudo systemctl enable grafana-server
sudo systemctl start grafana-server
sudo systemctl status grafana-server
```

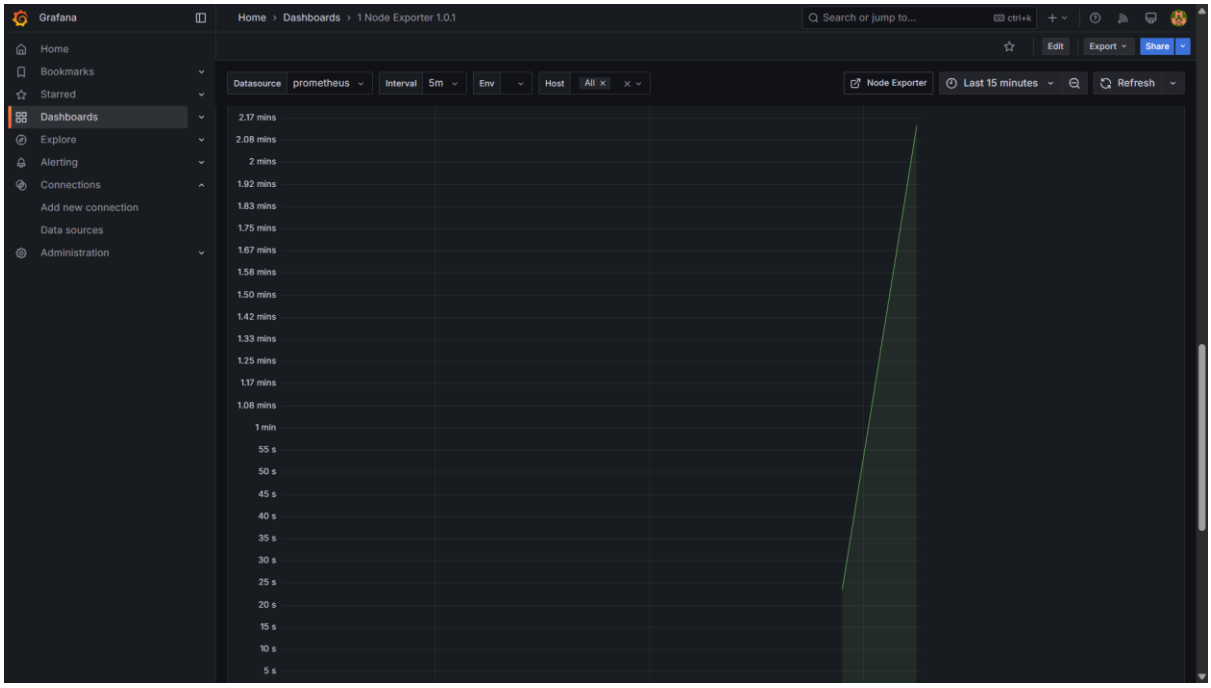

Grafana
Home › Dashboards › Node Exporter Full
Search or jump to...
ctrl+k
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Datasource default
Job node_export
Host localhost:9100
GitHub
Grafana
Last 24 hours
Refresh 1m
Quick CPU / Mem / Disk
Pressure
No data
CPU Busy
0.4%
Sys Load
0.0%
RAM Us...
27.2%
SWAP ...
0.0%
Root FS...
6.1%
C..
8
Uptime
4.3 hours
R..
1007 GiB
R..
8 GiB
S..
2 GiB
Basic CPU / Mem / Net / Disk
CPU Basic
100%
80%
60%
40%
20%
0%
15:00
18:00
21:00
00:00
03:00
06:00
09:00
12:00
Busy System
Busy User
Busy Iowait
Busy IRQs
Busy Other
Idle
Memory Basic
8 GiB
7 GiB
6 GiB
5 GiB
4 GiB
3 GiB
2 GiB
1 GiB
0 B
RAM Total
RAM Used
RAM Cache + Buffer
RAM Free
SWAP Used
Network Traffic Basic
6 Mb/s
4 Mb/s
2 Mb/s
0 b/s
-2 Mb/s
-4 Mb/s
-6 Mb/s
recv br-272b506530be
recv docker0
recv eth0
recv lo
Disk Space Used Basic
/
/mnt/wslg/distro
/var/lib/docker
/mnt/c
/mnt/d
/usr/lib/wsl/drivers
/mnt/wsl
/mnt/wslg
/run
/run/lock
/run/shm


Grafana
Home › Dashboards › Jenkins: Performance and Health Overview
Search or jump to...
