How to Remove And Limit Journal Log Size in Linux?

written by sysadmin | 19 February 2025

systemd-journald is a service that collects and stores logging data, creating structured, indexed journals based on the logging information it receives. But sometimes the logs produced are so large that you have to remove and limit the journal log.

Problem

How to remove and limit journal log size in Linux?

Solution

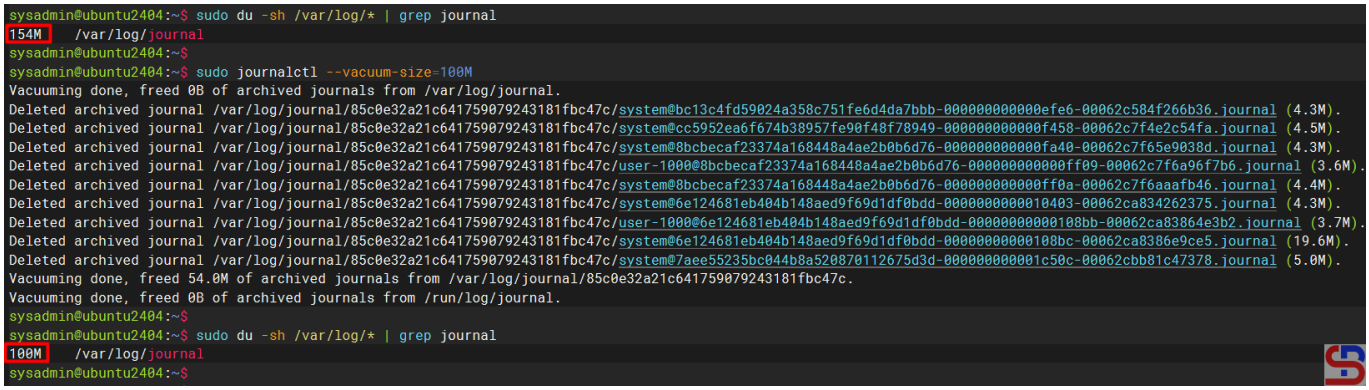
By default, the log journal is in the folder**/var/log/journal** and will retain 4 GB of data. You can limit the log size by using the format below:

```
journalctl --vacuum-size=BYTES
```

If you want to remove the journal log to 100 MB, you can use the command below:

```
journalctl --vacuum-size=100M
```

The journal log size will reduce to around 100 MB, like in the image below, after you execute the above command:



Remove the journal log

You can also make the journal log remain 100 MB without running the command above by configuring it in the **journald.conf** file. But the file is in a different folder in each Linux distro, so you have to search for the file using the following command:

```
find / -name journald.conf
```

After you find the file, for example, you want to limit the journal log to only 100 MB, then change the file so that it looks like the following:

```
[Journal]
SystemMaxUse=100MB
```

After that, restart the journald service using the command below:

```
systemctl restart systemd-journald.service
```

The journal log size should be produced in the folder /var /log, only measuring about 100 MB.

Note

If you want to test to generate lots of logging quickly, you can use the following command:

```
while true; do dd if=/dev/urandom bs=3 count=10000 | base64 | logger; done
```

At the same time, you can execute the following command to display the size of the journal log in another terminal:

```
while true; do du -s /var/log/journal/ ; sleep 5 ;done
```

What you should know is that the journal should not be disabled, especially if you use rsyslogd, because rsyslogd can get its information from journald, and they play very well together this way.

References

reintech.io
sematext.com
andreaskaris.github.io
unix.stackexchange.com

How to Install Nagios on RockyLinux?

written by sysadmin | 19 February 2025

The previous article explained how to install the Nagios application on Ubuntu. This article will explain how to install the Nagios application on RockyLinux.

Problem

How to install Nagios on RockyLinux?

Solution

Below are the steps to install Nagios on RockyLinux and work

on RockyLinux 9.5 and below. But I think these steps should apply to installing Nagios on RHEL and its derivatives, such as CentOS, AlmaLinux, and so on.

1. Download the packages

Install the packages needed to install Nagios using the command below:

```
 yum install -y httpd php php-devel gcc glibc glibc-common gd gd-devel make net-snmp-* wget zip unzip php-mysqlnd php-mysql*
```

2. Create a user and a group

Create a user and group for Nagios using the commands:

```
useradd nagios
groupadd nagcmd
usermod -G nagcmd nagios
usermod -G nagcmd apache
```

3. Download Nagios

Use the commands below to download Nagios, where at the time of this writing (February 2025), the latest version of Nagios is version 4.5.9:

```
cd /tmp
wget
https://github.com/NagiosEnterprises/nagioscore/archive/refs/heads/master.zip
-O nagios.zip
unzip nagios.zip
cd nagioscore-master/
```

4. Install Nagios

By default, Linux will create a Nagios folder in the /usr/local folder to save Nagios configuration files. So, use the following commands to install Nagios:

```
./configure
```

Info

If you want to save all Nagios files in a non-default folder, for example, in the /data folder, then use the following command: **./configure –prefix=/data/nagios**

After that, run the following commands:

```
make all
make install
make install-init
make install-commandmode
make install-config
make install-webconf
```

5. Create the password

Create a password for the user to access the Nagios application. Usually, nagiosadmin is a popular username for Nagios, but you can create another username.

```
htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
```

```
[root@RockyLinux9 nagioscore-master]# htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
[root@RockyLinux9 nagioscore-master]#
```

Create a password for the nagiosadmin user

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, execute the below command: **htpasswd -c /data/nagios/etc/htpasswd.users nagiosadmin**

6. Download Nagios Plugins

Plugins are compiled executables or scripts (Perl, shell, Python, PHP, Ruby, etc.) that can be run from a command line to check the status of a host or service. Nagios Core uses the results from plugins to determine the current status of hosts and services on your network. As of this writing (February 2025), the latest version of Nagios plugins is

version 2.4.12. You can check the latest version of Nagios plugins on this site. Run the following commands to download Nagios plugins:

```
cd /tmp
wget
https://github.com/nagios-plugins/nagios-plugins/archive/refs/heads/master.zip -O nagios-plugins.zip
unzip nagios-plugins.zip
cd nagios-plugins-master/
```

7. Install Nagios Plugins

After that, install Nagios plugins using the following commands:

```
./tools/setup
sudo ./configure --with-nagios-user=nagios --with-nagios-group=nagios
sudo make
sudo make install
```

8. Check the configuration

After installing Nagios and Nagios plugins, run the following command to check the configuration of Nagios:

```
/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
```

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, execute the below command: /data/nagios/bin/nagios -v /data/nagios/etc/nagios.cfg

and make sure there is no error like in the image below:

```
[root@RockyLinux9 nagios-plugins-master]# sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.5.9
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2024-12-19
License: GPL

Website: https://www.nagios.org
Reading configuration data...
   Read main config file okay...
   Read object config files okay...

Running pre-flight check on configuration data...

Checking objects...
        Checked 8 services.
        Checked 1 hosts.
        Checked 1 host groups.
        Checked 0 service groups.
        Checked 1 contacts.
        Checked 1 contact groups.
        Checked 24 commands.
        Checked 5 time periods.
        Checked 0 host escalations.
        Checked 0 service escalations.
Checking for circular paths...
        Checked 1 hosts
        Checked 0 service dependencies
        Checked 0 host dependencies
        Checked 5 timeperiods
Checking global event handlers...
Checking obsessive compulsive processor commands...
Checking misc settings...

Total Warnings: 0
Total Errors:   0

Things look okay - No serious problems were detected during the pre-flight check
[root@RockyLinux9 nagios-plugins-master]#
```

Check the Nagios configuration

9. Turn on the services

Turn on the services using the commands below:

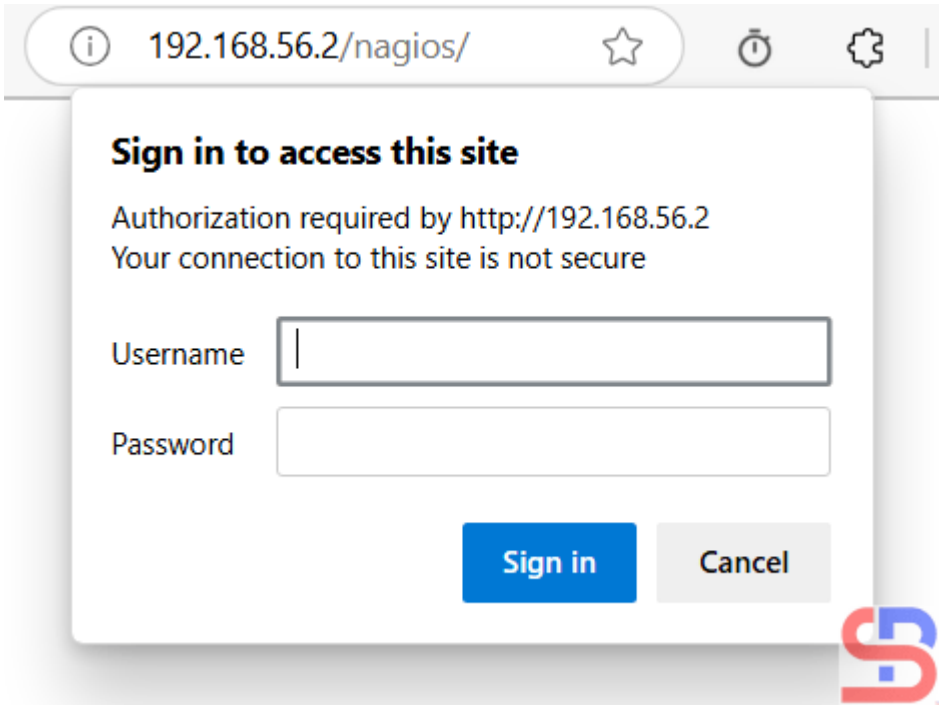
```
cp /lib/systemd/system/nagios.service /etc/systemd/system/
systemctl start httpd
systemctl start nagios
systemctl enable httpd
systemctl enable nagios
```

