comment installer-grafana-et-prometheus-sur-rocky-linux-9

Grafana is an open-source and multi-platform data visualization platform developed by Grafana Labs. Grafana provides an interactive data visualization web application which includes charts, graphs, and alerts. With Grafana, you can query, visualize, set up alerts, and explore metrics, logs, and traces of TSDB. It is a powerful tool that turns time-series database (TSDB) data into an insightful graph and visualization.

In Grafana, you can add your time-series database data via the 'Data Source'. Grafana supports multiple data sources such as Prometheus, InfluxDB, PostgreSQL, Loki, Jaeger, Graphite, Google Cloud Monitoring, AWS CloudWatch, Azure Monitor, and many more.

In this tutorial, I will install Grafana open-source analytics and visualization web application with Nginx as a reverse proxy. Then, I will install and configure the Prometheus open-source system monitoring with Node Exporter to gather system metrics. Lastly, you will add Prometheus as the data source to the Grafana and set up a dashboard for system monitoring.

For this guide, you will install all of those packages on top of the Rocky Linux 9 server.

Prerequisites

To begin with, you must have the following requirements to complete this guide:

- A Rocky Linux 9 server - You can use multiple servers or a single server for the experiment. Below are the types of installation you must know:
  Single server: grafana, prometheus, and node_exporter on a single server.
  Two servers: grafana on server1, prometheus, and node_exporter on server3.
  Three servers: grafana on server1, prometheus on server2, and node_exporter on server3.
- A non-root user with sudo/root administrator privileges.

Installing Grafana

Grafana is a multi-platform application that can be installed on multiple operating systems such as Windows, Linux, and macOS. For Linux systems, Grafana provides repositories for both Debian-based operating systems (Debian and Ubuntu) and RHEL-based operating systems (RHEL, CentOS, Fedora, RockyLinux, AlmaLinux).

In this step, you will set up the Grafana repository and install the Grafana 9.3 on the Rocky Linux 9 server.

Before setting up the Grafana repository, run the below command to set up the default crypto policy backend to 'SHA1' and reboot the server to apply changes.

```
sudo update-crypto-policies --set DEFAULT:SHA1
sudo reboot
```

After logging in again, create a new repository file '/etc/yum.repos.d/grafana.repo' using the below nano editor command.

```
sudo nano /etc/yum.repos.d/grafana.repo
```

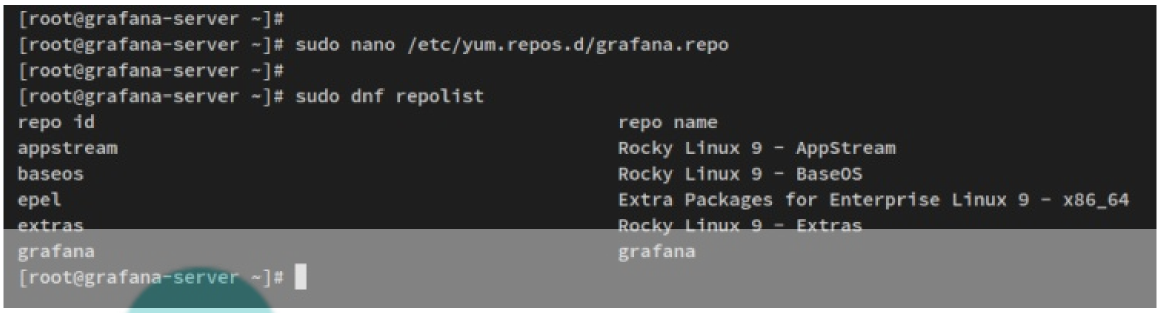
Add the following Grafana repository to the file.

```
[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
```

Save the file and exit the editor.

Now run the below command to verify the list repository on your system. You should see that the Grafana repository has been added.

```
sudo dnf repolist
```

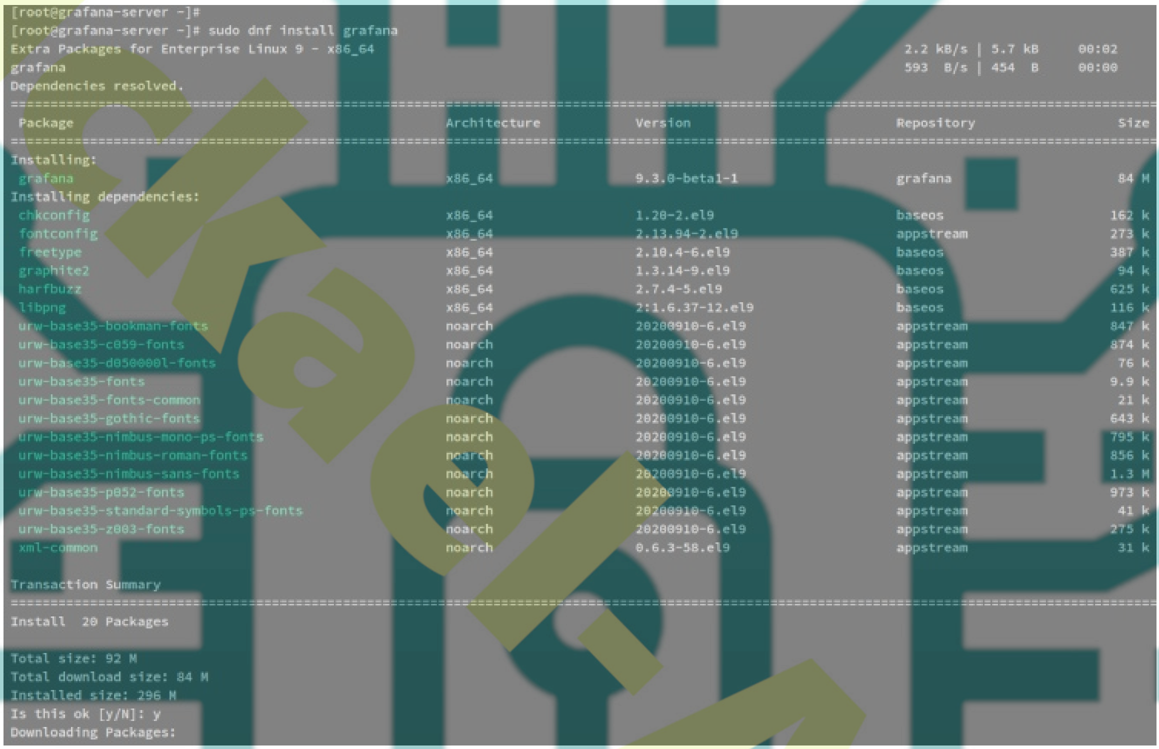


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo nano /etc/yum.repos.d/grafana.repo
[root@grafana-server ~]#
[root@grafana-server ~]# sudo dnf repolist
repo id                                    repo name
appstream                                  Rocky Linux 9 - AppStream
baseos                                     Rocky Linux 9 - BaseOS
epel                                       Extra Packages for Enterprise Linux 9 - x86_64
extras                                     Rocky Linux 9 - Extras
grafana                                    grafana
[root@grafana-server ~]#
```

With the Grafana repository added, you can now install the Grafana package via the dnf command below.

```
sudo dnf install grafana
```

When prompted, input y to confirm the installation and press ENTER.

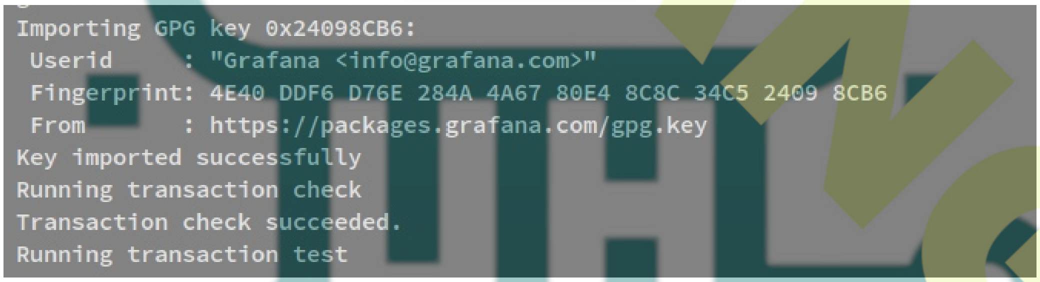


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo dnf install grafana
Extra Packages for Enterprise Linux 9 - x86_64                              2.2 kB/s | 5.7 kB     00:02
grafana                                                                     593  B/s | 454  B     00:00
Dependencies resolved.
=============================================================================================================
 Package                                Architecture     Version                Repository              Size
=============================================================================================================
Installing:
 grafana                                x86_64           9.3.0-beta1-1          grafana                 84 M
Installing dependencies:
 chkconfig                              x86_64           1.20-2.el9             baseos                 162 k
 fontconfig                             x86_64           2.13.94-2.el9          appstream              273 k
 freetype                               x86_64           2.10.4-6.el9           baseos                 387 k
 graphite2                              x86_64           1.3.14-9.el9           baseos                  94 k
 harfbuzz                               x86_64           2.7.4-5.el9            baseos                 625 k
 libpng                                 x86_64           2:1.6.37-12.el9        baseos                 116 k
 urw-base35-bookman-fonts               noarch           20200910-6.el9         appstream              847 k
 urw-base35-c059-fonts                  noarch           20200910-6.el9         appstream              874 k
 urw-base35-d050000l-fonts              noarch           20200910-6.el9         appstream               76 k
 urw-base35-fonts                       noarch           20200910-6.el9         appstream              9.9 k
 urw-base35-fonts-common                noarch           20200910-6.el9         appstream               21 k
 urw-base35-gothic-fonts                noarch           20200910-6.el9         appstream              643 k
 urw-base35-nimbus-mono-ps-fonts        noarch           20200910-6.el9         appstream              795 k
 urw-base35-nimbus-roman-fonts          noarch           20200910-6.el9         appstream              856 k
 urw-base35-nimbus-sans-fonts           noarch           20200910-6.el9         appstream              1.3 M
 urw-base35-p052-fonts                  noarch           20200910-6.el9         appstream              973 k
 urw-base35-standard-symbols-ps-fonts   noarch           20200910-6.el9         appstream               41 k
 urw-base35-z003-fonts                  noarch           20200910-6.el9         appstream              275 k
 xml-common                             noarch           0.6.3-58.el9           appstream               31 k

Transaction Summary
=============================================================================================================
Install  20 Packages

Total size: 92 M
Total download size: 84 M
Installed size: 296 M
Is this ok [y/N]: y
Downloading Packages:
```

You will also be prompted to confirm the gpg key for the Grafana repository. Input y and press ENTER to add the gpg key to your system.