ctrl+k
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Last 30 minutes
Refresh
Processing speed
N/A
Job queue duration
No data
Queued rate
N/A
JVM free memory
N/A
Memory Usage
N/A
Jenkins health
No data
JVM Uptime
N/A
Jenkins nodes offline
No data
CPU Usage
N/A
Total Jobs
None!
Sucessful Jobs
No data
Aborted Jobs
No data
Unstable Jobs
No data
Failed Jobs
No data
Jenkins queue size
None!
Executor free
Executors health
No data
Job Duration
No data
Executor In-use


New Tab
1 Node Exporter 1.0.1 - Dashbo
localhost:3000/d/KvM1xSCZz/1-node-exporter-1-0-1?orgId=1&from=now-15m&to=now&timezone=browser&var-datasource=deglf5o5gmjggf&var-interval=5m&var-env=&var-host=$__all
Grafana
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
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)
Search
ENG
IN
15:44
22-03-2025

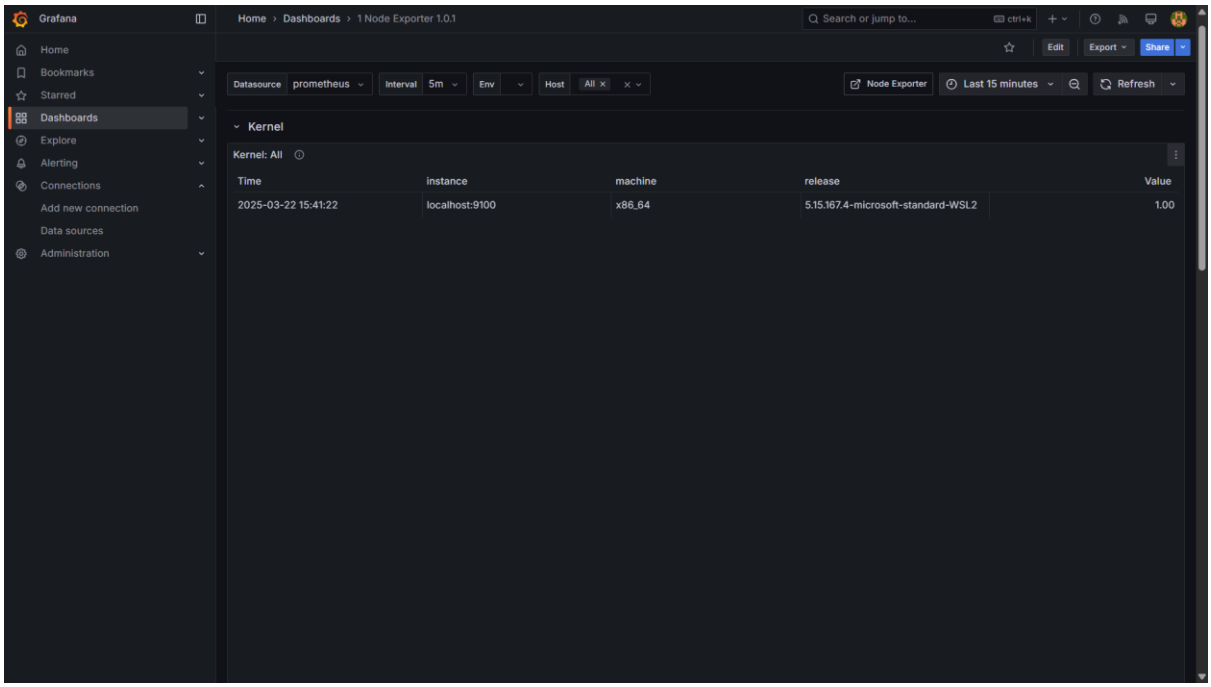
Overview:

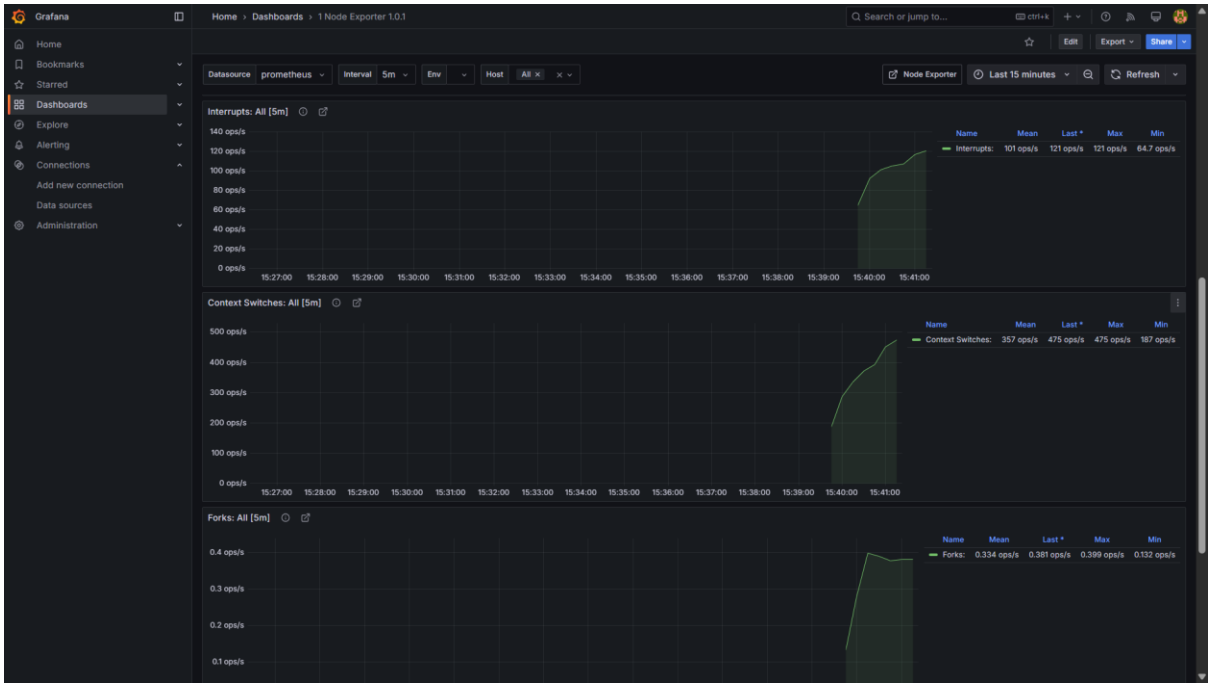

Grafana
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
ctrl+k
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Datasource prometheus
Interval 5m
Env
Host All
Node Exporter
Last 15 minutes
Refresh
Overview
FR Time
RO Time
Node Exporter Overview: All
Time
instance
version
Value
2025-03-22 15:41:22
localhost:9100
1.6.1
1.00


Grafana
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
ctrl+k
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Datasource prometheus
