

Experiment 9

Aim: To Understand Continuous monitoring and Installation and configuration of Nagios Core, Nagios Plugins and NRPE (Nagios Remote Plugin Executor) on Linux Machine.

Step 1: Create an ec2 instance, select amazon linux, t2.micro , select a key name and launch instance.

Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags [Info](#)

Name
nagios-host [Add additional tags](#)

▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents **Quick Start**

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux

Summary

Number of instances [Info](#)
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.5.2...[read more](#)
ami-0fff1b9a61dec8a5f

Virtual server type (instance type)
t2.micro

Firewall (security group)
NAGIOS2

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel **Launch instance** [Review commands](#)

Step 2 : Connect to the instance using the SSH client, and copy and paste the command on the terminal

```
ec2-user@ip-172-31-33-100:~
Microsoft Windows [Version 10.0.19045.4894]
(c) Microsoft Corporation. All rights reserved.

C:\Users\veyda>cd Downloads

C:\Users\veyda\Downloads>ssh -i "nagios.pem" ec2-user@ec2-174-129-105-123.compute-1.amazonaws.com
The authenticity of host 'ec2-174-129-105-123.compute-1.amazonaws.com (174.129.105.123)' can't be established.
ECDSA key fingerprint is SHA256:ToI7CEULcDMUEI7aeXSD8JcW8Vy/MienkGGAp4RR7jc.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-174-129-105-123.compute-1.amazonaws.com,174.129.105.123' (ECDSA) to the list of known hosts.

#_
~\####_ Amazon Linux 2023
~\####_
~\###|
~\#/ https://aws.amazon.com/linux/amazon-linux-2023
~\V~'~>
~\_/_/
~\m/'
ec2-user@ip-172-31-33-100 ~]$
```

Step 3: First, run the following command:- `sudo yum update` This command will check for any updates for the YUM library.

```

[ec2-user@ip-172-31-35-21 ~]$ sudo yum update
Last metadata expiration check: 0:02:03 ago on Tue Oct  8 05:47:23 2024.
Dependencies resolved.
Nothing to do.
Complete!

```

Step 4: Run the command: `sudo yum install httpd php` This installs an Apache server and a PHP on your instance.

```

[ec2-user@ip-172-31-35-21 ~]$ sudo yum install httpd php
Last metadata expiration check: 0:02:58 ago on Tue Oct  8 05:47:23 2024.
Dependencies resolved.
=====
Package                Arch      Version                               Repository      Size
=====
Installing:
httpd                   x86_64    2.4.62-1.amzn2023                   amazonlinux     48 k
php8.3                  x86_64    8.3.10-1.amzn2023.0.1               amazonlinux     10 k
Installing dependencies:
apr                     x86_64    1.7.2-2.amzn2023.0.2               amazonlinux     129 k
apr-util                x86_64    1.6.3-1.amzn2023.0.1               amazonlinux     98 k
generic-logos-httpd    noarch    18.0.0-12.amzn2023.0.3             amazonlinux     19 k
httpd-core              x86_64    2.4.62-1.amzn2023                   amazonlinux     1.4 M
httpd-filesystem        noarch    2.4.62-1.amzn2023                   amazonlinux     14 k
=====

```

Step 5: Run the command: `sudo yum install gcc glibc glibc-common` This installs the C/C++ compiler (GCC) along with the necessary C libraries required for compiling and running C programs.

```

[ec2-user@ip-172-31-35-21 ~]$ sudo yum install gcc glibc glibc-common
Last metadata expiration check: 0:03:21 ago on Tue Oct  8 05:47:23 2024.
Package glibc-2.34-52.amzn2023.0.11.x86_64 is already installed.
Package glibc-common-2.34-52.amzn2023.0.11.x86_64 is already installed.
Dependencies resolved.
=====
Package                Arch      Version                               Repository      Size
=====
Installing:
gcc                     x86_64    11.4.1-2.amzn2023.0.2               amazonlinux     32 M
Installing dependencies:
annobin-docs           noarch    10.93-1.amzn2023.0.1               amazonlinux     92 k
annobin-plugin-gcc      x86_64    10.93-1.amzn2023.0.1               amazonlinux     887 k
cpp                     x86_64    11.4.1-2.amzn2023.0.2               amazonlinux     10 M
gc                       x86_64    8.0.4-5.amzn2023.0.2               amazonlinux     105 k
=====

