

# How to Change the Timezone on the Linux Server?

written by sysadmin | 21 February 2025

When you install Linux on a server for the first time, you are asked to select the regional zone where the server is located so that Linux will create the date and the time on the server based on that zone. But sometimes you want to change the timezone on your Linux server.

## Problem

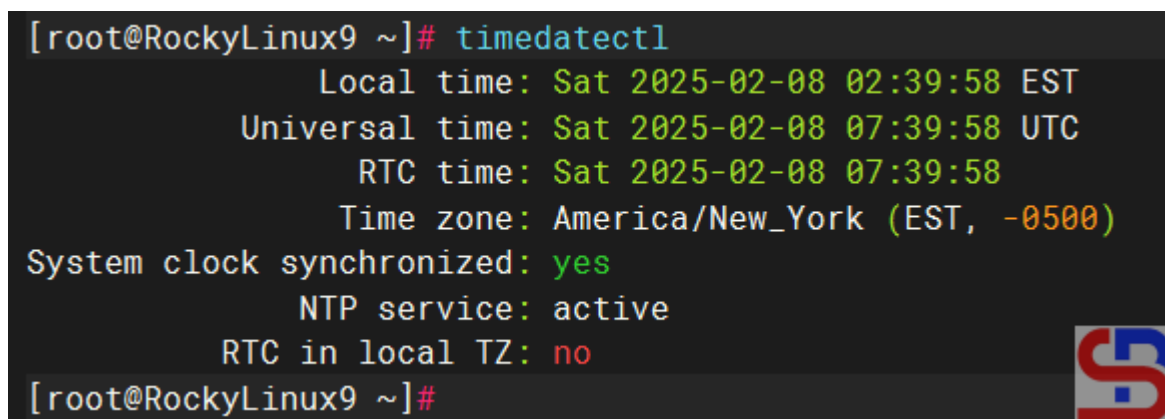
How to change the timezone on the Linux server?

## Solution

To see the timezone currently used on the server, you can use the command:

```
timedatectl
```

```
[root@RockyLinux9 ~]# timedatectl
    Local time: Sat 2025-02-08 02:39:58 EST
    Universal time: Sat 2025-02-08 07:39:58 UTC
    RTC time: Sat 2025-02-08 07:39:58
    Time zone: America/New_York (EST, -0500)
System clock synchronized: yes
    NTP service: active
    RTC in local TZ: no
[root@RockyLinux9 ~]#
```



The timedatectl command

From the image above, the server's time zone is in the American region in the New York area. To see the timezone provided by Linux, use the following command:

```
timedatectl list-timezones
```

```
[root@RockyLinux9 ~]# timedatectl list-timezones
```

```
Africa/Abidjan  
Africa/Accra  
Africa/Addis_Ababa  
Africa/Algiers  
Africa/Asmara  
Africa/Asmera  
Africa/Bamako  
Africa/Bangui  
Africa/Banjul  
Africa/Bissau  
Africa/Blantyre  
Africa/Brazzaville  
Africa/Bujumbura  
Africa/Cairo  
Africa/Casablanca  
Africa/Ceuta  
Africa/Conakry
```



List of timezones

If you want to change the timezone to Singapore, then you can type the command below:

```
timedatectl set-timezone Asia/Singapore
```

Then the time on the server will change to Singapore time, as in the image below:

```
[root@RockyLinux9 ~]# timedatectl set-timezone Asia/Singapore
```

```
[root@RockyLinux9 ~]#
```

```
[root@RockyLinux9 ~]# timedatectl
```

```
Local time: Sat 2025-02-08 15:42:03 +08
```

```
Universal time: Sat 2025-02-08 07:42:03 UTC
```

```
RTC time: Sat 2025-02-08 07:42:03
```

```
Time zone: Asia/Singapore (+08, +0800)
```

```
System clock synchronized: yes
```

```
NTP service: active
```

```
RTC in local TZ: no
```

```
[root@RockyLinux9 ~]#
```



After updating the timezone

## Note

Apart from using the `timedatectl` command, you can also use the command below:

```
tzselect
```

There is a list of the continents. Select the number that corresponds to the zone you want. For example, I choose Singapore as the timezone on my server, then I will choose number 5 for Asia, and will choose Singapore in the country selection, as in the image below:

```
[root@RockyLinux9 ~]# tzselect
Please identify a location so that time zone rules can be set correctly.
Please select a continent, ocean, "coord", or "TZ".
 1) Africa                7) Europe
 2) Americas              8) Indian Ocean
 3) Antarctica            9) Pacific Ocean
 4) Asia                  10) coord - I want to use geographical coordinates.
 5) Atlantic Ocean        11) TZ - I want to specify the timezone using the Posix TZ format.
 6) Australia
#? 4
Please select a country whose clocks agree with yours.
 1) Afghanistan          11) Christmas Island    21) Iraq                 31) Lebanon              41) Qatar                51) Thailand
 2) Antarctica           12) Cocos (Keeling) Islands 22) Israel                32) Macau                42) Russia               52) Turkmenistan
 3) Armenia              13) Cyprus               23) Japan                 33) Malaysia            43) Réunion              53) United Arab Emirates
 4) Azerbaijan           14) East Timor           24) Jordan                34) Mongolia            44) Saudi Arabia         54) Uzbekistan
 5) Bahrain              15) French S. Terr.     25) Kazakhstan           35) Myanmar (Burma)     45) Seychelles           55) Vietnam
 6) Bangladesh          16) Georgia              26) Korea (North)        36) Nepal                46) Singapore            56) Yemen
 7) Bhutan               17) Hong Kong            27) Korea (South)        37) Oman                 47) Sri Lanka
 8) Brunei               18) India                 28) Kuwait                38) Pakistan            48) Syria
 9) Cambodia             19) Indonesia            29) Kyrgyzstan           39) Palestine            49) Taiwan
10) China                20) Iran                  30) Laos                  40) Philippines          50) Tajikistan
#? 46
The following information has been given:
Singapore
peninsular Malaysia
Therefore TZ='Asia/Singapore' will be used.
Selected time is now: Sat Feb 8 15:44:52 +08 2025.
Universal time is now: Sat Feb 8 07:44:52 UTC 2025.
Is the above information OK?
 1) Yes
 2) No
#? 1
You can make this change permanent for yourself by appending the line
TZ='Asia/Singapore'; export TZ
to the file '.profile' in your home directory; then log out and log in again.
Here is that TZ value again, this time on standard output so that you
can use the /usr/bin/tzselect command in shell scripts:
Asia/Singapore
[root@RockyLinux9 ~]#
```

Alternative to change the timezones

Once finished, the script in the red box must be inserted into the **.profile** or **.bashrc** file (if there is no **.bashrc** file on the server, then create the file manually). After that, use the command:

```
source ~/.bashrc
```

Then the timezone on the server will change.