Interval 5m
Env
Host All
Node Exporter
Last 15 minutes
Refresh
2.17 mins
2.08 mins
2 mins
1.92 mins
1.83 mins
1.75 mins
1.67 mins
1.58 mins
1.50 mins
1.42 mins
1.33 mins
1.25 mins
1.17 mins
1.08 mins
1 min
55 s
50 s
45 s
40 s
35 s
30 s
25 s
20 s
15 s
10 s
5 s

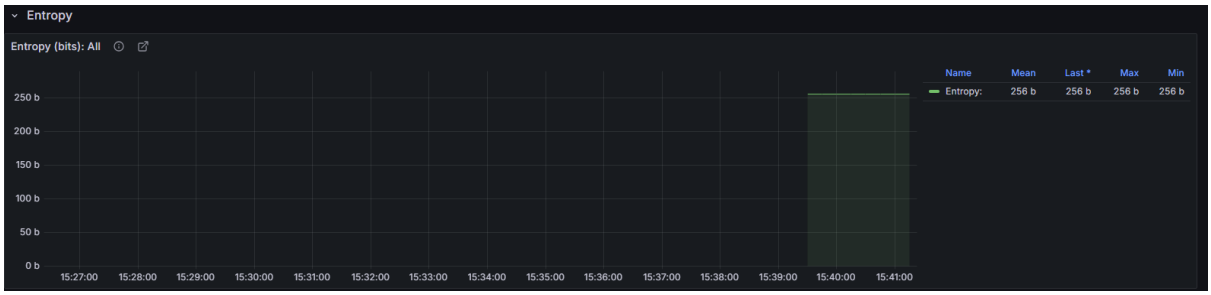

Server Uptime Metrics (%): All [1d]
100%
80%
60%
40%
20%
0%
15:30
15:35
15:40
2025-03-22 15:30:00
Downtime: [localhost:8080] 0%
Name
Mean
Last *
Max
Min
Downtime: [localhost:8080]
0%
0%
0%
0%

Kernel:


Grafana
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Datasource prometheus
Interval 5m
Env
Host All
Node Exporter
Last 15 minutes
Refresh
