ADVANCED DEVOPS EXP 9

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

Theory:

What is Nagios?

Nagios is an open-source monitoring tool designed to monitor systems, networks, and infrastructure. It helps organizations identify and resolve IT infrastructure issues before they affect critical business processes. Nagios provides monitoring and alerting services for servers, switches, applications, and services.

Key Features of Nagios

- **Monitoring**: Nagios can monitor a wide range of network services (HTTP, SMTP, POP3, etc.), host resources (processor load, disk usage, system logs, etc.), and environmental factors (temperature, humidity, etc.).
- **Alerting:** When an issue is detected, Nagios can send alerts via email, SMS, or custom scripts to notify administrators.
- **Reporting:** Nagios provides detailed reports and logs of outages, events, notifications, and alert responses, helping in historical analysis and SLA compliance.
- **Scalability:** Nagios is designed to scale and can monitor large, complex environments. 5. Flexibility: With a wide range of plugins and add-ons, Nagios can be customized to meet specific monitoring needs.

How Nagios Works

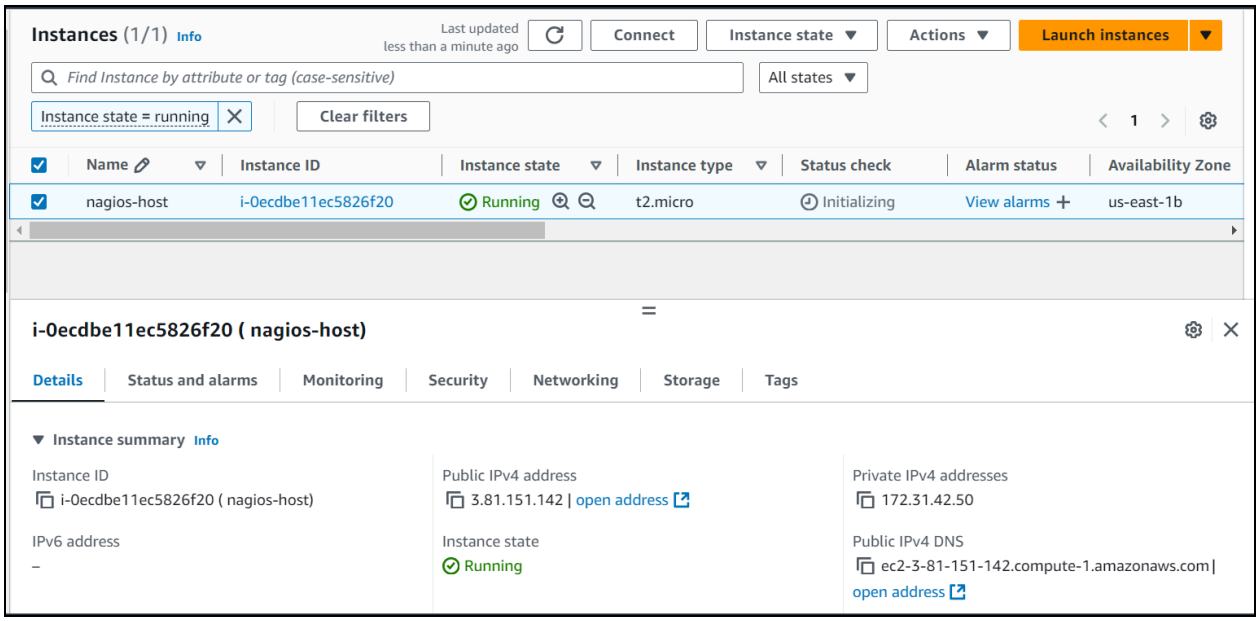
- **Configuration:** Administrators configure Nagios to monitor specific services and hosts. This involves defining what to monitor, how to monitor it, and what actions to take when issues are detected.
- **Plugins:** Nagios uses plugins to gather information about the status of various services and hosts. These plugins can be custom scripts or pre-built ones available in the Nagios community.
- **Scheduling:** Nagios schedules regular checks of the defined services and hosts using the configured plugins.
- **Alerting**: If a check indicates a problem, Nagios triggers an alert. Alerts can be configured to escalate if not acknowledged within a certain timeframe. 5. Web Interface: Nagios provides a web interface for viewing the status of monitored services and hosts, acknowledging alerts, and generating reports.

