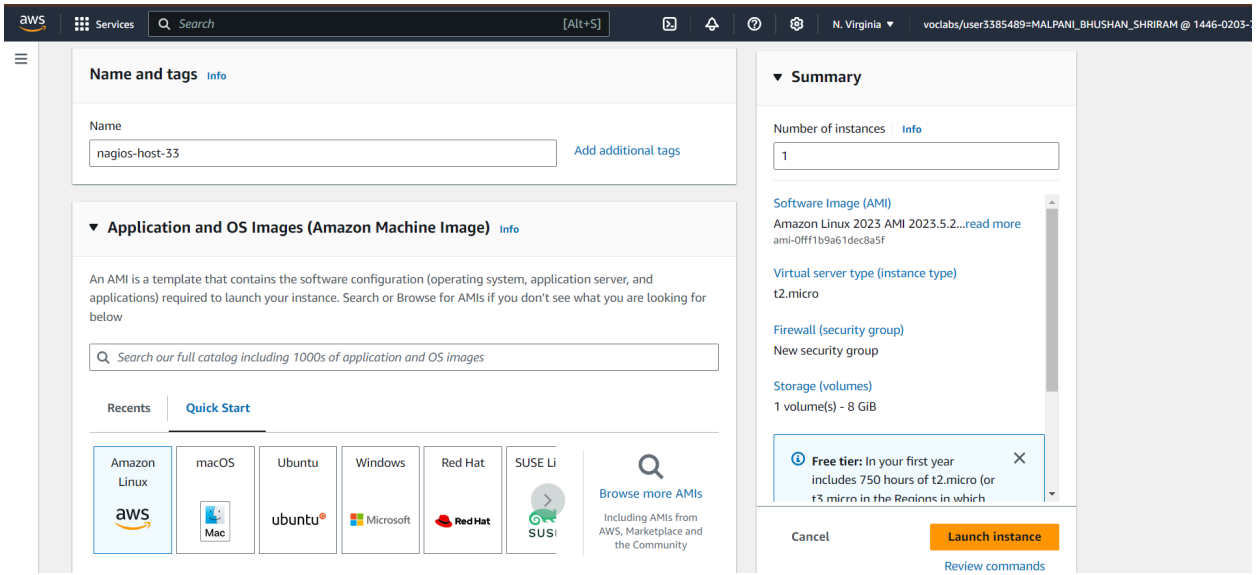
NAME: Bhushan Malpani **DIV: D15C** **ROLL NO:33**

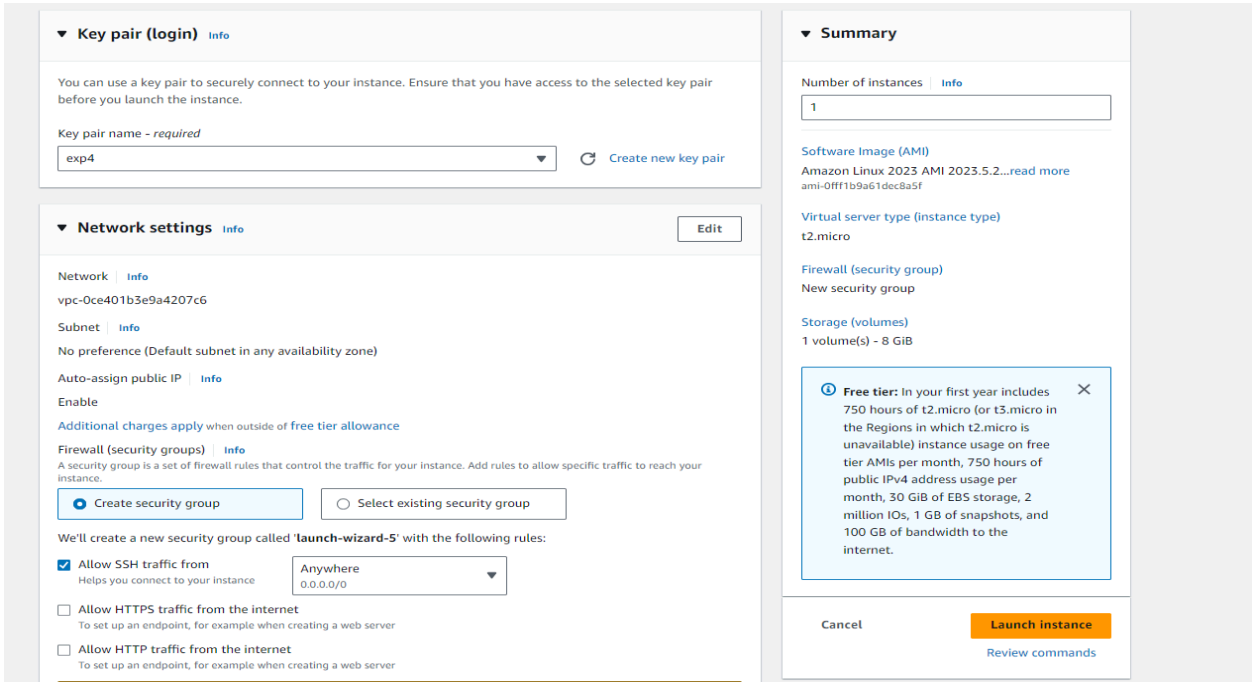
Aim: To Understand Continuous monitoring and Installation and configuration of Nagios Core, Nagios Plugins and NRPE (Nagios Remote Plugin Executor) on Linux Machine.

Step 1: Login to your AWS account. Search for EC2 on services. Open the interface and click on Create Instance.

