

Aim: Installing and Configuring Nagios for Docker Monitoring

Objective:

To set up a functional Nagios Core monitoring system.

To monitor Docker containers and key performance metrics (CPU, memory, container status).

To configure Nagios plugins and scripts for Docker integration.

To generate alerts for container or service failures.

Description:

Nagios is an open-source monitoring tool used to track the health of IT infrastructure. In this project, Nagios will be set up to monitor Docker containers running on a host machine. Since Nagios does not natively support Docker, this requires integrating it with custom scripts or plugins (e.g., `check_docker` or `check_docker_container`). The goal is to ensure visibility into the containerized environment and automate alerting in case of issues.

Implementation:

1. Environment Setup:

- *OS: Ubuntu 20.04 (or similar Linux distro)*
- *Docker Engine installed and running*
- *Nagios Core 4.x*

2. Installing Nagios Core:

```
sudo apt update
```

```
sudo apt install -y autoconf gcc make libgd-dev libmcrypt-dev libssl-dev dc build-essential snmp
```

```
sudo useradd nagios
```

```
sudo groupadd nagcmd
```

```
sudo usermod -a -G nagcmd nagios
```

```
sudo usermod -a -G nagcmd www-data
```

```
# Download and compile Nagios Core
```

```
cd /tmp
```

```
wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.tar.gz
```

```
tar xzf nagios-4.4.6.tar.gz
```

```
cd nagios-4.4.6
```

```
./configure --with-command-group=nagcmd
```

```
make all
```

```
sudo make install
```

```
sudo make install-init
```

```
sudo make install-config
```

```
sudo make install-commandmode
```

```
sudo make install-webconf
```

3. Installing Nagios Plugins:

```
cd /tmp
```

```
wget https://nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz
```

```
tar xzf nagios-plugins-2.3.3.tar.gz
```

```
cd nagios-plugins-2.3.3
```

```
./configure --with-nagios-user=nagios --with-nagios-group=nagios
```

```
make
```

```
sudo make install
```

4. Configure Web Access:

- Create Nagios admin user:

5. Install Docker Monitoring Plugin:

- Download a plugin like [check_docker](#) or create a custom script.
- Place it in /usr/local/nagios/libexec/
- Make it executable:

```
chmod +x /usr/local/nagios/libexec/check_docker
```

6. Add Docker Checks to Nagios Configuration:

- Edit commands.cfg:

```
define command {
```

```
    command_name    check_docker_container
```

```
    command_line    $USER1$/check_docker -C $ARG1$
```

```
}
```

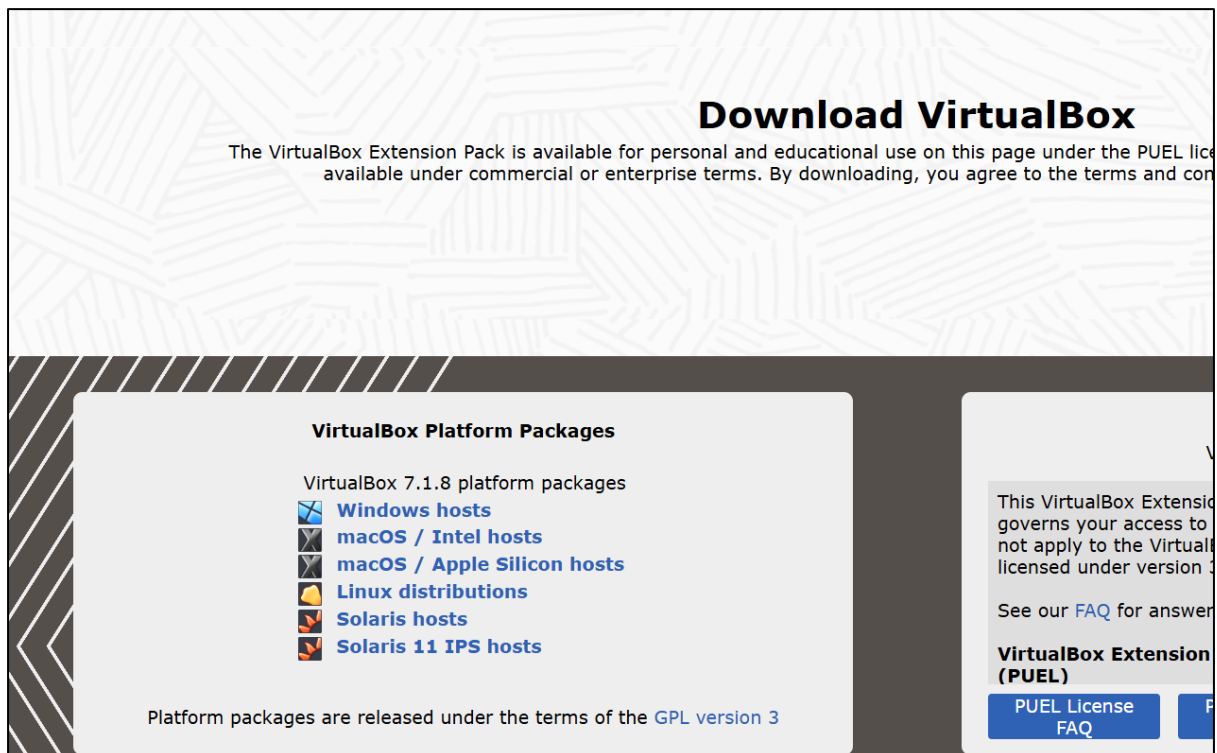
Add a host and service for Docker in nagios.cfg:

```
define host {  
    use          linux-server  
  
    host_name    DockerHost  
  
    address     127.0.0.1  
  
}  
  
define service {  
    use          generic-service  
  
    host_name    DockerHost  
  
    service_description Docker Container Status  
  
    check_command check_docker_container!nginx  
  
}
```