Setting Up Nagios

1. **Installation**: Install Nagios on a server, typically a Linux-based system.
2. **Configuration Files**: Edit configuration files to define what to monitor and how to monitor it. This includes defining hosts, services, contacts, and notification methods.
3. **Plugins**: Install and configure necessary plugins to monitor specific services and hosts.
4. **Web Interface**: Set up the web interface to allow easy access to monitoring data and alert management.
5. **Testing**: Test the configuration to ensure that Nagios is correctly monitoring the defined services and hosts and that alerts are being sent as expected

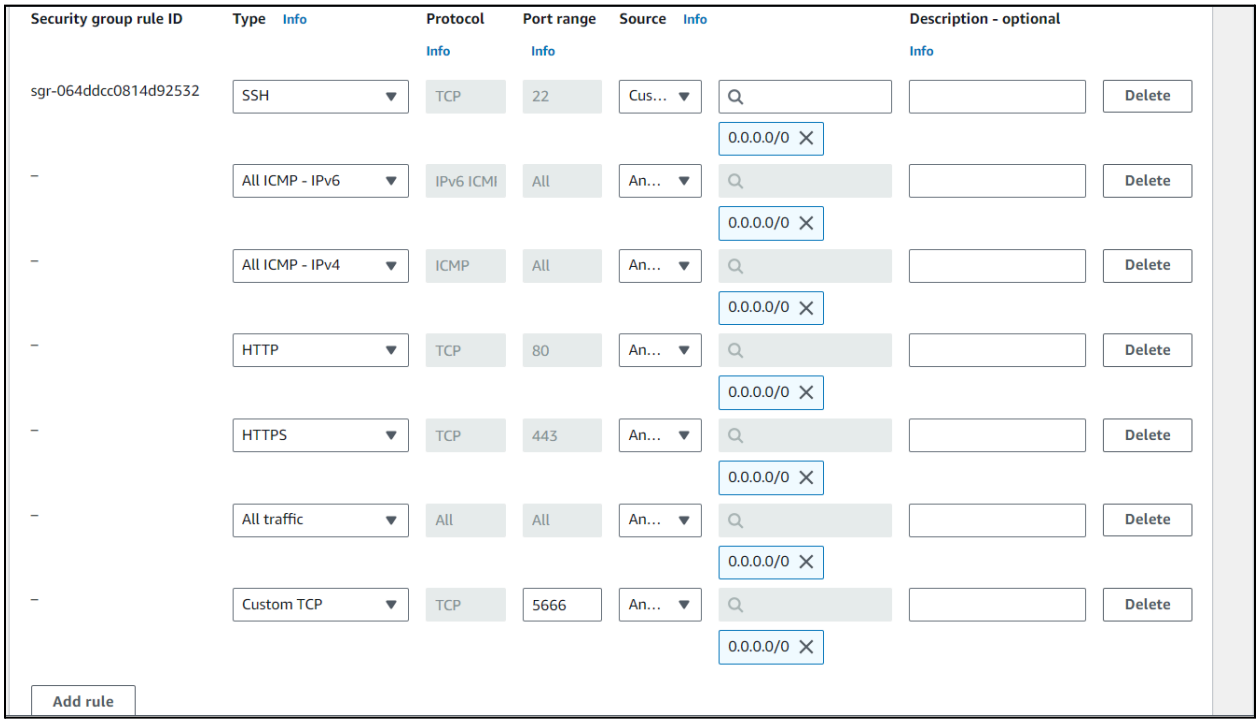
1. Create an Amazon Linux EC2 Instance

- Name it nagios-host.



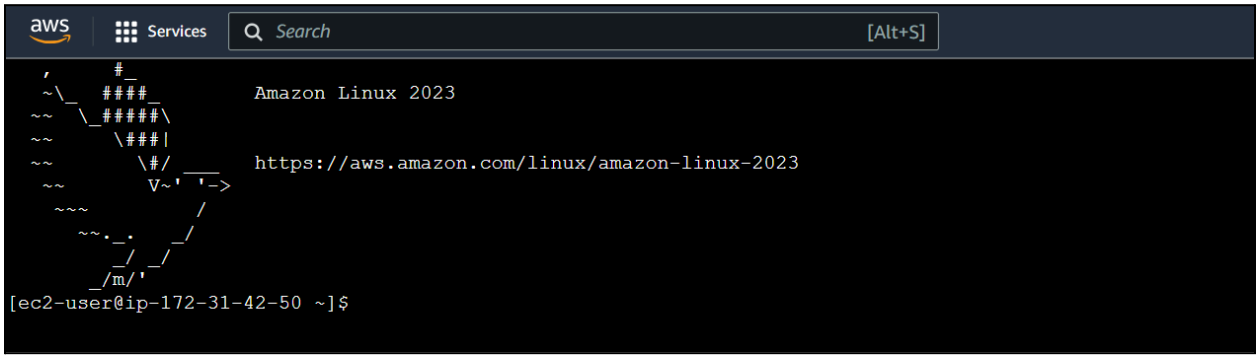
2. Configure Security Group

- 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 or use EC2 Instance Connect from the browse



