EXPERIMENT NO. 9

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

Theory:

What is Nagios?

Nagios is an open-souíce monitoíing tool designed to monitoí systems, netwoíks, and infíastíuctuíe. It helps oíganizations identify and íesolve Iľ infíastíuctuíe issues befoíe they affect cíitical business píocesses. Nagios píovides monitoring and aleíting services for service, switches, applications, and seívices.

Key features of Nagios

1. Monitoring: Nagios can monitoí a wide íange of netwoík seívices (HTTP, SMTP, POP3, etc.), host íesouíces (processor load, disk usage, system logs, etc.), and enviíonmental factoís (tempeíatuíe, humidity, etc.).
2. Aleíting: When an issue is detected, Nagios can send aleíts via email, SMS, oí custom scíipts to notify administíatoís.
3. Repoíting: Nagios píovides detailed íepoíts and logs of outages, events, notifications, and aleít íesponses, helping in histoíical analysis and SLA compliance.
4. Scalability: Nagios is designed to scale and can monitoí laíge, complex enviíonments.
5. Ïlexibility: With a wide íange of plugins and add-ons, Nagios can be customized to meet specific monitoíing needs.

How Nagios Woíks

1. Configuíation: Administíatoís configuíe Nagios to monitoí specific seívices and hosts. ľhis involves defining what to monitoí, how to monitoí it, and what actions to take when issues aíe detected.
2. Plugins: Nagios uses plugins to gatheí infoímation about the status of vaíious seívices and hosts. ľhese plugins can be custom scíipts oí píe-built ones available in the Nagios community.
3. Scheduling: Nagios schedules íegulaí checks of the defined seívices and hosts using the configuíed plugins.

4. Alerting: If a check indicates a píoblem, Nagios tíiggeís an aleít. Aleíts can be configuíed to escalate if not acknowledged within a ceítain timefíame.

5. Web Inteíface: Nagios píovides a web inteíface foí viewing the status of monitoíed seívices and hosts, acknowledging aleíts, and geneíating íepoíts.

Continuous Monitoíing

Continuous monitoíing is a píocess that involves constantly tíacking and analyzing the peífoímance and secuíity of Il' systems. l'his píactice is cíucial foí identifying and íesponding to issues in íeal-time, ensuíing system íeliability, and maintaining secuíity. Key benefits include:

- Real-time insights into system peífoímance.
- Eaíly detection of issues to píevent downtime.
- Enhanced secuíity thíough continuous thíeat detection.
- Impíoved compliance with íegulatoíy standaíds.

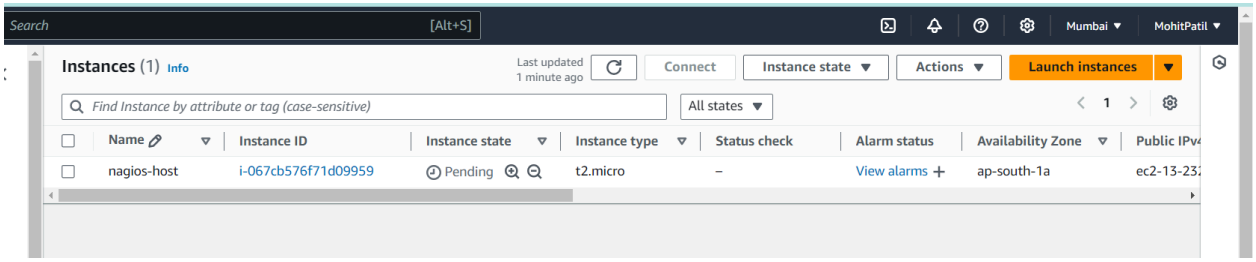
Setting Up Nagios

1. Installation: Install Nagios on a server, typically a Linux-based system.
2. Configuíation Ïiles: Edit configuíation files to define what to monitoí and how to monitoí it. l'his includes defining hosts, seívices, contacts, and notification methods.
3. Plugins: Install and configuíe necessaíy plugins to monitoí specific seívices and hosts.
4. Web Inteíface: Set up the web inteíface to allow easy access to monitoíing data and aleít management.
5. Testing: Test the configuíation to ensuíe that Nagios is coíiectly monitoíing the defined seívices and hosts and that aleíts aíe being sent as expected.