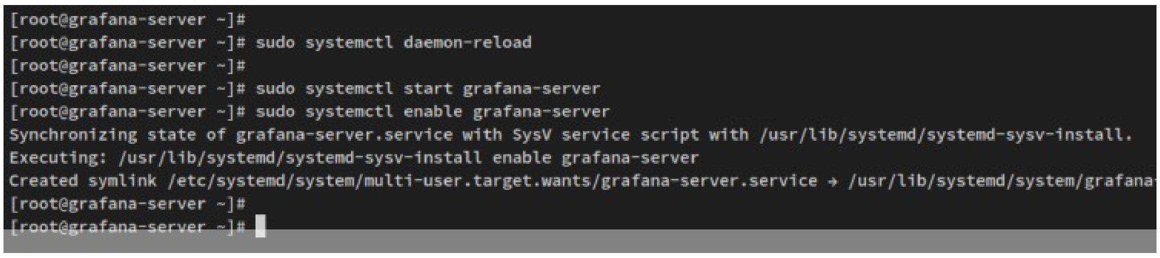
```
Importing GPG key 0x24098CB6:
 Userid     : "Grafana <info@grafana.com>"
 Fingerprint: 4E40 DDF6 D76E 284A 4A67 80E4 8C8C 34C5 2409 8CB6
 From       : https://packages.grafana.com/gpg.key
Key imported successfully
Running transaction check
Transaction check succeeded.
Running transaction test
```

When the Grafana is installed, run the below systemctl command to reload systemd privileges.

```
sudo systemctl daemon-reload
```

Then, start and enable the Grafana service 'grafana-server'. The Grafana service should now be enabled and running.

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

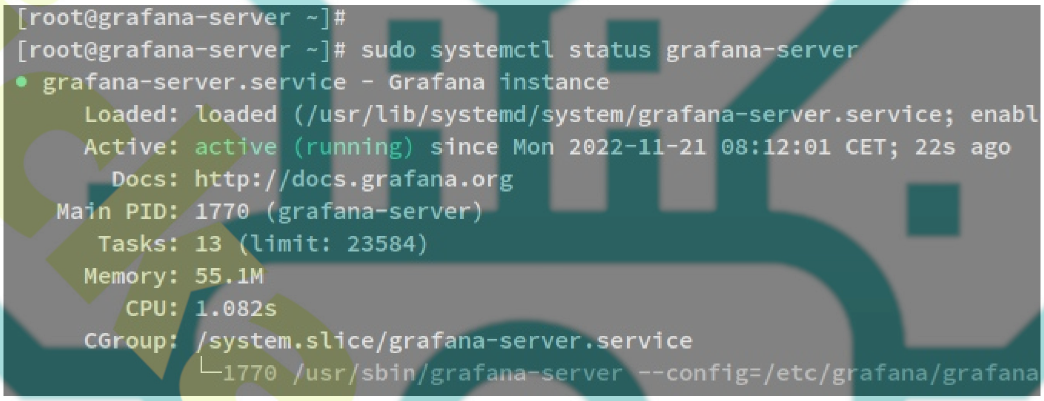


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl daemon-reload
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl start grafana-server
[root@grafana-server ~]# sudo systemctl enable grafana-server
Synchronizing state of grafana-server.service with SysV service script 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
[root@grafana-server ~]#
[root@grafana-server ~]# 
```

Verify the *'grafana-server'* service via the below command to ensure that the service is running.

```
sudo systemctl status grafana-server
```

The below output confirms that the grafana-server is enabled and running. The grafana-server should now be run automatically upon the bootup.



```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl status grafana-server
● grafana-server.service - Grafana instance
     Loaded: loaded (/usr/lib/systemd/system/grafana-server.service; enabl
     Active: active (running) since Mon 2022-11-21 08:12:01 CET; 22s ago
       Docs: http://docs.grafana.org
   Main PID: 1770 (grafana-server)
      Tasks: 13 (limit: 23584)
     Memory: 55.1M
        CPU: 1.082s
     CGroup: /system.slice/grafana-server.service
             └─1770 /usr/sbin/grafana-server --config=/etc/grafana/grafana
```

Configuring Grafana

Now that the Grafana server is installed and running, you'll set up how the Grafana should be run via the configuration filer '/etc/grafana/grafana.ini'. In this example, you'll run grafana on localhost only with the local-domain grafana.hwdomain.io.

Open the Grafana configuration file '*/etc/grafana/grafana.ini*' using the below nano editor command.

```
sudo nano /etc/grafana/grafana.ini
```

Uncomment some below lines and change the default value as below.

```
[server]

# The IP address to bind to, empty will bind to all interfaces
http_addr = localhost

# The http port  to use
http_port = 3000

# The public facing domain name used to access grafana from a browser
domain = grafana.hwdomain.io
```

With this configuration, you configure Grafana to run at localhost only with the default TCP port 3000. You'll run Grafana with the local domain grafana.hwdomain.io, which is handled by the reverse proxy.

Save the file and close the editor when you are finished.

Now restart the '*grafana-server*' service via the systemctl command to apply new changes.

```
sudo systemctl restart grafana-server
```

Grafana is configured, and up and running. You'll next install and configure Nginx as a reverse proxy for the Grafana server.

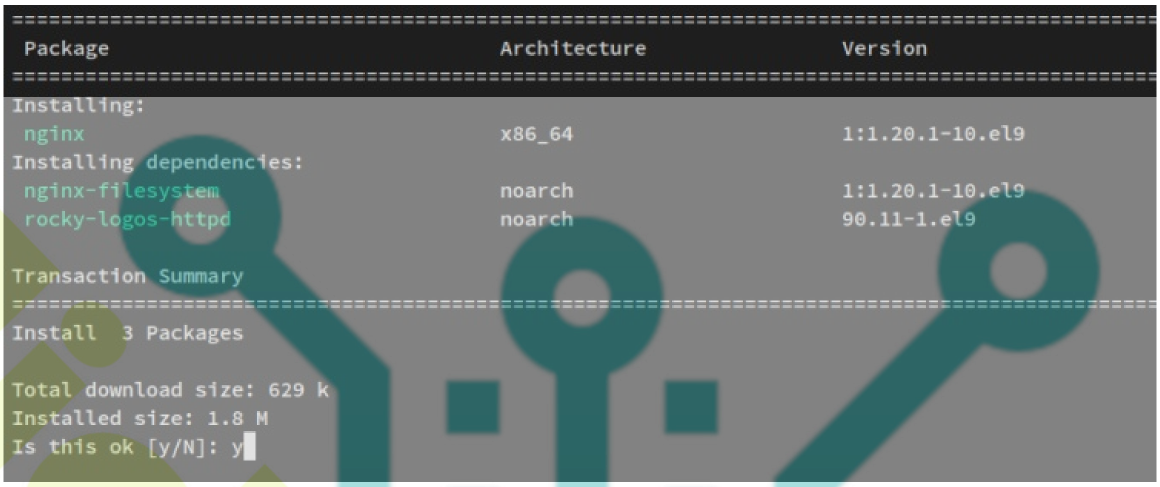
Setting up Nginx as a Reverse Proxy

In this step, you will install the Nginx web server and configure it as a reverse proxy for the Grafana server. Before installing Nginx, ensure you have a domain name or local domain resolving to your server and SSL certificates generated.

Run the dnf command below to install the Nginx web server to your system.

```
sudo dnf install nginx
```

Input y when prompted for the confirmation and press ENTER to proceed.



```
================================================================================
 Package                     Architecture          Version
================================================================================
Installing:
 nginx                       x86_64                1:1.20.1-10.el9
Installing dependencies:
 nginx-filesystem            noarch                1:1.20.1-10.el9
 rocky-logos-httpd           noarch                90.11-1.el9

Transaction Summary
================================================================================
Install  3 Packages

Total download size: 629 k
Installed size: 1.8 M
Is this ok [y/N]: y
```

After installing Nginx, create a new Nginx server block file '*/etc/nginx/conf.d/grafana.conf*' using the below nano editor command.

```
sudo nano /etc/nginx/conf.d/grafana.conf
```

Add the following lines to the file and change the details domain name and path of SSL certificates.

```
# this is required to proxy Grafana Live WebSocket connections.
map $http_upgrade $connection_upgrade {
  default upgrade;
  '' close;
}

server {
    listen      80;
    server_name grafana.hwdomain.io;
    rewrite     ^    https://$server_name$request_uri? permanent;
}

server {
  listen      443 ssl http2;
  server_name grafana.hwdomain.io;

  root /usr/share/nginx/html;
  index index.html index.htm;

  ssl_certificate /etc/letsencrypt/live/grafana.hwdomain.io/fullchain.pem;
  ssl_certificate_key /etc/letsencrypt/live/grafana.hwdomain.io/privkey.pem;

  access_log /var/log/nginx/grafana-access.log;
  error_log /var/log/nginx/grafana-error.log;

  location / {
    proxy_set_header Host $http_host;
    proxy_pass http://localhost:3000/;
  }

  # Proxy Grafana Live WebSocket connections.
  location /api/live {
    rewrite  ^/(.*)  /$1 break;
    proxy_http_version 1.1;
    proxy_set_header Upgrade $http_upgrade;
    proxy_set_header Connection $connection_upgrade;
    proxy_set_header Host $http_host;
    proxy_pass http://localhost:3000/;
  }
}
```

With this configuration, you'll run Nginx as a reverse proxy for the grafana server that is running on localhost:3000. You'll also secure the grafana via a secure SSL/HTTPS connection. Also, you'll set up a reverse proxy for the grafana WebSocket connections.

Save the file and exit the editor when you are finished.

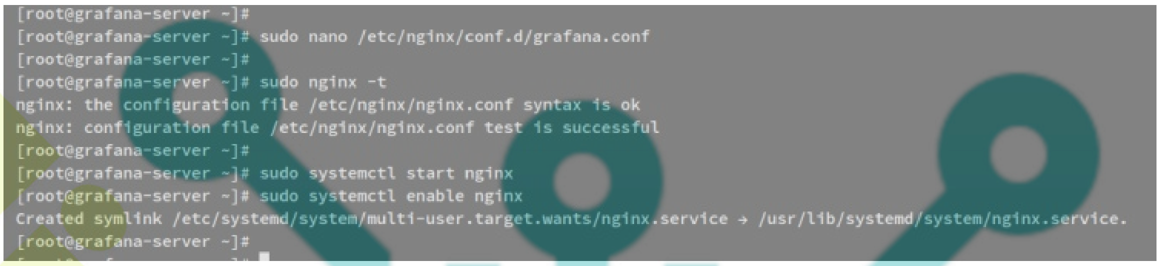
Next, run the below command to verify the Nginx configuration and ensure that you have the proper configuration.