10. Check the application

Open your browser, and type in your browser:

```
http://your_ip_address_server/nagios
```

And there should be a display like the image below:

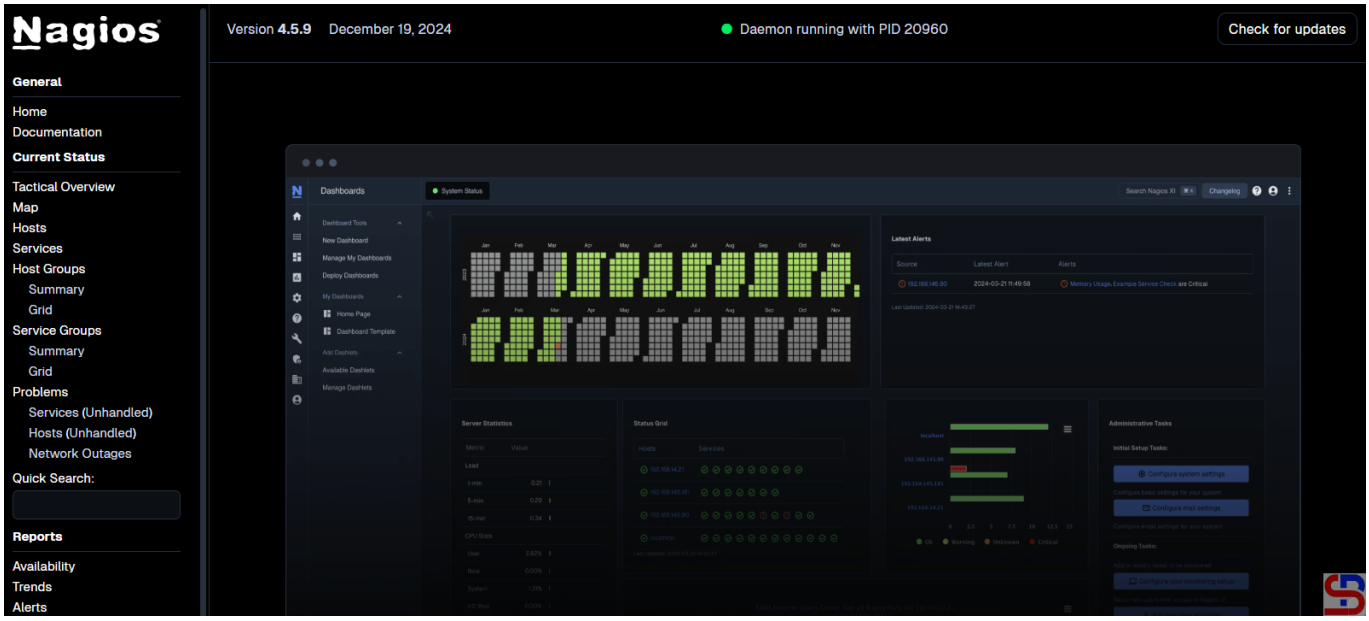


Open the Nagios application

If you don’t see the image like the above image in your browser, maybe the Firewall/IPTables is still on in your server. Run the following commands:

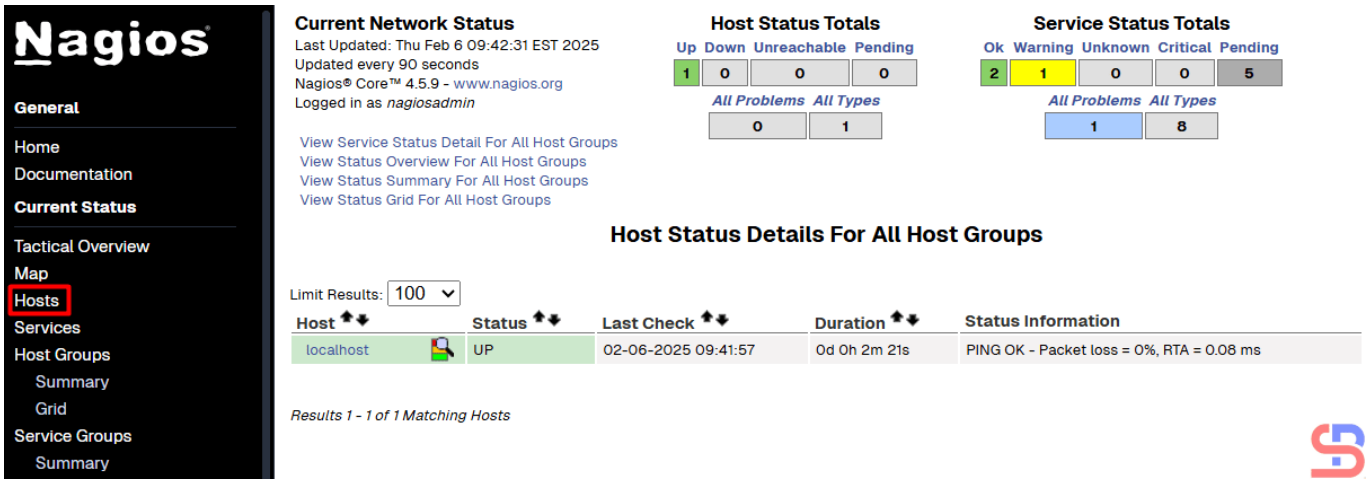
```
firewall-cmd --zone=public --add-port=80/tcp --permanent
firewall-cmd --reload
sed -i 's/SELINUX=.*/SELINUX=disabled/g' /etc/selinux/config
setenforce 0
```

Back to your browser again, and it should work now. Insert the username (**nagiosadmin**) and the password for Nagios. If the username and the password are right, the Nagios application will appear like this:



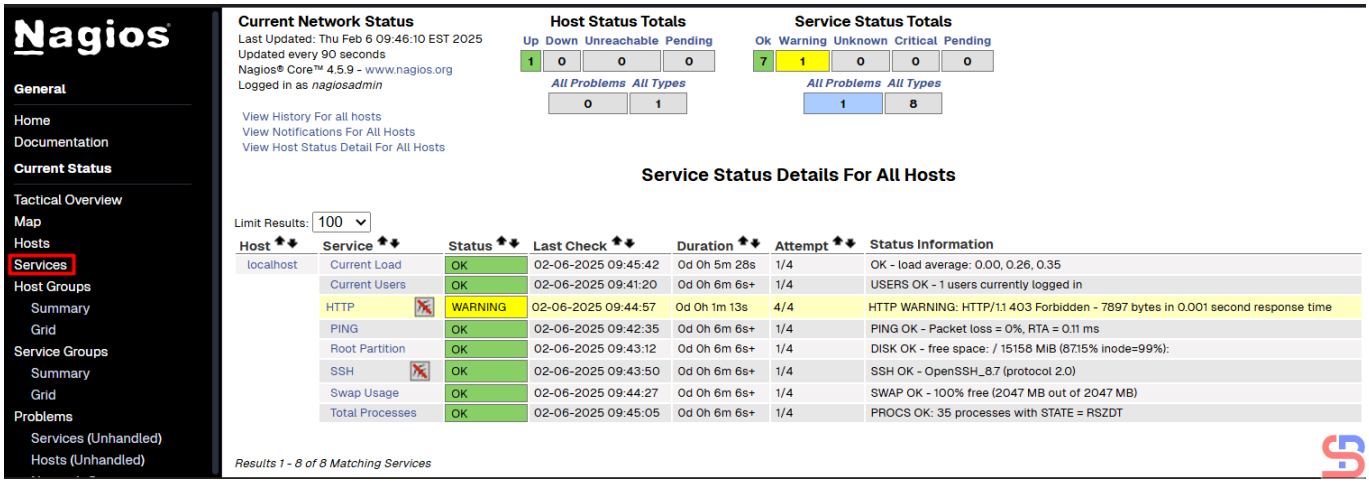
Open the Nagios application

If you want to know which hosts are being monitored by Nagios, click **Hosts**. Nagios will display the hosts that are being monitored:



Hosts monitored by Nagios

From the picture above, it can be seen that currently, Nagios is only monitoring the Nagios server or localhost. If you want to know which services are being monitored by Nagios, click **Services**. Nagios will display the services that are being monitored:



Services monitored by Nagios

From the picture above, you can see that Nagios monitored 8 services for the Nagios server or localhost.