## References

[linuxize.com](http://linuxize.com)  
[wikihow.com](http://wikihow.com)  
[baeldung.com](http://baeldung.com)  
[askubuntu.com](http://askubuntu.com)  
[superuser.com](http://superuser.com)

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# [How to Remove And Limit Journal Log Size in Linux?](#)

written by sysadmin | 21 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:

```
sysadmin@ubuntu2404:~$ sudo du -sh /var/log/* | grep journal
154M /var/log/journal
sysadmin@ubuntu2404:~$
sysadmin@ubuntu2404:~$ sudo journalctl --vacuum-size=100M
Vacuuming done, freed 0B of archived journals from /var/log/journal.
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@bc13c4fd59024a358c751fe6d4da7bbb-000000000000efe6-00062c584f266b36_journal (4.3M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@cc5952ea6f74b38957fe90f48f78949-000000000000f458-00062c7f4e2c54fa_journal (4.5M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@8bcbecaf23374a168448a4ae2b0b6d76-000000000000fa40-00062c7f65e9038d_journal (4.3M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/user-1000@8bcbecaf23374a168448a4ae2b0b6d76-000000000000ff09-00062c7f6a96f7b6_journal (3.6M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@8bcbecaf23374a168448a4ae2b0b6d76-000000000000ffa-00062c7f6aaa46_journal (4.4M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@6e124681eb404b148aed9f69d1df0bdd-0000000000010403-00062ca834262375_journal (4.3M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/user-1000@6e124681eb404b148aed9f69d1df0bdd-00000000000108bb-00062ca83864e3b2_journal (3.7M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@6e124681eb404b148aed9f69d1df0bdd-00000000000108bc-00062ca8386e9ce5_journal (19.6M).
Deleted archived journal /var/log/journal/85c0e32a21c641759079243181fbc47c/system@7ae55235bc044b8a520870112675d3d-000000000001c50c-00062cbb81c47378_journal (5.0M).
Vacuuming done, freed 54.0M of archived journals from /var/log/journal/85c0e32a21c641759079243181fbc47c.
Vacuuming done, freed 0B of archived journals from /run/log/journal.
sysadmin@ubuntu2404:~$
sysadmin@ubuntu2404:~$ sudo du -sh /var/log/* | grep journal
100M /var/log/journal
sysadmin@ubuntu2404:~$
```

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](https://reintech.io)  
[sematext.com](https://sematext.com)  
[andreaskaris.github.io](https://andreaskaris.github.io)  
[unix.stackexchange.com](https://unix.stackexchange.com)

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## [How to Install Nagios on RockyLinux?](#)

written by sysadmin | 21 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
p -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:

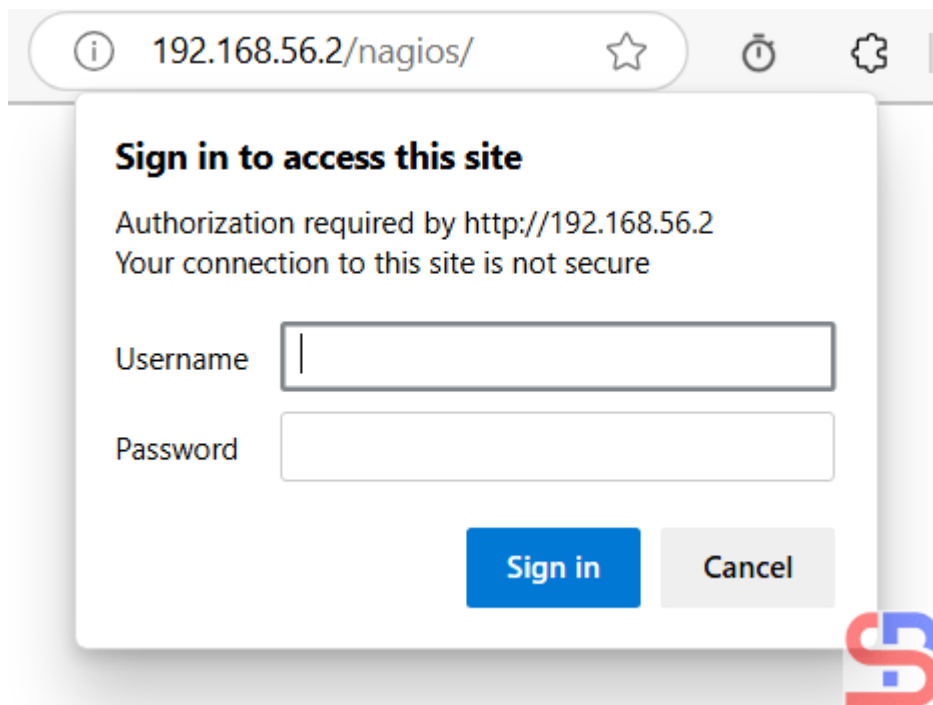
```
cp /lib/systemd/system/nagios.service /etc/systemd/system/
systemctl start httpd
systemctl start nagios
systemctl enable httpd
systemctl enable nagios
```