4. Update Package Indices and Install Required Packages

Commands -

- sudo yum update sudo yum install httpd php
- sudo yum install gcc glibc glibc-common
- sudo yum install gd gd-devel

```
[ec2-user@ip-172-31-42-50 ~]$ sudo yum update -y
Last metadata expiration check: 0:10:05 ago on Mon Oct  7 15:30:12 2024.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-42-50 ~]$ sudo yum install -y httpd php
Last metadata expiration check: 0:10:30 ago on Mon Oct  7 15:30:12 2024.
Dependencies resolved.
================================================================================
 Package                 Architecture            Version                 Repository
    Size
================================================================================
Installing:
 httpd                   x86_64                  2.4.62-1.amzn2023       amazonlinux
    48 k
```

```
Installed:
  apr-1.7.2-2.amzn2023.0.2.x86_64                 apr-util-1.6.3-1.amzn2023.0.1.x86_64
  generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch   httpd-2.4.62-1.amzn2023.x86_64
  httpd-filesystem-2.4.62-1.amzn2023.noarch       httpd-tools-2.4.62-1.amzn2023.x86_64
  libsodium-1.0.19-4.amzn2023.x86_64              libxslt-1.1.34-5.amzn2023.0.2.x86_64
  mod_http2-2.0.27-1.amzn2023.0.3.x86_64          mod_lua-2.4.62-1.amzn2023.x86_64
  php8.3-8.3.10-1.amzn2023.0.1.x86_64             php8.3-cli-8.3.10-1.amzn2023.0.1.x86_64
  php8.3-fpm-8.3.10-1.amzn2023.0.1.x86_64         php8.3-mbstring-8.3.10-1.amzn2023.0.1.x86_64
  php8.3-pdo-8.3.10-1.amzn2023.0.1.x86_64         php8.3-process-8.3.10-1.amzn2023.0.1.x86_64
  php8.3-xml-8.3.10-1.amzn2023.0.1.x86_64

Complete!
[ec2-user@ip-172-31-42-50 ~]$
```

```
[ec2-user@ip-172-31-42-50 ~]$ sudo yum install -y gcc glibc glibc-common
Last metadata expiration check: 0:13:52 ago on Mon Oct  7 15:30:12 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                                    Architecture
     Size
================================================================================
==========
Installing:
 gcc                                        x86_64
     32 M
Installing dependencies:
 annobin-docs                               noarch
```

5. Create a New Nagios User

Commands -

- sudo adduser -m nagios
- sudo passwd nagios

admin123

```
[ec2-user@ip-172-31-42-50 ~]$ sudo useradd nagios
useradd: user 'nagios' already exists
[ec2-user@ip-172-31-42-50 ~]$ sudo useradd nagios
useradd: user 'nagios' already exists
[ec2-user@ip-172-31-42-50 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
Sorry, passwords do not match.
New password:
[ec2-user@ip-172-31-42-50 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: The password fails the dictionary check - it is based on a dictionary word
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-42-50 ~]$
```

6. Create a New User Group

Commands -

- sudo groupadd nagcmd

```
[ec2-user@ip-172-31-42-50 ~]$ sudo groupadd nagcmd
[ec2-user@ip-172-31-42-50 ~]$ sudo groupadd nagcmd
groupadd: group 'nagcmd' already exists
[ec2-user@ip-172-31-42-50 ~]$ sudo usermod -aG nagcmd nagios
sudo usermod -aG nagcmd apache
[ec2-user@ip-172-31-42-50 ~]$
```

7. Create a Directory for Nagios Downloads

Commands -

- mkdir ~/downloads
- cd ~/downloads

```
[ec2-user@ip-172-31-42-50 ~]$ mkdir ~/downloads
[ec2-user@ip-172-31-42-50 ~]$ cd ~/downloads
[ec2-user@ip-172-31-42-50 downloads]$
```