Note

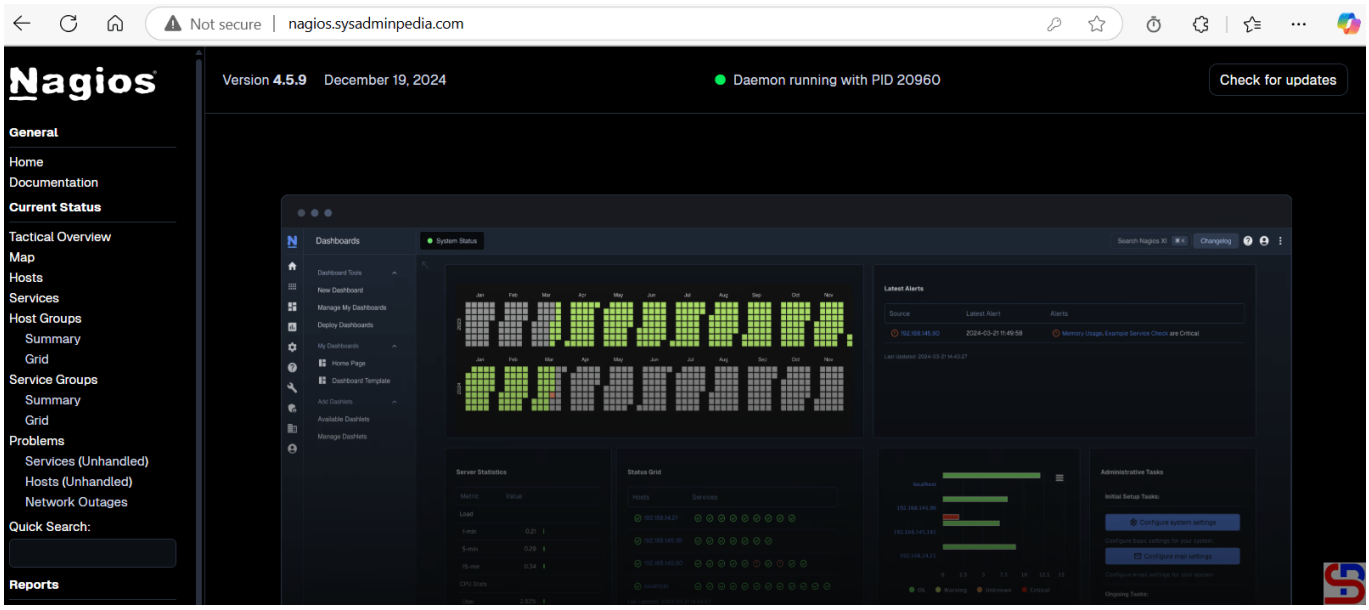
If you have a domain/subdomain and want to use that domain/subdomain for the Nagios application, create a virtual host on your web server. For example, I have the domain sysadminpedia.com and want to use the subdomain nagios.sysadminpedia.com for the Nagios application. So, I created the script below in the file **/etc/httpd/conf.d/nagios.sysadminpedia.com.conf**:

```
<VirtualHost *:80>
    ServerName nagios.sysadminpedia.com
    ServerAdmin sysadmin@nagios.sysadminpedia.com
    DocumentRoot /usr/local/nagios/share
    <Directory /usr/local/nagios/share>
         Options -Indexes +FollowSymLinks
         AllowOverride All
    </Directory>

    ErrorLog /var/log/httpd/nagios.sysadminpedia.com-error.log
    CustomLog /var/log/httpd/nagios.sysadminpedia.com-access.log combined
</VirtualHost>
```

Restart the web server, open your browser, and type your domain/subdomain for Nagios, and it should be like the image

below:



Using a domain or a subdomain for the Nagios application

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, you can copy the script above, but you must change the word **/usr/local to /data**.

References

support.nagios.com
tecmint.com
statusengine.org

How to Display a File Without the Hashtag Sign on Linux?

written by sysadmin | 19 February 2025

If you open the configuration file on the Linux Server, you will usually find many comments used in the file, which are started by a hashtag sign (#). This aims to explain a configuration that is under comment. But sometimes you want to see the configuration without having to look at the

explanation of the configuration.

Problem

How to display a file without the hashtag sign on Linux?

Solution

For example, I want to see the default configuration file for the fstab file, which is located at **/etc/fstab**, and by default, it will look like the image below:

```
[root@RockyLinux9 etc]# cat fstab

#
# /etc/fstab
# Created by anaconda on Thu Sep 19 07:29:32 2024
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/rl_rockylinux9-root /                       xfs     defaults        0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot                   xfs     defaults        0 0
/dev/mapper/rl_rockylinux9-swap none                    swap    defaults        0 0
[root@RockyLinux9 etc]#
```

The fstab file

As far as I know, there are 3 methods to display the file without the hash sign:

1. Using the grep command

To use the grep command, you can use the format below:

```
grep -v '#' filename
```

In this case, type the command below:

```
grep -v '#' /etc/fstab
```

And it will look like the image below:

```
[root@RockyLinux9 etc]# grep -v '#' /etc/fstab

/dev/mapper/rl_rockylinux9-root /                       xfs     defaults        0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot                   xfs     defaults        0 0
/dev/mapper/rl_rockylinux9-swap none                    swap    defaults        0 0
[root@RockyLinux9 etc]#
```

Using the grep command

2. Using the sed command

To use the sed command, you can use the format below:

```
sed '/#/d' filename
```

In this case, type the command below:

```
sed '/#/d' /etc/fstab
```

And it will look like the image below:

```
[root@RockyLinux9 etc]# sed '/#/d' /etc/fstab

/dev/mapper/rl_rockylinux9-root /                       xfs     defaults        0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot                   xfs     defaults        0 0
/dev/mapper/rl_rockylinux9-swap none                    swap    defaults        0 0
[root@RockyLinux9 etc]#
```

Using the sed command

3. Using the awk command

To use the awk command, you can use the format below:

```
awk '! /#/' filename
```

In this case, type the command below:

```
awk '! /#/' /etc/fstab
```

And it will look like the image below:

```
[root@RockyLinux9 etc]# awk '! /#/' /etc/fstab

/dev/mapper/rl_rockylinux9-root /                       xfs     defaults        0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot                   xfs     defaults        0 0
/dev/mapper/rl_rockylinux9-swap none                    swap    defaults        0 0
[root@RockyLinux9 etc]#
```

Using the awk command

Note

Usually, when you use either of the three commands above to display a sentence that does not start with a hash mark in a Linux file, the result may be a lot of empty spaces, for example, in the zabbix_agentd.conf file, as shown in the image below:

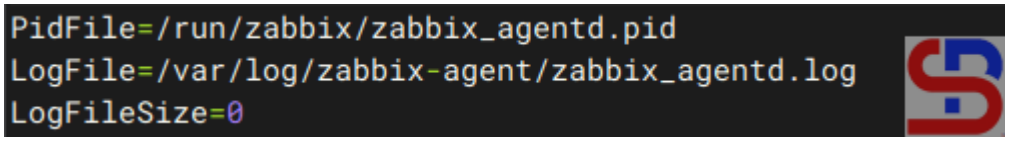


The initial output

So if you want to only display the results without any blank spaces, then use the command below:

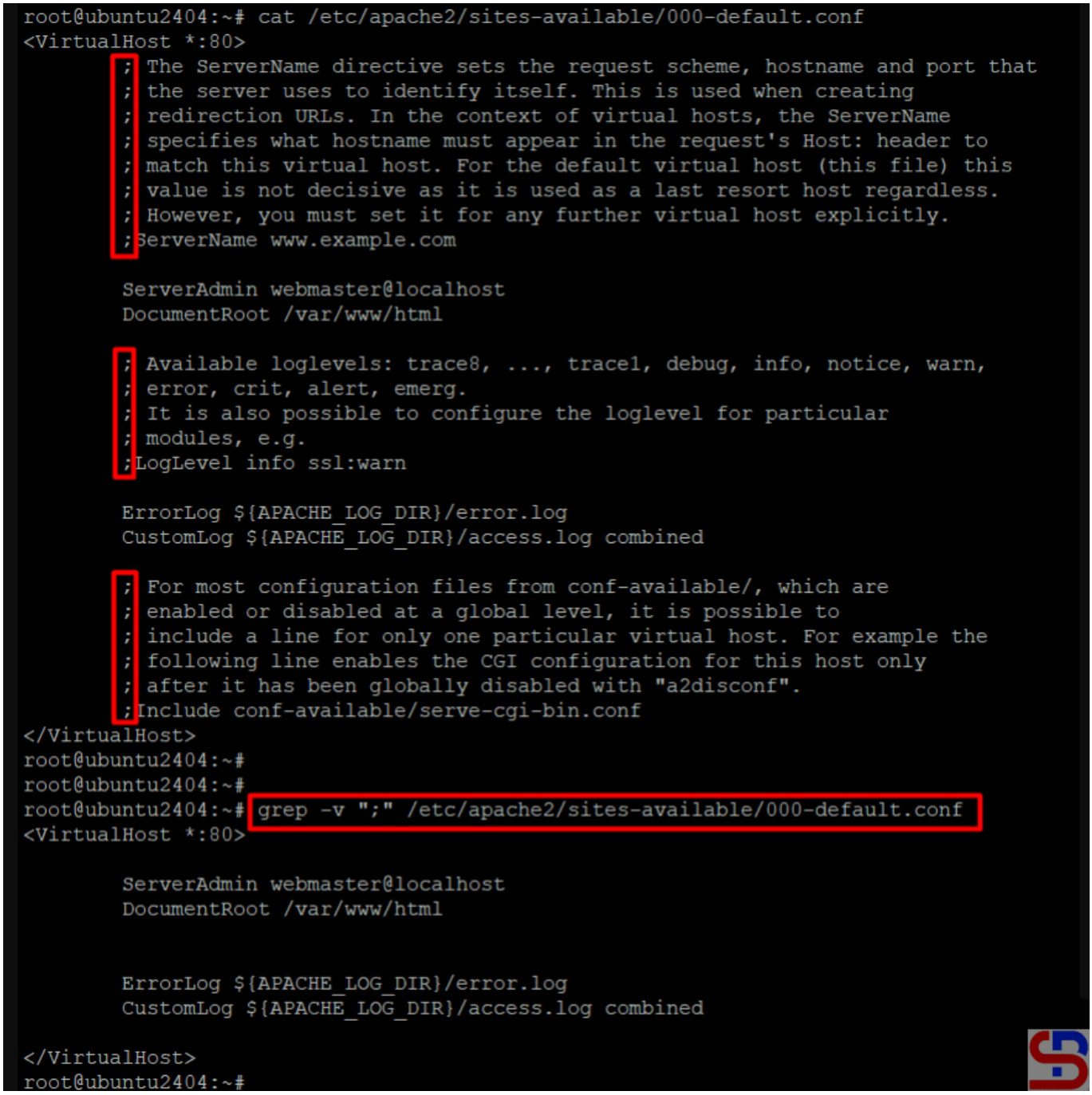
```
grep -v '^#' /etc/zabbix/zabbix_agentd.conf | grep -v '^$'
```

and the result will be as shown in the image below:



The expected result

If the file comments do not use a hashtag sign, for example, use a semicolon (;), replace the hashtag sign with a semicolon sign in one of the commands above, and it should display a configuration that does not start with the semicolon sign:



Using the semicolon sign

References

unix.com
unix.stackexchange.com

How to Install Nagios on Ubuntu?

written by sysadmin | 19 February 2025

Nagios is an event monitoring system created by Ethan Galstad and first released in 2002, which offers monitoring and alerting services for servers, switches, applications, and services. It alerts users when things go wrong and alerts them again when the problem has been resolved. There are 2 types of Nagios: Nagios XI for the enterprise version and Nagios Core for the free version. This article will explain how to install Nagios Core on Ubuntu.