## 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:

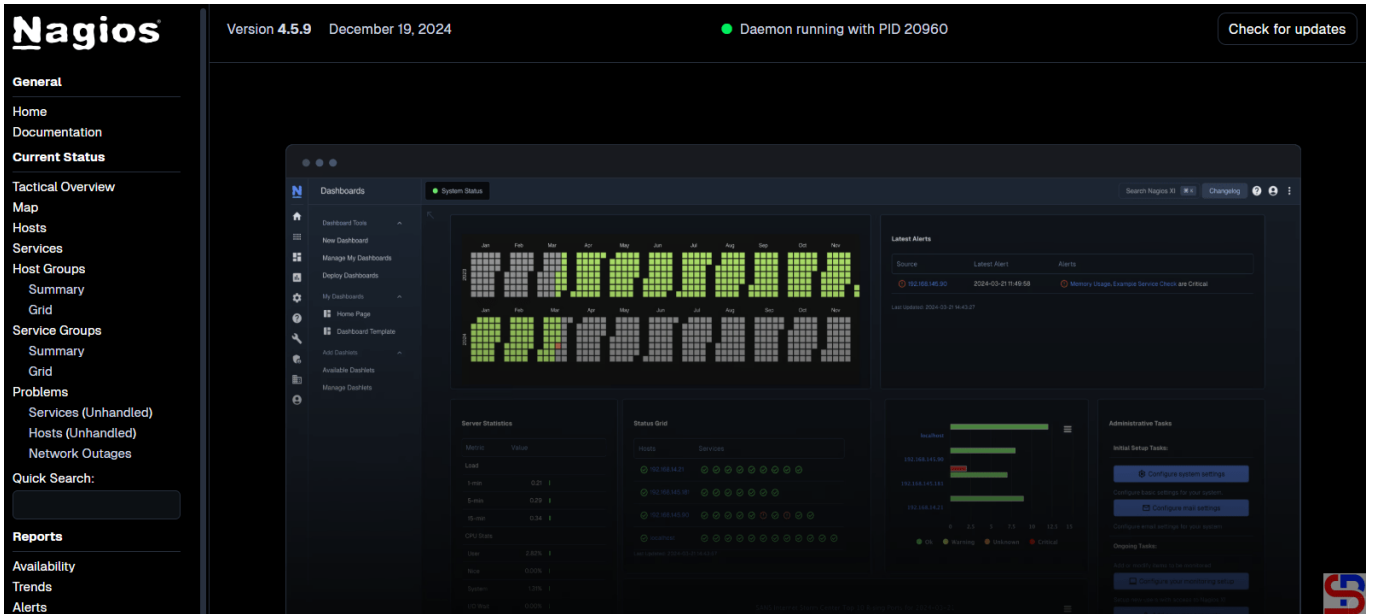


Open the Nagios application

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:

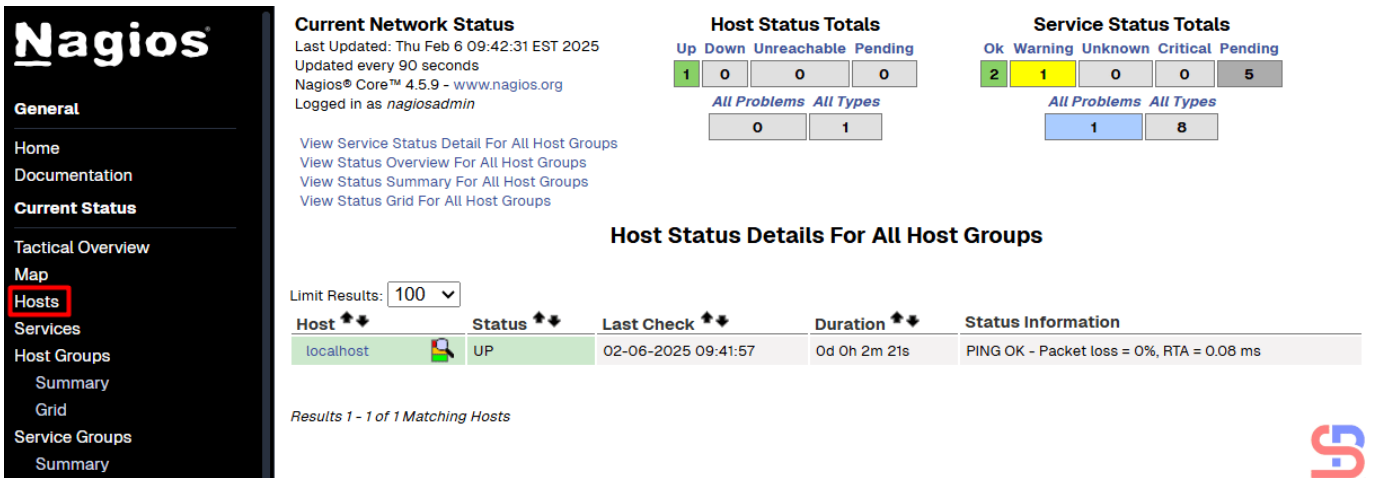
```
firewall-cmd --zone=public --add-port=80/tcp --permanent
firewall-cmd --reload
sed -i 's/SELINUX=.* /SELINUX=disabled/g' /etc/selinux/config
setenforce 0
```

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:

**Current Network Status**  
 Last Updated: Thu Feb 6 09:46:10 EST 2025  
 Updated every 90 seconds  
 Nagios® Core™ 4.5.9 - www.nagios.org  
 Logged in as nagiosadmin

**Host Status Totals**  
 Up: 1, Down: 0, Unreachable: 0, Pending: 0  
 All Problems: 0, All Types: 1

**Service Status Totals**  
 Ok: 7, Warning: 1, Unknown: 0, Critical: 0, Pending: 0  
 All Problems: 1, All Types: 8

**Service Status Details For All Hosts**

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	02-06-2025 09:45:42	0d 0h 5m 28s	1/4	OK - load average: 0.00, 0.26, 0.35
	Current Users	OK	02-06-2025 09:41:20	0d 0h 6m 6s+	1/4	USERS OK - 1 users currently logged in
	HTTP	WARNING	02-06-2025 09:44:57	0d 0h 1m 13s	4/4	HTTP WARNING: HTTP/1.1 403 Forbidden - 7897 bytes in 0.001 second response time
	PING	OK	02-06-2025 09:42:35	0d 0h 6m 6s+	1/4	PING OK - Packet loss = 0%, RTA = 0.11 ms
	Root Partition	OK	02-06-2025 09:43:12	0d 0h 6m 6s+	1/4	DISK OK - free space: / 15158 MiB (87.15% inode=99%):
	SSH	OK	02-06-2025 09:43:50	0d 0h 6m 6s+	1/4	SSH OK - OpenSSH_8.7 (protocol 2.0)
	Swap Usage	OK	02-06-2025 09:44:27	0d 0h 6m 6s+	1/4	SWAP OK - 100% free (2047 MB out of 2047 MB)
	Total Processes	OK	02-06-2025 09:45:05	0d 0h 6m 6s+	1/4	PROCS OK: 35 processes with STATE = RSZDT