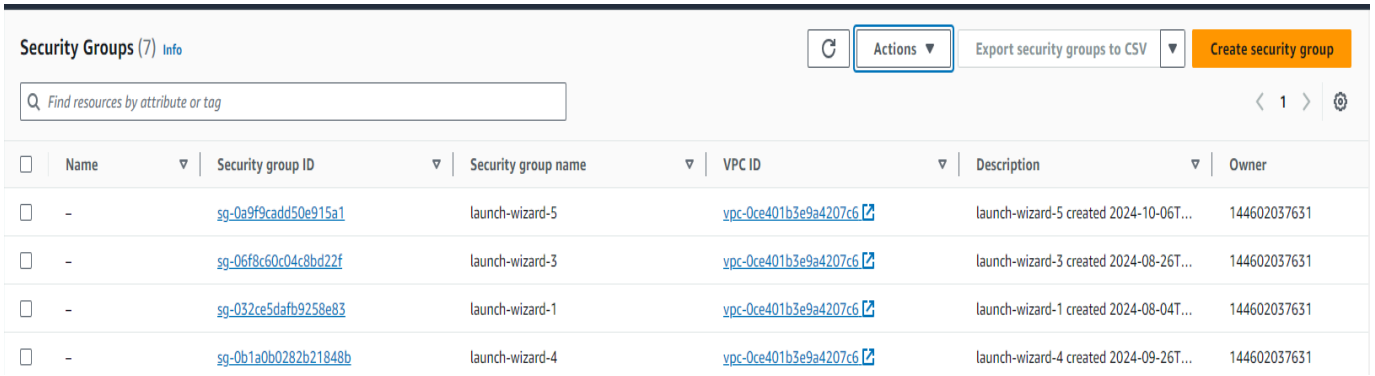


Select The OS Image as Amazon Linux.

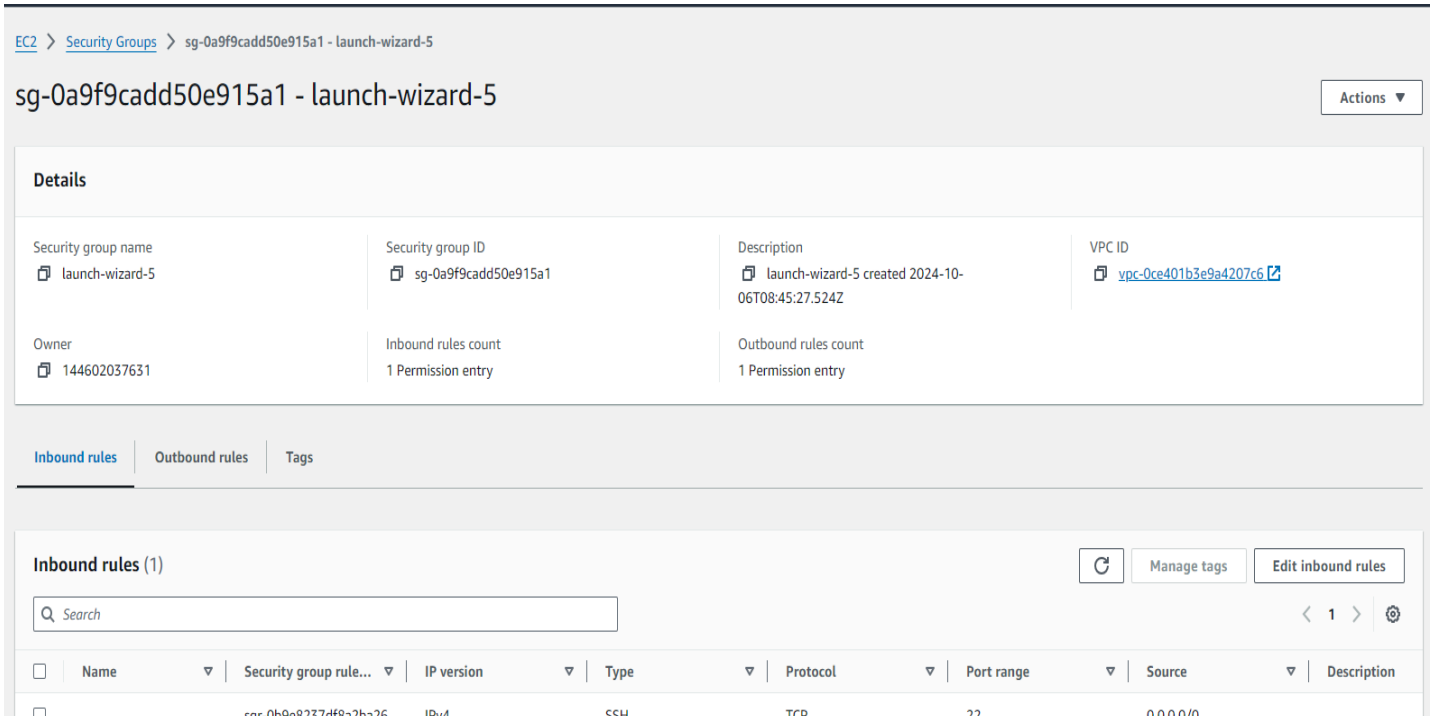
Step 2: If you do not have a private key created or a .pem file created, click on create a key pair. Else select the key pair that you had created before. (Make sure you know where the .pem file for that key is present on your system)