Implementation :

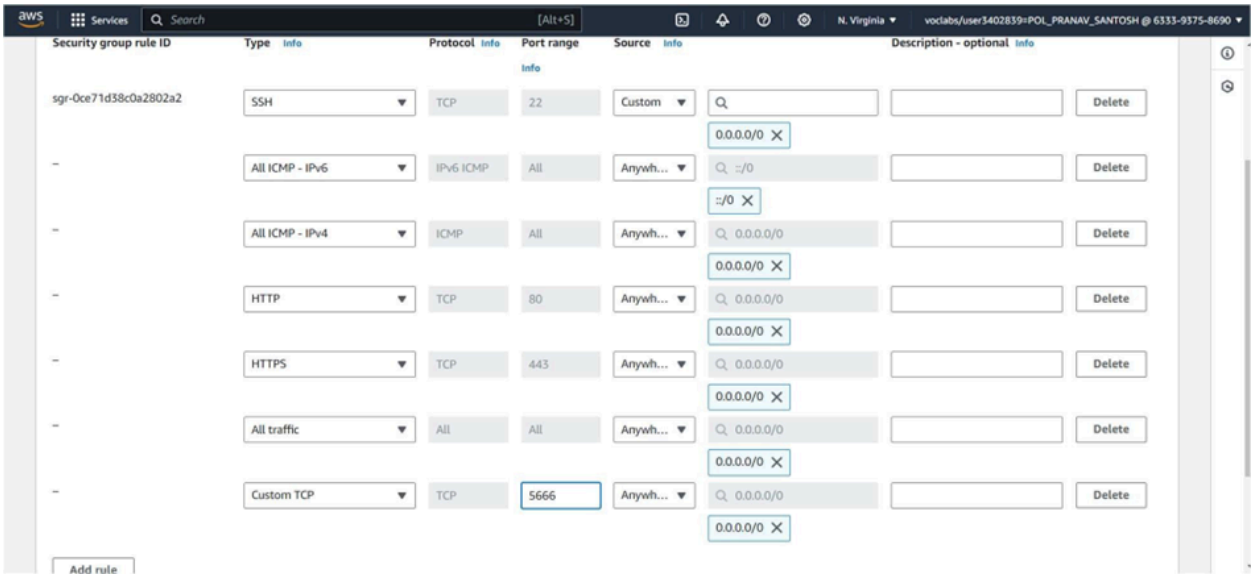
1. Create an Amazon Linux EC2 Instance

- Name it nagios-host.



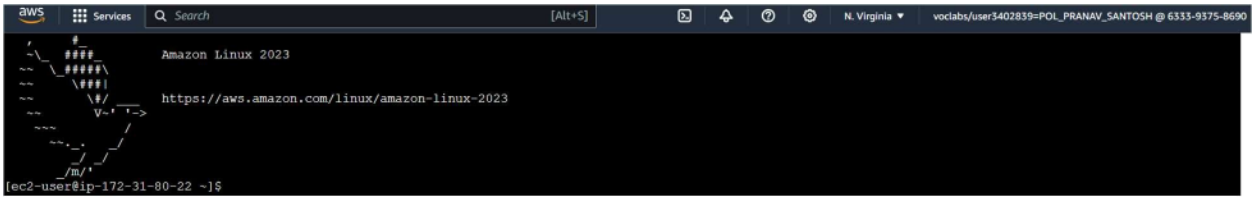
2. Configure Security Group

- Ensure HTTP, HTTPS, SSH, and ICMP are open from everywhere.
- Edit the inbound rules of the specified Security Group