Problem

How to install Nagios on Ubuntu?

Solution

Here are the steps to install Nagios on Ubuntu, and these steps work on Ubuntu 24.04 and below and I think it should also work on Debian.

1. Download the packages

Install the packages needed to install Nagios using the command below:

```
sudo apt-get install autoconf gcc libc6 make wget unzip apache2 php libapache2-mod-php libgd-dev libssl-dev
```

2. Create a user and a group

After that, create a user and group for Nagios using the commands:

```
sudo useradd nagios
sudo groupadd nagcmd
sudo usermod -a -G nagcmd nagios
sudo usermod -a -G nagcmd www-data
```

3. Download Nagios

Use the commands below to download Nagios, where at the time of this writing (February 2025), the latest version of Nagios is version 4.5.9:

```
cd /tmp
wget
https://github.com/NagiosEnterprises/nagioscore/archive/refs/heads/master.zip
-O nagios.zip
unzip nagios.zip
cd nagioscore-master/
```

4. Install Nagios

By default, Linux will create a Nagios folder in the /usr/local folder to save Nagios configuration files. So, use the following commands to install Nagios:

```
sudo ./configure --with-command-group=nagcmd --with-httpd-
conf=/etc/apache2/sites-enabled
```

Info

If you want to save all Nagios files in a non-default folder, for example, in the /data folder, then use the following command: **sudo ./configure –prefix=/data/nagios –with-command-group=nagcmd –with-httpd-conf=/etc/apache2/sites-enabled**

After that, run the following commands:

```
sudo make all
sudo make install
sudo make install-init
sudo make install-daemoninit
sudo make install-config
sudo make install-commandmode
sudo make install-webconf
sudo a2enmod rewrite
sudo a2enmod cgi
```

5. Create the password

Create a password for the user Nagios to access the Nagios application. Nagiosadmin is usually a popular username for Nagios, but you can create another.

```
sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
```

```
sysadmin@ubuntu2404:/tmp/nagioscore-master$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
sysadmin@ubuntu2404:/tmp/nagioscore-master$
```

Create the password

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, execute the below command: **sudo htpasswd -c /data/nagios/etc/htpasswd.users nagiosadmin**

6. Download Nagios Plugins

Plugins are compiled executables or scripts (Perl, shell, Python, PHP, Ruby, etc.) that can be run from a command line to check the status of a host or service. Nagios Core uses the results from plugins to determine the current status of hosts and services on your network. As of this writing (February 2025), the latest version of Nagios plugins is version 2.4.12. You can check the latest version of Nagios plugins on this site. Run the following commands to download Nagios plugins:

```
cd /tmp
wget
https://github.com/nagios-plugins/nagios-plugins/archive/refs/heads/master.zip -O nagios-plugins.zip
unzip nagios-plugins.zip
cd nagios-plugins-master/
```

7. Install Nagios Plugins

After that, install Nagios plugins using the following commands:

```
./tools/setup
sudo ./configure --with-nagios-user=nagios --with-nagios-group=nagios
sudo make
sudo make install
```

8. Check the configuration

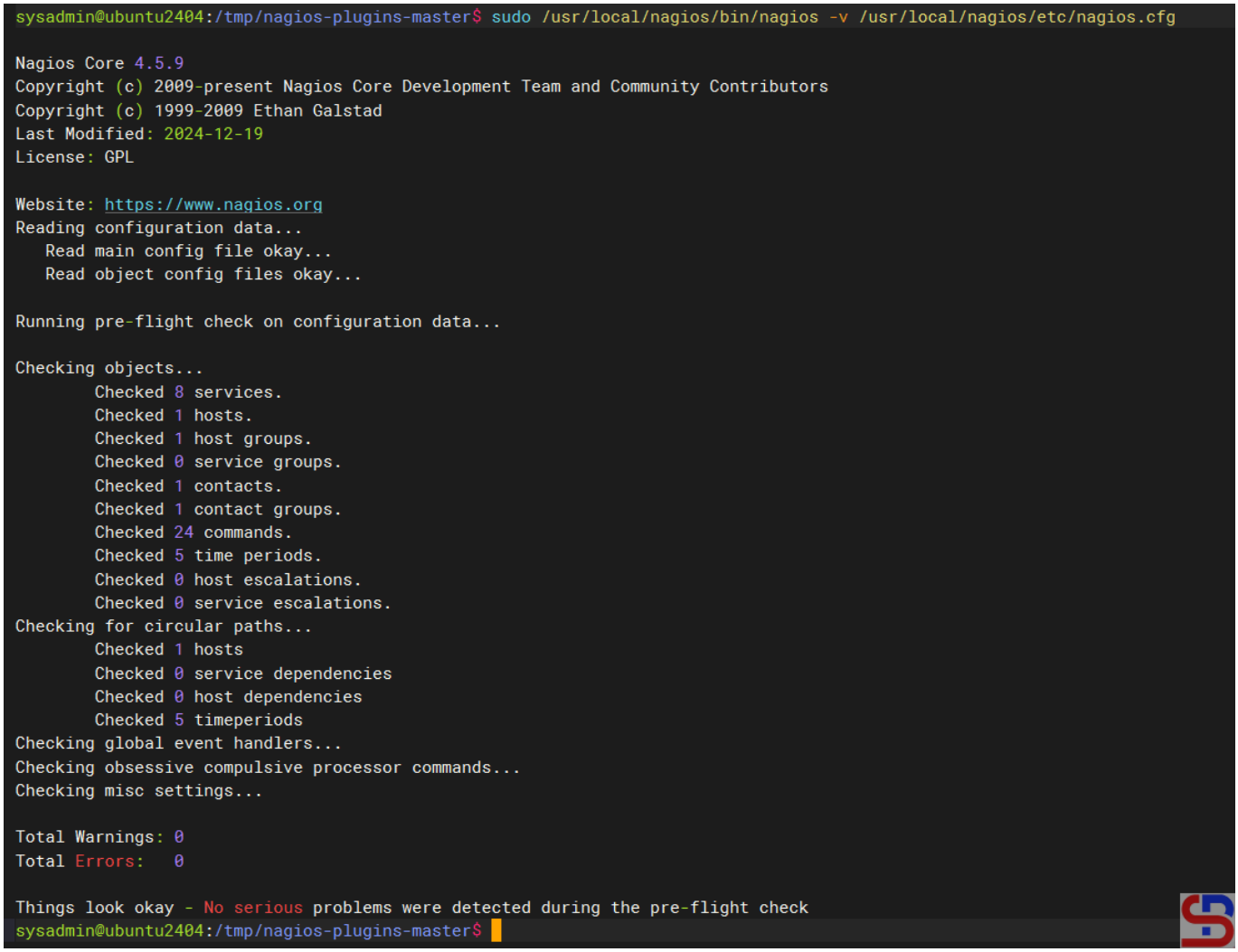
After installing Nagios and Nagios plugins, run the following command to check the configuration of Nagios:

```
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
```

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, execute the below command: **sudo /data/nagios/bin/nagios -v /data/nagios/etc/nagios.cfg**

and make sure there is no error like in the image below:



Check the Nagios configuration

9. Turn on the services

Turn on the services using the commands below:

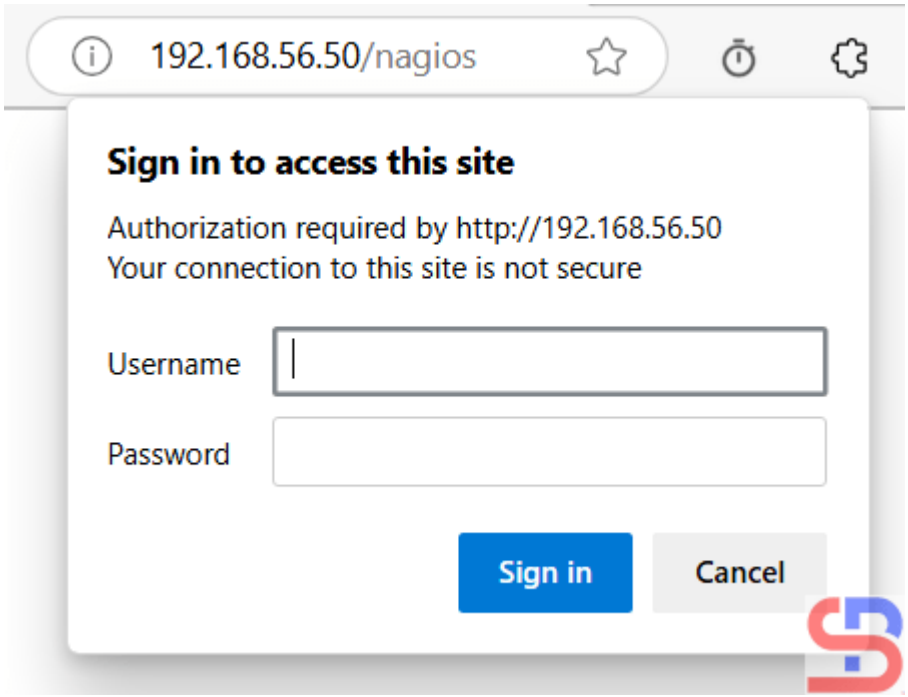
```
sudo systemctl start nagios.service
sudo systemctl enable nagios
sudo systemctl restart apache2.service
```