```
sudo nginx -t
```

If you have the proper configuration, you should get the output message such as 'test successful - syntax ok'.

Now run the below systemctl command to start and enable the Nginx.

```
sudo systemctl start nginx
sudo systemctl enable nginx
```

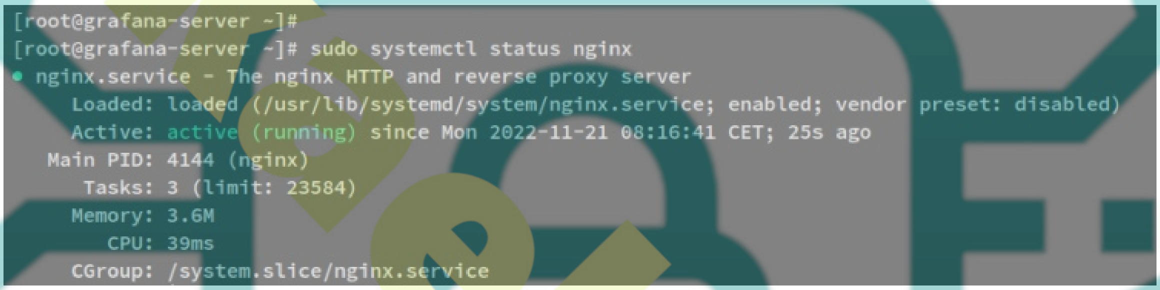


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo nano /etc/nginx/conf.d/grafana.conf
[root@grafana-server ~]#
[root@grafana-server ~]# sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl start nginx
[root@grafana-server ~]# sudo systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /usr/lib/systemd/system/nginx.service.
[root@grafana-server ~]#
```

The Nginx service should now be running and enabled. Verify the Nginx service via the systemctl command below.

```
sudo systemctl status nginx
```

The following output confirms that the Nginx service is running and it's enabled. The Nginx service should be run automatically upon the bootup.



```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl status nginx
● nginx.service - The nginx HTTP and reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor preset: disabled)
     Active: active (running) since Mon 2022-11-21 08:16:41 CET; 25s ago
   Main PID: 4144 (nginx)
      Tasks: 3 (limit: 23584)
     Memory: 3.6M
        CPU: 39ms
     CGroup: /system.slice/nginx.service
```

With the Nginx service up and running on both HTTP and HTTPS protocols, you'll then set up the firewalld to open both services.

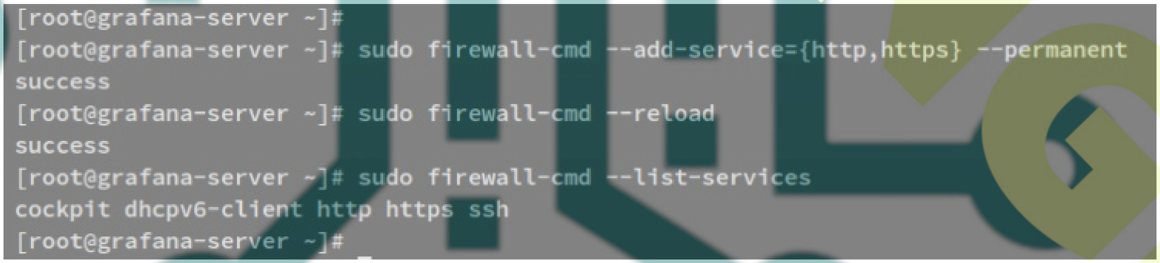
Run the below firewall-cmd command to add the HTTP and HTTPS service to the firewalld.

```
sudo firewall-cmd --add-service={http,https} --permanent
```

After that, reload the firewalld to apply changes and verify the list of enabled services on firerwalld.

```
sudo firewall-cmd --reload
sudo firewall-cmd --list-services
```

You should receive the following output - The HTTP and HTTPS services added t the firewalld.