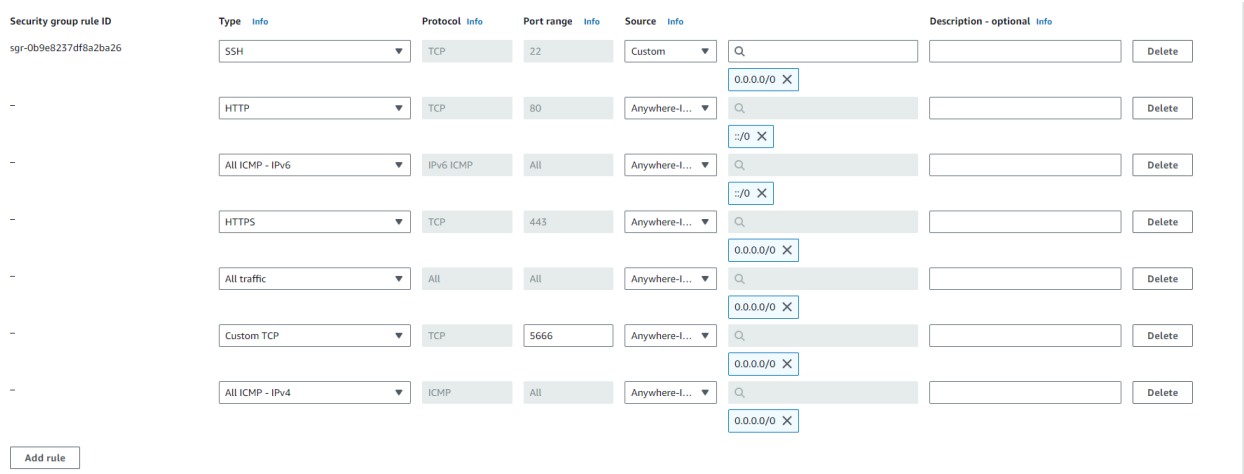
AWS will create a security group for this instance. Keep the name of that instance saved.
Step 3: After creating the instance, click on Security Groups from the left side pane. Find the security group that was created for your instance. Click on the instance ID for that group.



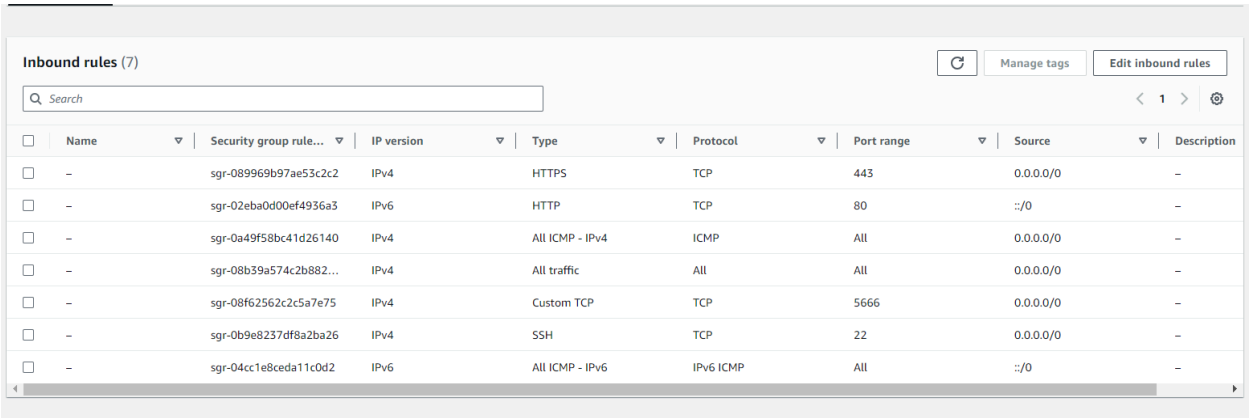
Here, click on Edit Inbound Rules.



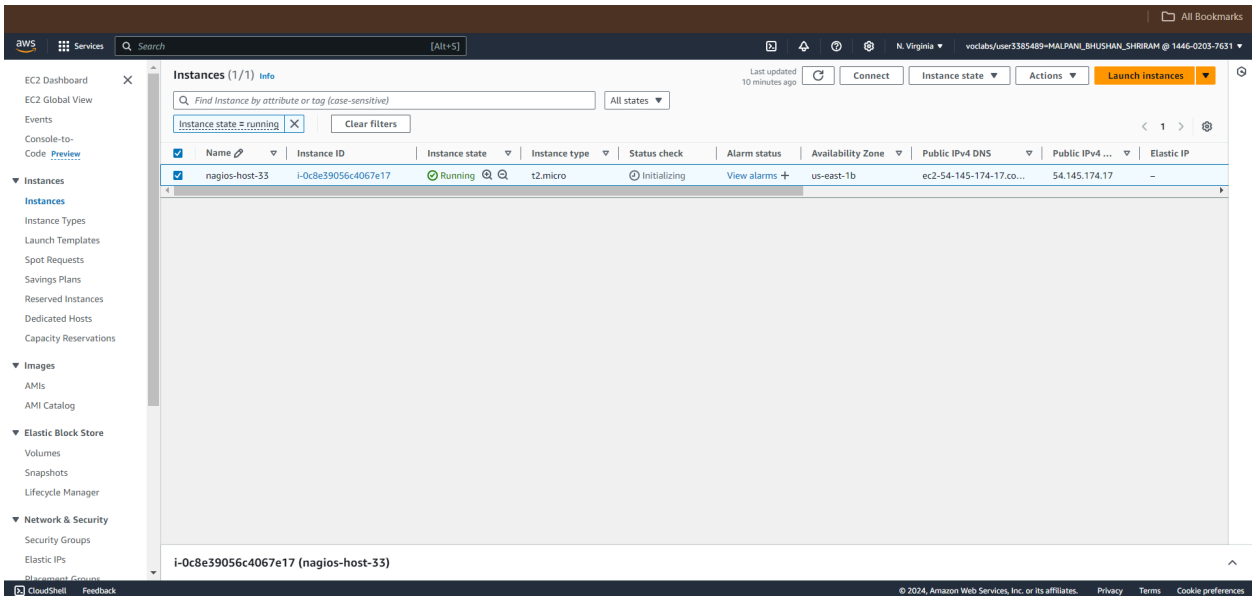
Now, click on add rules, and add teh rules for the following protocols:
HTTP, All ICMP - IPv6, HTTPS, All traffic, Custom TCP (Port 5666), All ICMP - IPv4