```

Step 6: Run the command: `sudo yum install gd gd-devel`

```

[ec2-user@ip-172-31-35-21 ~]$ sudo yum install gd gd-devel
Last metadata expiration check: 0:03:44 ago on Tue Oct  8 05:47:23 2024.
Dependencies resolved.
=====
Package                Arch      Version                               Repository      Size
=====
Installing:
gd                      x86_64    2.3.3-5.amzn2023.0.3               amazonlinux     139 k
gd-devel               x86_64    2.3.3-5.amzn2023.0.3               amazonlinux     38 k
Installing dependencies:
brotli                 x86_64    1.0.9-4.amzn2023.0.2               amazonlinux     314 k
brotli-devel           x86_64    1.0.9-4.amzn2023.0.2               amazonlinux     31 k
bzip2-devel            x86_64    1.0.8-6.amzn2023.0.2               amazonlinux     214 k
cairo                  x86_64    1.17.6-2.amzn2023.0.1             amazonlinux     684 k
cmake-filesystem        x86_64    3.22.2-1.amzn2023.0.4             amazonlinux     16 k
=====

```

Step 7: Run the commands: `sudo adduser -m nagios sudo passwd nagios`

```
Complete!
[ec2-user@ip-172-31-35-21 ~]$ sudo adduser -m nagios
[ec2-user@ip-172-31-35-21 ~]$ sudo passwd -m nagios
passwd: bad argument -m: unknown option
[ec2-user@ip-172-31-35-21 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
[ec2-user@ip-172-31-35-21 ~]$ sudo usermod -a -G nagcmd nagios
[ec2-user@ip-172-31-35-21 ~]$ sudo usermod -a -G nagcmd apache
```

Step 10: `mkdir ~/downloads cd ~/downloads` This creates a directory named 'downloads', to store the files of the nagios server that are downloaded

```
[ec2-user@ip-172-31-35-21 ~]$ : mkdir ~/downloads
[ec2-user@ip-172-31-35-21 ~]$ cd ~/downloads
```

Step 11: `wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz` The above command installs the latest version of nagios-core

Step 12: `wget https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz` The above command installs the latest version of nagios-plugins.

```
[ec2-user@ip-172-31-35-21 downloads]$ wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz
--2024-10-09 05:42:49-- https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz
Resolving assets.nagios.com (assets.nagios.com)... 45.79.49.120, 2600:3c00::f03c:92ff:fef7:45ce
Connecting to assets.nagios.com (assets.nagios.com)[45.79.49.120]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2065473 (2.0M) [application/x-gzip]
Saving to: 'nagios-4.5.5.tar.gz.1'

nagios-4.5.5.tar.gz.1 100%[=====>] 1.97M 5.56MB/s in 0.4s

2024-10-09 05:42:50 (5.56 MB/s) - 'nagios-4.5.5.tar.gz.1' saved [2065473/2065473]

[ec2-user@ip-172-31-35-21 downloads]$ wget https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz
--2024-10-09 05:43:04-- https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz
Resolving nagios-plugins.org (nagios-plugins.org)... 45.56.123.251
Connecting to nagios-plugins.org (nagios-plugins.org)[45.56.123.251]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2753049 (2.6M) [application/x-gzip]
Saving to: 'nagios-plugins-2.4.11.tar.gz.1'

nagios-plugins-2.4.11.tar.gz.1 100%[=====>] 2.62M 5.49MB/s in 0.5s

2024-10-09 05:43:05 (5.49 MB/s) - 'nagios-plugins-2.4.11.tar.gz.1' saved [2753049/2753049]
```

Step 13:

`tar xzvf nagios-4.5.5.tar.gz` This extracts the nagios-core files into the same directory using the `tar` command.