3. Connect to Your EC2 Instance

- SSH into your EC2 instance oí use EC2 Instance Connect from the browser



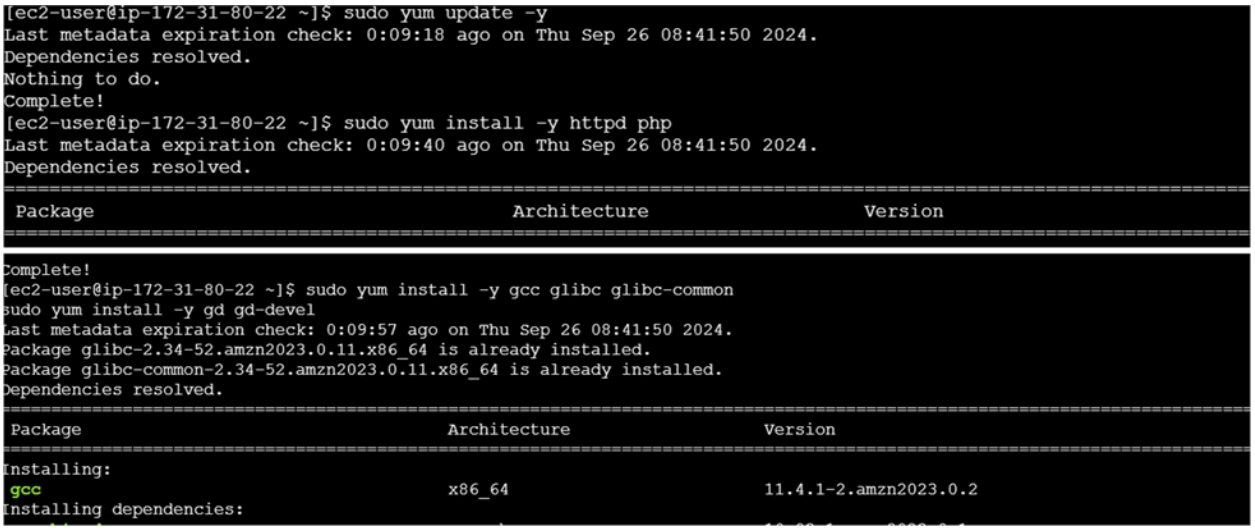
4. Update Package Indices and Install Requiíed Packages

Commands -

sudo yum update

sudo yum install http php

sudo yum install gcc glibc glibc-common sudo yum install gd gd-devel



5. Cíeate a New Nagios User

Commands -

sudo adduseí -m nagios sudo passwd nagios

```
[ec2-user@ip-172-31-80-22 ~]$ sudo useradd nagios
[ec2-user@ip-172-31-80-22 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
```

6. Cíeate a New User Group

Commands -

sudo gíoupadd nagcmd

```
[ec2-user@ip-172-31-80-22 ~]$ sudo groupadd nagcmd
[ec2-user@ip-172-31-80-22 ~]$
```

7. Add Users to the Group

Commands -

sudo useímod -a -G nagcmd nagios sudo useímod -a -G nagcmd apache

```
[ec2-user@ip-172-31-80-22 ~]$ sudo usermod -aG nagcmd nagios
sudo usermod -aG nagcmd apache
```

8. Create a Directory foí Nagios Downloads

Commands -

mkdií ~/downloads cd ~/downloads

```
[ec2-user@ip-172-31-80-22 ~]$ mkdir ~/downloads
cd ~/downloads
```

9. Download Nagios and Plugins Souíce Ïiles

Commands -

Wget https://assets.nagios.com/downloads/nagioscoíe/íeleases/nagios-4.4.6.taí.gz wget https://nagios-plugins.oíg/download/nagios-plugins-2.3.3.taí.gz

```
[ec2-user@ip-172-31-80-22 downloads]$ wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.tar.gz
wget https://nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz
--2024-09-26 08:56:36--  https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.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: 11333414 (11M) [application/x-gzip]
Saving to: 'nagios-4.4.6.tar.gz'

nagios-4.4.6.tar.gz                 100%[=============================================================================>]  10.81M  12.6MB/s    in 0.9

2024-09-26 08:56:37 (12.6 MB/s) - 'nagios-4.4.6.tar.gz' saved [11333414/11333414]

--2024-09-26 08:56:37--  https://nagios-plugins.org/download/nagios-plugins-2.3.3.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: 2782610 (2.7M) [application/x-gzip]
Saving to: 'nagios-plugins-2.3.3.tar.gz'
```