Kernel
Kernel: All
Time
instance
machine
release
Value
2025-03-22 15:41:22
localhost:9100
x86_64
5.15.167.4-microsoft-standard-WSL2
1.00

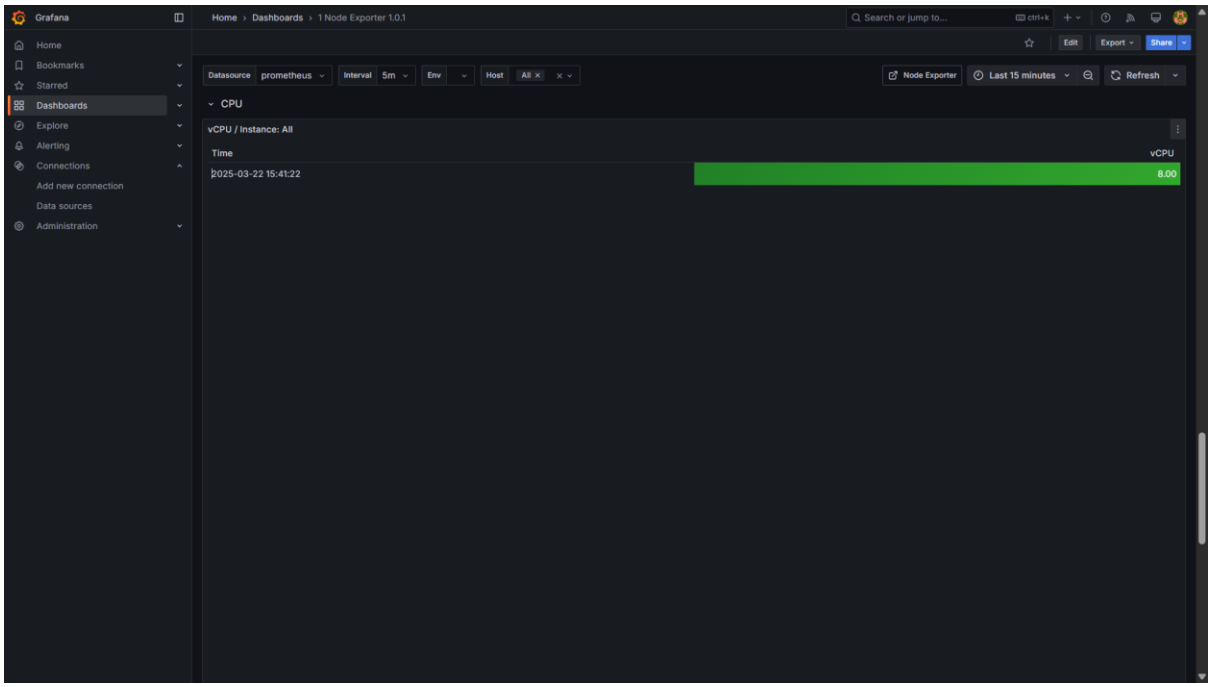

Grafana
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
Edit
Export
Share
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Datasource prometheus
Interval 5m
Env
Host All
Node Exporter
Last 15 minutes
Refresh
Interrupts: All [5m]
Name
Mean
Last *
Max
Min
Interrupts: 101 ops/s 121 ops/s 121 ops/s 64.7 ops/s
140 ops/s
120 ops/s
100 ops/s
80 ops/s
60 ops/s
40 ops/s
20 ops/s
0 ops/s
15:27:00 15:28:00 15:29:00 15:30:00 15:31:00 15:32:00 15:33:00 15:34:00 15:35:00 15:36:00 15:37:00 15:38:00 15:39:00 15:40:00 15:41:00