Results 1 - 8 of 8 Matching Services

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

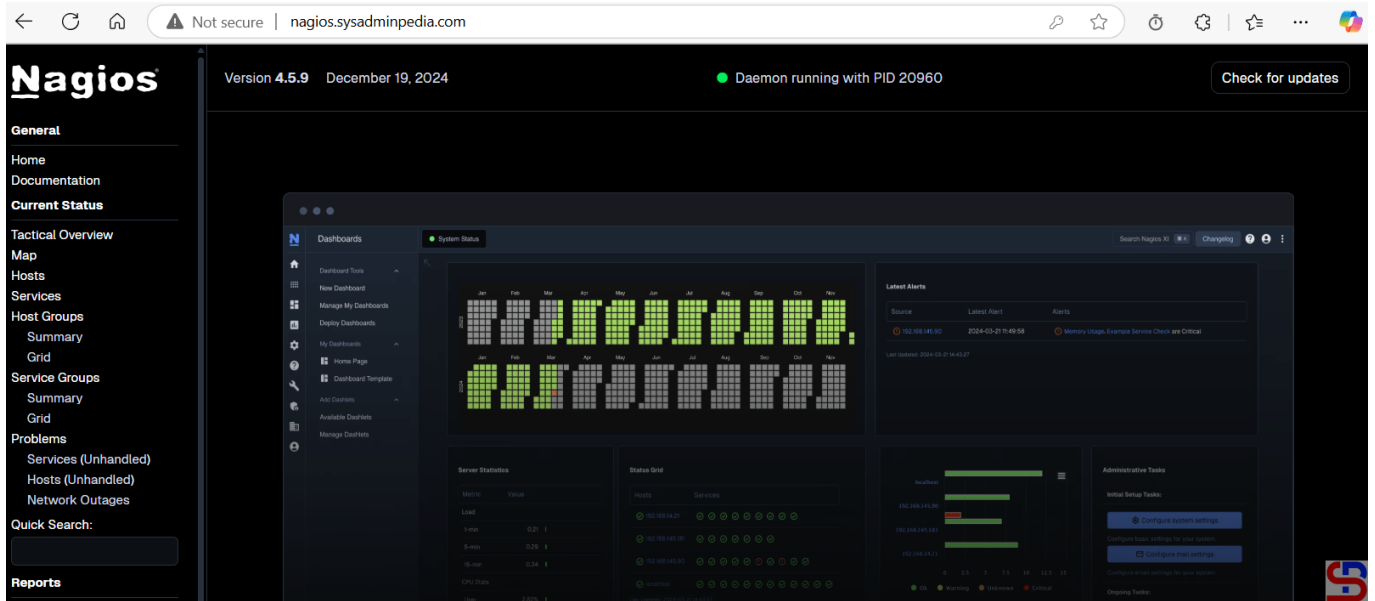
**/etc/httpd/conf.d/nagios.sysadminpedia.com.conf:**

```
<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](https://support.nagios.com)
- [tecmint.com](https://tecmint.com)
- [statusengine.org](https://statusengine.org)

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# [How to Display a File Without the Hashtag Sign on Linux?](#)

written by sysadmin | 21 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/r1_rockylinux9-root /          xfs     defaults      0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot  xfs     defaults      0 0
/dev/mapper/r1_rockylinux9-swap none    swap    defaults      0 0
```



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/r1_rockylinux9-root /          xfs     defaults      0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot  xfs     defaults      0 0
/dev/mapper/r1_rockylinux9-swap none    swap    defaults      0 0
```



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/r1_rockylinux9-root /          xfs     defaults      0 0
UUID=066eb699-fd9c-45ae-bba8-6c220e767ed7 /boot  xfs     defaults      0 0
/dev/mapper/r1_rockylinux9-swap none    swap    defaults      0 0
```



Using the awk command

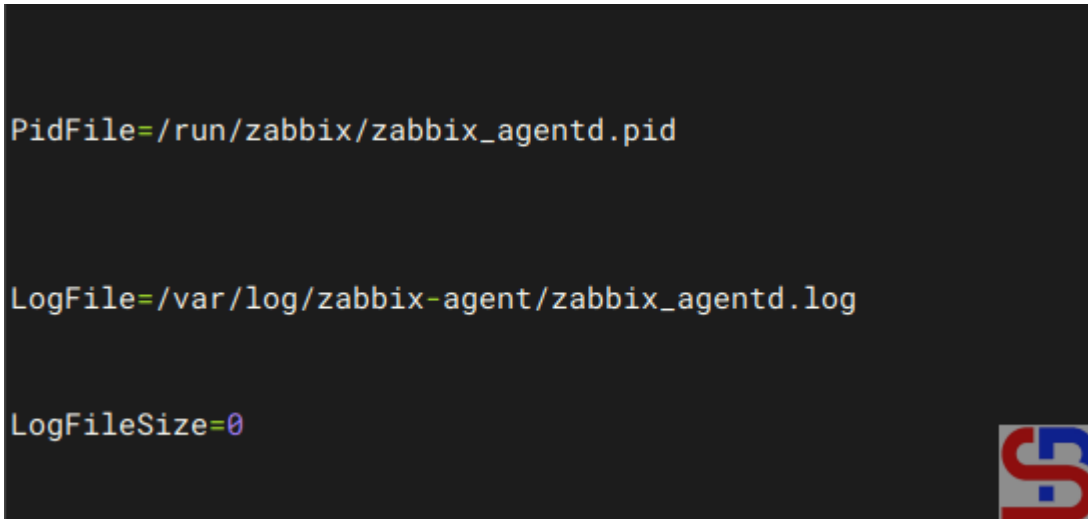
## Note

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:

```
PidFile=/run/zabbix/zabbix_agentd.pid

LogFile=/var/log/zabbix-agent/zabbix_agentd.log

LogFileSize=0
```

A terminal window with a dark background showing the output of a command. The output consists of three lines of text: 'PidFile=/run/zabbix/zabbix\_agentd.pid', 'LogFile=/var/log/zabbix-agent/zabbix\_agentd.log', and 'LogFileSize=0'. There are significant blank lines between each line of output. A small logo with a red 'S' and a blue 'G' is visible in the bottom right corner of the terminal window.

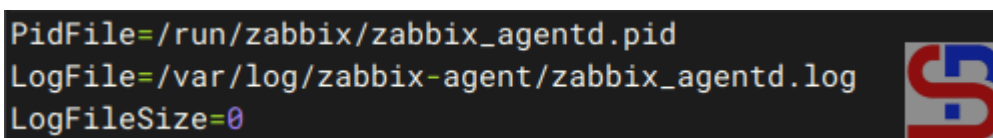
The initial output

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:

```
PidFile=/run/zabbix/zabbix_agentd.pid
LogFile=/var/log/zabbix-agent/zabbix_agentd.log
LogFileSize=0
```

A terminal window with a dark background showing the output of the same command as above. The output consists of three lines of text: 'PidFile=/run/zabbix/zabbix\_agentd.pid', 'LogFile=/var/log/zabbix-agent/zabbix\_agentd.log', and 'LogFileSize=0'. There are no blank lines between the lines of output. A small logo with a red 'S' and a blue 'G' is visible in the bottom right corner of the terminal window.