10. Extract the Nagios Source Ïile

Commands -

taí zxvf nagios-4.4.6.taí.gz cd nagios-4.4.6

```
[ec2-user@ip-172-31-80-22 downloads]$ tar zxvf nagios-4.4.6.tar.gz
cd nagios-4.4.6
nagios-4.4.6/
nagios-4.4.6/.gitignore
nagios-4.4.6/.travis.yml
nagios-4.4.6/CONTRIBUTING.md
nagios-4.4.6/Changelog
nagios-4.4.6/INSTALLING
nagios-4.4.6/LEGAL
nagios-4.4.6/LICENSE
nagios-4.4.6/Makefile.in
nagios-4.4.6/README.md
nagios-4.4.6/THANKS
nagios-4.4.6/UPGRADING
nagios-4.4.6/aclocal.m4
nagios-4.4.6/autoconf-macros/
nagios-4.4.6/autoconf-macros/.gitignore
nagios-4.4.6/autoconf-macros/CHANGELOG.md
nagios-4.4.6/autoconf-macros/LICENSE
nagios-4.4.6/autoconf-macros/LICENSE.md
nagios-4.4.6/autoconf-macros/README.md
nagios-4.4.6/autoconf-macros/add_group_user
nagios-4.4.6/autoconf-macros/ax_nagios_get_distrib
```

11. Run the Configuíation Scíipt

Commands -

./configuíe --with-command-gíoup=nagcmd

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ ./configure --with-command-group=nagcmd
checking for a BSD-compatible install... /usr/bin/install -c
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether make sets $(MAKE)... yes
checking whether ln -s works... yes
checking for strip... /usr/bin/strip
checking how to run the C preprocessor... gcc -E
```

12. Compile the Souíce Code

Commands -

make all

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ make all
cd ./base && make
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.4.6/base'
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o nagios.o nagios.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o broker.o broker.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o nebmods.o nebmods.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o ../common/shared.o ../common/shared.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o query-handler.o query-handler.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o workers.o workers.c
In function 'get_wproc_list',
    inlined from 'get_worker' at workers.c:277:12:
workers.c:253:17: warning: '%s' directive argument is null [-Wformat-overflow=]
  253 |                 log_debug_info(DEBUGL_CHECKS, 1, "Found specialized worker(s) for '%s'", (slash && *slash != '/') ? slash : cmd_name);
      |                 ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o checks.o checks.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o config.o config.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o commands.o commands.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o events.o events.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o flapping.o flapping.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o logging.o logging.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o macros-base.o ../common/macros.c
```

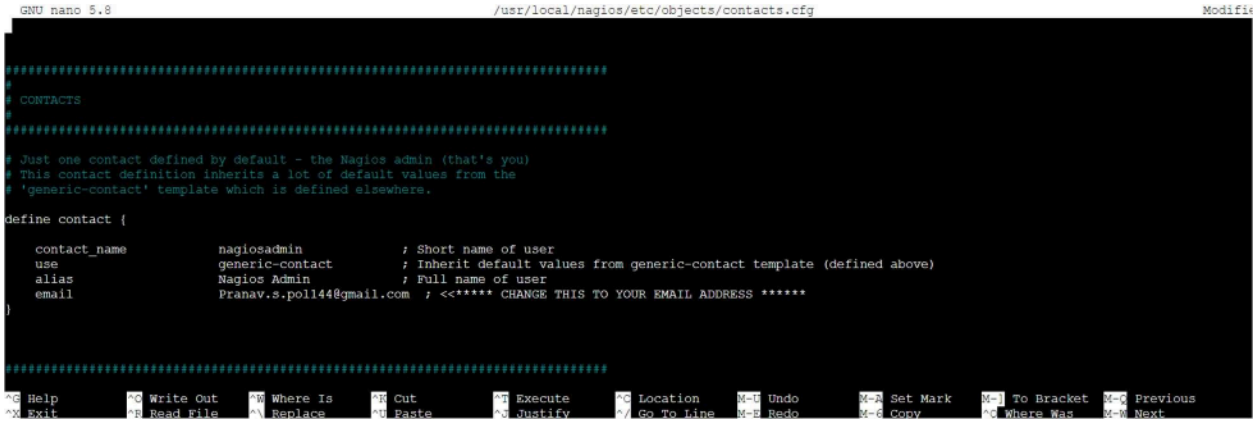
13. Install Binaíies, Init Scíipt, and Sample Config Ïiles
Commands -
./sudo make install sudo make install-init sudo make install-config
sudo make install-commandmode

```
*** Support Notes *******************************************

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.
```

14. Edit the Config file to Change the Email Address
Commands -

sudo nano /usí/local/nagios/etc/objects/contacts.cfg

- Change the email addíess in the contacts.cfg file to youí píefeííed email.