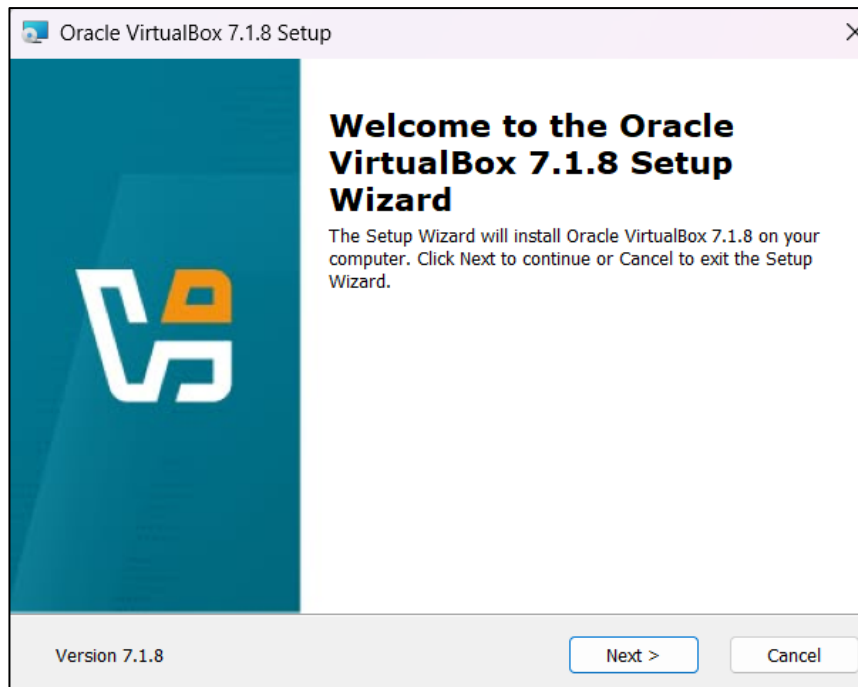
7. Restart Nagios:

```
sudo systemctl restart nagios
```