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:

```
root@ubuntu2404:~# cat /etc/apache2/sites-available/000-default.conf
<VirtualHost *:80>
    ; The ServerName directive sets the request scheme, hostname and port that
    ; the server uses to identify itself. This is used when creating
    ; redirection URLs. In the context of virtual hosts, the ServerName
    ; specifies what hostname must appear in the request's Host: header to
    ; match this virtual host. For the default virtual host (this file) this
    ; value is not decisive as it is used as a last resort host regardless.
    ; However, you must set it for any further virtual host explicitly.
    ;ServerName www.example.com

    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/html

    ; Available loglevels: trace8, ..., tracel, debug, info, notice, warn,
    ; error, crit, alert, emerg.
    ; It is also possible to configure the loglevel for particular
    ; modules, e.g.
    ;LogLevel info ssl:warn

    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined

    ; For most configuration files from conf-available/, which are
    ; enabled or disabled at a global level, it is possible to
    ; include a line for only one particular virtual host. For example the
    ; following line enables the CGI configuration for this host only
    ; after it has been globally disabled with "a2disconf".
    ;Include conf-available/serve-cgi-bin.conf
</VirtualHost>
root@ubuntu2404:~#
root@ubuntu2404:~#
root@ubuntu2404:~# grep -v ";" /etc/apache2/sites-available/000-default.conf
<VirtualHost *:80>

    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/html

    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined

</VirtualHost>
root@ubuntu2404:~#
```

Using the semicolon sign

## References

[unix.com](http://unix.com)

[unix.stackexchange.com](http://unix.stackexchange.com)



# How to Install Nagios on Ubuntu?

written by sysadmin | 21 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
p -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:

```
sysadmin@ubuntu2404:/tmp/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
sysadmin@ubuntu2404:/tmp/nagios-plugins-master$
```

Check the Nagios configuration



## 9. Turn on the services

Turn on the services using the commands below:

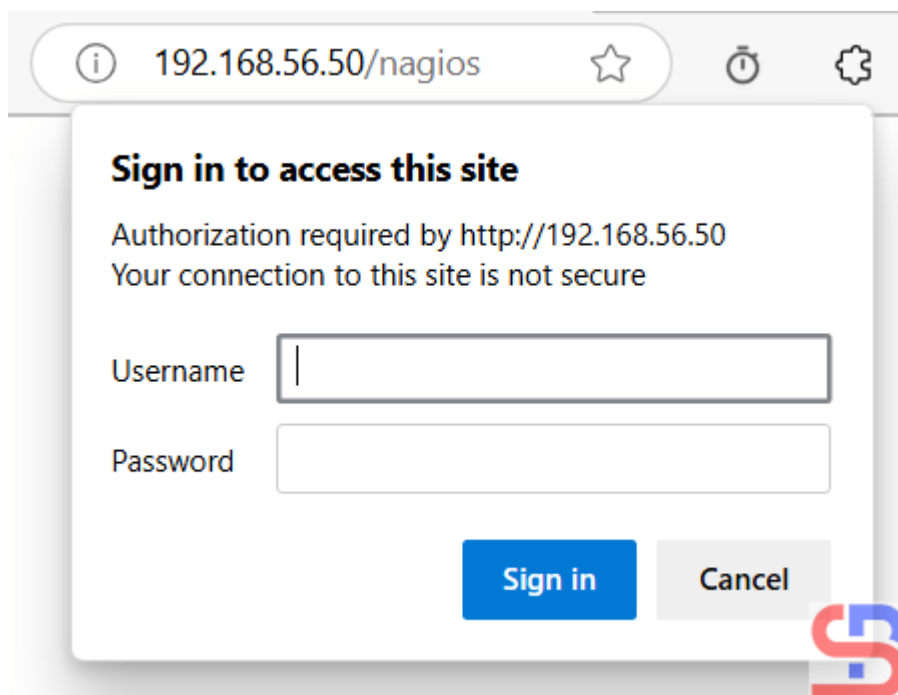
```
sudo systemctl start nagios.service
sudo systemctl enable nagios
sudo systemctl restart apache2.service
```

## 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:

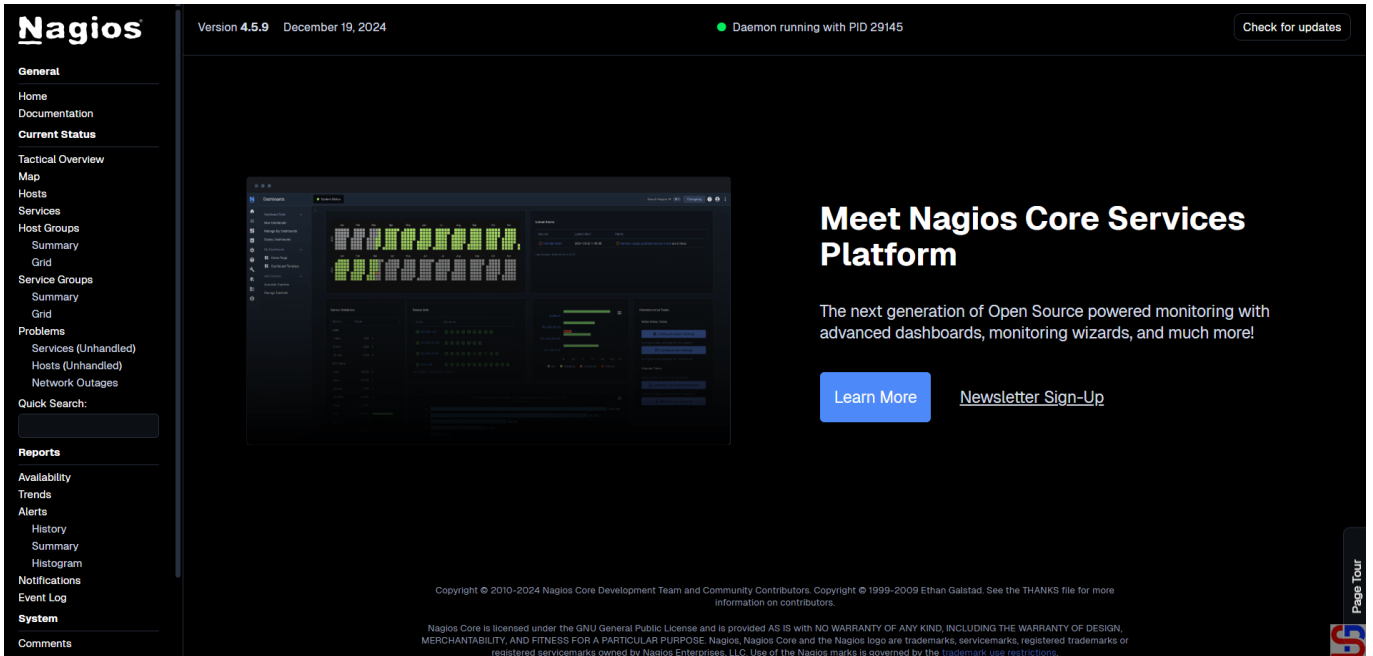


Open Nagios in the browser

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:

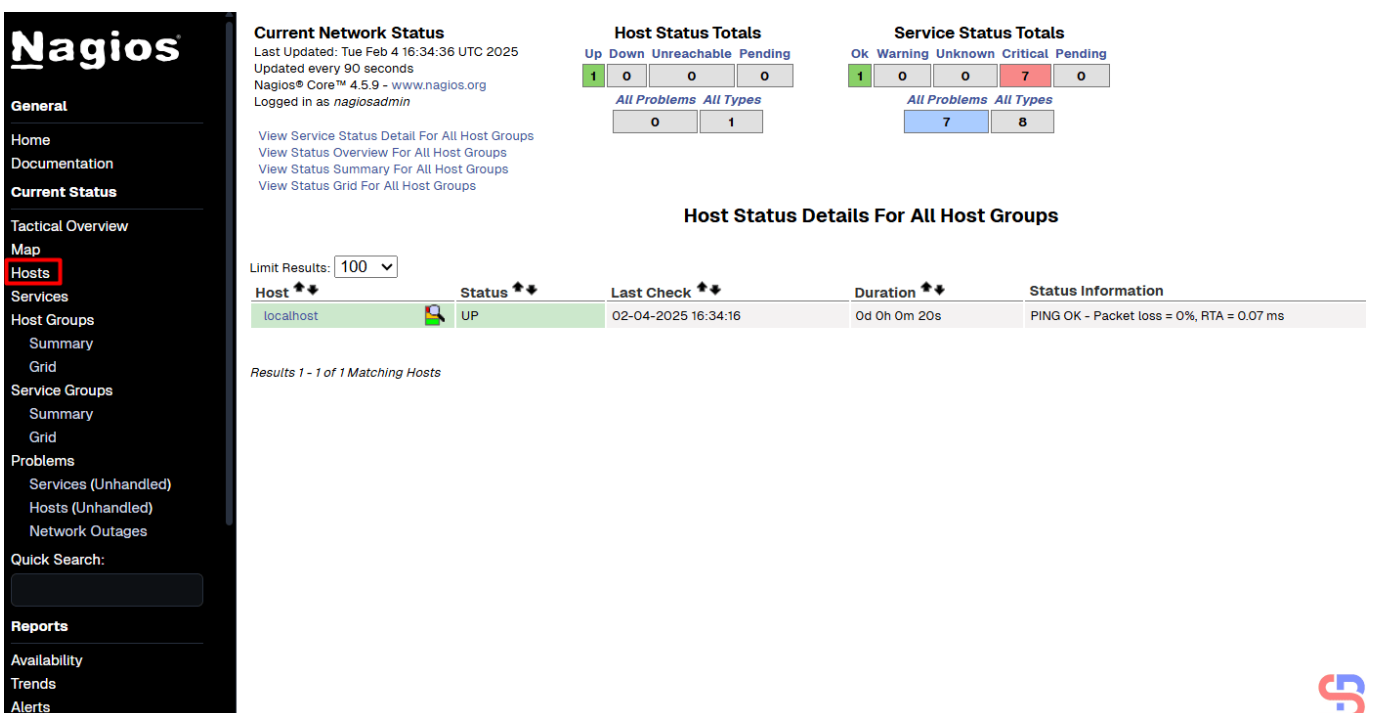
```
sudo ufw allow Apache
sudo ufw reload
```

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:



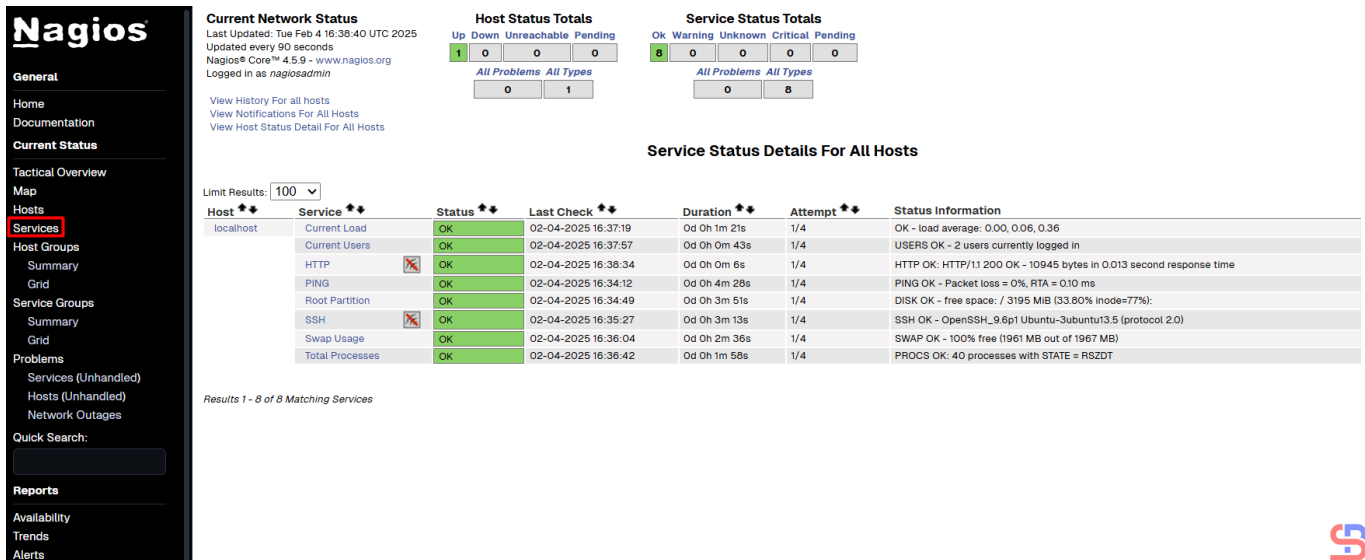
Nagios application

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:



**Current Network Status**  
Last Updated: Tue Feb 4 16:38:40 UTC 2025  
Updated every 90 seconds  
Nagios® Core™ 4.5.9 - www.nagios.org  
Logged in as nagiosadmin

**Host Status Totals**  
Up Down Unreachable Pending  
1 0 0 0  
All Problems All Types

**Service Status Totals**  
Ok Warning Unknown Critical Pending  
8 0 0 0 0  
All Problems All Types

**Service Status Details For All Hosts**

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	02-04-2025 16:37:19	0d 0h 1m 21s	1/4	OK - load average: 0.00, 0.06, 0.36
	Current Users	OK	02-04-2025 16:37:57	0d 0h 0m 43s	1/4	USERS OK - 2 users currently logged in
	HTTP	OK	02-04-2025 16:38:34	0d 0h 0m 6s	1/4	HTTP OK: HTTP/1.1 200 OK - 10945 bytes in 0.013 second response time
	PING	OK	02-04-2025 16:34:12	0d 0h 4m 28s	1/4	PING OK - Packet loss = 0%, RTA = 0.10 ms
	Root Partition	OK	02-04-2025 16:34:49	0d 0h 3m 51s	1/4	DISK OK - free space: / 3195 MIB (33.80% inode=77%):
	SSH	OK	02-04-2025 16:35:27	0d 0h 3m 13s	1/4	SSH OK - OpenSSH_9.6p1 Ubuntu-3ubuntu13.5 (protocol 2.0)
	Swap Usage	OK	02-04-2025 16:36:04	0d 0h 2m 36s	1/4	SWAP OK - 100% free (1961 MB out of 1967 MB)
	Total Processes	OK	02-04-2025 16:36:42	0d 0h 1m 58s	1/4	PROCS OK: 40 processes with STATE = RSZDT

