Monitoring Setup with Prometheus, Grafana, Node Exporter, Loki, and Promtail

Step 1: Update System and Install Grafana

dnf update -y
dnf install -y https://dl.grafana.com/enterprise/release/grafana-enterprise-11.1.4-1.x86_64.rpm

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Step 2: Install Prometheus and Node Exporter

Download Prometheus and Node Exporter

wget
https://github.com/prometheus/prometheus/releases/download/v2.53.2/prometheus-2.53.2.linux-amd64.tar.gz
wget
https://github.com/prometheus/node_exporter/releases/download/v1.8.2/node_exporter-1.8.2.linux-amd64.tar.gz

Extract Files

tar -xvf prometheus-2.53.2.linux-amd64.tar.gz
tar -xvf node_exporter-1.8.2.linux-amd64.tar.gz

Move Binaries to System Path

cp -rvf prometheus-2.53.2.linux-amd64/prom* /usr/local/bin
cp -rvf node_exporter-1.8.2.linux-amd64/node_exporter /usr/local/bin

Configure Prometheus

mkdir -p /etc/prometheus
cp -rvf prometheus-2.53.2.linux-amd64/prometheus.yml /etc/prometheus/

Edit the Prometheus configuration file:

nano /etc/prometheus/prometheus.yml

Append the following:

```
 - job_name: "node_exporter"
    static_configs:
      - targets: ["localhost:9100"]
```

Step 3: Configure Firewall Rules

```
firewall-cmd --add-port=3000/tcp --permanent
firewall-cmd --add-port=9100/tcp --permanent
firewall-cmd --add-port=9090/tcp --permanent
firewall-cmd --reload
```

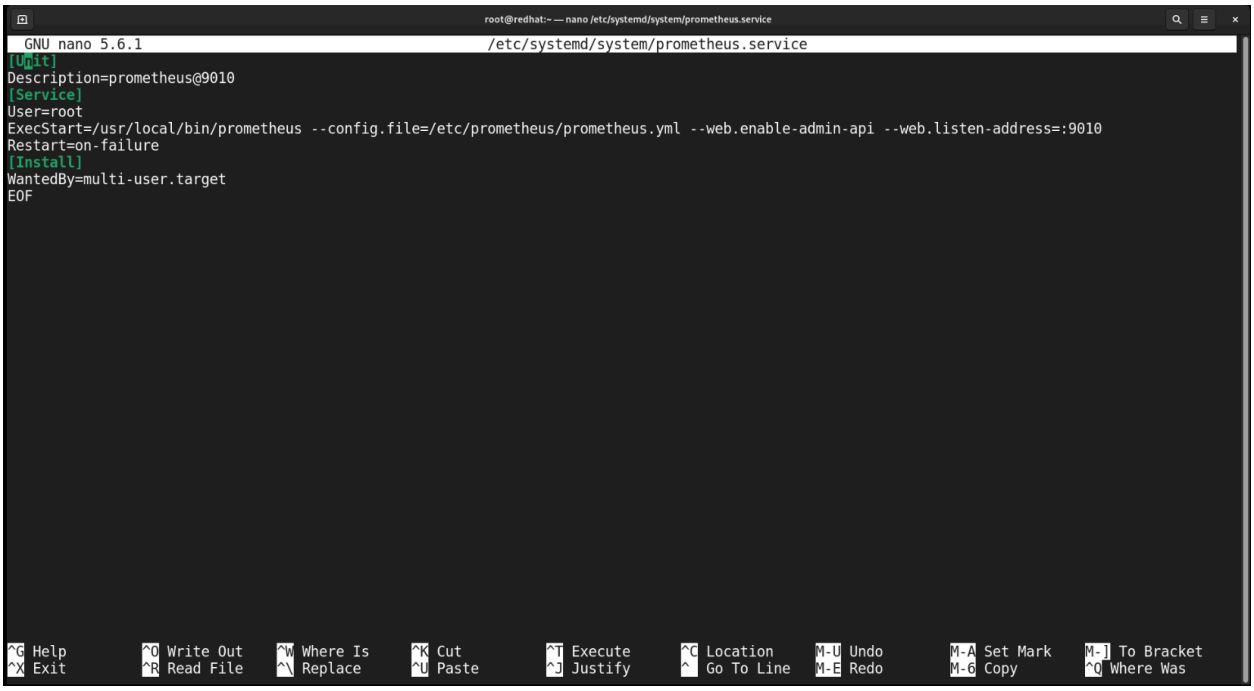
Step 4: Create Systemd Units for Prometheus and Node Exporter