Use 'ls' command to find the correct directory

run the 'sudo yum install openssl-devel' command.

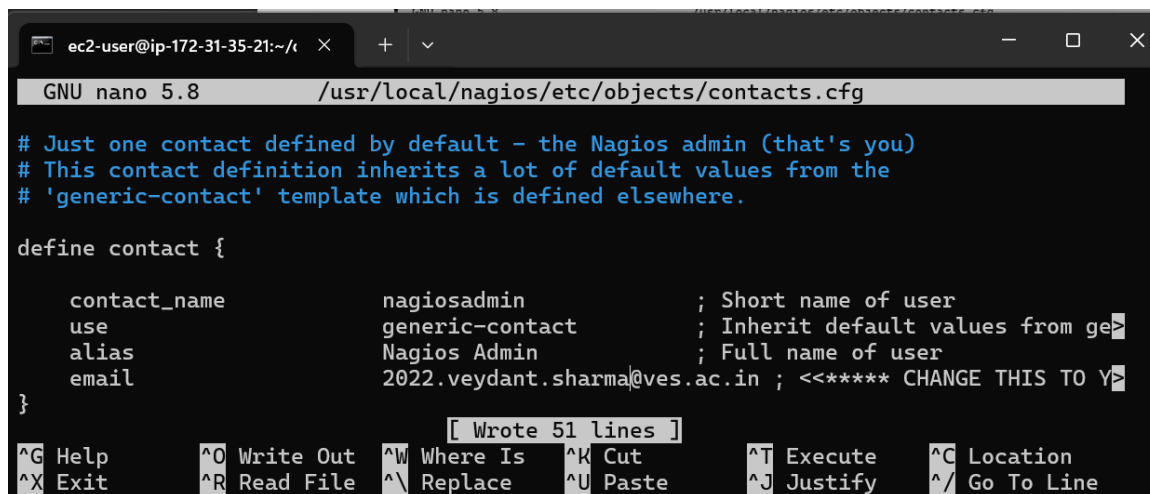
```
[ec2-user@ip-172-31-35-21 downloads]$ ls
nagios-4.5.5  nagios-4.5.5.tar.gz  nagios-4.5.5.tar.gz.1  nagios-plugins-2.4.11.tar.gz
[ec2-user@ip-172-31-35-21 downloads]$ cd nagios-4.5.5
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ sudo yum install openssl-devel
Last metadata expiration check: 23:58:21 ago on Tue Oct  8 05:47:23 2024.
Package openssl-devel-1:3.0.8-1.amzn2023.0.14.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ ./configure --with-command-group=nagcmd
checking for a BSD compatible install... /usr/bin/install -s
```

Step 14: Next, we must compile all components of this software according to the instructions in the Makefile. To do so, use the following command: make all Then, sudo make install sudo make install-init sudo make install-config sudo make install-commandmode

```
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ make all
cd ./base && make
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.5.5/base'
make -C ../lib
```

```
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ sudo make install
sudo make install-init
sudo make install-config
sudo make install-commandmode
cd ./base && make install
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.5.5/base'
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/bin
/usr/bin/install -c -s -m 774 -o nagios -g nagios nagios /usr/local/nagios/bin
/usr/bin/install -c -s -m 774 -o nagios -g nagios nagiosstats /usr/local/nagios/bin
make[1]: Leaving directory '/home/ec2-user/downloads/nagios-4.5.5/base'
```

Step 15: : We need to update the email linked with this server to our email for it to send notifications (if any needed). sudo nano /usr/local/nagios/etc/objects/contacts.cfg



```
ec2-user@ip-172-31-35-21:~/t
GNU nano 5.8 /usr/local/nagios/etc/objects/contacts.cfg

# Just one contact defined by default - the Nagios admin (that's you)
# This contact definition inherits a lot of default values from the
# 'generic-contact' template which is defined elsewhere.

define contact {

    contact_name      nagiosadmin          ; Short name of user
    use                generic-contact      ; Inherit default values from ge
    alias              Nagios Admin        ; Full name of user
    email              2022.veydant.sharma@ves.ac.in ; <<***** CHANGE THIS TO Y

}

[ Wrote 51 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
```

Step 17: sudo make install-webconf This installs the necessary configuration files for the Nagios web interface.