Results 1 - 8 of 8 Matching Services

## Services monitored by Nagios

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

## Note

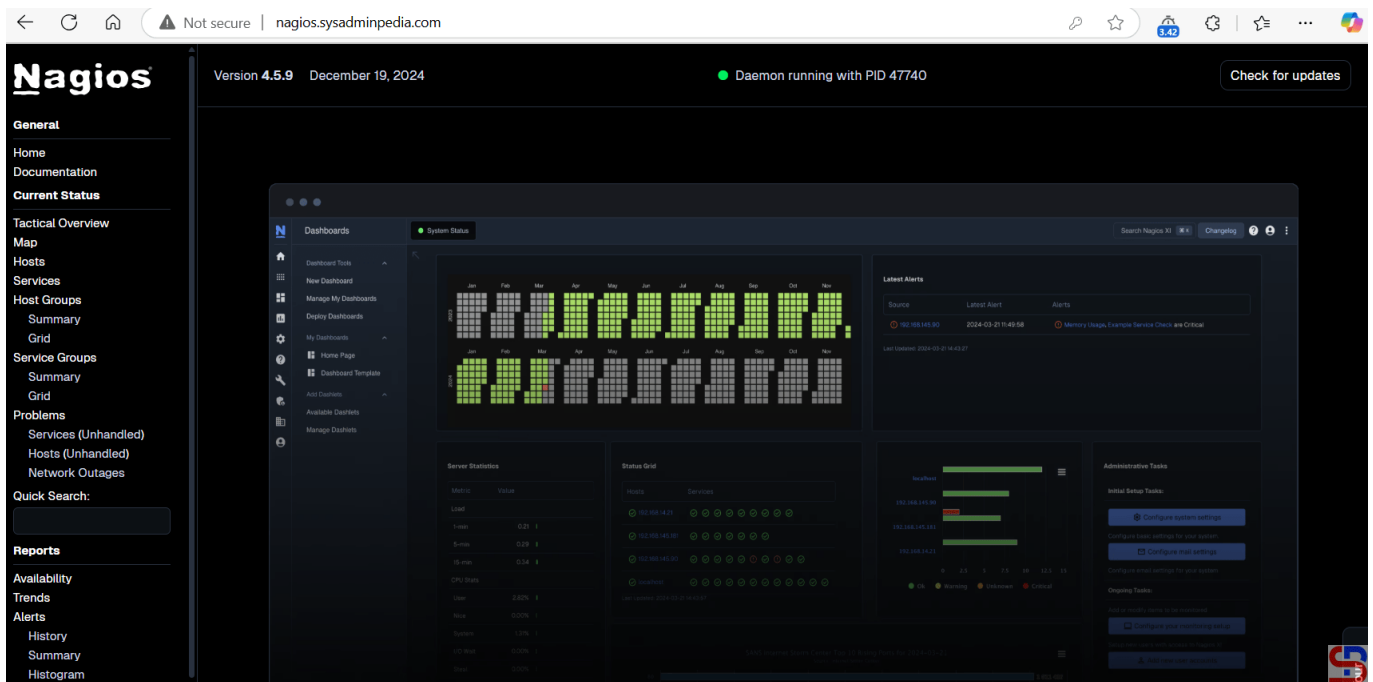
If you have a domain/subdomain and want to use that domain/subdomain for the Nagios application, create a virtual host on your web server. For example, I have the domain sysadminpedia.com and want to use the subdomain nagios.sysadminpedia.com for the Nagios application. So, I created the script below 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](https://en.wikipedia.org)
- [assets.nagios.com](https://assets.nagios.com)
- [techoverflow.net](https://techoverflow.net)

# How to Install Docker on the Linux Server?

written by sysadmin | 21 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.

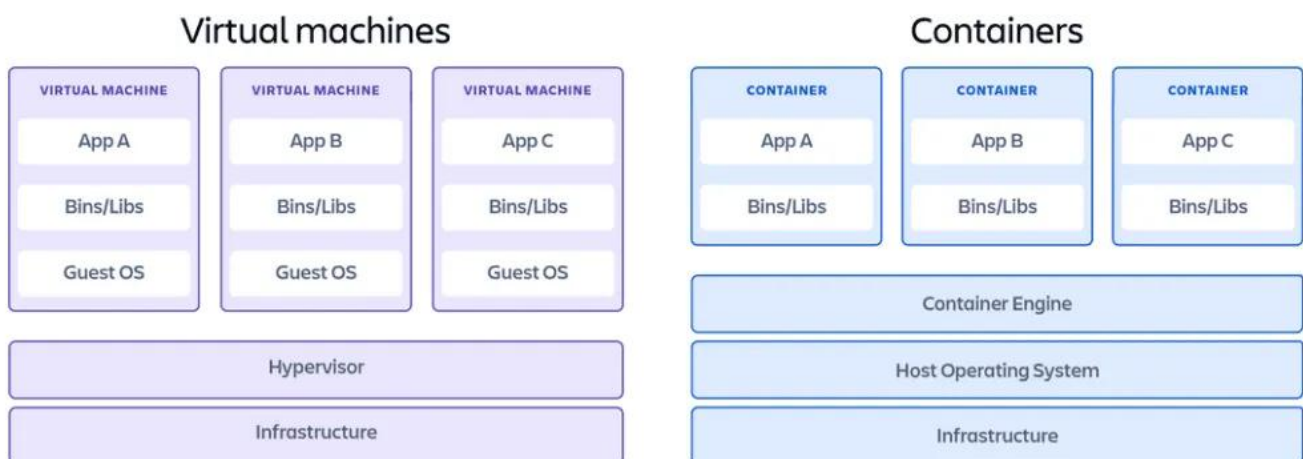
## Problem

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](https://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	<ol style="list-style-type: none"> <li>1. When the privilege of a user in a container is escalated from a common user to the <b>root</b> user, the user gains root permissions of the host machine.</li> <li>2. Hardware isolation is not implemented, so containers are vulnerable to attacks.</li> </ol>	<ol style="list-style-type: none"> <li>1. The root permissions of a VM tenant are isolated from those of the host machine.</li> <li>2. Hardware isolation is implemented to prevent VM escape and data exchange.</li> </ol>