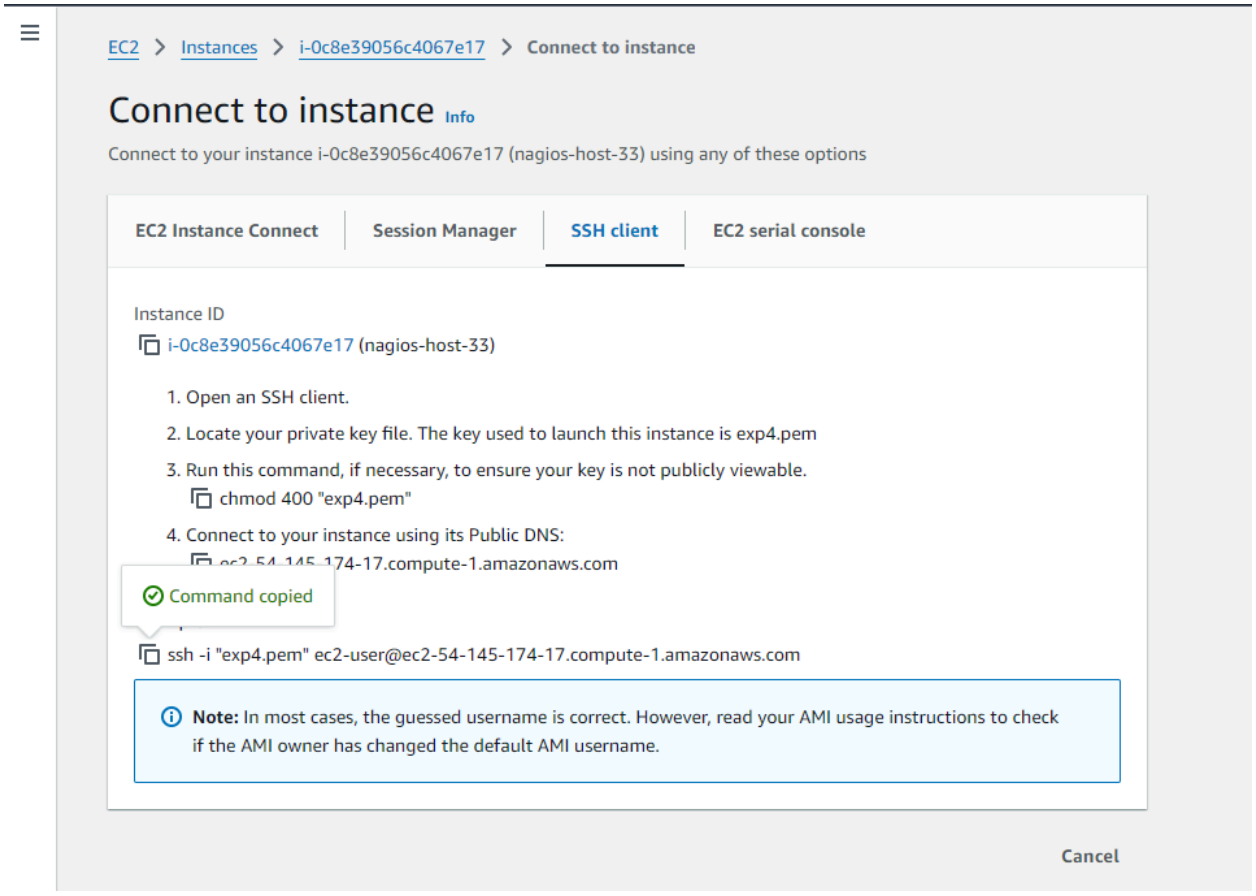
Click on save. This will add all the inbound rules to the security group.



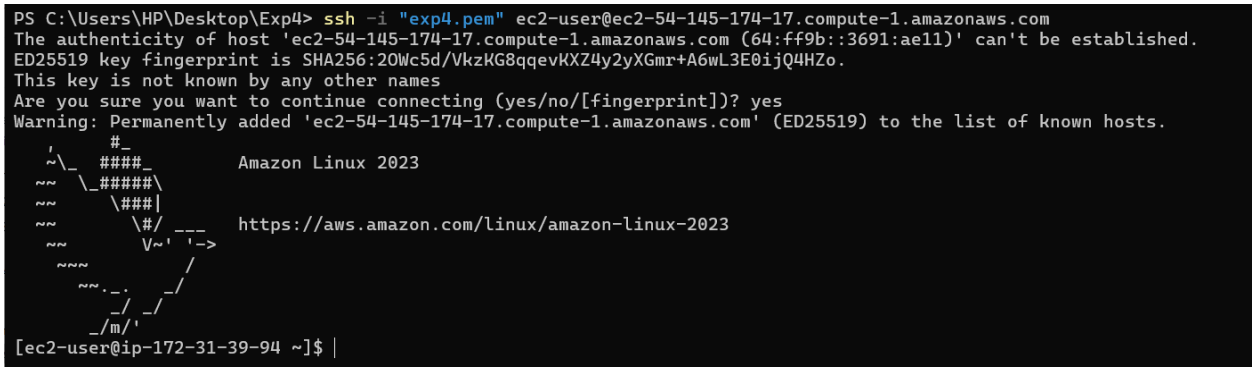
Step 4: Now come back to the instances screen. Click on the instance ID of your instance. Then click on Connect.



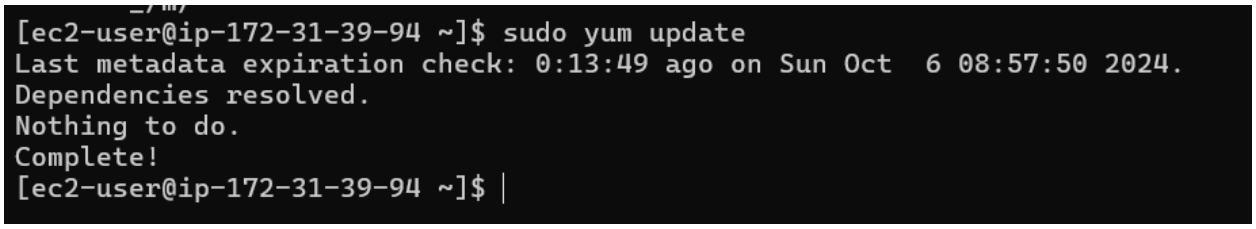
Click on SSH client. Copy the example command.