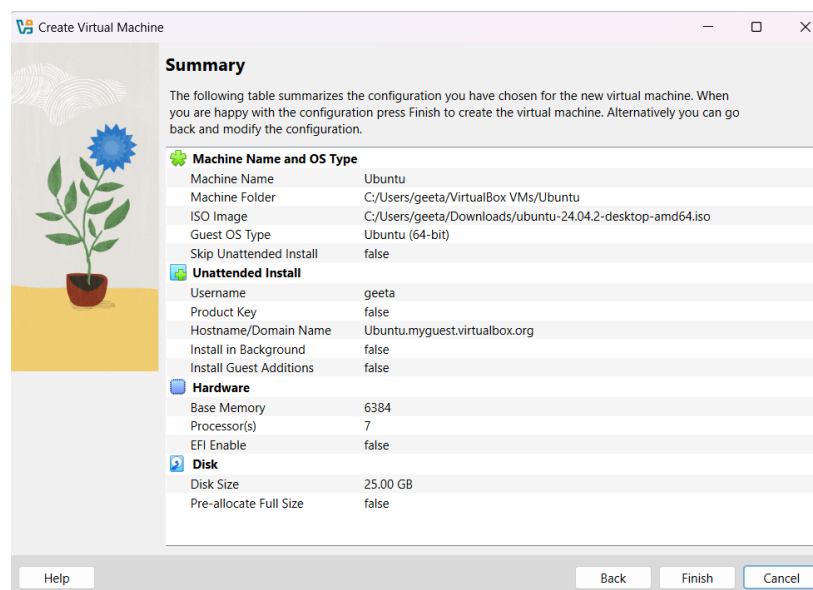
<https://www.virtualbox.org/wiki/Downloads>



The screenshot shows the 'Download VirtualBox' page. At the top, it says 'Download VirtualBox' in large bold letters. Below that, a disclaimer states: 'The VirtualBox Extension Pack is available for personal and educational use on this page under the PUEL license. It is not available under commercial or enterprise terms. By downloading, you agree to the terms and conditions.' The main content area is titled 'VirtualBox Platform Packages' and lists 'VirtualBox 7.1.8 platform packages' with the following links: 'Windows hosts', 'macOS / Intel hosts', 'macOS / Apple Silicon hosts', 'Linux distributions', 'Solaris hosts', and 'Solaris 11 IPS hosts'. Each link is preceded by a small icon. At the bottom of this section, it says 'Platform packages are released under the terms of the GPL version 3'. On the right side, there is a sidebar with a section titled 'VirtualBox Extension (PUEL)' and a link to 'PUEL License FAQ'.



<https://ubuntu.com/download/desktop>



```
geeta@Ubuntu:/tmp$ sudo apt install apache2-utils
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libapr1t64 libaprutil1t64
The following NEW packages will be installed:
  apache2-utils libapr1t64 libaprutil1t64
0 upgraded, 3 newly installed, 0 to remove and 1 not upgraded.
Need to get 297 kB of archives.
After this operation, 907 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
```

```
geeta@Ubuntu: ~/Downloads/nagios-4.5.9
geeta@Ubuntu:~/Downloads$ ls
nagios-4.5.9  nagios-4.5.9.tar.gz
geeta@Ubuntu:~/Downloads$ tar -xzf nagios-4.5.9.tar.gz
nagios-4.5.9/
nagios-4.5.9/.github/
nagios-4.5.9/.github/workflows/
nagios-4.5.9/.github/workflows/test.yml
nagios-4.5.9/.gitignore
nagios-4.5.9/CONTRIBUTING.md
nagios-4.5.9/Changelog
nagios-4.5.9/INSTALLING
nagios-4.5.9/LLEGAL
nagios-4.5.9/LICENSE
nagios-4.5.9/Makefile.in
nagios-4.5.9/README.md
nagios-4.5.9/THANKS
nagios-4.5.9/UPGRADING
nagios-4.5.9/aclocal.m4
nagios-4.5.9/autoconf-macros/
nagios-4.5.9/autoconf-macros/.gitignore
nagios-4.5.9/autoconf-macros/CHANGELOG.md
nagios-4.5.9/autoconf-macros/LICENSE
nagios-4.5.9/autoconf-macros/LICENSE.md
nagios-4.5.9/autoconf-macros/README.md
```

```
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ sudo apt update
sudo apt install -y build-essential libgd-dev libapache2-mod-php php7.4 php7.4-cli
php7.4-mbstring unzip wget curl libssl-dev apache2
Hit:1 http://in.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package php7.4 is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source
```

```
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ sudo make all
cd ./base && make
make[1]: Entering directory '/home/geeta/Downloads/nagios-4.5.9/base'
gcc -Wall -I.. -I../lib -I../include -I../include -I.. -g -O2 -I/usr/include/
openssl -DHAVE_CONFIG_H -DNSCORE -c -o nagios.o ./nagios.c
./nagios.c: In function 'main':
./nagios.c:611:25: warning: ignoring return value of 'asprintf' declared with attri
611 |         asprintf(&mac->x[MACRO_PROCESSTARTTIME], "%llu", (
    |         ^
./nagios.c:841:25: warning: ignoring return value of 'asprintf' declared with attri
841 |         asprintf(&mac->x[MACRO_EVENTSTARTTIME], "%llu", (un
    |         ^
```