10. Check the application

Open your browser, and type in your browser:

```
http://your_ip_address_server/nagios
```

And there should be a display like the image below:

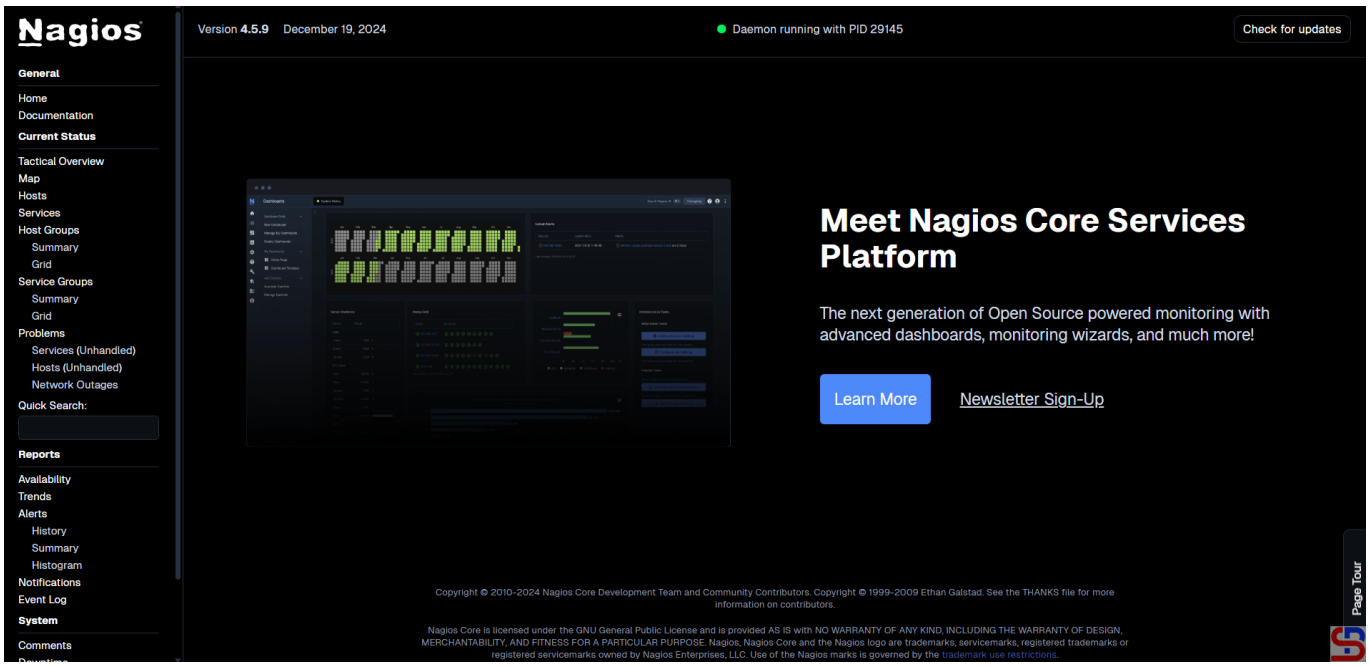


Open Nagios in the browser

If you don’t see the image like the above image in your browser, maybe the Firewall/IPTables is still on your server. Run the following commands:

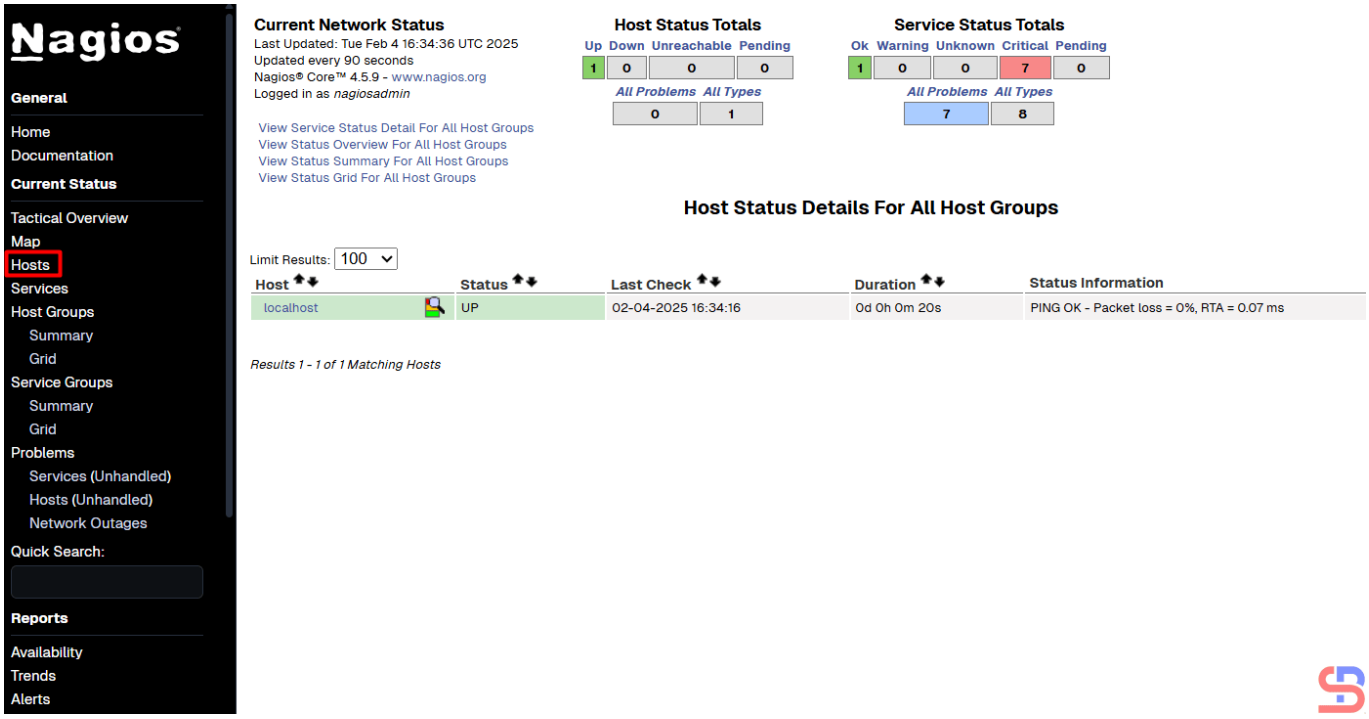
```
sudo ufw allow Apache
sudo ufw reload
```

Back to your browser again, and it should work now. Insert the username (**nagiosadmin**) and the password for Nagios. If the username and the password are right, the Nagios application will appear like this:



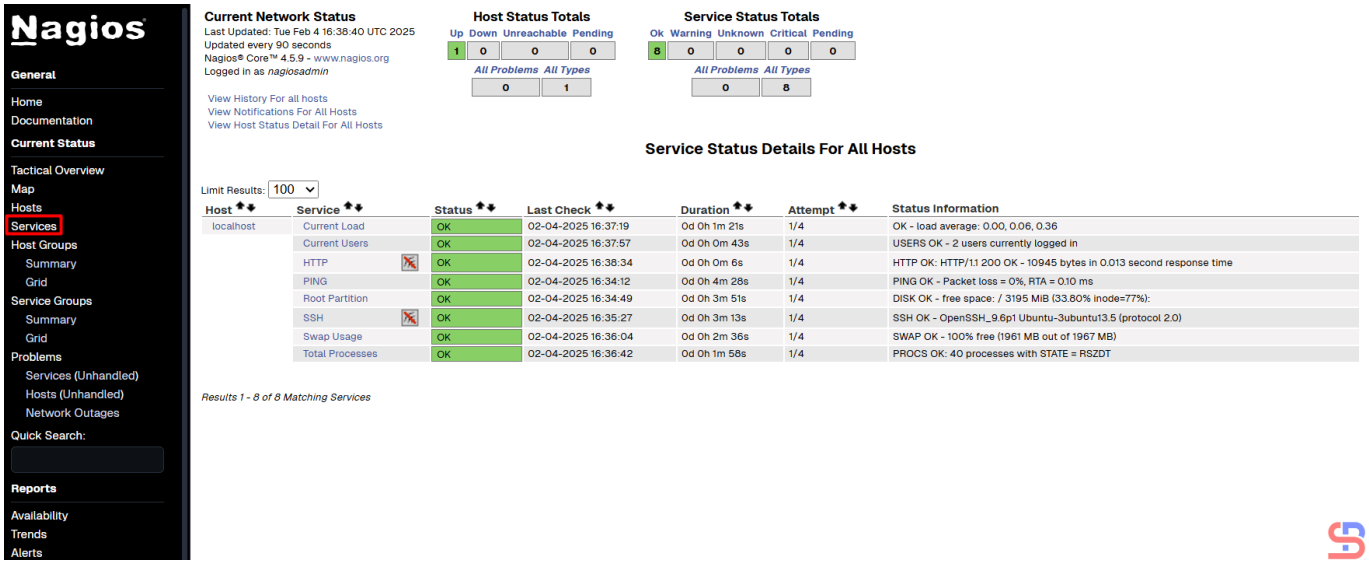
Nagios application

If you want to know which hosts are being monitored by Nagios, click **Hosts,** and Nagios will display the hosts that are being monitored:



Hosts monitored by Nagios

You can see from the picture above, Nagios only monitors the Nagios server or localhost. If you want to know which services are being monitored by Nagios, click **Services** then Nagios will display the services that are being monitored:



Services monitored by Nagios

From the picture above, Nagios monitors 8 services for the Nagios server or localhost.