Context Switches: All [5m]
Name
Mean
Last *
Max
Min
Context Switches: 357 ops/s 475 ops/s 475 ops/s 187 ops/s
500 ops/s
400 ops/s
300 ops/s
200 ops/s
100 ops/s
0 ops/s
15:27:00 15:28:00 15:29:00 15:30:00 15:31:00 15:32:00 15:33:00 15:34:00 15:35:00 15:36:00 15:37:00 15:38:00 15:39:00 15:40:00 15:41:00
Forks: All [5m]
Name
Mean
Last *
Max
Min
Forks: 0.334 ops/s 0.381 ops/s 0.399 ops/s 0.132 ops/s
0.4 ops/s
0.3 ops/s
0.2 ops/s
0.1 ops/s

Entropy:



Load:

CPU:

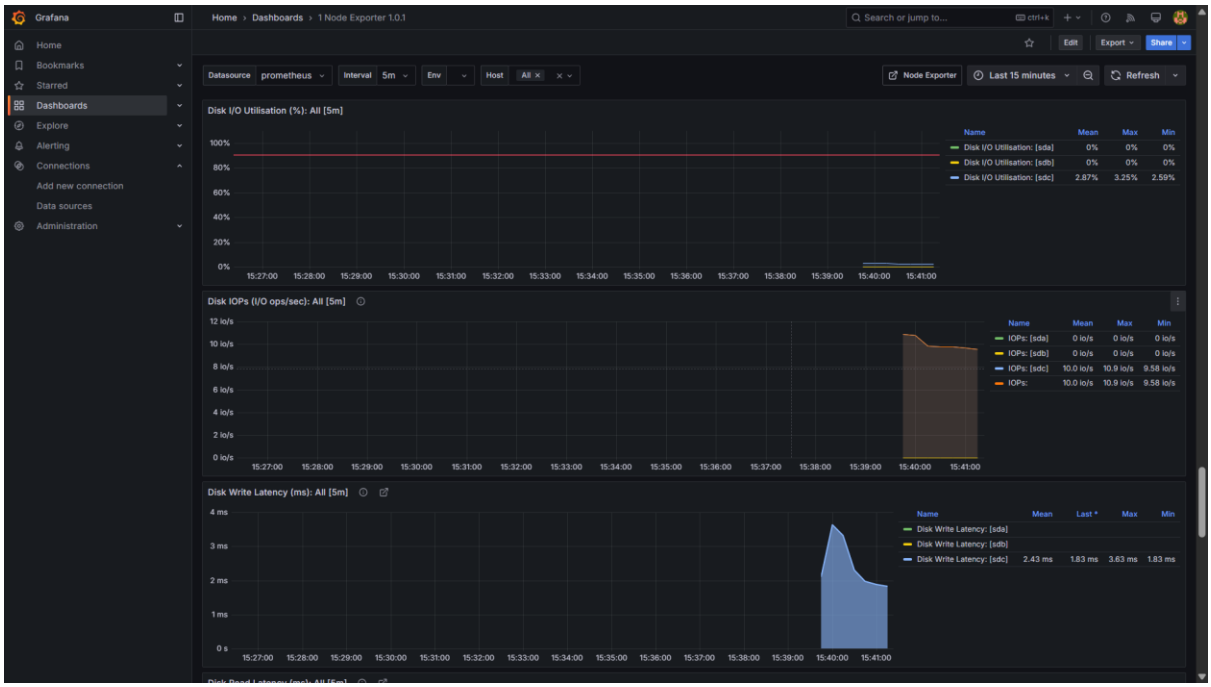

Grafana
Home
Bookmarks
Starred
Dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
Edit
Export
Share
Datasource
prometheus
Interval
5m
Env
Host
All
Node Exporter