15. Configuíe the Web Inteíface

Commands -

sudo make install-webconf

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ sudo nano /usr/local/nagios/etc/objects/contacts.cfg
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ 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-172-31-80-22 nagios-4.4.6]$
```

16. Create a Nagios Admin Account

Commands -

sudo htpasswd -c /usí/local/nagios/etc/htpasswd.useís nagiosadmin

- You will be píompted to enteí and confiím the passwoíd foí the nagiosadmin useí.

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
```

17. Restaít Apache

Commands -

sudo systemctl restart httpd

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ sudo systemctl restart httpd
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$
```

18. Extíact the Plugins Souíce Ïile

Commands -

cd ~/downloads
taí zxvf nagios-plugins-2.3.3.taí.gz cd nagios-plugins-2.3.3

```
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ sudo systemctl restart httpd
[ec2-user@ip-172-31-80-22 nagios-4.4.6]$ cd ~/downloads
tar zxvf nagios-plugins-2.3.3.tar.gz
cd nagios-plugins-2.3.3
nagios-plugins-2.3.3/
nagios-plugins-2.3.3/perlmods/
nagios-plugins-2.3.3/perlmods/Config-Tiny-2.14.tar.gz
nagios-plugins-2.3.3/perlmods/parent-0.226.tar.gz
nagios-plugins-2.3.3/perlmods/Test-Simple-0.98.tar.gz
nagios-plugins-2.3.3/perlmods/Makefile.in