Note

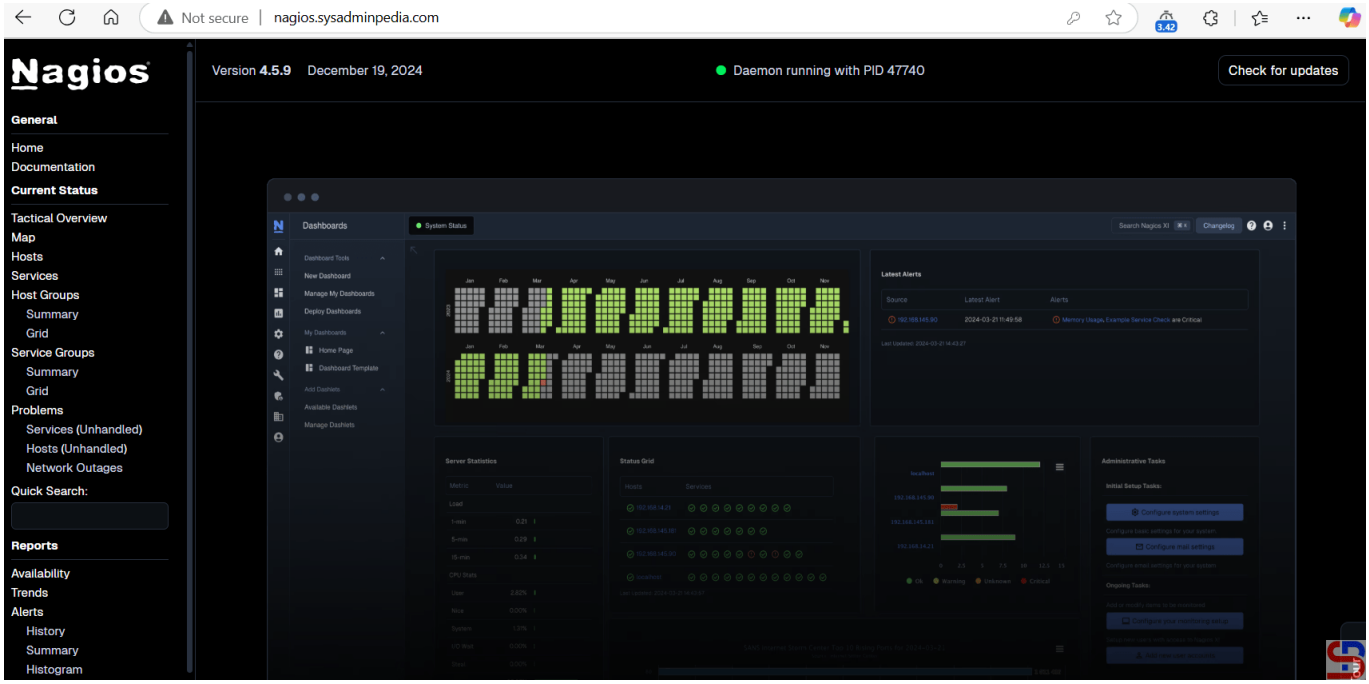
If you have a domain/subdomain and want to use that domain/subdomain for the Nagios application, create a virtual host on your web server. For example, I have the domain sysadminpedia.com and want to use the subdomain nagios.sysadminpedia.com for the Nagios application. So, I created the script below in the file **/etc/apache2/sites-enabled/nagios.sysadminpedia.com.conf**:

```
<VirtualHost *:80>
    ServerName nagios.sysadminpedia.com
    ServerAdmin sysadmin@nagios.sysadminpedia.com
    DocumentRoot /usr/local/nagios/share
    <Directory /usr/local/nagios/share>
         Options -Indexes +FollowSymLinks
```

```
        AllowOverride All
    </Directory>

    ErrorLog /var/log/apache2/nagios.sysadminpedia.com-error.log
    CustomLog /var/log/apache2/nagios.sysadminpedia.com-access.log combined
</VirtualHost>
```

Restart the webserver, open your browser, and type your domain/subdomain for Nagios, and it should be like the image below:



Using a domain/subdomain for the Nagios application

Info

If you installed Nagios in a non-default folder, for example, in the /data folder, you can copy the script above, but you must change the word **/usr/local to /data**

References

en.wikipedia.org
assets.nagios.com
techoverflow.net

How to Install Docker on the Linux Server?

written by sysadmin | 19 February 2025

A Docker is a platform for developing, shipping, and running container applications. Docker is like installing a virtual machine application on your laptop or server, whether it's VirtualBox, VMWare, or Xen, so you can test various operating systems or applications on it without putting your laptop or server in danger.

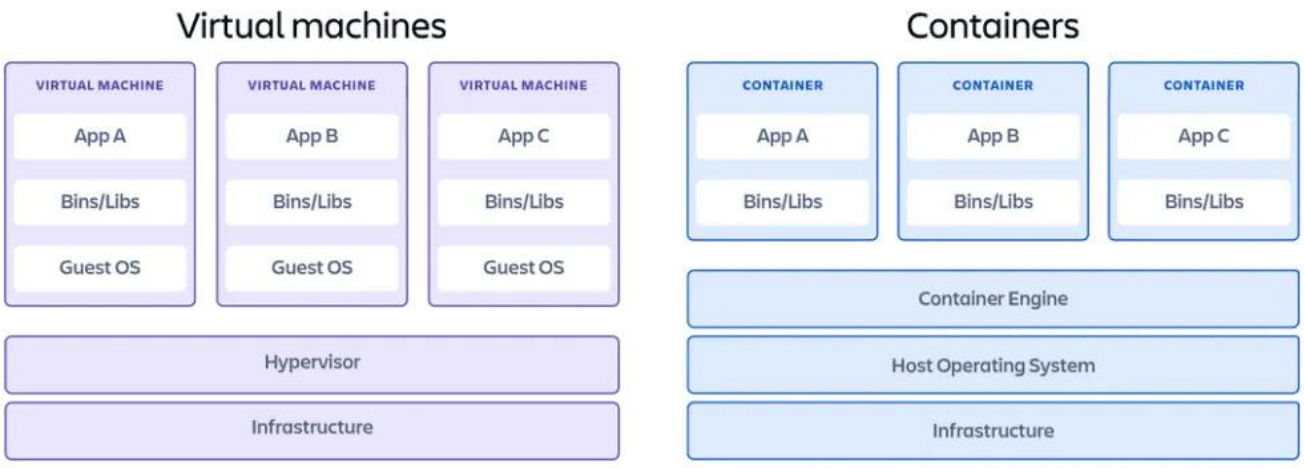
Problem

How to install Docker on the Linux server?

Solution

A. Docker summary

The key differentiator between containers and virtual machines is that virtual machines virtualize an entire machine down to the hardware layers, and containers only virtualize software layers above the operating system level. Take a look at the image below to make the difference between virtual machines and Docker clearer:



Comparison of Docker and Virtual Machine Architecture (image credit from atlassian.com)

The table below shows the comparison between virtual machines and Docker:

Comparison Item	Docker Container	VM
Isolation level	Low	High
Time required for startup	Seconds	Minutes
Image size	Several megabytes	Hundreds of megabytes to several gigabytes
Running performance (compared with bare metal servers)	Performance loss: < 2%	Performance loss: about 15%
Image portability	Not related to the platform	Related to the platform
Density	100 to 1000 on a single machine	10 to 100 on a single machine
Security	1. When the privilege of a user in a container is escalated from a common user to the **root** user, the user gains root permissions of the host machine. 2. Hardware isolation is not implemented, so containers are vulnerable to attacks.	1. The root permissions of a VM tenant are isolated from those of the host machine. 2. Hardware isolation is implemented to prevent VM escape and data exchange.

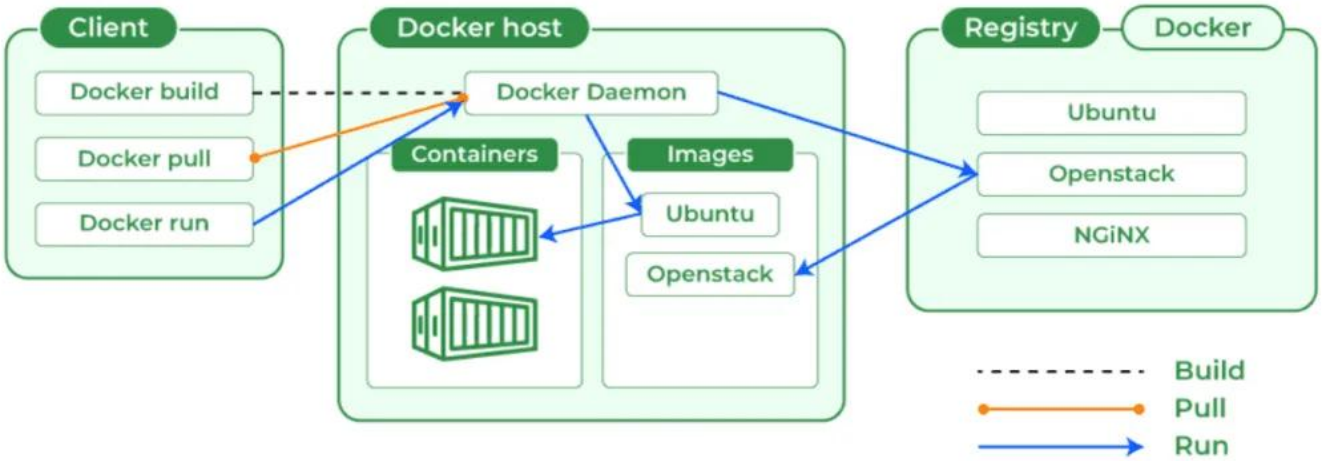
Comparison between Docker and virtual machine (Image credit from huawei.com)

Below is a brief explanation of the terms in Docker:

- □□□□□□ □□□□: Downloads images from Docker Hub if not locally available
- □□□□□□ □□□□□: Creates a local image using a Dockerfile, enabling custom images
- □□□□□□ □□□□:Uploads images to Docker Hub, allowing sharing
- □□□□□□ □□□: Takes an image to run a container, useful for starting web servers or other applications
- □□□□□□ □□□□□: Read-only templates forming the base of containers, including all application dependencies
- □□□□□□ □□□□□□: Interacts with Docker, sending instructions to the Docker daemon to execute tasks
- □□□□□□ **Daemon**: Handles all requests, including building, running, and distributing containers
- □□□□□□ □□□□□□□□□□: Include everything needed to run an application, such as code, libraries, and configurations

- □□□□□□ □□□□□□□□: Stores Docker images, with Docker Hub as a public registry and the option to create private ones

The image below is a picture of how the Docker works:



How Docker works (Image credit from geeksforgeeks.org)

B. Install Docker

In general, use the command below to install Docker on Linux:

```
curl -fsSL https://get.docker.com -o get-docker.sh
sh get-docker.sh
```

But after you execute the commands above, there is an error like this when you install it in RockyLinux:

```
ERROR: Unsupported distribution ‘rocky’
```

You have to install Docker manually using these commands:

```
sudo dnf config-manager --add-repo
https://download.docker.com/linux/rhel/docker-ce.repo
sudo dnf -y install docker-ce docker-ce-cli containerd.io docker-buildx-
plugin docker-compose-plugin
```

Or when you install Docker in OpenSUSE, you get an error like this:

ERROR: Unsupported distribution ‘opensuse-leap’

Use the commands below to install Docker in OpenSUSE:

```
sudo zypper install -y docker docker-compose docker-compose-switch
```

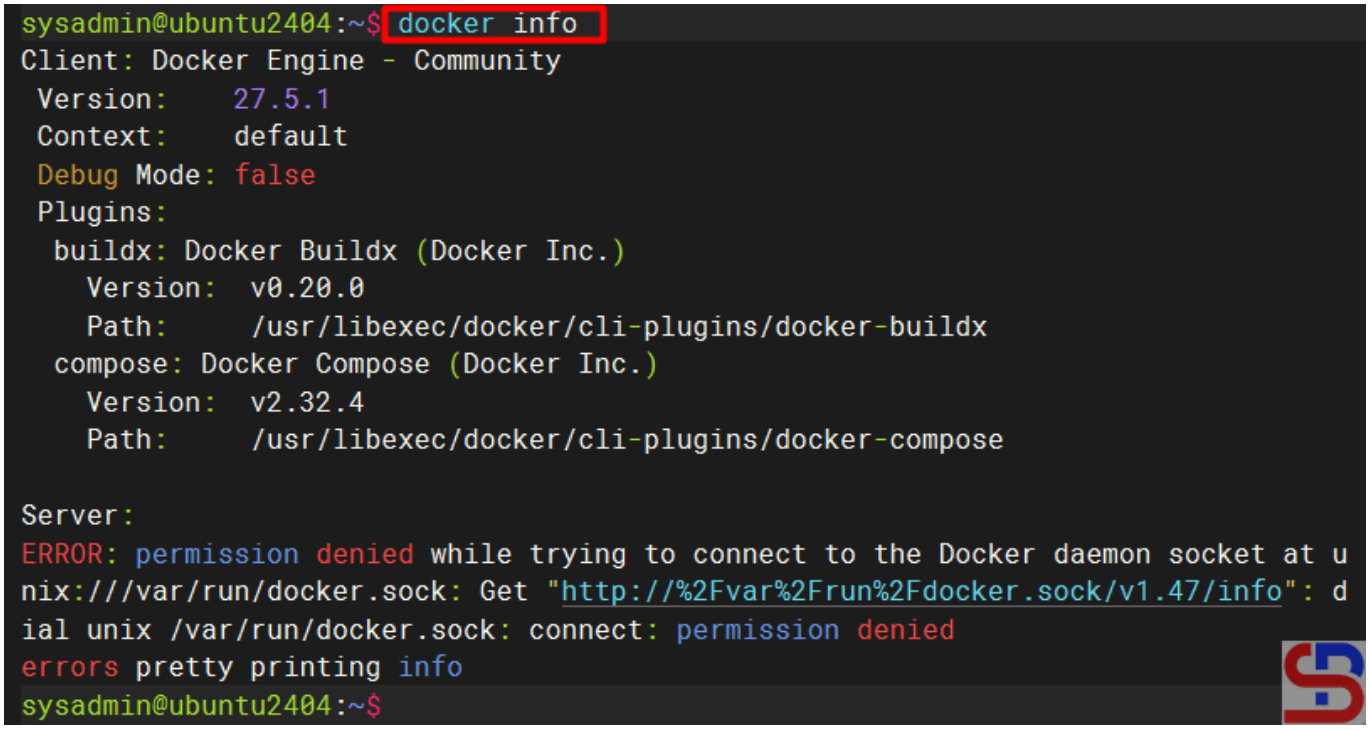
C. After installing Docker

Use the following command to run Docker:

```
sudo systemctl restart docker
sudo systemctl enable docker
```

To see the version of Docker you installed, use the command below:

```
docker info
```



Running the docker info command

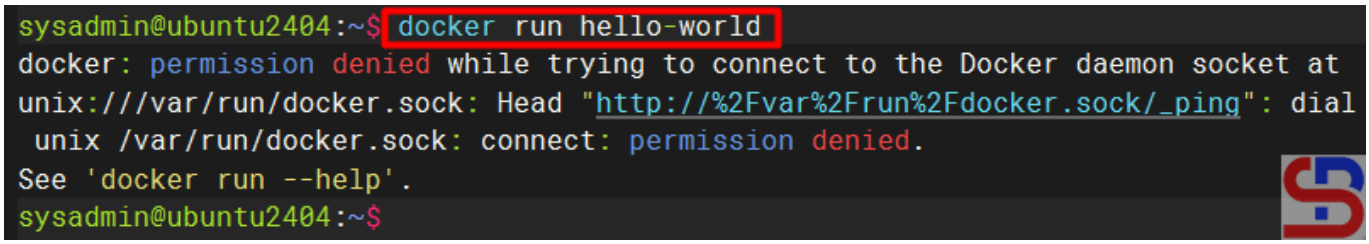
D. Test the application in Docker

After that, to see whether Docker is running well on the server, use the command below to run the hello-world

container on your server:

```
docker run hello-world
```

If you have got the error like the image below:



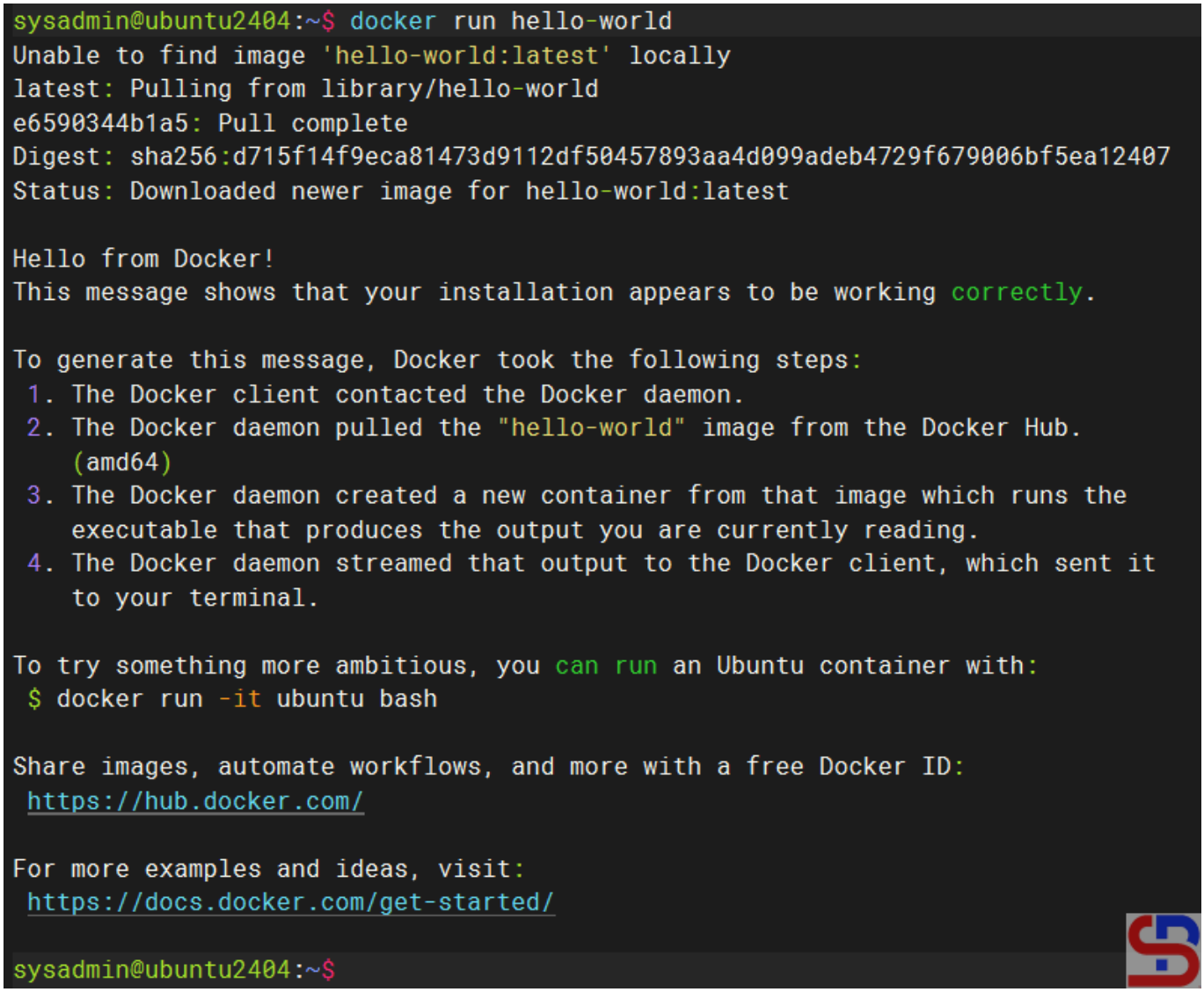
Error when running the docker run command

ERROR: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get “http://%2Fvar%2Frun%2Fdocker.sock/v1.47/info”: dial unix /var/run/docker.sock: connect: permission denied

Then you have to run the following command:

```
sudo usermod -aG docker $USER
```

Log out of your server and log in again. After that, you should be able to run the Docker commands like in the image below:



Test the Docker run command

That way, your Docker application is ready to use.