If you have questions about configuring or running Nagios, please make sure that you:

- Look at the sample config files
- Read the documentation on the Nagios Library at: <https://library.nagios.com>

before you post a question to one of the mailing lists. Also make sure to include pertinent information that could help others help you. This might include:

- What version of Nagios you are using
- What version of the plugins you are using
- Relevant snippets from your config files
- Relevant error messages from the Nagios log file

For more information on obtaining support for Nagios, visit:

<https://support.nagios.com>

Enjoy.

documentation for more information on how to actually define services, hosts, etc. to fit your particular needs.

```
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var/rw  
chmod g+s /usr/local/nagios/var/rw
```

*** External command directory configured ***

```
/usr/bin/install -c -m 644 sample-config/httpd.conf /etc/apache2/sites-available/  
nagios.conf  
if [ 0 -eq 1 ]; then \  
    ln -s /etc/apache2/sites-available/nagios.conf /etc/apache2/sites-enabled/na  
gios.conf; \  
fi
```

*** Nagios/Apache conf file installed ***

geeta@Ubuntu:~/Downloads/nagios-4.5.9\$

10.0.2.15/nagios

http://10.0.2.15

This site is asking you to sign in.

Username

Password

Cancel Sign in

```

geeta@Ubuntu: ~/Downloads/nagios-4.5.9
GNU nano 7.2 /usr/local/nagios/etc/objects/commands.cfg
#####
# COMMANDS.CFG - SAMPLE COMMAND DEFINITIONS FOR NAGIOS 4.5.9
#
#
# NOTES: This config file provides you with some example command definitions
#        that you can reference in host, service, and contact definitions.
#
#        You don't need to keep commands in a separate file from your other
#        object definitions. This has been done just to make things easier to
#        understand.
#####

#####
#
# SAMPLE NOTIFICATION COMMANDS
#
# These are some example notification commands. They may or may not work on
# your system without modification. As an example, some systems will require
#####

#####
#
#
#####
[ Read 253 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line

```

```

geeta@Ubuntu:/usr/local/nagios/libexec$ cd /usr/local/nagios/libexec
$ curl -O https://raw.githubusercontent.com/timdaman/check_docker/master/check_docker/check_docker.py
--2025-05-05 06:44:04-- https://raw.githubusercontent.com/timdaman/check_docker/master/check_docker/check_docker.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.110.133, 185.199.111.133, 185.199.108.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|185.199.110.133|:443... connected
HTTP request sent, awaiting response... 200 OK
Length: 35938 (35K) [text/plain]
Saving to: 'check_docker.py.1'

check_docker.py.1  100%[=====] 35.10K  ---KB/s   in 0.007s

2025-05-05 06:44:04 (5.12 MB/s) - 'check_docker.py.1' saved [35938/35938]