Step 5: Now, we have to connect our local OS terminal to the instance using SSH. For this,
Open terminal wher the private key file is located (.pem)
Paste the copied SSH command and run it.



Step 6: Now we start working on this terminal. First run the command
sudo yum update
This command will check for any updates for the YUM library.



Step 7: We are going to install an Apache server and a PHP on this instance. For that, run this command.
sudo yum install httpd php

```
[ec2-user@ip-172-31-39-94 ~]$ sudo yum install httpd php
Last metadata expiration check: 0:14:13 ago on Sun Oct  6 08:57:50 2024.
Dependencies resolved.
================================================================================
 Package                 Architecture    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
 httpd-tools             x86_64          2.4.62-1.amzn2023       amazonlinux   81 k
 libbrotli               x86_64          1.0.9-4.amzn2023.0.2    amazonlinux  315 k
 libsodium               x86_64          1.0.19-4.amzn2023       amazonlinux  176 k
 libxslt                 x86_64          1.1.34-5.amzn2023.0.2   amazonlinux  241 k
 mailcap                 noarch          2.1.49-3.amzn2023.0.3   amazonlinux   33 k
 nginx-filesystem        noarch          1:1.24.0-1.amzn2023.0.4 amazonlinux  9.8 k
 php8.3-cli              x86_64          8.3.10-1.amzn2023.0.1   amazonlinux  3.7 M
 php8.3-common           x86_64          8.3.10-1.amzn2023.0.1   amazonlinux  737 k
 php8.3-process          x86_64          8.3.10-1.amzn2023.0.1   amazonlinux   45 k
 php8.3-xml              x86_64          8.3.10-1.amzn2023.0.1   amazonlinux  154 k
Installing weak dependencies:
 apr-util-openssl        x86_64          1.6.3-1.amzn2023.0.1    amazonlinux   17 k
 mod_http2               x86_64          2.0.27-1.amzn2023.0.3   amazonlinux  166 k
 mod_lua                 x86_64          2.4.62-1.amzn2023       amazonlinux   61 k
 php8.3-fpm              x86_64          8.3.10-1.amzn2023.0.1   amazonlinux  1.9 M
```

```
Installed:
  apr-1.7.2-2.amzn2023.0.2.x86_64                apr-util-1.6.3-1.amzn2023.0.1.x86_64
  apr-util-openssl-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-core-2.4.62-1.amzn2023.x86_64
  httpd-filesystem-2.4.62-1.amzn2023.noarch      httpd-tools-2.4.62-1.amzn2023.x86_64
  libbrotli-1.0.9-4.amzn2023.0.2.x86_64          libsodium-1.0.19-4.amzn2023.x86_64
  libxslt-1.1.34-5.amzn2023.0.2.x86_64           mailcap-2.1.49-3.amzn2023.0.3.noarch
  mod_http2-2.0.27-1.amzn2023.0.3.x86_64         mod_lua-2.4.62-1.amzn2023.x86_64
  nginx-filesystem-1:1.24.0-1.amzn2023.0.4.noarch 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-common-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-opcache-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-sodium-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-172-31-39-94 ~]$
```

Step 8: Next we install C/C++ compiler (GCC) along with the necessary C libraries required for compiling and running C programs. Use the following command.
sudo yum install gcc glibc glibc-common

```
[ec2-user@ip-172-31-39-94 ~]$ sudo yum install gcc glibc glibc-common
Last metadata expiration check: 0:15:54 ago on Sun Oct  6 08:57:50 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    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
 glibc-devel             x86_64          2.34-52.amzn2023.0.11   amazonlinux   27 k
 glibc-headers-x86       noarch          2.34-52.amzn2023.0.11   amazonlinux  427 k
 guile22                 x86_64          2.2.7-2.amzn2023.0.3    amazonlinux  6.4 M
 kernel-headers          x86_64          6.1.109-118.189.amzn2023 amazonlinux 1.4 M
 libmpc                  x86_64          1.2.1-2.amzn2023.0.2    amazonlinux   62 k
 libtool-ltdl            x86_64          2.4.7-1.amzn2023.0.3    amazonlinux   38 k
 libxcrypt-devel         x86_64          4.4.33-7.amzn2023       amazonlinux   32 k
 make                    x86_64          1:4.3-5.amzn2023.0.2    amazonlinux  534 k

Transaction Summary
================================================================================
Install  13 Packages
```

```
Installed:
  annobin-docs-10.93-1.amzn2023.0.1.noarch       annobin-plugin-gcc-10.93-1.amzn2023.0.1.x86_64
  cpp-11.4.1-2.amzn2023.0.2.x86_64               gc-8.0.4-5.amzn2023.0.2.x86_64
  gcc-11.4.1-2.amzn2023.0.2.x86_64               glibc-devel-2.34-52.amzn2023.0.11.x86_64
  glibc-headers-x86-2.34-52.amzn2023.0.11.noarch guile22-2.2.7-2.amzn2023.0.3.x86_64
  kernel-headers-6.1.109-118.189.amzn2023.x86_64 libmpc-1.2.1-2.amzn2023.0.2.x86_64
  libtool-ltdl-2.4.7-1.amzn2023.0.3.x86_64       libxcrypt-devel-4.4.33-7.amzn2023.x86_64
  make-1:4.3-5.amzn2023.0.2.x86_64
```