Prometheus Service File

nano /etc/systemd/system/prometheus.service

Add the following content:

```
[Unit]
Description=Prometheus Service
[Service]
User=root
ExecStart=/usr/local/bin/prometheus --config.file=/etc/prometheus/prometheus.yml
Restart=on-failure
[Install]
WantedBy=multi-user.target
```



Node Exporter Service File

nano /etc/systemd/system/node_exporter.service

Add the following content:

[Unit]
Description=Node Exporter Service
[Service]
User=root
ExecStart=/usr/local/bin/node_exporter
Restart=on-failure
[Install]
WantedBy=multi-user.target

Reload and Start Services

systemctl daemon-reload
systemctl start prometheus.service
systemctl start node_exporter.service
systemctl enable prometheus.service
systemctl enable node_exporter.service
systemctl start grafana-server

Step 5: SELinux Configuration

semanage port -a -t http_port_t -p tcp 9090
semanage port -a -t http_port_t -p tcp 9100
semanage port -a -t http_port_t -p tcp 3000

Step 6: Grafana Dashboard Setup

1. Open Grafana in your browser: `http://localhost:3000`.
2. Add Prometheus as a data source with the URL `http://localhost:9090`.
3. Import Dashboard:
    - Go to Dashboards > Import.

- Enter ID `1860` and click **Load**.
- Select the Prometheus data source and click **Import**.

Step 7: Install and Configure Loki and Promtail

Install Loki and Promtail

wget -q -O gpg.key https://rpm.grafana.com/gpg.key
rpm --import gpg.key
nano /etc/yum.repos.d/grafana.repo

Add the following content:

[grafana]
name=grafana
baseurl=https://rpm.grafana.com
repo_gpgcheck=1
enabled=1
gpgcheck=1
gpgkey=https://rpm.grafana.com/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt

Install Loki and Promtail:

dnf update
dnf install loki promtail

Start and Enable Services

systemctl start loki
systemctl enable loki
systemctl start promtail
systemctl enable promtail

Edit Promtail Configuration:

nano /etc/promtail/config.yml

Add log file paths:

/var/log/messages -> /var/log/*

Update Firewall Rules

firewall-cmd --add-port=3100/tcp --permanent
firewall-cmd --add-port=9080/tcp --permanent
firewall-cmd --reload

Step 8: Grafana Logs Dashboard

1. Add Loki as a data source in Grafana.
2. Use the visualization option to query logs.
3. Apply changes and save the dashboard.

Step 9: Install PHPMyAdmin

dnf install https://dl.fedoraproject.org/pub/epel/epel-release-latest-9.noarch.rpm
dnf update
dnf install httpd phpmyadmin mysql-server -y

Edit Apache Configuration:

nano /etc/httpd/conf.d/phpMyAdmin.conf

Update Directory Permissions:

```
<Directory /usr/share/phpMyAdmin/>
   AddDefaultCharset UTF-8
   Require all granted
</Directory>
```

Restart Services:

systemctl restart httpd
systemctl enable --now mysqld
mysql_secure_installation
mysql -u root -p

Verification

Ensure all services are active:
 systemctl status prometheus.service
systemctl status node_exporter.service
systemctl status loki.service
systemctl status promtail.service
systemctl status grafana-server

1.
2. Test Grafana dashboards for metrics and logs.

Note: Add screenshots for each major step, especially for Grafana configuration, dashboard imports, and log queries.