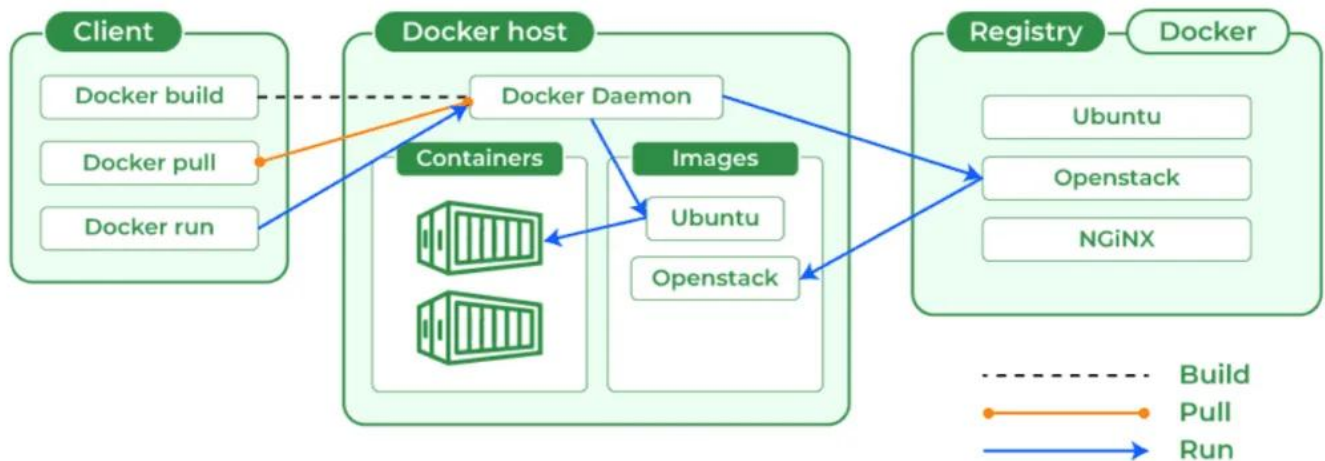
Comparison between Docker and virtual machine (Image credit from [huawei.com](http://huawei.com))

Below is a brief explanation of the terms in Docker:

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

- `docker build` `docker pull`: 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](https://www.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
```

```
sysadmin@ubuntu2404:~$ docker info  
Client: Docker Engine - Community  
Version: 27.5.1  
Context: default  
Debug Mode: false  
Plugins:  
  buildx: Docker Buildx (Docker Inc.)  
    Version: v0.20.0  
    Path: /usr/libexec/docker/cli-plugins/docker-buildx  
  compose: Docker Compose (Docker Inc.)  
    Version: v2.32.4  
    Path: /usr/libexec/docker/cli-plugins/docker-compose  
  
Server:  
ERROR: permission denied while trying to connect to the Docker daemon socket at u  
nix:///var/run/docker.sock: Get "http://%2Fvar%2Frun%2Fdocker.sock/v1.47/info": d  
ial unix /var/run/docker.sock: connect: permission denied  
errors pretty printing info  
sysadmin@ubuntu2404:~$
```

Running the docker info command

### D. Test the application in Docker

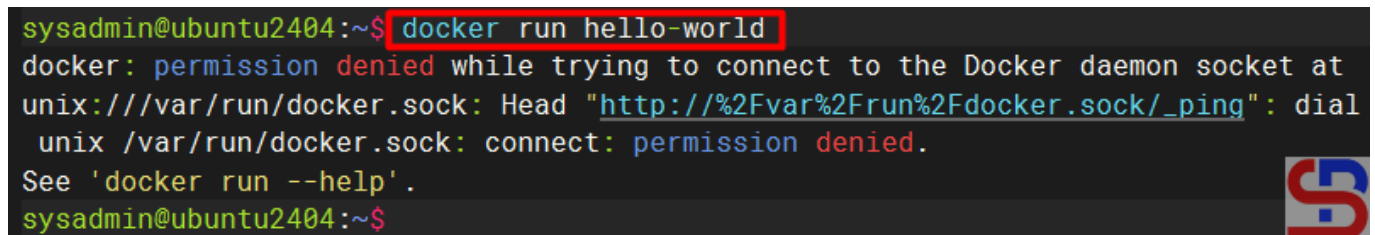
After that, to see whether Docker is running well on the server, use the command below to run the hello-world

container on your server:

```
docker run hello-world
```

If you have got the error like the image below:

```
sysadmin@ubuntu2404:~$ docker run hello-world
docker: permission denied while trying to connect to the Docker daemon socket at
unix:///var/run/docker.sock: Head "http://%2Fvar%2Frun%2Fdocker.sock/_ping": dial
unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
sysadmin@ubuntu2404:~$
```

A terminal window screenshot showing a command prompt where the user runs 'docker run hello-world'. The output shows a 'permission denied' error. The command 'docker run hello-world' is highlighted with a red box. A small logo is visible in the bottom right corner of the terminal window.

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:

```
sysadmin@ubuntu2404:~$ docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
e6590344b1a5: Pull complete
Digest: sha256:d715f14f9eca81473d9112df50457893aa4d099adeb4729f679006bf5ea12407
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

sysadmin@ubuntu2404:~$
```



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

[phoenixnap.com](https://phoenixnap.com)  
[youtube.com](https://youtube.com)  
[docs.docker.com](https://docs.docker.com)  
[geeksforgeeks.org](https://geeksforgeeks.org)  
[atlassian.com](https://atlassian.com)  
[qa.com](https://qa.com)  
[info.support.huawei.com](https://info.support.huawei.com)  
[simform.com](https://simform.com)  
[linkedin.com](https://linkedin.com)  
[docs.rockylinux.org](https://docs.rockylinux.org)  
[en.opensuse.org](https://en.opensuse.org)

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## [How to Display Server Memory Percentage on Linux?](#)

written by sysadmin | 21 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:

```
sysadmin@ubuntu2404:~$ free -m Mebibytes
              total        used         free      shared  buff/cache   available
Mem:           3916          779           607           6         2785         3136
Swap:           511           0            511
sysadmin@ubuntu2404:~$
sysadmin@ubuntu2404:~$ free --mega MegaBytes
              total        used         free      shared  buff/cache   available
Mem:           4106          807           643           6         2923         3298
Swap:           536           0            536
```

Difference between Mebibyte and Megabyte



## References

[stackoverflow.com](https://stackoverflow.com)

[baeldung.com](https://baeldung.com)

[mathda.com](https://mathda.com)