nagios-plugins-2.3.3/perlmods/version-0.9903.tar.gz
nagios-plugins-2.3.3/perlmods/Makefile.am
nagios-plugins-2.3.3/perlmods/Module-Runtime-0.013.tar.gz
nagios-plugins-2.3.3/perlmods/Module-Metadata-1.000014.tar.gz
nagios-plugins-2.3.3/perlmods/Params-Validate-1.08.tar.gz
nagios-plugins-2.3.3/perlmods/Class-Accessor-0.34.tar.gz
nagios-plugins-2.3.3/perlmods/Try-Tiny-0.18.tar.gz
nagios-plugins-2.3.3/perlmods/Module-Implementation-0.07.tar.gz
nagios-plugins-2.3.3/perlmods/Makefile
nagios-plugins-2.3.3/perlmods/Perl-OSType-1.003.tar.gz
nagios-plugins-2.3.3/perlmods/install_order
nagios-plugins-2.3.3/perlmods/Nagios-Plugin-0.36.tar.gz
nagios-plugins-2.3.3/perlmods/Math-Calc-Units-1.07.tar.gz
nagios-plugins-2.3.3/perlmods/Module-Build-0.4007.tar.gz
nagios-plugins-2.3.3/ABOUT-NLS
nagios-plugins-2.3.3/configure.ac
nagios-plugins-2.3.3/Makefile.in
```

19. Compile and Install Plugins

Commands -

./configuíe --with-nagios-useí=nagios --with-nagios-gíoup=nagios make
sudo make install

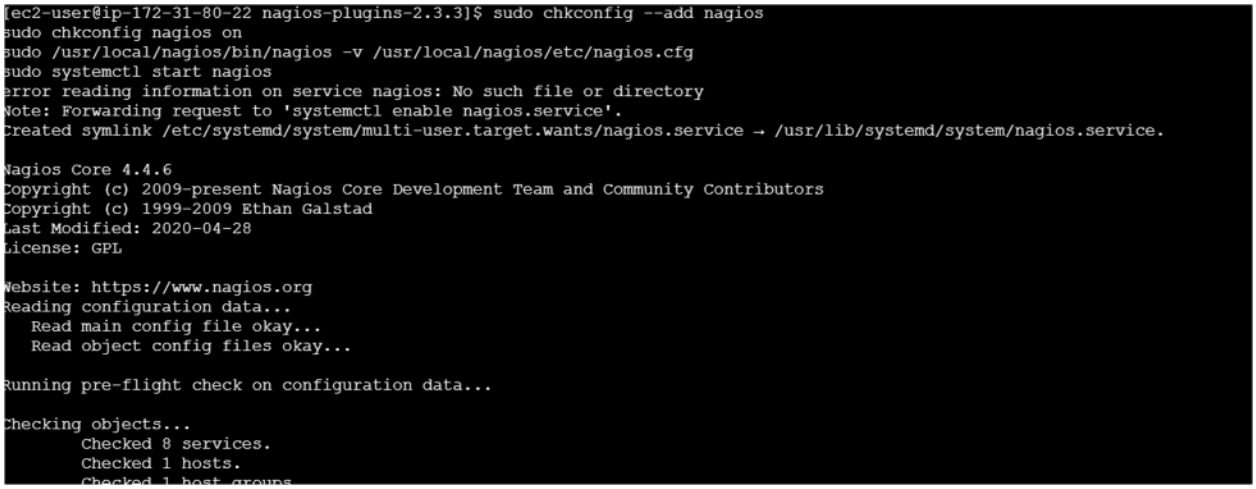
```
[ec2-user@ip-172-31-80-22 nagios-plugins-2.3.3]$ ./configure --with-nagios-user=nagios --with-nagios-group=nagios
make
sudo make install
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /usr/bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether to disable maintainer-specific portions of Makefiles... yes