Last 15 minutes
Refresh
CPU
vCPU / Instance: All
Time
vCPU
2025-03-22 15:41:22
8.00


CPU Used (%): All [5m]
100%
80%
60%
40%
20%
0%
15:27:00
15:28:00
15:29:00
15:30:00
15:31:00
15:32:00
15:33:00
15:34:00
15:35:00
15:36:00
15:37:00
15:38:00
15:39:00
15:40:00
15:41:00
Name
Mean
Last *
Max
Min
CPU: node_export
9.08%
0.325%
38.5%
0.325%

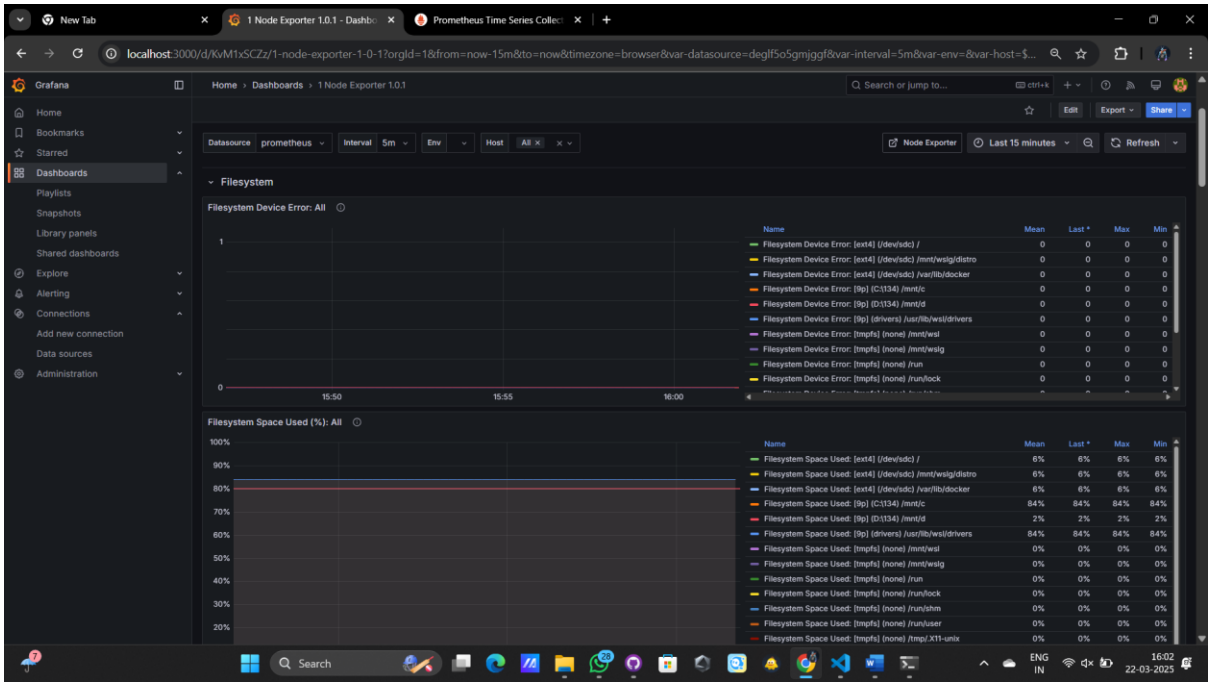
Memory:


Memory
Memory Used (%): All
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
15:30
15:35
15:40
Name
Mean
Last *
Max
Min
{instance="localhost:9100", job="node_export"}
14%
16%
16%
10%

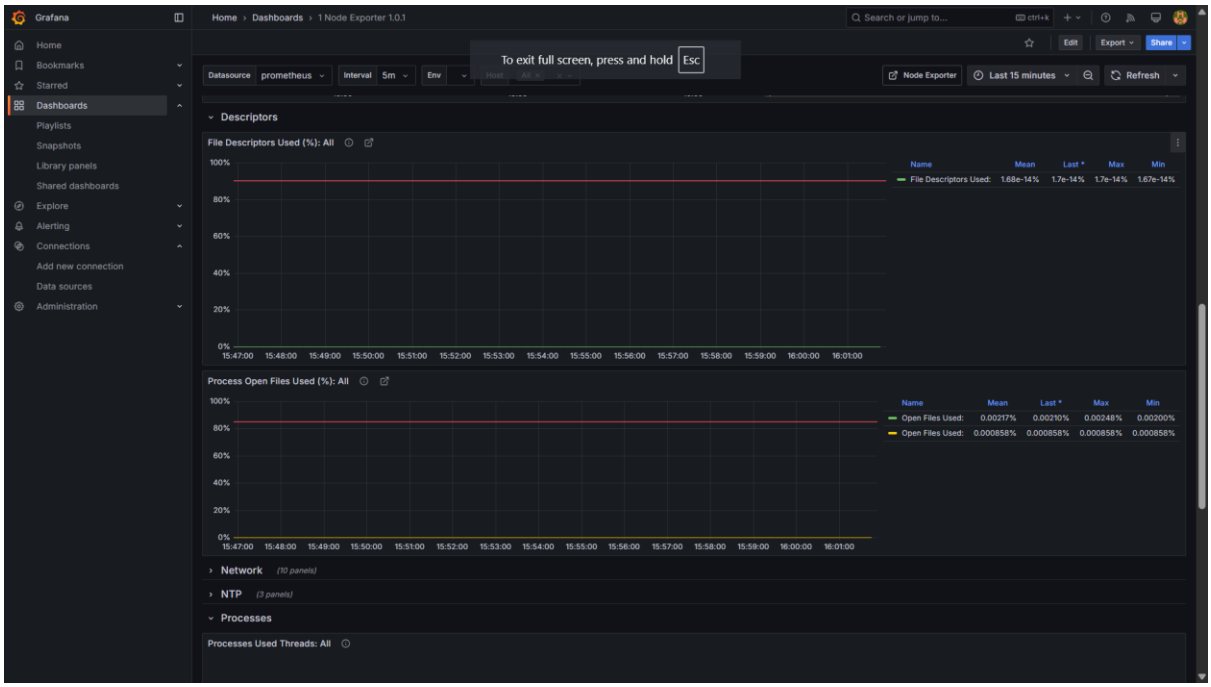
Disk:



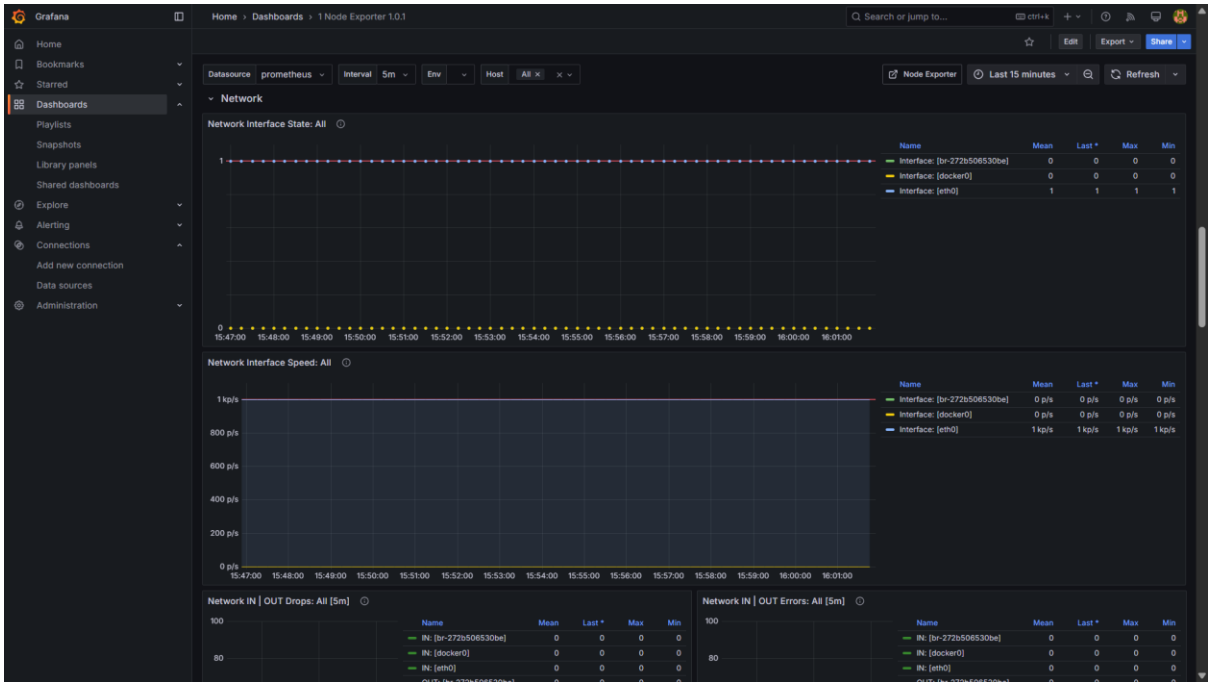
Filesystem:

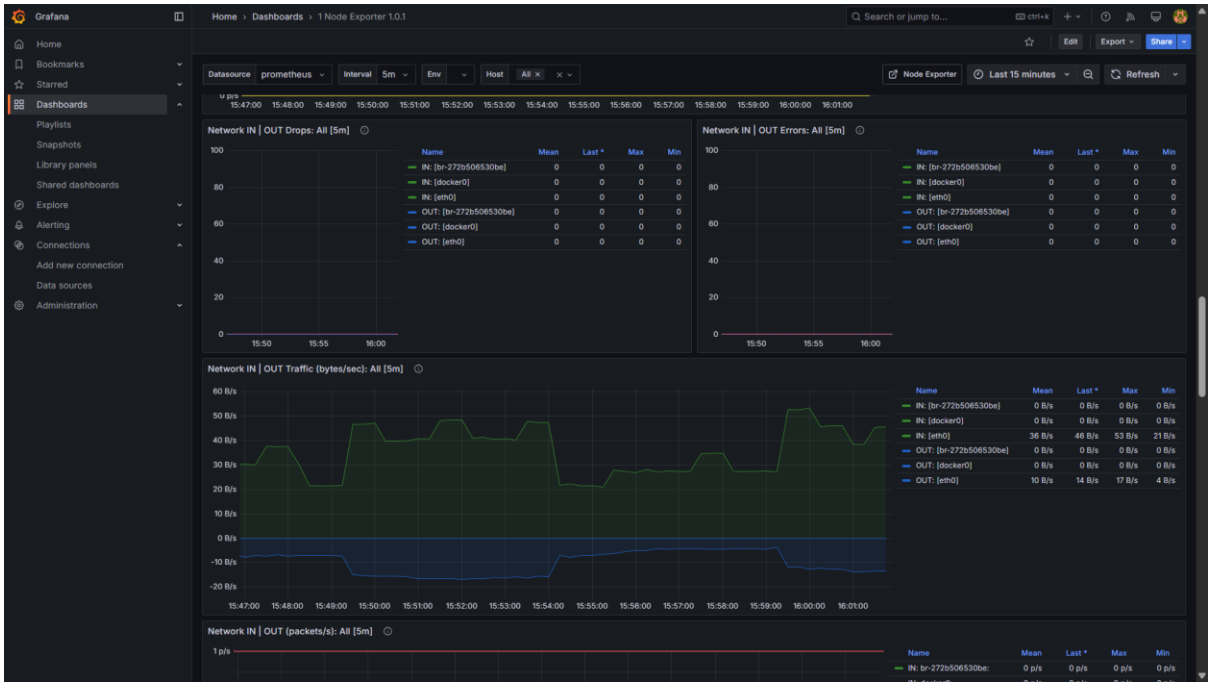


Descriptors:



Network:




Grafana
Home
Bookmarks
Starred
Dashboards
Playlists
Snapshots
Library panels
Shared dashboards
Explore
Alerting
Connections
Add new connection
Data sources
Administration
Home › Dashboards › 1 Node Exporter 1.0.1
Search or jump to...
Edit
Export
Share
Datasource prometheus
Interval 5m
Env
Host All
Node Exporter
Last 15 minutes
Refresh
Network IN | OUT Drops: All [5m]
Network IN | OUT Errors: All [5m]
Network IN | OUT Traffic (bytes/sec): All [5m]
Network IN | OUT (packets/s): All [5m]
Name
Mean
Last *
Max
Min
IN: [br-272b506530be]
IN: [docker0]
IN: [eth0]
OUT: [br-272b506530be]
OUT: [docker0]
OUT: [eth0]