Step 18: `sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin` This creates a user named 'nagiosadmin' to access the nagios web interface. Create a password and keep it in mind as it will be required in the future steps.

Step 19: Restart the apache server to apply all the recent configurations. `sudo service httpd restart`

Step 20: `cd ~/downloads tar zxvf nagios-plugins-2.4.11.tar.gz` This changes the directory to the 'downloads' directory and extracts the files for nagios-plugins

```
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ sudo make install-webconf
/usr/bin/install -c -m 644 sample-config/httpd.conf /etc/httpd/conf.d/nagios.conf
if [ 0 -eq 1 ]; then \
    ln -s /etc/httpd/conf.d/nagios.conf /etc/apache2/sites-enabled/nagios.conf; \
fi

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

[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ sudo service httpd restart
Redirecting to /bin/systemctl restart httpd.service
[ec2-user@ip-172-31-35-21 nagios-4.5.5]$ cd ~/downloads
[ec2-user@ip-172-31-35-21 downloads]$ tar zxvf nagios-plugins-2.4.11.tar.gz
nagios-plugins-2.4.11/
nagios-plugins-2.4.11/build-aux/
```

Step 21: `cd nagios-plugins-2.4.11 ./configure --with-nagios-user=nagios --with-nagios-group=nagios` This installs the configurations for the nagios-plugins files.

```
[ec2-user@ip-172-31-35-21 downloads]$ cd nagios-plugins-2.4.11
[ec2-user@ip-172-31-35-21 nagios-plugins-2.4.11]$ ./configure --with-nagios-user=nagios --with-nagios-group=nagios
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /usr/bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether make supports nested variables... yes
checking whether to enable maintainer-specific portions of Makefiles... yes
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
```

Step 22: `sudo chkconfig --add nagios`
`sudo chkconfig nagios on`

```
error: Reading information on service nagios: No such file or directory
[ec2-user@ip-172-31-35-21 nagios-plugins-2.4.11]$ sudo chkconfig --add nagios
sudo chkconfig nagios on
error: Reading information on service nagios: No such file or directory
Note: Forwarding request to 'systemctl enable nagios.service'.
Created symlink /etc/systemd/system/multi-user.target.wants/nagios.service → /usr/lib/systemd/system/nagios.service.
[ec2-user@ip-172-31-35-21 nagios-plugins-2.4.11]$ sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.5.5
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2024-09-17
License: GPL

Website: https://www.nagios.org
Reading configuration data...
```

```
[ec2-user@ip-172-31-35-21 downloads]$ tar zxvf nagios-4.5.5.tar.gz
nagios-4.5.5/
nagios-4.5.5/.github/
nagios-4.5.5/.github/workflows/
nagios-4.5.5/.github/workflows/test.yml
nagios-4.5.5/.gitignore
nagios-4.5.5/CONTRIBUTING.md
```