Note

You don’t have to use Docker to create and run containers, but you can use other applications such as podman, buildah, cri-o, etc. However, Docker is the most popular at the moment. Also, the terms and workings of various container applications are almost the same, so if you understand the terms and workings of Docker, then you will also understand the terms and workings of other container applications. To learn about basic commands in Docker, go to this page.

References

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How to Display Server Memory Percentage on Linux?

written by sysadmin | 19 February 2025

In general, sysadmins will use the **free -m** command to see how much server memory is on the Linux server and how much is used. However, I want to display the server memory percentage on my Linux.

Problem

How to display server memory percentage on Linux?

Solution

If you run **free -m** on your Linux server, you will see something like this in the image below:

```
sysadmin@ubuntu2404:~$ free -m
               total        used        free      shared  buff/cache   available
Mem:            3916         789         682           6        2699        3127
Swap:            511           0         511
sysadmin@ubuntu2404:~$
```

Display of RAM condition

a. Display the memory used

Use the command below to display the memory used in percent form:

```
free -m | grep Mem | awk '{print $3/$2 * 100.0}' | sed 's/$/%/'
```

```
sysadmin@ubuntu2404:~$ free -m | grep Mem | awk '{print $3/$2 * 100.0}' | sed 's/$/%/'
19.8927%
sysadmin@ubuntu2404:~$
```

Used memory in percentage

b. Display available free memory

Use the command below to display available free memory in percent form:

```
free -m | grep Mem | awk '{print $4/$2 * 100.0}' | sed 's/$/%/'
```

```
sysadmin@ubuntu2404:~$ free -m | grep Mem | awk '{print $4/$2 * 100.0}' | sed 's/$/%/'
17.3136%
sysadmin@ubuntu2404:~$
```

Free memory in percentage

c. Display the cache memory

Use the command below to display the cache memory in percent form:

```
free -m | grep Mem | awk '{print $6/$2 * 100.0}' | sed 's/$/%/'
```

```
sysadmin@ubuntu2404:~$ free -m | grep Mem | awk '{print $6/$2 * 100.0}' | sed 's/$/%/'
70.046%
sysadmin@ubuntu2404:~$
```

Cache memory in percentage

d. Integrate with bash script

If you want the percentage of memory to be put into the bash script for comparison, then the percentage should be changed from a fraction to an integer. Take a look at an example of a bash script below:

```
#!/bin/bash

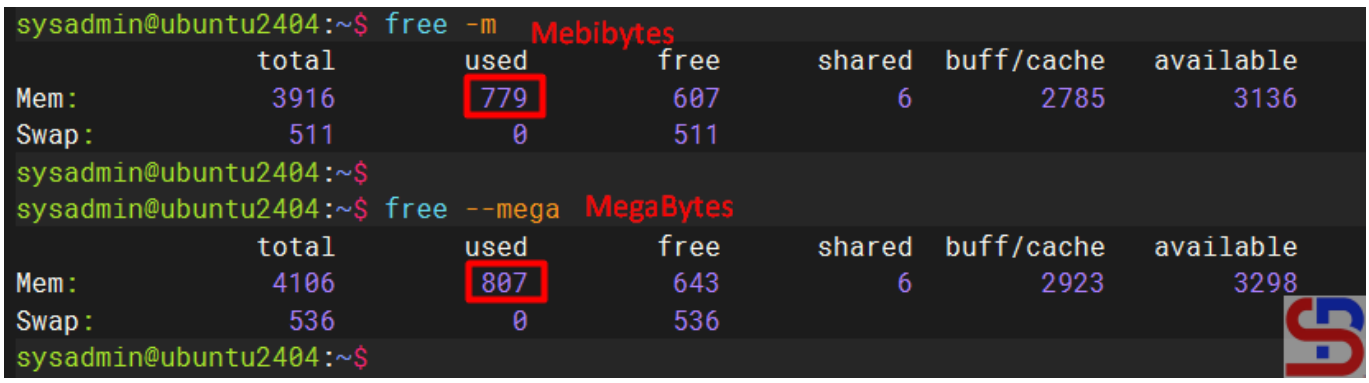
# Take the percentage of memory usage
mem_usage=$(free -m | grep Mem | awk '{print $3/$2 * 100.0}')
echo Usage Memory: $mem_usage

# Change to integer for comparison
mem_usage_int=${mem_usage%.*}

# Check condition
if [ $mem_usage_int -gt 80 ]; then
    echo "High Memory: ${mem_usage_int}% used"
else
    echo "Low Memory: ${mem_usage_int}% used"
fi
```

Note

Sysadmins, including me, often think that using the **free -m** command will display memory in Megabytes (MB), even though the command will display memory in Mebibytes. To display memory in Megabytes, run the **free –mega** command, where 1 Mebibyte (MiB) is the same as 1,048 Megabytes. Look at the image below to see the difference between Mebibytes and Megabytes:



Difference between Mebibyte and Megabyte

References

stackoverflow.com
baeldung.com
mathda.com

How to Make a Linux User Have the sudo Function?

written by sysadmin | 19 February 2025

SUDO stands for “**SuperUser DO**” and it is a program for Unix-like computer operating systems that enables users to run programs with the security privileges of another user, by default, the superuser. With sudo, a normal user can install or delete an application, change the server network, or even reboot or shut down the server.

Problem

How to make a Linux user have the sudo function?

Solution

This article will explain how to make a Linux user have the sudo function on RockyLinux/AlmaLinux/CentOS, Ubuntu/Debian, and OpenSUSE distros. For example, you want to add the user john to these distros and want that user to be able to use the sudo function. As far as I know, there are two methods to do it:

1. Change the sudoers file

Open the /etc/sudoers file or use the command below:

```
visudo
```

Add to the file the user name as in the image below:

```
## Allow root to run any commands anywhere
root    ALL=(ALL)       ALL
john    ALL=(ALL)       ALL
```

Add the user in the sudoers file

After that, save the file and then try to add a new user using the user john, if there is a display like the image below:

```
[john@RockyLinux9 ~]$ sudo systemctl restart sshd

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for john:
[john@RockyLinux9 ~]$
```

Choose number 1

Then select number **1**, and the user should successfully add a new user as in the image above.

2. Add the user to the sudo group

Add the user to the sudo group, where the name of this sudo group can vary in each distro. To see the name of the sudo group, look in the sudoers file and look for a sentence similar to '**Allows people in group to execute any command**'. For example, in RockyLinux and OpenSUSE, the name of the sudo group is **wheel**, **sudo** in Ubuntu, and don't forget to make sure to uncomment the section as in the image below:

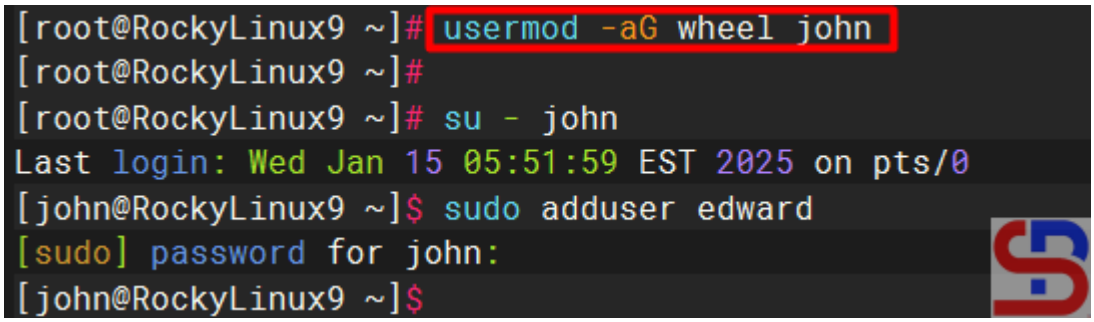
```
## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)       ALL
```

Check the sudo group in the sudoers file

Then type the command below so that a user can use sudo:

RockyLinux & OpenSUSE

```
usermod -aG wheel john
```



Add the user to the sudo group

Ubuntu/Debian

```
usermod -aG sudo john
```

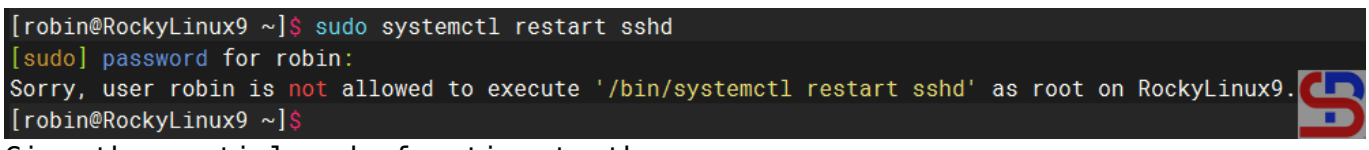
Note

The two methods above can provide the sudo feature to a user on Linux so that the user can run commands that can only be executed by root if the user uses the sudo command by writing down the password. However, if you want the bob user not to have to enter a password when running the sudo command, then in the sudoers file, type the script below:

```
bob             ALL=(ALL)       NOPASSWD: ALL
```

Use the command below if you want the robin user to only be able to perform reboot commands using sudo, but not other commands using sudo:

```
robin           ALL=(ALL)     /usr/sbin/reboot
```



Give the partial sudo function to the user

References

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