Step 9: We would also need GD library and its development tools. For that, run this command sudo yum install gd gd-devel

```
[ec2-user@ip-172-31-39-94 ~]$ sudo yum install gd gd-devel
Last metadata expiration check: 0:17:02 ago on Sun Oct  6 08:57:50 2024.
Dependencies resolved.
================================================================================================================================
 Package                          Architecture     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
 fontconfig                       x86_64           2.13.94-2.amzn2023.0.2                 amazonlinux            273 k
 fontconfig-devel                 x86_64           2.13.94-2.amzn2023.0.2                 amazonlinux            128 k
 fonts-filesystem                 noarch           1:2.0.5-12.amzn2023.0.2                amazonlinux            9.5 k
 freetype                         x86_64           2.13.2-5.amzn2023.0.1                  amazonlinux            423 k
 freetype-devel                   x86_64           2.13.2-5.amzn2023.0.1                  amazonlinux            912 k
 glib2-devel                      x86_64           2.74.7-689.amzn2023.0.2                amazonlinux            486 k
 google-noto-fonts-common         noarch           20201206-2.amzn2023.0.2                amazonlinux             15 k
 google-noto-sans-vf-fonts        noarch           20201206-2.amzn2023.0.2                amazonlinux            492 k
 graphite2                        x86_64           1.3.14-7.amzn2023.0.2                  amazonlinux             97 k
 graphite2-devel                  x86_64           1.3.14-7.amzn2023.0.2                  amazonlinux             21 k
 harfbuzz                         x86_64           7.0.0-2.amzn2023.0.1                   amazonlinux            868 k
 harfbuzz-devel                   x86_64           7.0.0-2.amzn2023.0.1                   amazonlinux            404 k
 harfbuzz-icu                     x86_64           7.0.0-2.amzn2023.0.1                   amazonlinux             18 k
 jbigkit-libs                     x86_64           2.1-21.amzn2023.0.2                    amazonlinux             54 k
 langpacks-core-font-en           noarch           3.0-21.amzn2023.0.4                    amazonlinux             10 k

Installed:
  brotli-1.0.9-4.amzn2023.0.2.x86_64                          brotli-devel-1.0.9-4.amzn2023.0.2.x86_64
  bzip2-devel-1.0.8-6.amzn2023.0.2.x86_64                     cairo-1.17.6-2.amzn2023.0.1.x86_64
  cmake-filesystem-3.22.2-1.amzn2023.0.4.x86_64               fontconfig-2.13.94-2.amzn2023.0.2.x86_64
  fontconfig-devel-2.13.94-2.amzn2023.0.2.x86_64              fonts-filesystem-1:2.0.5-12.amzn2023.0.2.noarch
  freetype-2.13.2-5.amzn2023.0.1.x86_64                       freetype-devel-2.13.2-5.amzn2023.0.1.x86_64
  gd-2.3.3-5.amzn2023.0.3.x86_64                              gd-devel-2.3.3-5.amzn2023.0.3.x86_64
  glib2-devel-2.74.7-689.amzn2023.0.2.x86_64                  google-noto-fonts-common-20201206-2.amzn2023.0.2.noarch
  google-noto-sans-vf-fonts-20201206-2.amzn2023.0.2.noarch    graphite2-1.3.14-7.amzn2023.0.2.x86_64
  graphite2-devel-1.3.14-7.amzn2023.0.2.x86_64                harfbuzz-7.0.0-2.amzn2023.0.1.x86_64
  harfbuzz-devel-7.0.0-2.amzn2023.0.1.x86_64                  harfbuzz-icu-7.0.0-2.amzn2023.0.1.x86_64
  jbigkit-libs-2.1-21.amzn2023.0.2.x86_64                     langpacks-core-font-en-3.0-21.amzn2023.0.4.noarch
  libICE-1.0.10-6.amzn2023.0.2.x86_64                         libSM-1.2.3-8.amzn2023.0.2.x86_64
  libX11-1.7.2-3.amzn2023.0.4.x86_64                          libX11-common-1.7.2-3.amzn2023.0.4.noarch
  libX11-devel-1.7.2-3.amzn2023.0.4.x86_64                    libX11-xcb-1.7.2-3.amzn2023.0.4.x86_64
  libXau-1.0.9-6.amzn2023.0.2.x86_64                          libXau-devel-1.0.9-6.amzn2023.0.2.x86_64
  libXext-1.3.4-6.amzn2023.0.2.x86_64                         libXpm-3.5.15-2.amzn2023.0.3.x86_64
  libXpm-devel-3.5.15-2.amzn2023.0.3.x86_64                   libXrender-0.9.10-14.amzn2023.0.2.x86_64
  libXt-1.2.0-4.amzn2023.0.2.x86_64                           libblkid-devel-2.37.4-1.amzn2023.0.4.x86_64
  libffi-devel-3.4.4-1.amzn2023.0.1.x86_64                    libicu-67.1-7.amzn2023.0.3.x86_64
  libicu-devel-67.1-7.amzn2023.0.3.x86_64                     libjpeg-turbo-2.1.4-2.amzn2023.0.5.x86_64
  libjpeg-turbo-devel-2.1.4-2.amzn2023.0.5.x86_64             libmount-devel-2.37.4-1.amzn2023.0.4.x86_64
  libpng-2:1.6.37-10.amzn2023.0.6.x86_64                      libpng-devel-2:1.6.37-10.amzn2023.0.6.x86_64
  libselinux-devel-3.4-5.amzn2023.0.2.x86_64                  libsepol-devel-3.4-3.amzn2023.0.3.x86_64
  libtiff-4.4.0-4.amzn2023.0.18.x86_64                        libtiff-devel-4.4.0-4.amzn2023.0.18.x86_64
  libwebp-1.2.4-1.amzn2023.0.6.x86_64                         libwebp-devel-1.2.4-1.amzn2023.0.6.x86_64
  libxcb-1.13.1-7.amzn2023.0.2.x86_64                         libxcb-devel-1.13.1-7.amzn2023.0.2.x86_64
  libxml2-devel-2.10.4-1.amzn2023.0.6.x86_64                  pcre2-devel-10.40-1.amzn2023.0.3.x86_64
  pcre2-utf16-10.40-1.amzn2023.0.3.x86_64                     pcre2-utf32-10.40-1.amzn2023.0.3.x86_64
  pixman-0.40.0-3.amzn2023.0.3.x86_64                         sysprof-capture-devel-3.40.1-2.amzn2023.0.2.x86_64
  xml-common-0.6.3-56.amzn2023.0.2.noarch                     xorg-x11-proto-devel-2021.4-1.amzn2023.0.2.noarch
  xz-devel-5.2.5-9.amzn2023.0.2.x86_64                        zlib-devel-1.2.11-33.amzn2023.0.5.x86_64

Complete!
[ec2-user@ip-172-31-39-94 ~]$
```