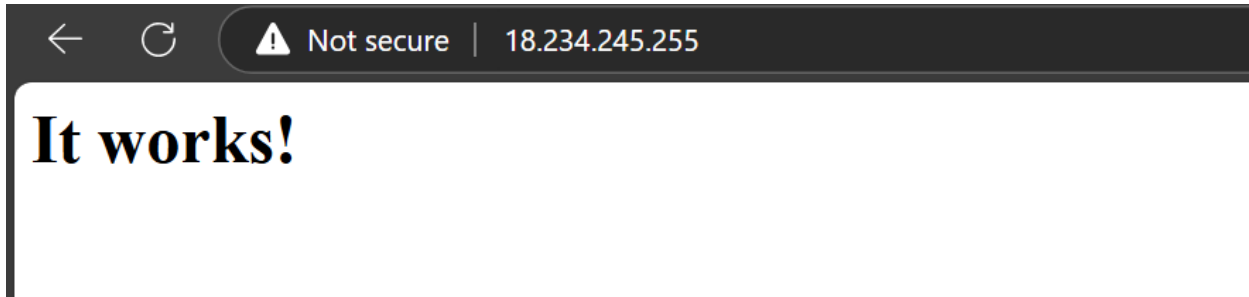
Step 23: `sudo service nagios start` This starts the Nagios service.

`sudo systemctl status nagios` This checks the status of Nagios. Ensure that it is 'active(running)'.

```
[ec2-user@ip-172-31-35-21 nagios-plugins-2.4.11]$ sudo service nagios start
Redirecting to /bin/systemctl start nagios.service
[ec2-user@ip-172-31-35-21 nagios-plugins-2.4.11]$ sudo systemctl status nagios
● nagios.service - Nagios Core 4.5.5
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; preset: disabled)
   Active: active (running) since Wed 2024-10-09 05:55:32 UTC; 11s ago
     Docs: https://www.nagios.org/documentation
   Process: 21100 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg (code=exited, status=0>
   Process: 21101 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg (code=exited, status=0/SU>
   Main PID: 21102 (nagios)
      Tasks: 6 (limit: 1112)
     Memory: 5.5M
        CPU: 77ms
    CGroup: /system.slice/nagios.service
            └─21102 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
              └─21103 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                └─21104 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                  └─21105 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                    └─21106 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                      └─21107 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg

Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: qh: Socket '/usr/local/nagios/var/rw/nagios.qh' successful
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: qh: core query handler registered
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: qh: echo service query handler registered
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: qh: help for the query handler registered
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: wproc: Successfully registered manager as @wproc with query
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: wproc: Registry request: name=Core Worker 21105;pid=21105
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: wproc: Registry request: name=Core Worker 21104;pid=21104
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: wproc: Registry request: name=Core Worker 21103;pid=21103
Oct 09 05:55:32 ip-172-31-35-21.ec2.internal nagios[21102]: wproc: Registry request: name=Core Worker 21106;pid=21106
```

Step 24: In the address bar, enter 'http://<ipv4 address>/nagios'.



A screenshot of the Nagios Core 4.5.5 web interface. The browser address bar shows '18.234.245.255/nagios/'. The interface features a left-hand navigation menu with categories: General (Home, Documentation), Current Status (Tactical Overview, Map, Hosts, Services, Host Groups, Service Groups, Problems), Reports (Availability, Trends, Alerts, Notifications, Event Log), and System (Comments, Downtime, Process Info, Performance Info, Scheduling Queue, Configuration). The main content area includes the Nagios Core logo, a status message 'Daemon running with PID 21102', the version 'Version 4.5.5' dated 'September 17, 2024', and a 'Check for updates' link. Below this are four boxes: 'Get Started' with links to monitoring, look-and-feel, addons, support, training, and certification; 'Quick Links' with links to Nagios Library, Labs, Exchange, Support, company, and project; 'Latest News'; and 'Don't Miss...'. At the bottom, there is a copyright notice for 2010-2024 and 1999-2009, and a license statement for the GNU General Public License.

Conclusion:

- In the above experiment, we learned how to install and configure Nagios Core, Nagios Plugins and NRPE (Nagios Remote Plugin Executor) on Linux Machine.
- We faced some issues with the configuration command, which were fixed with the right directory and the `sudo yum install openssl-devel` command.
- Once the setup was complete, we hosted the Nagios server and accessed the Nagios dashboard by pasting the public IPv4 address of our instance in the browser