```

```

geeta@Ubuntu:/usr/local/nagios/libexec$ sudo mv check_docker.py.1 check_docker.py
geeta@Ubuntu:/usr/local/nagios/libexec$ sudo chmod +x check_docker.py
geeta@Ubuntu:/usr/local/nagios/libexec$ sudo ln -s /usr/local/nagios/libexec/check_docker.py /usr/local/nagios/libexec/check_docker
geeta@Ubuntu:/usr/local/nagios/libexec$ ./check_docker --help
usage: check_docker [-h] [--connection [/<path to>/docker.socket|<ip/host address>:<port>] |
                  --secure-connection [<ip/host address>:<port>]]
                  [--binary_units | --decimal_units] [--timeout TIMEOUT]
                  [--containers CONTAINERS [CONTAINERS ...]] [--present] [--threads THREADS]
                  [--cpu WARN:CRIT] [--memory WARN:CRIT:UNITS] [--status STATUS] [--health]
                  [--uptime WARN:CRIT] [--image-age WARN:CRIT] [--version]
                  [--insecure-registries INSECURE_REGISTRIES [INSECURE_REGISTRIES ...]]
                  [--restarts WARN:CRIT] [--no-ok] [--no-performance] [-V]

Check docker containers.

options:
  -h, --help            show this help message and exit
  --connection [/<path to>/docker.socket|<ip/host address>:<port>]
                        Where to find docker daemon socket. (default: /var/run/docker.sock)
  --secure-connection [<ip/host address>:<port>]
                        Where to find TLS protected docker daemon socket.
  --binary_units         Use a base of 1024 when doing calculations of KB, MB, GB, & TB (This is
                        default)
  --decimal_units        Use a base of 1000 when doing calculations of KB, MB, GB, & TB
  --timeout TIMEOUT      Connection timeout in seconds. (default: 10.0)
  --containers CONTAINERS [CONTAINERS ...]
                        One or more RegEx that match the names of the container(s) to check. If

```



```

geeta@Ubuntu: ~/Downloads/nagios-4.5.9
: permission denied
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ sudo usermod -aG docker geeta
[sudo] password for geeta:
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ newgrp docker
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ docker run -d --name wordsearch-container nginx
Unable to find image 'nginx:latest' locally
latest: Pulling from library/nginx
254e724d7786: Pull complete
9< 292750: Pull complete
3 53ce49: Pull complete
4f21ed9ac0c0: Pull complete
d38f2ef2d6f2: Pull complete
40a6e9f4e456: Pull complete
d3dc5ec71e9d: Pull complete
Digest: sha256:c15da6c91de8d2f436196f3a768483ad32c258ed4e1beb3d367a27ed67253e66
Status: Downloaded newer image for nginx:latest
77aa65f2d4fb98b4277627bf76d76ccb62ac33921a81b3e6539f4e6c6897256
geeta@Ubuntu:~/Downloads/nagios-4.5.9$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
77aa65f2d4fb  nginx     "/docker-entrypoint..."  27 seconds ago  Up 24 seconds  80/tcp     wordsearch-container
geeta@Ubuntu:~/Downloads/nagios-4.5.9$

```

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	CRITICAL	05-05-2025 08:07:23	0d 11h 27m 47s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_load, ...) failed. errno is 2: No such file or directory
	Current Users	CRITICAL	05-05-2025 08:08:01	0d 11h 27m 9s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_users, ...) failed. errno is 2: No such file or directory
	Docker Container - wordsearch-container	UNKNOWN	05-05-2025 08:09:46	0d 0h 1m 12s	1/3	UNKNOWN - Docker container
	HTTP	CRITICAL	05-05-2025 08:08:38	0d 11h 26m 32s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_http, ...) failed. errno is 2: No such file or directory
	PING	CRITICAL	05-05-2025 08:09:17	0d 11h 25m 54s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_ping, ...) failed. errno is 2: No such file or directory
	Root Partition	CRITICAL	05-05-2025 08:07:06	0d 11h 25m 17s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_disk, ...) failed. errno is 2: No such file or directory
	SSH	CRITICAL	05-05-2025 08:07:06	0d 11h 24m 39s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_ssh, ...) failed. errno is 2: No such file or directory
	Swap Usage	CRITICAL	05-05-2025 08:07:06	0d 11h 24m 2s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_swap, ...) failed. errno is 2: No such file or directory
	Total Processes	CRITICAL	05-05-2025 08:07:06	0d 11h 23m 24s	4/4	(No output on stdout) stderr: execvp(/usr/local/nagios/libexec/check_procs, ...) failed. errno is 2: No such file or directory

Results 1 - 9 of 9 Matching Services

Page Tour

Conclusion:

The integration of Nagios with Docker enhances visibility into containerized environments by providing real-time monitoring and proactive alerting. Through the installation and configuration steps, we successfully set up Nagios Core to track the status and performance of Docker containers using custom plugins. This setup helps ensure high availability and quick issue resolution by alerting administrators to container failures or resource bottlenecks. Overall, Nagios proves to be a powerful and flexible tool for monitoring modern, container-based infrastructure when paired with the right plugins and configurations.