8. Download Nagios and Plugins Source Files

Commands -

- 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

```
[ec2-user@ip-172-31-42-50 downloads]$ wget https://assets.nagios.com/downloads/nagioscore/releases/
--2024-10-07 16:07:16--  https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.tar.g
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                             0%[
nagios-4.4.6.tar.gz                             2%[=>
nagios-4.4.6.tar.gz                            19%[=================>
nagios-4.4.6.tar.gz                            49%[================================================>
nagios-4.4.6.tar.gz                            76%[=================================================
nagios-4.4.6.tar.gz                           100%[=================================================
 1.0s

2024-10-07 16:07:18 (11.1 MB/s) - 'nagios-4.4.6.tar.gz' saved [11333414/11333414]
```

9. Extract the Nagios Source File

Commands -

- tar zxvf nagios-4.4.6.tar.gz cd nagios-4.4.6

```
[ec2-user@ip-172-31-42-50 downloads]$ tar zxvf nagios-4.4.6.tar.gz
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
```

10. Run the Configuration Script Commands

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

```
[ec2-user@ip-172-31-42-50 downloads]$ cd nagios-4.4.6
[ec2-user@ip-172-31-42-50 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
checking for grep that handles long lines and -e... /usr/bin/grep
checking for egrep... /usr/bin/grep -E
checking for ANSI C header files... yes
```

11. Compile the Source Code

Commands -

make all

```
*** 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

************************************************************
```

12. Install Binaries, Init Script, and Sample Config Files

Commands -

- sudo make install
- sudo make install-init
- sudo make install-config
- sudo make install-commandmode

```
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ sudo make install
cd ./base && make install
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.4.6/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 nagiostats /usr/local/nagios/bin
make[1]: Leaving directory '/home/ec2-user/downloads/nagios-4.4.6/base'
cd ./cgi && make install
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.4.6/cgi'
make install-basic
make[2]: Entering directory '/home/ec2-user/downloads/nagios-4.4.6/cgi'
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/sbin
```

```
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ sudo make install-init
/usr/bin/install -c -m 755 -d -o root -g root /lib/systemd/system
/usr/bin/install -c -m 755 -o root -g root startup/default-service /lib/systemd/system/
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ sudo make install-config
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc/objects
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/nagios.cfg /usr/local/n
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/cgi.cfg /usr/local/nagi
/usr/bin/install -c -b -m 660 -o nagios -g nagios sample-config/resource.cfg /usr/local
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/templat
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/command
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/contact
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/timeper
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/localho
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/windows
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/printer
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/switch.
```

```
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ sudo make install-commandmode
/usr/bin/install -c -m 775 -o nagios -g nagcmd -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***

[ec2-user@ip-172-31-42-50 nagios-4.4.6]$
```

14. Edit the Config File to Change the Email Address

Commands -

- sudo nano /usr/local/nagios/etc/objects/contacts.cfg
- Change the email address in the contacts.cfg file to your preferred email.

```
##############################################################################
#
# CONTACTS
#
##############################################################################
odified
# 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 generic-contact template (defined above)
    alias                   Nagios Admin            ; Full name of user
    email                   shravanirasam0212@gmail.com  ; <<***** CHANGE THIS TO YOUR EMAIL ADDRESS ******
}



##############################################################################
#
# CONTACT GROUPS
#
```

15. Configure the Web Interface

Commands -

sudo make install-webconf

```
[ec2-user@ip-172-31-42-50 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-172-31-42-50 nagios-4.4.6]$
```

16.Create a Nagios Admin Account

Commands -

- sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
- You will be prompted to enter and confirm the password for the nagiosadmin user

```
[ec2-user@ip-172-31-42-50 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
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$
```

admin123

17. Restart Apache

Commands -

- sudo systemctl restart httpd

18. Extract the Plugins Source File

Commands -

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

```
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ sudo systemctl restart httpd
[ec2-user@ip-172-31-42-50 nagios-4.4.6]$ cd ~/downloads
[ec2-user@ip-172-31-42-50 downloads]$ tar zxvf nagios-plugins-2.3.3.tar.gz
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
```

19. Compile and Install Plugins Commands -

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

```
[ec2-user@ip-172-31-42-50 downloads]$ cd nagios-plugins-2.3.3
[ec2-user@ip-172-31-42-50 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
```