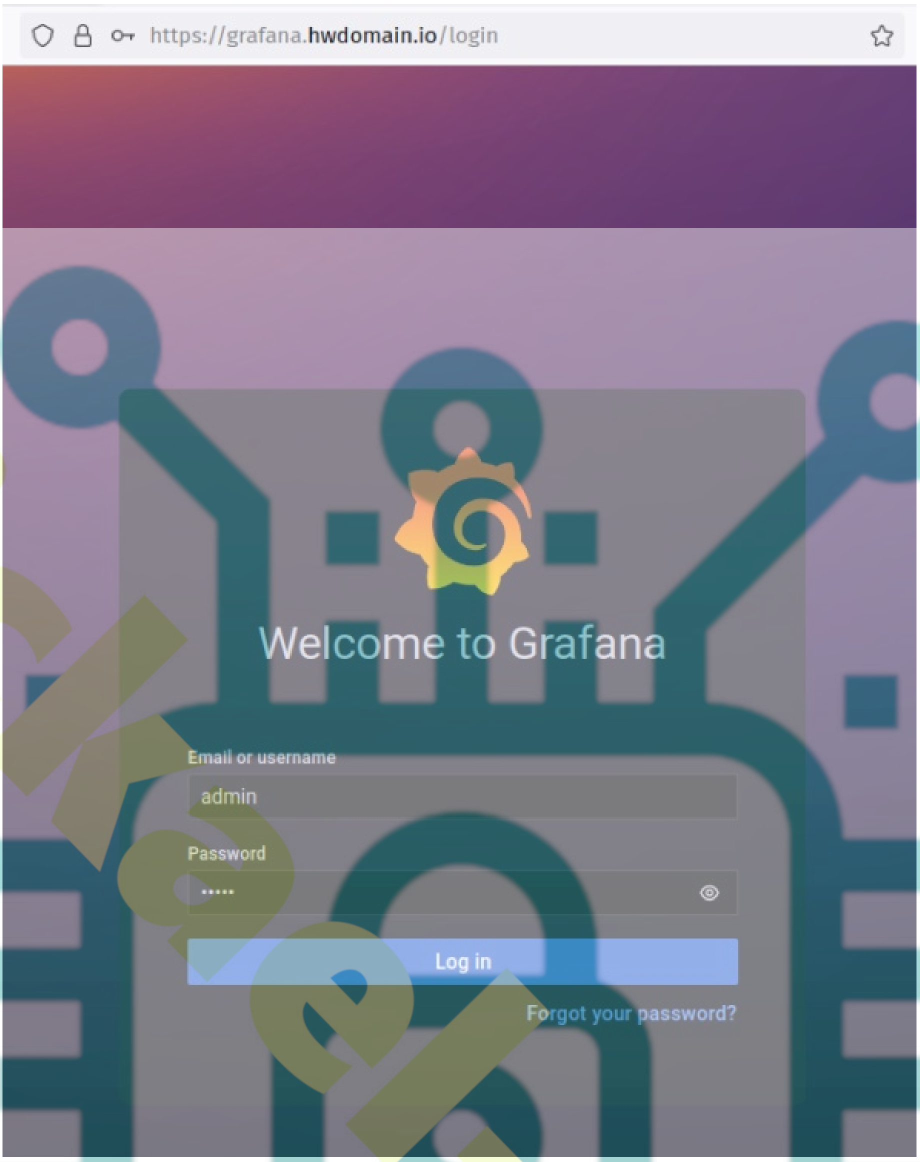


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo firewall-cmd --add-service={http,https} --permanent
success
[root@grafana-server ~]# sudo firewall-cmd --reload
success
[root@grafana-server ~]# sudo firewall-cmd --list-services
cockpit dhcpv6-client http https ssh
[root@grafana-server ~]#
```

After configured the firewalld, you will be able to access your grafana and Nginx reverse proxy installation.

Open the web browser and visit the domain name for your grafana installation (i.e: https://grafana.hwdomain.io/), and you should get the grafana login page.

Log in with the default user/password '**admin**'.

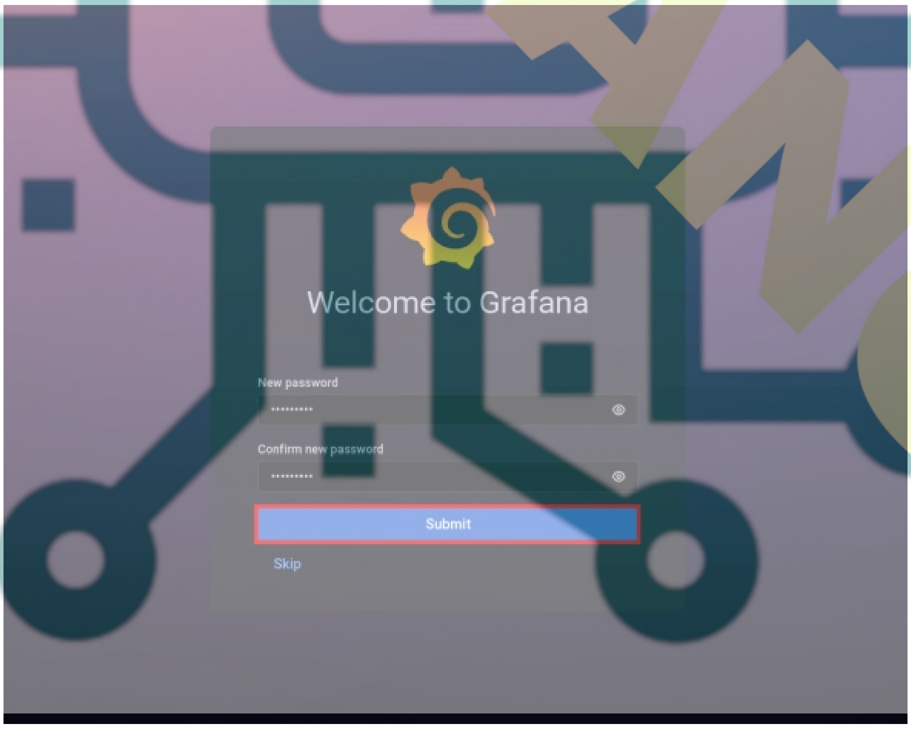

https://grafana.hwdomain.io/login

Welcome to Grafana

Email or username
admin

Password
•••••

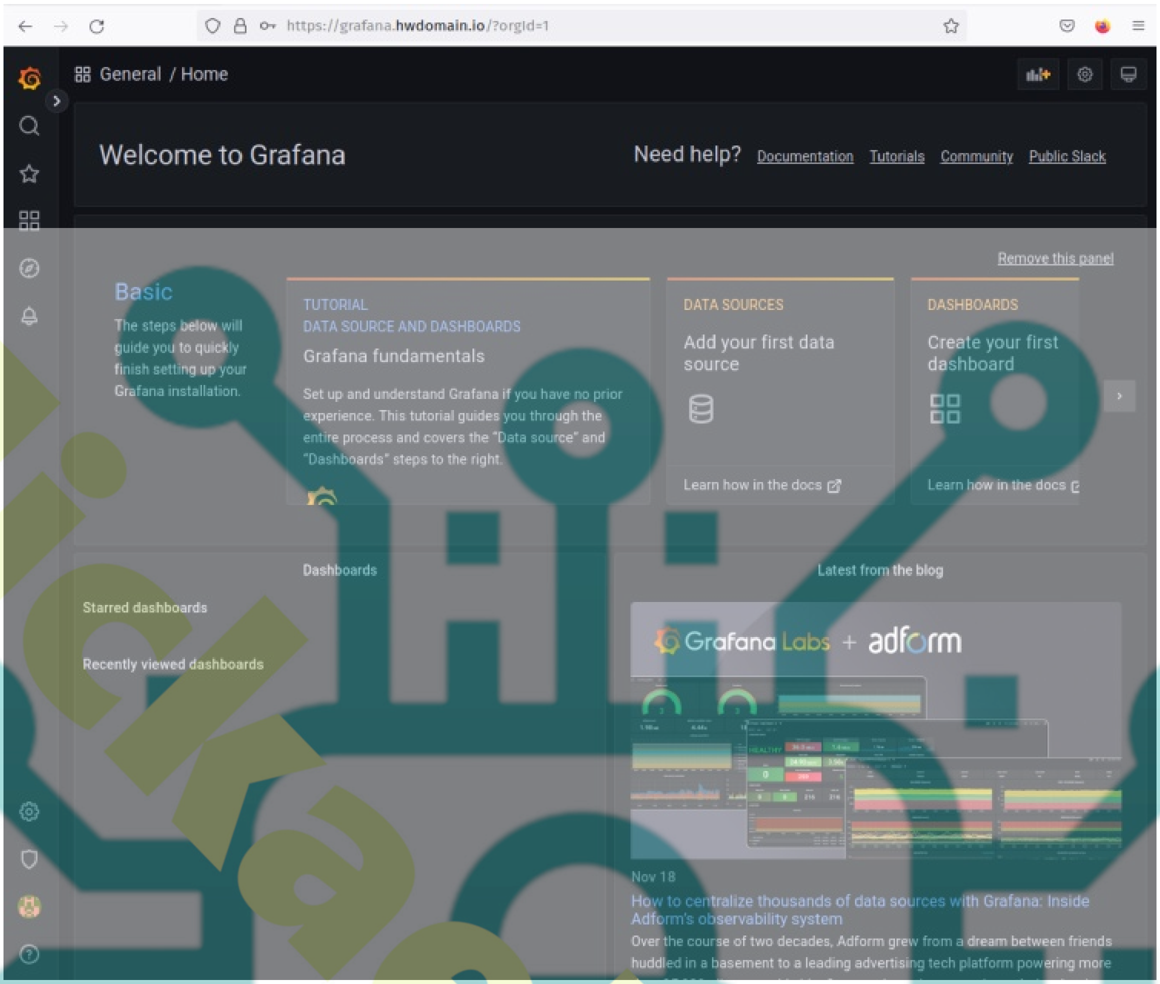
After logging in, you will be asked to change the default password. Input the new password for your grafana installation and press '**Submit**' to confirm.


Welcome to Grafana

New password
•••••••••

Confirm new password
•••••••••

You should now get the grafana dashboard as the following screenshot.


https://grafana.hwdomain.io/?orgId=1
General / Home
Welcome to Grafana
Need help? Documentation Tutorials Community Public Slack
Remove this panel
Basic
The steps below will guide you to quickly finish setting up your Grafana installation.
TUTORIAL
DATA SOURCE AND DASHBOARDS
Grafana fundamentals
Set up and understand Grafana if you have no prior experience. This tutorial guides you through the entire process and covers the "Data source" and "Dashboards" steps to the right.
DATA SOURCES
Add your first data source
Learn how in the docs
DASHBOARDS
Create your first dashboard
Learn how in the docs
Dashboards
Starred dashboards
Recently viewed dashboards
Latest from the blog
Grafana Labs + adform
Nov 18
How to centralize thousands of data sources with Grafana: Inside Adform's observability system
Over the course of two decades, Adform grew from a dream between friends huddled in a basement to a leading advertising tech platform powering more

At this point, you have finished the grafana installation and configuration on the Rocky Linux 9 server. You also run the grafana with Nginx reverse proxy and secured the grafana installation via HTTPS and change the default admin user for grafana.

With this, you'll next install and configure Prometheus and node_exporter for gathering metrics of your system and add Prometheus as the data source to your grafana.

Installing Prometheus and Node Exporter

Prometheus is an open-source system monitoring and alerting toolkit. It's a powerful tool for collecting and querying metric data. The Prometheus works by pulling(scraping) real-time metrics from application services and hosts on a regular cadence by sending HTTP requests on metrics endpoints, then compresses and stores them in a time-series database.

The node_exporter is one of the most popular prometheus scrapers for pulling metrics of operating systems. The node_exporter is designed to monitor the host system, it exposes a wide variety of hardware- and kernel-related metrics.

You'll now install prometheus and node_exporter on the Rocky Linux 9 server.

Create a new repository file *'/etc/yum.repos.d/prometheus.repo'* using the below nano editor command.

```
sudo nano /etc/yum.repos.d/prometheus.repo
```

Add the following lines to the file, which is the prometheus repository provided by Packagecloud.io.

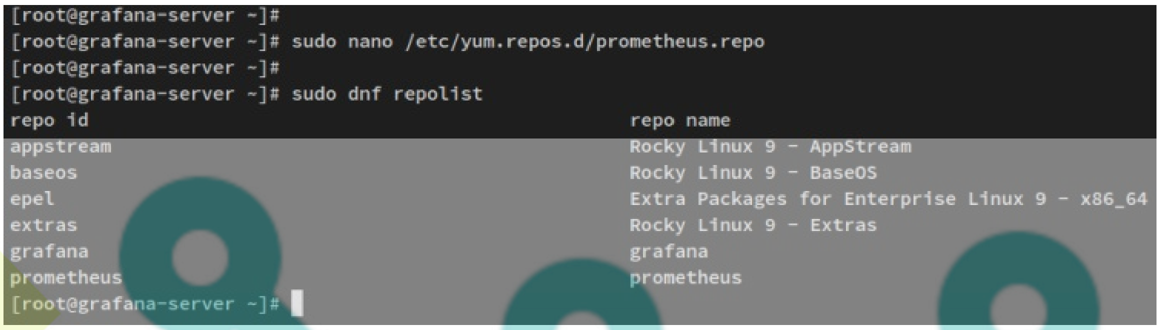
```
[prometheus]
name=prometheus
baseurl=https://packagecloud.io/prometheus-rpm/release/el/$releasever/$basearch
repo_gpgcheck=1
enabled=1
gpgkey=https://packagecloud.io/prometheus-rpm/release/gpgkey
       https://raw.githubusercontent.com/lest/prometheus-rpm/master/RPM-GPG-KEY-prometheus-rpm
gpgcheck=1
metadata_expire=300
```

Save and close the file when you are finished.

You can now verify the list of available repositories on your system via the dnf command below.

```
sudo dnf repolist
```

In the below output confirm that the prometheus repository added to your system.

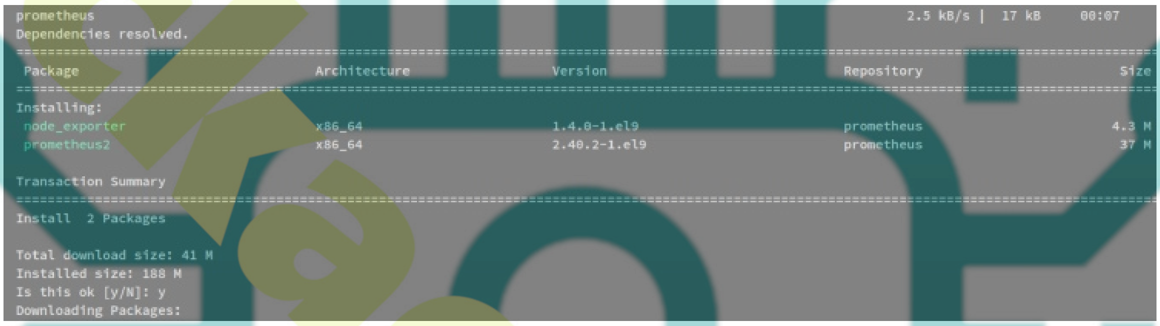


```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo nano /etc/yum.repos.d/prometheus.repo
[root@grafana-server ~]#
[root@grafana-server ~]# sudo dnf repolist
repo id                                              repo name
appstream                                            Rocky Linux 9 - AppStream
baseos                                               Rocky Linux 9 - BaseOS
epel                                                 Extra Packages for Enterprise Linux 9 - x86_64
extras                                               Rocky Linux 9 - Extras
grafana                                              grafana
prometheus                                           prometheus
[root@grafana-server ~]#
```

Now install prometheus and node_exporter packages via the following dnf command.

```
sudo dnf install prometheus2 node_exporter
```

When prompted, input y to confirm and press ENTER. And the prometheus and node_exporter installation will begin.

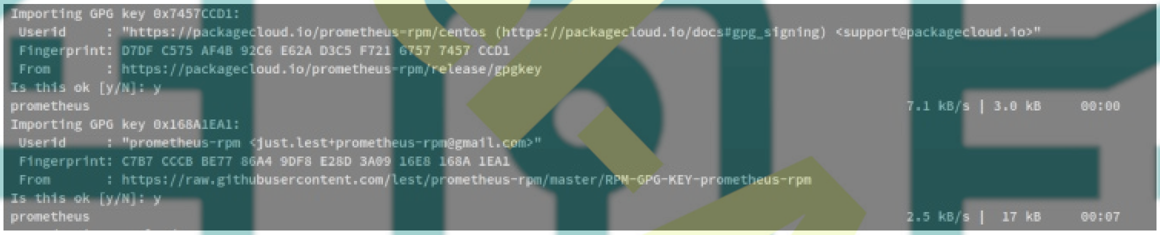


```
prometheus                                                                        2.5 kB/s |  17 kB     00:07
Dependencies resolved.
=================================================================================================================
 Package                 Architecture             Version                   Repository                   Size
=================================================================================================================
Installing:
 node_exporter           x86_64                   1.4.0-1.el9               prometheus                  4.3 M
 prometheus2             x86_64                   2.40.2-1.el9              prometheus                   37 M

Transaction Summary
=================================================================================================================
Install  2 Packages

Total download size: 41 M
Installed size: 188 M
Is this ok [y/N]: y
Downloading Packages:
```

Also, when prompted to add the GPG key, input y to confirm.