Step 10: Now, we create a user called as ‘nagios’ and make sure that it has a home directory, and set up a password for it.
sudo adduser -m nagios
sudo passwd nagios

```
[ec2-user@ip-172-31-39-94 ~]$ sudo adduser -m nagios
sudo passwd nagios
Changing password for user nagios.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-39-94 ~]$
```

Step 11: Create a user group called as ‘nagcmd’ to execute nagios commands.
sudo groupadd nagcmd

```
[ec2-user@ip-172-31-39-94 ~]$ sudo groupadd nagcmd
[ec2-user@ip-172-31-39-94 ~]$
```

Step 12: Add users apache and nagios to this user group.
sudo usermod -a -G nagcmd nagios
sudo usermod -a -G nagcmd apache

```
[ec2-user@ip-172-31-39-94 ~]$ sudo usermod -a -G nagcmd nagios
sudo usermod -a -G nagcmd apache
```

Step 13: We create a directory downloads, to store the files of nagios server that are downloaded.
mkdir ~/downloads
cd ~/downloads

```
[ec2-user@ip-172-31-39-94 ~]$ mkdir ~/downloads
cd ~/downloads
```

Step 14:Now we need to install the latest versions of nogios-core and nagios-plugins. Go to the respective websites and check whether a better version is available.If newer versions are available, then right click on the download button → Copy link address.
Paste this link address in place of the current link in command.
If not run these commands.

wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz

```
[ec2-user@ip-172-31-39-94 downloads]$ wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz
--2024-10-06 09:18:48--  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’

nagios-4.5.5.tar.gz                 100%[=======================================================================>]   1.97M  5.66MB/s    in 0.3s

2024-10-06 09:18:49 (5.66 MB/s) - ‘nagios-4.5.5.tar.gz’ saved [2065473/2065473]
```

wget https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz

```
[ec2-user@ip-172-31-39-94 downloads]$ wget https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz
--2024-10-06 09:19:14--  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’

nagios-plugins-2.4.11.tar.gz          100%[=======================================================================>]   2.62M  6.48MB/s    in 0.4s

2024-10-06 09:19:15 (6.48 MB/s) - ‘nagios-plugins-2.4.11.tar.gz’ saved [2753049/2753049]
```

Step 15:Now, we need to extract nagios-core file into the same directory. For that, we will use tar command.
tar zxvf nagios-4.5.5.tar.gz

```
[ec2-user@ip-172-31-39-94 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
nagios-4.5.5/Changelog
nagios-4.5.5/INSTALLING
nagios-4.5.5/LEGAL
nagios-4.5.5/LICENSE
nagios-4.5.5/Makefile.in
nagios-4.5.5/README.md
nagios-4.5.5/THANKS
nagios-4.5.5/UPGRADING
nagios-4.5.5/aclocal.m4
nagios-4.5.5/autoconf-macros/
nagios-4.5.5/autoconf-macros/.gitignore
nagios-4.5.5/autoconf-macros/CHANGELOG.md
nagios-4.5.5/autoconf-macros/LICENSE
nagios-4.5.5/autoconf-macros/LICENSE.md
nagios-4.5.5/autoconf-macros/README.md
nagios-4.5.5/autoconf-macros/add_group_user
nagios-4.5.5/autoconf-macros/ax_nagios_get_distrib
nagios-4.5.5/autoconf-macros/ax_nagios_get_files
nagios-4.5.5/autoconf-macros/ax_nagios_get_inetd
nagios-4.5.5/autoconf-macros/ax_nagios_get_init
nagios-4.5.5/autoconf-macros/ax_nagios_get_os
nagios-4.5.5/autoconf-macros/ax_nagios_get_paths
nagios-4.5.5/autoconf-macros/ax_nagios_get_ssl
```

```
nagios-4.5.5/xdata/.gitignore
nagios-4.5.5/xdata/Makefile.in
nagios-4.5.5/xdata/xcddefault.c
nagios-4.5.5/xdata/xcddefault.h
nagios-4.5.5/xdata/xodtemplate.c
nagios-4.5.5/xdata/xodtemplate.h
nagios-4.5.5/xdata/xpddefault.c
nagios-4.5.5/xdata/xpddefault.h
nagios-4.5.5/xdata/xrddefault.c
nagios-4.5.5/xdata/xrddefault.h
nagios-4.5.5/xdata/xsddefault.c
nagios-4.5.5/xdata/xsddefault.h
[ec2-user@ip-172-31-39-94 downloads]$
```

Step 16: We need to ensure that Nagios uses a specific group (in this case, `nagcmd`) for executing external commands.
./configure --with-command-group=nagcmd

An error could be encountered here: ./configure: no such path or directory

Solution: Navigate to the nagios-4.5.5 folder in downloads. (version could vary)

Steps: ls

```
[ec2-user@ip-172-31-39-94 downloads]$ ls
nagios-4.5.5  nagios-4.5.5.tar.gz  nagios-plugins-2.4.11.tar.gz
```