20. Start Nagios

Commands

- sudo chkconfig --add nagios
- sudo chkconfig nagios on
- sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
- sudo systemctl start nagios

```
[ec2-user@ip-172-31-42-50 nagios-plugins-2.3.3]$ sudo chkconfig --add nagios
sudo chkconfig nagios on
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
sudo systemctl start nagios
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/l

Nagios Core 4.4.6
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2020-04-28
License: GPL

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

21. Check the Status of Nagios

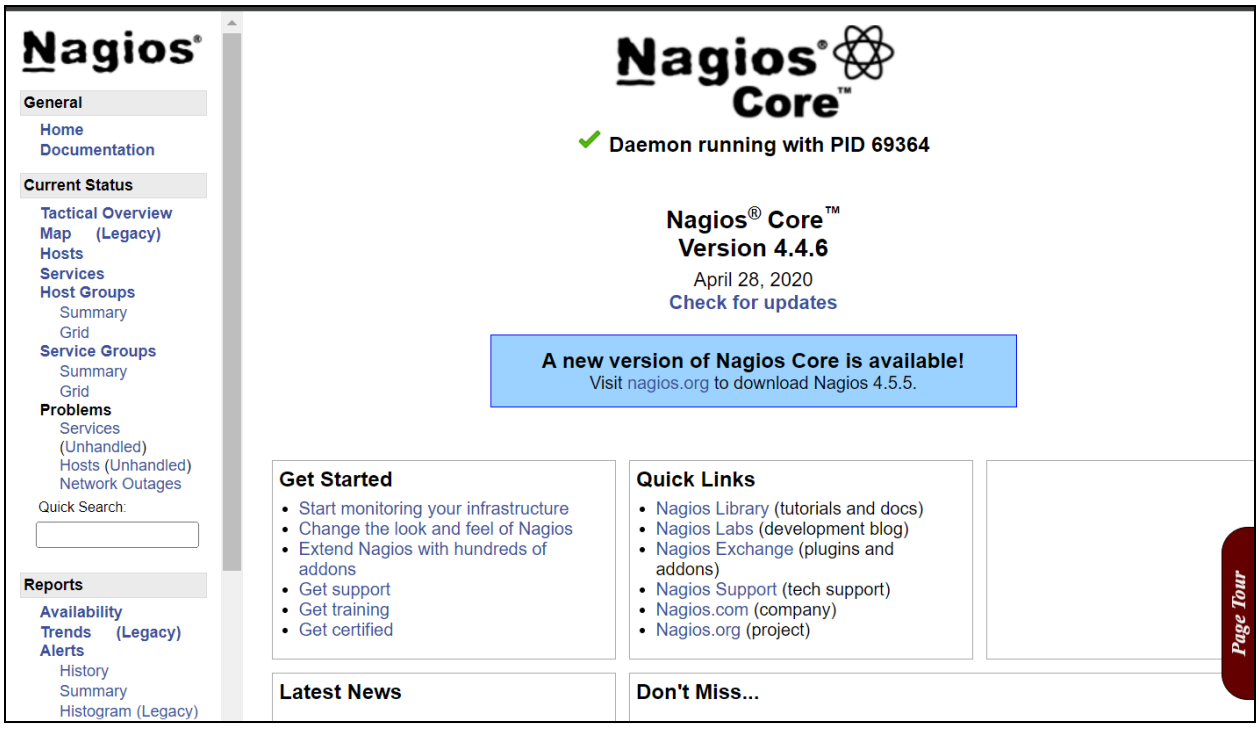
Commands -

- sudo systemctl status nagios

```
Things look okay - No serious problems were detected during the pre-flight check
[ec2-user@ip-172-31-42-50 nagios-plugins-2.3.3]$ sudo systemctl status nagios
● nagios.service - Nagios Core 4.4.6
     Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; preset: disabled)
     Active: active (running) since Mon 2024-10-07 16:28:45 UTC; 38s ago
       Docs: https://www.nagios.org/documentation
    Process: 69362 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
    Process: 69363 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg (c
   Main PID: 69364 (nagios)
      Tasks: 6 (limit: 1112)
     Memory: 2.1M
        CPU: 22ms
     CGroup: /system.slice/nagios.service
             ├─69364 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             ├─69365 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─69366 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─69367 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─69368 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             └─69369 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
```

22. Access Nagios Web Interface

- Copy the Public IP address of your EC2 instance.
- Open your browser and navigate to http:///nagios.
- Enter the username nagiosadmin and the password you set in Step 16



Conclusion:

After installing and configuring Nagios Core, Plugins, and NRPE on a Linux machine, We have a robust continuous monitoring setup, ensuring proactive issue detection and optimal system performance.