```
Importing GPG key 0x7457CCD1:
 Userid     : "https://packagecloud.io/prometheus-rpm/centos (https://packagecloud.io/docs#gpg_signing) <support@packagecloud.io>"
 Fingerprint: D7DF C575 AF4B 92C6 E62A D3C5 F721 6757 7457 CCD1
 From       : https://packagecloud.io/prometheus-rpm/release/gpgkey
Is this ok [y/N]: y
prometheus                                                                        7.1 kB/s | 3.0 kB     00:00
Importing GPG key 0x168A1EA1:
 Userid     : "prometheus-rpm <just.lest+prometheus-rpm@gmail.com>"
 Fingerprint: C7B7 CCCB BE77 86A4 9DF8 E28D 3A09 16E8 168A 1EA1
 From       : https://raw.githubusercontent.com/lest/prometheus-rpm/master/RPM-GPG-KEY-prometheus-rpm
Is this ok [y/N]: y
prometheus                                                                        2.5 kB/s |  17 kB     00:07
```

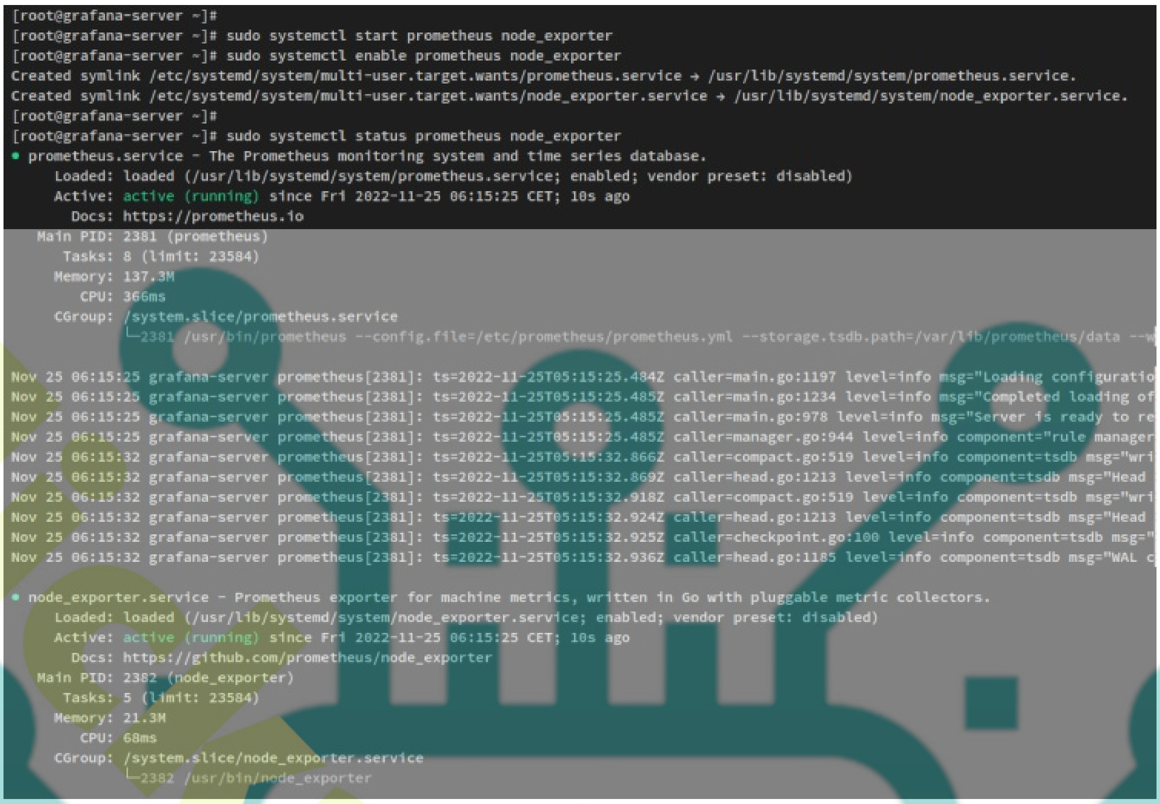
After prometheus and node_exporter is installed, run the following systemctl command to start and enable bot services, the prometheus, and node_exporter services.

```
sudo systemctl start prometheus node_exporter
sudo systemctl enable prometheus node_exporter
```

Now verify the promethues and node_exporter services using the below command.

```
sudo systemctl status prometheus node_exporter
```

In the below output confirm that the prometheus and node_exporter service is running and enabled. Both services will be run automatically at boot.



```
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl start prometheus node_exporter
[root@grafana-server ~]# sudo systemctl enable prometheus node_exporter
Created symlink /etc/systemd/system/multi-user.target.wants/prometheus.service → /usr/lib/systemd/system/prometheus.service.
Created symlink /etc/systemd/system/multi-user.target.wants/node_exporter.service → /usr/lib/systemd/system/node_exporter.service.
[root@grafana-server ~]#
[root@grafana-server ~]# sudo systemctl status prometheus node_exporter
● prometheus.service - The Prometheus monitoring system and time series database.
     Loaded: loaded (/usr/lib/systemd/system/prometheus.service; enabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 06:15:25 CET; 10s ago
       Docs: https://prometheus.io
   Main PID: 2381 (prometheus)
      Tasks: 8 (limit: 23584)
     Memory: 137.3M
        CPU: 366ms
     CGroup: /system.slice/prometheus.service
             └─2381 /usr/bin/prometheus --config.file=/etc/prometheus/prometheus.yml --storage.tsdb.path=/var/lib/prometheus/data --w

Nov 25 06:15:25 grafana-server prometheus[2381]: ts=2022-11-25T05:15:25.484Z caller=main.go:1197 level=info msg="Loading configuratio
Nov 25 06:15:25 grafana-server prometheus[2381]: ts=2022-11-25T05:15:25.485Z caller=main.go:1234 level=info msg="Completed loading of
Nov 25 06:15:25 grafana-server prometheus[2381]: ts=2022-11-25T05:15:25.485Z caller=main.go:978 level=info msg="Server is ready to re
Nov 25 06:15:25 grafana-server prometheus[2381]: ts=2022-11-25T05:15:25.485Z caller=manager.go:944 level=info component="rule manager
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.866Z caller=compact.go:519 level=info component=tsdb msg="wri
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.869Z caller=head.go:1213 level=info component=tsdb msg="Head
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.918Z caller=compact.go:519 level=info component=tsdb msg="wri
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.924Z caller=head.go:1213 level=info component=tsdb msg="Head
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.925Z caller=checkpoint.go:100 level=info component=tsdb msg="
Nov 25 06:15:32 grafana-server prometheus[2381]: ts=2022-11-25T05:15:32.936Z caller=head.go:1185 level=info component=tsdb msg="WAL c

● node_exporter.service - Prometheus exporter for machine metrics, written in Go with pluggable metric collectors.
     Loaded: loaded (/usr/lib/systemd/system/node_exporter.service; enabled; vendor preset: disabled)
     Active: active (running) since Fri 2022-11-25 06:15:25 CET; 10s ago
       Docs: https://github.com/prometheus/node_exporter
   Main PID: 2382 (node_exporter)
      Tasks: 5 (limit: 23584)
     Memory: 21.3M
        CPU: 68ms
     CGroup: /system.slice/node_exporter.service
             └─2382 /usr/bin/node_exporter
```

The prometheus is running on port 9090 by default, while node-exporter is running on default port 9100. You'll now add both ports 9090 and 9100 to the firewalld.

Run the below firewall-cmd command to add the prometheus and node_exporter port to the firewalld. Then, reload the firewalld to apply new changes.

```
sudo firewall-cmd --add-port={9090/tcp,9100/tcp} --permanent
sudo firewall-cmd --reload
```

With the firewalld configured, you can access the prometheus and node_exporter installation. But, you'll next go a step further by configuring both prometheus and node_exporter.

Configuring Prometheus and Node Exporter

After prometheus and node_exporter is installed, you will now set up both services with the following configurations:

- Enabling the basic authentication for prometheus.
- Enabling HTTPS/SSL on prometheus web interface.
- Setting u scrape_config for the target machine.

Enable basic_auth and HTTPS/SSL for Prometheus

On the default installation, prometheus comes without password authentication and runs on the HTTP protocol. To secure the installation, you'll then set up the basic_auth and enable HTTPS on your prometheus installation.

Before setting up the basic_auth on prometheus, run the following dnf command to install the 'httpd-tools' package. This package provides the command 'htpasswd' that can be used to generate a bcrypt password.

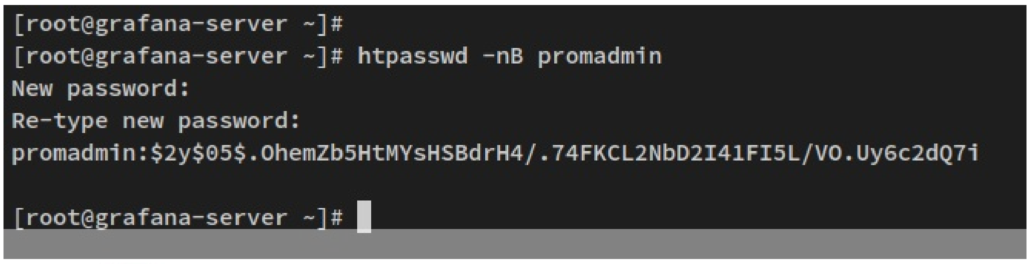
```
sudo dnf install httpd-tools -y
```

Next, run the below command to generate a password for your prometheus installation. In this example, you will use the user 'promadmin' as the default user for the prometheus basic_auth.

```
htpasswd -nB promadmin
```

When prompted, input the password that will be used for prometheus *basic_auth* and repeat the password.

In the below output, you can see the generated bcrypt password. Copy the username and generated password.