checking build system type... x86_64-unknown-linux-gnu
checking host system type... x86_64-unknown-linux-gnu
checking for gcc... gcc
checking for C compiler default output file name... a.out
checking whether the C compiler works... yes
checking whether we are cross compiling... no
checking for suffix of executables...
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking for style of include used by make... GNU
checking dependency style of gcc... gcc3
checking how to run the C preprocessor... gcc -E
checking for grep that handles long lines and -e... /usr/bin/grep
```

20. Staít Nagios

Commands -

sudo chkconfig --add nagios sudo chkconfig nagios on

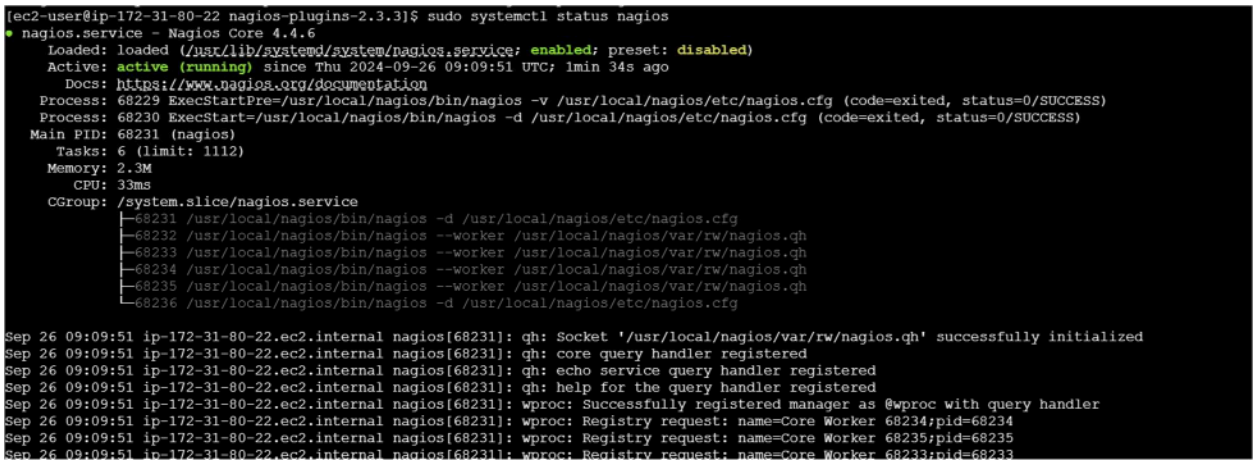
sudo /usí/local/nagios/bin/nagios -v /usí/local/nagios/etc/nagios.cfg sudo systemctl staít nagios



21. Check the Status of Nagios

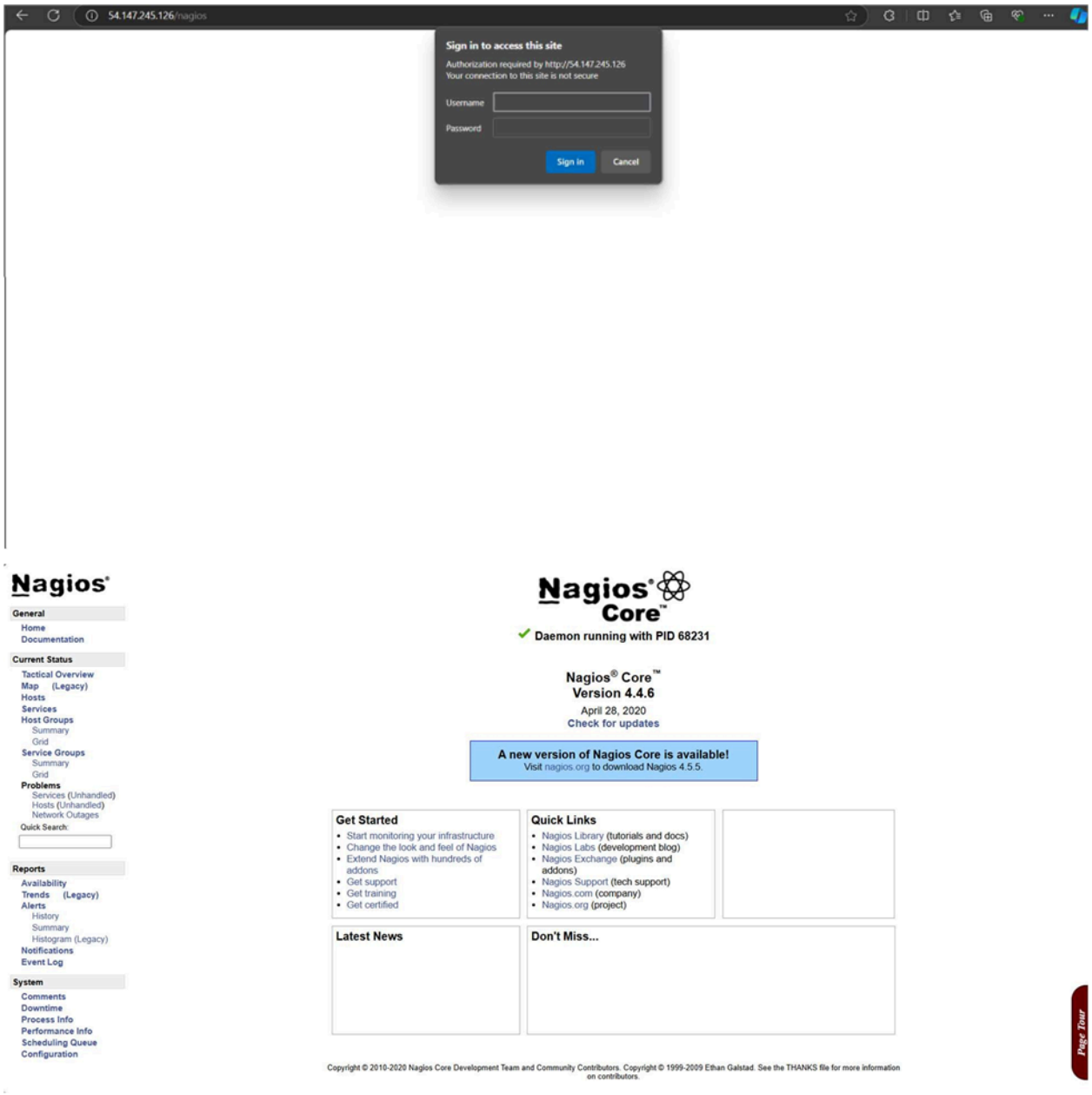
Commands -

sudo systemctl status nagios



22. Access Nagios Web Inteíface

- Copy the Public IP addíess of youí EC2 instance.
- Open youí bíowseí and navigate to http://<youí_public_ip_addíess>/nagios.
- Enteí the useíname nagiosadmin and the passwoíd you set in Step 16.



Conclusion:

After installing and configuíing Nagios Coíe, Plugins, and NRPE on a Linux machine, We have a íobust continuous monitoíing setup, ensuíing píoactive issue detection and optimal system peífoímance.