```
[root@grafana-server ~]#
[root@grafana-server ~]# htpasswd -nB promadmin
New password:
Re-type new password:
promadmin:$2y$05$.OhemZb5HtMYsHSBdrH4/.74FKCL2NbD2I41FI5L/VO.Uy6c2dQ7i

[root@grafana-server ~]#
```

Now create a new prometheus configuration file '*/etc/prometheus/web.yml*' using the below nano editor command. This configuration will enable HTTPS/SSL and the basic_auth on your Prometheus installation.

```
sudo nano /etc/prometheus/web.yml
```

Add the following lines to the file and be sure to change the path of SSL certificates and the username and password that will be sued for your prometheus.

```
# tls certificates
tls_server_config:
  cert_file: fullchain.pem
  key_file: privkey.pem

# basic_auth
basic_auth_users:
  promadmin: $2y$05$.OhemZb5HtMYsHSBdrH4/.74FKCL2NbD2I41FI5L/VO.Uy6c2dQ7i
```

The '*tls_server_config*' section allows you to enable secure HTTPS/SSL connections, and '*basic_auth_users*' will enable the basic password authentication on your prometheus installation.

Save the file and exit the editor when you are finished.

Next, open the file '*/etc/default/prometheus*' using the following nano editor command.

```
sudo nano /etc/default/prometheus
```

Add the following line to the '**PROMETHEUS_OPTS**' section.

```
--web.config.file=/etc/prometheus/web.yml
```

The option '*--web.config.file*' will specify the configuration or prometheus web interface. In this example, the configuration is '*/etc/prometheus/web.yml*'.

Save the file and exit the editor when you are done.

Setting up scrape_config for Target Machine

After enabled the prometheus basic_auth and HTTPS/SSL, you'll next add the target machine to the promethues 'scrape_config' section.

Open the promethues configuration file '*/etc/prometheus/prometheus.yml*' using the below nano editor command.

```
sudo nano /etc/prometheus/prometheus.yml
```

On the scrape_config section, change the default configuration with the following lines.

```
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'.
    # add settings for certificate and authentication
    scheme: https
    tls_config:
      cert_file: /etc/prometheus/server.crt
      key_file: /etc/prometheus/server.key
      # if using self-signed certificate, set [true]
      insecure_skip_verify: true
    basic_auth:
      username: 'promadmin'
      password: 'password'

    static_configs:
      # if using a valid certificate, set the same hostname in the certificate
      - targets: ["localhost:9090"]
  - job_name: "node_exporter"

    static_configs:
      - targets: ["192.168.5.120:9100"]
```

With this configuration, you'll set up two jobs with the name 'prometheus' and 'node_exporter'. And be sure to change the basic_auth section on the 'promethues' job.

- On the '*prometheus*' job, you will enable the HTTPS secure connection and enable the 'basic_auth' for authentication. In the 'prometheus' job, the target host is 'localhost:9090', which is the prometheus server.
- On the '*node_exporter*' job, the target is the node_exporter service itself, which is running on port '9100'.

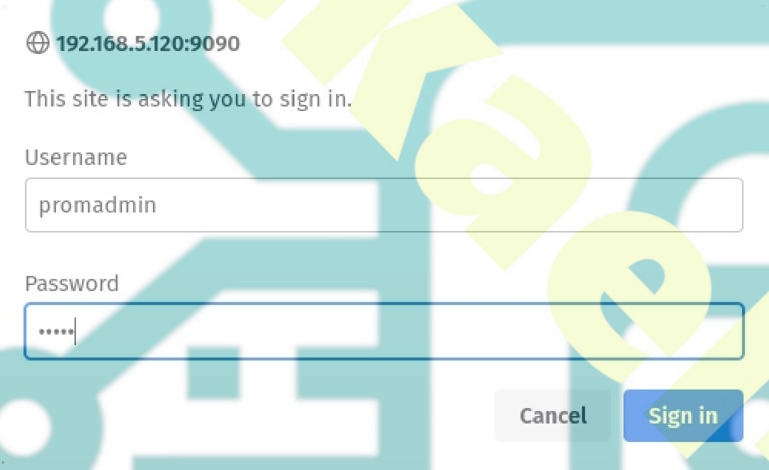
Now run the below systemctl command to restart both prometheus and node_exporter services and apply new changes.

```
sudo systemctl restart prometheus node_exporter
```

At this point, you have taken prometheus to the next step by enabling basic authentication and securing via SSL/HTTPS. You also added two scrapes for collecting metrics, the '*prometheus*', and '*node_exporter*'.

To verify your installation, open up the web browser and visit the server IP address with port '9090' (i.e: https://192.168.5.120:9090/).

You'll now be prompted with the basic authentication, input the user '*promadmin*' and the password that you've created.



192.168.5.120:9090

This site is asking you to sign in.

Username

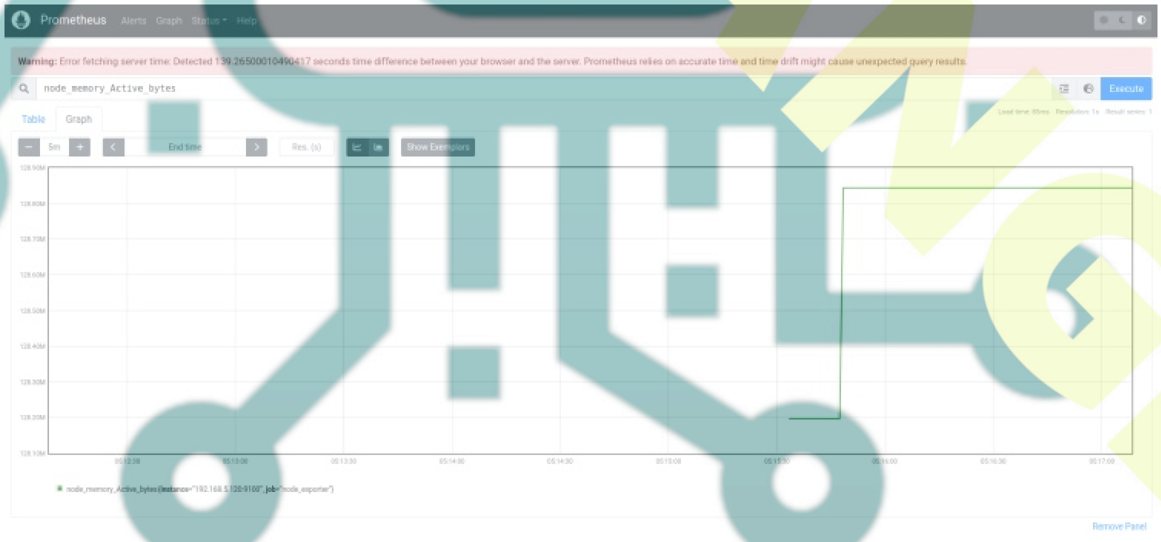
promadmin

Password

•••••

After logging in, you should have the promethues dashboard. Input the query such as '*node_memory_Active_bytes*' and click '**Execute**'. You should get the metrics from the query that you have executed.

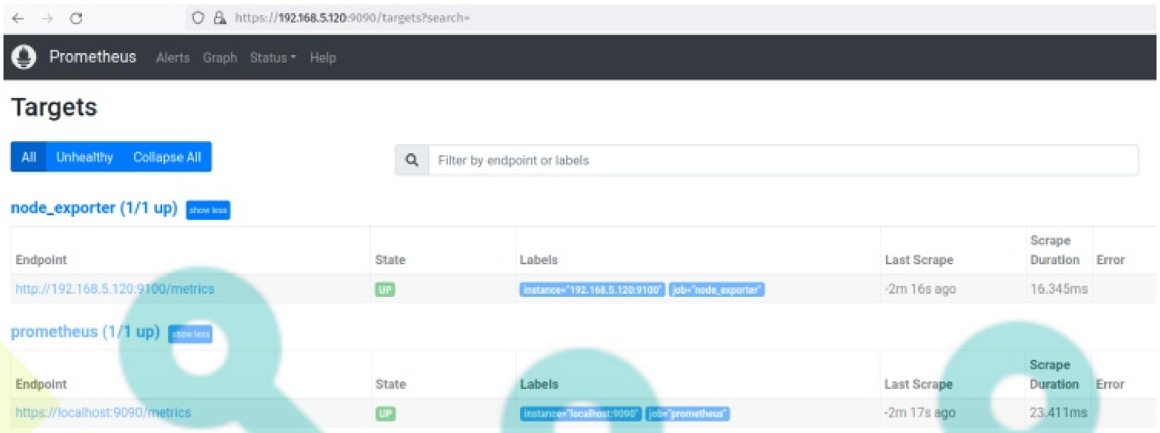
The query '*node_memory_Active_bytes*' is provided by the '*node_exporter*' for checking the active memory.



Warning: Error fetching server time: Detected 139.26500010490417 seconds time difference between your browser and the server. Prometheus relies on accurate time and time drift might cause unexpected query results.

```
node_memory_Active_bytes
```

Next, click on the '**Status**' menu and select '**Target**'. You should have two different jobs that you have created, the '*prometheus*' and '*node_exporter*'. Both the '*prometheus*' and '*node_exporter*' jobs status is up.



node_exporter (1/1 up)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://192.168.5.120:9100/metrics	UP	instance="192.168.5.120:9100" job="node_exporter"	-2m 16s ago	16.345ms	

prometheus (1/1 up)

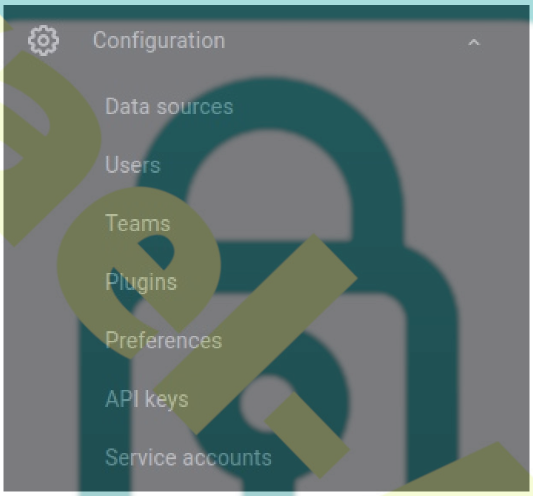
Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
https://localhost:9090/metrics	UP	instance="localhost:9090" job="prometheus"	-2m 17s ago	23.411ms	

With the prometheus and node_exporter is configured, you'll next add the prometheus as a data source to grafana.

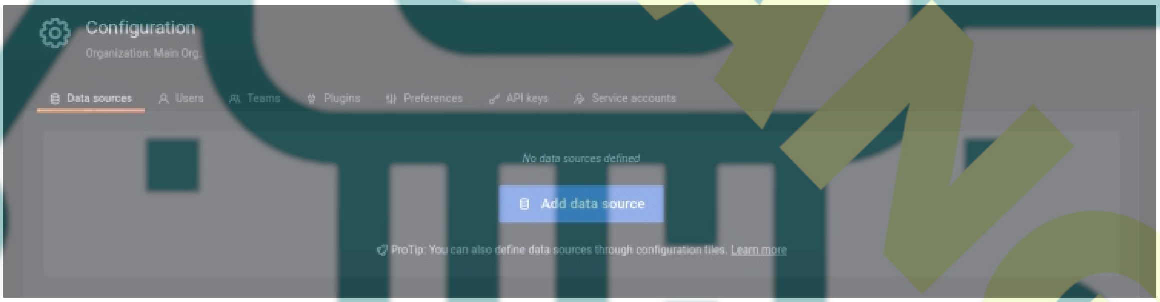
Adding Prometheus as Data Source to Grafana

Grafana supports multiple data sources such as MySQL, PostgreSQL, Influxdb, Graphite, Prometheus, and many more. In this step, you'll add the promethues as the data source to the grafana.

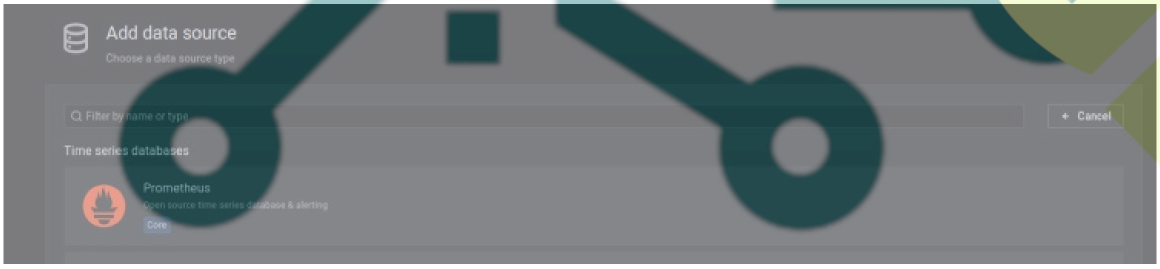
On the grafana dashboard, click the '**Configuration**' menu and select '**Data Sources**'.



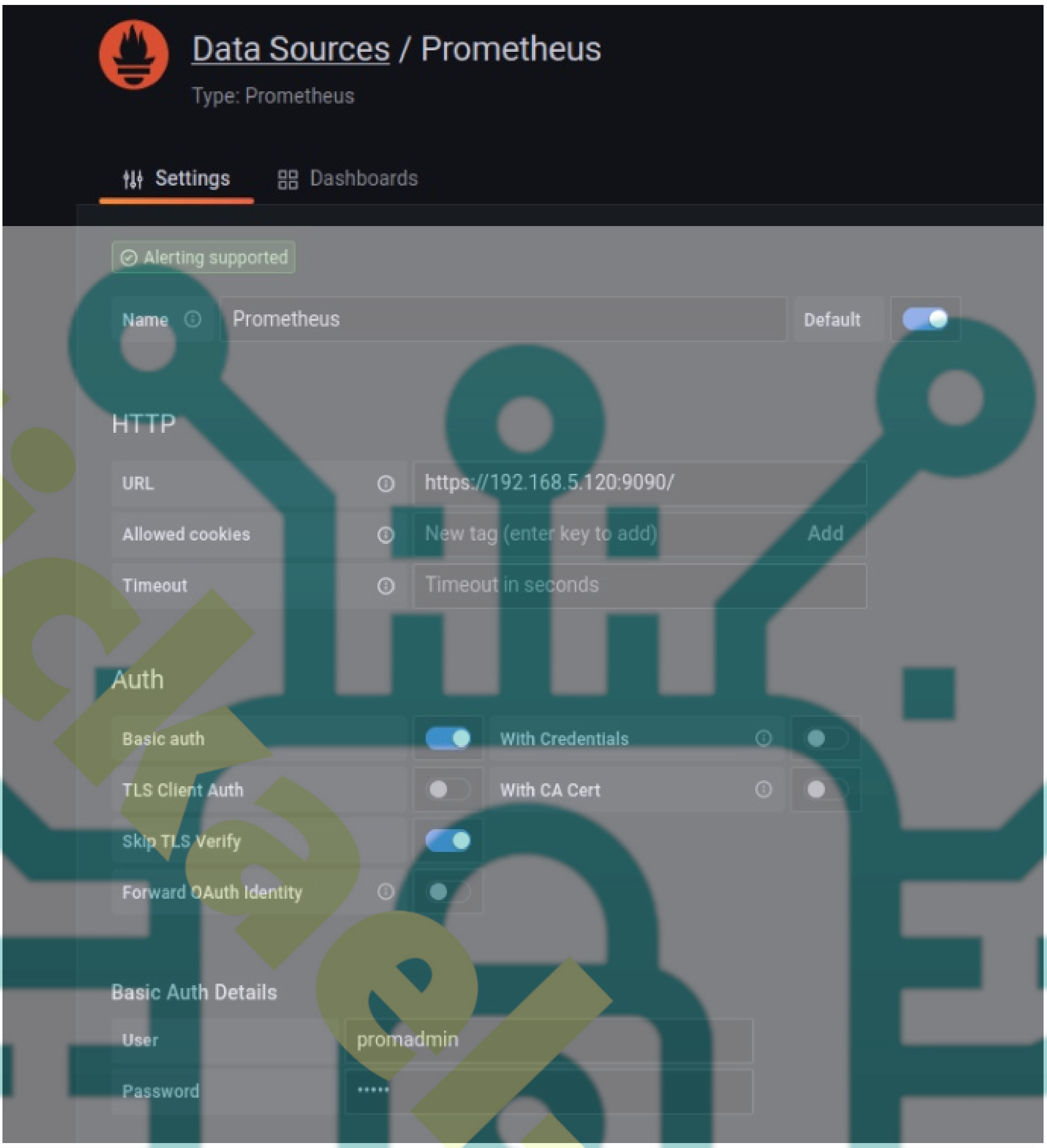
Now click '**Add data source**' to add the new data source.



Select the data source type you want to add. This example is '**Prometheus**'.



Now input details of prometheus configuration - the '*prometheus*' scrape_config. Be sure to enable the '**Basic auth**' and the '**Skip TLS Verify**' (if you're using the self-signed certificates).



Data Sources / Prometheus

Type: Prometheus

Alerting supported

Name: Prometheus

Default: on

HTTP

URL: https://192.168.5.120:9090/

Allowed cookies: New tag (enter key to add)

Timeout: Timeout in seconds

Auth

Basic auth: on

With Credentials: off

TLS Client Auth: off

With CA Cert: off

Skip TLS Verify: on

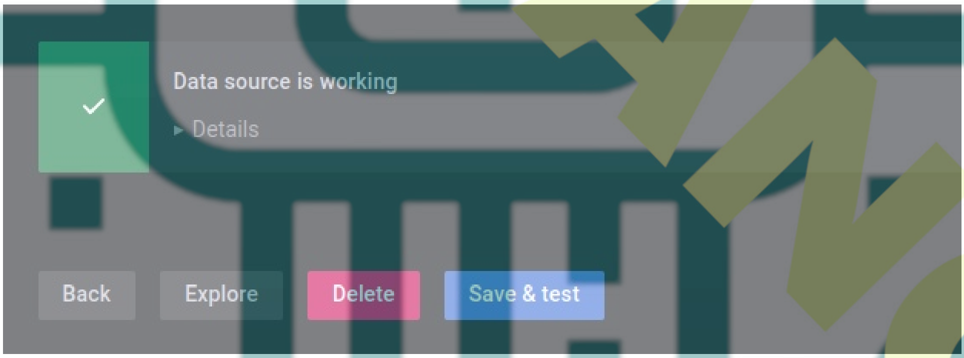
Forward OAuth Identity: off

Basic Auth Details

User: promadmin

Password: •••••

Scroll down to the bottom page and click the '**Save & test**' to confirm. if you have the output message such as '**Data source is working**', then you are ready to go and added the prometheus data source to grafana.



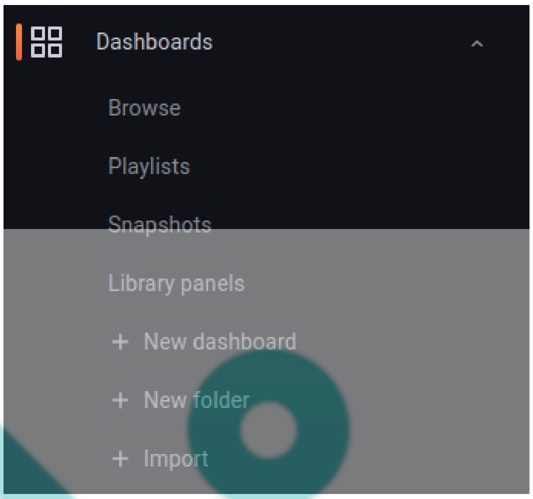
Data source is working

Setting up Dashboard Monitoring

With Prometheus added to Grafana as a data source, you can create a new dashboard for monitoring your system. You can create the dashboard manually for each cell or by importing some examples of the Grafana dashboard from the Grafana dashboard repository.

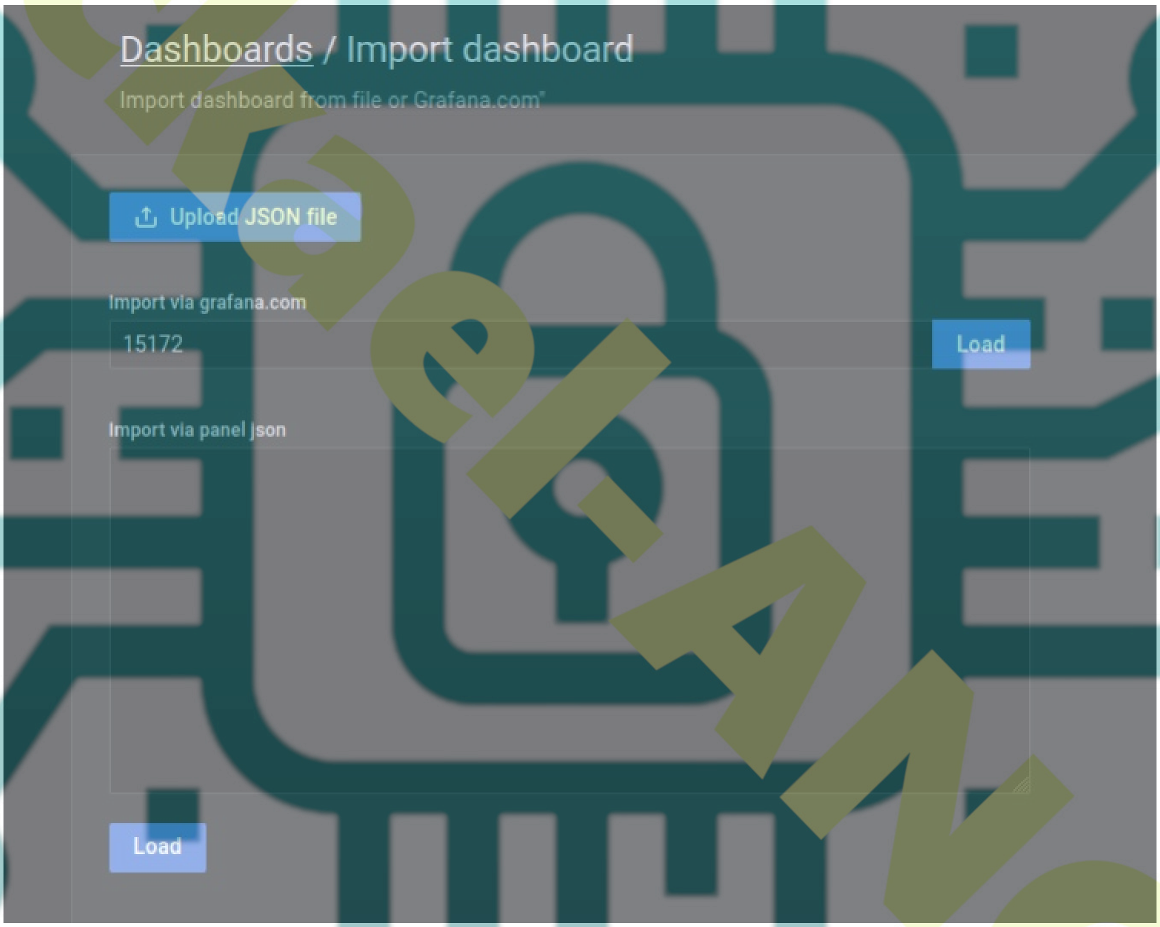
In this step, you'll set up the Grafana dashboard by importing the available dashboard online to Grafana.

Click on the '**Dashboard**' menu and select '**Import**'.



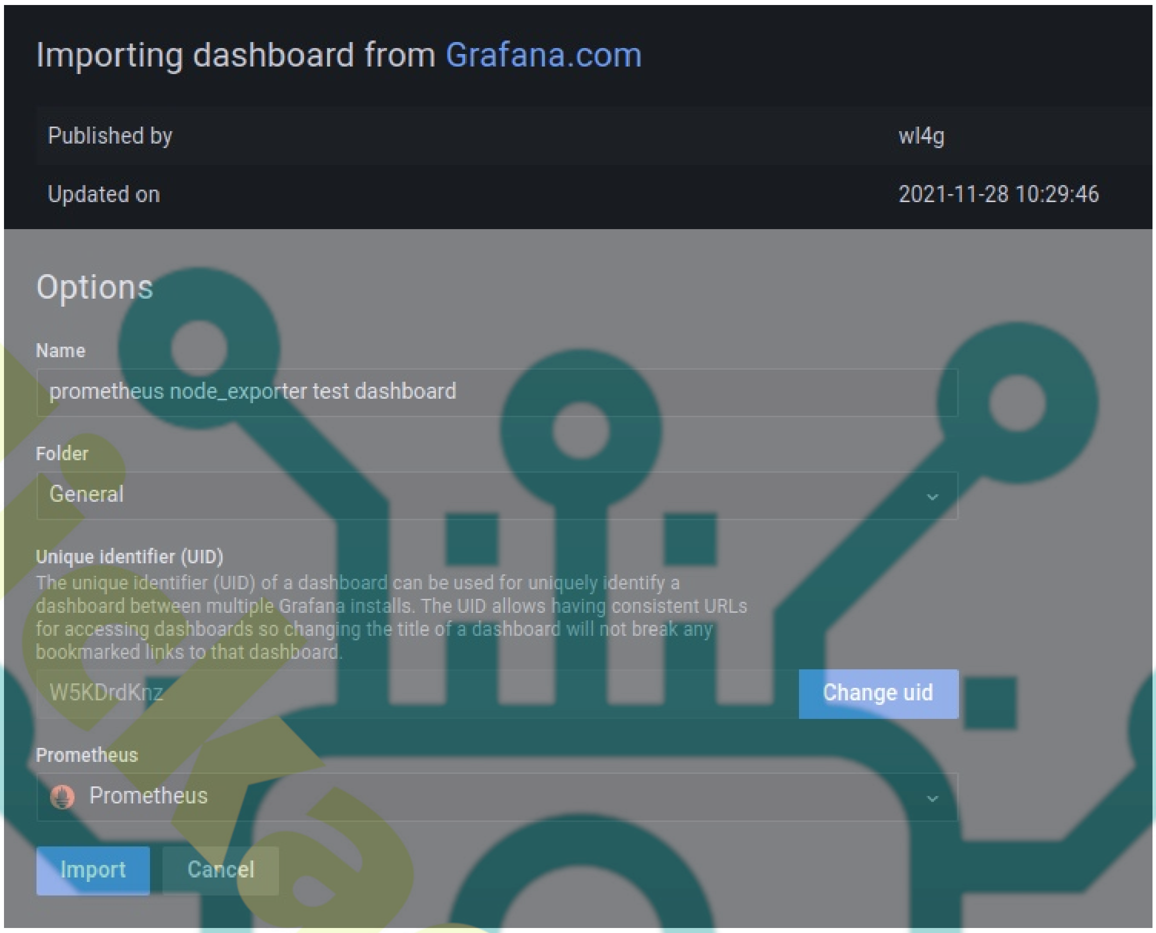
Now you can find examples of a dashboard from the [Grafana Dashboard repository](). This example uses the Grafana dashboard with id '*15172*'.

Input the dashboard id you want to import, '**15172**', then click '**Load**'.


Dashboards / Import dashboard

Import dashboard from file or Grafana.com

Now, input the name of the new dashboard and select '**Prometheus**' as the data source. Click '**Import**' to confirm.



Importing dashboard from Grafana.com

Published by wl4g

Updated on 2021-11-28 10:29:46

Options

Name

prometheus node_exporter test dashboard

Folder

General

Unique identifier (UID)

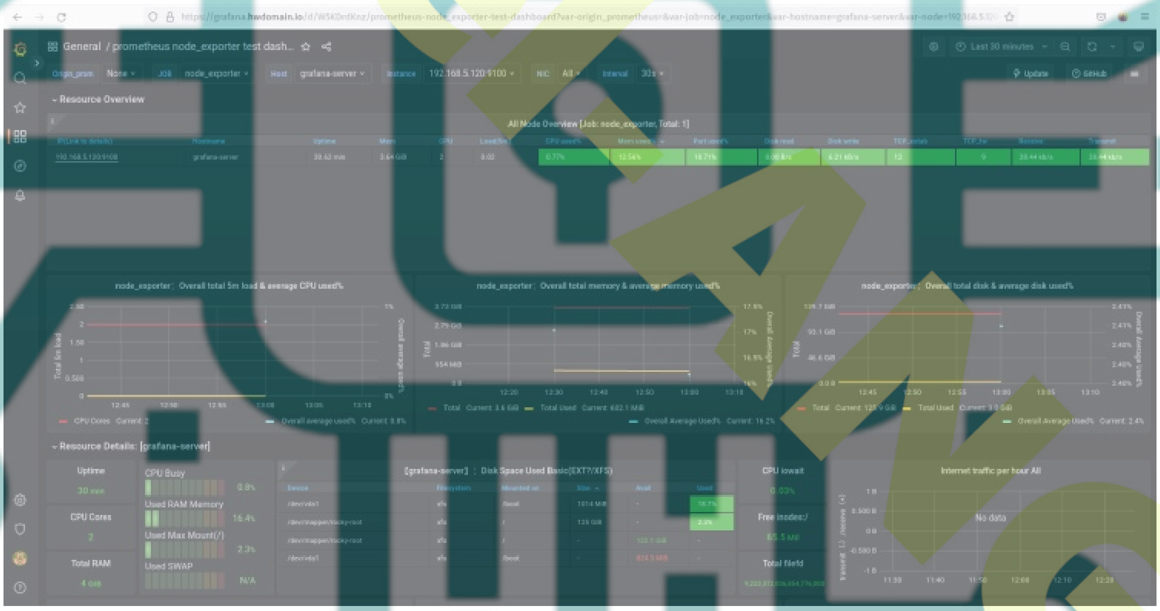
The unique identifier (UID) of a dashboard can be used for uniquely identify a dashboard between multiple Grafana installs. The UID allows having consistent URLs for accessing dashboards so changing the title of a dashboard will not break any bookmarked links to that dashboard.

W5KDrdKnz

Prometheus

Prometheus

In the below screenshot confirm that the new grafana dashboard with the prometheus data source for monitoring systems is created.



General / prometheus node_exporter test dash...
Last 30 minutes
Resource Overview
All Node Overview [Job: node_exporter, Total: 1]
node_exporter : Overall total 5m load & average CPU used%
node_exporter : Overall total memory & average memory used%
node_exporter : Overall total disk & average disk used%
Resource Details: [grafana-server]
Uptime
CPU Cores
Total RAM
CPU Busy
Used RAM Memory
Used Max Mount(/)
Used SWAP
[grafana-server] : Disk Space Used Basic(EXT?/XFS)
CPU iowait
Free inodes:/
Total filefd
Internet traffic per hour All
No data

Conclusion

In this tutorial, you installed Grafana for data visualization with Nginx as a reverse proxy on a Rocky Linux 9 server. You also installed the Prometheus and node_exporter along with Grafana.

The Prometheus runs with SSL/TLS connection enabled, basic_auth module enabled for user authentication, and configured two scrapes for collecting system metrics with the Prometheus itself and the node_expoter.

Lastly, you added Prometheus as a data source to Grafana and imported a dashboard for data visualization with data collected by Prometheus and node_exporter.

From here, you can add another exporter for your application to Prometheus and visualize all the metrics via the Grafana data visualization dashboard.