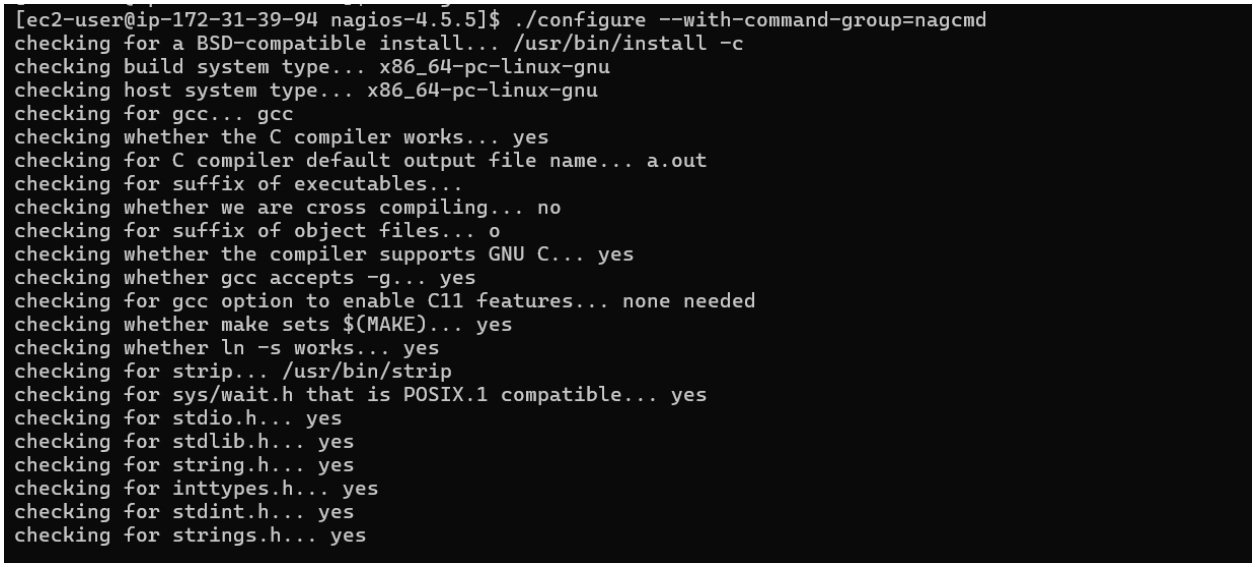
- cd nagios-4.5.5 (use the version shown by your ls command)
- ./configure --with-command-group=nagcmd

Another error could be Cannot find SSL headers.

To solve this, we need to install OpenSSL Dev Library

Steps:
sudo yum install openssl-devel

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



```
*** Configuration summary for nagios 4.5.5 2024-09-17 ***:

 General Options:
 -------------------------
        Nagios executable:  nagios
        Nagios user/group:  nagios,nagios
       Command user/group:  nagios,nagcmd
             Event Broker:  yes
        Install ${prefix}:  /usr/local/nagios
    Install ${includedir}:  /usr/local/nagios/include/nagios
                Lock file:  /run/nagios.lock
   Check result directory:  /usr/local/nagios/var/spool/checkresults
           Init directory:  /lib/systemd/system
  Apache conf.d directory:  /etc/httpd/conf.d
             Mail program:  /bin/mail
                  Host OS:  linux-gnu
          IOBroker Method:  epoll

 Web Interface Options:
 ------------------------
                 HTML URL:  http://localhost/nagios/
                  CGI URL:  http://localhost/nagios/cgi-bin/
 Traceroute (used by WAP):  /usr/bin/traceroute


Review the options above for accuracy.  If they look okay,
type 'make all' to compile the main program and CGIs.

[ec2-user@ip-172-31-39-94 nagios-4.5.5]$
```

Step 17: We need to compile all components of this software according to the instruction in the Makefile. For that, use this command:
make all

Then,
sudo make install
sudo make install-init
sudo make install-config
sudo make install-commandmode

```
[ec2-user@ip-172-31-39-94 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/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: cannot stat 'nagios': No such file or directory
make[1]: *** [Makefile:188: install] Error 1
make[1]: Leaving directory '/home/ec2-user/nagios-4.5.5/base'
make: *** [Makefile:287: install] Error 2
/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/nagios.service
/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/nagios/etc/nagios.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/cgi.cfg /usr/local/nagios/etc/cgi.cfg
/usr/bin/install -c -b -m 660 -o nagios -g nagios sample-config/resource.cfg /usr/local/nagios/etc/resource.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/templates.cfg /usr/local/nagios/etc/objects/templates.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/commands.cfg /usr/local/nagios/etc/objects/commands.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/contacts.cfg /usr/local/nagios/etc/objects/contacts.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/timeperiods.cfg /usr/local/nagios/etc/objects/timeperiods.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/localhost.cfg /usr/local/nagios/etc/objects/localhost.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/windows.cfg /usr/local/nagios/etc/objects/windows.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/printer.cfg /usr/local/nagios/etc/objects/printer.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/switch.cfg /usr/local/nagios/etc/objects/switch.cfg
```

```
*** Config files installed ***

Remember, these are *SAMPLE* config files.  You'll need to read
the 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 nagcmd -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***
```

Step 18: 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-172-31-39-94:~/
  GNU nano 5.8                                  /usr/local/nagios/etc/objects/contacts.cfg
s##############################################################################
# CONTACTS.CFG - SAMPLE CONTACT/CONTACTGROUP DEFINITIONS
#
#
# NOTES: This config file provides you with some example contact and contact
#        group definitions that you can reference in host and service
#        definitions.
#
#        You don't need to keep these definitions in a separate file from your
#        other object definitions.  This has been done just to make things
#        easier to understand.
#
##############################################################################



##############################################################################
#
# CONTACTS
#
##############################################################################

# 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                   2022.bhushan.malpani@ves.ac.in ; <****** CHANGE THIS TO YOUR EMAIL ADDRESS ******
}
```

Here, change the email under ‘define contact{}’ to your email address.
To save this use the following shortcut sequence CTRL+O→Enter→CTRL+X.
CTRL+O: Overwrite the existing file with edited file
CTRL+X: Exit nano editor.

Step 19: We need to install the necessary configuration files for the Nagios web interface. Run the following command.
sudo make install-webconf

```
[ec2-user@ip-172-31-39-94 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 ***
```

Step 20: Now we need to setup a user to access this nagios web interface. So we run this command to create a user called ‘nagiosadmin’.

Keep this username and password saved as it is needed to login to the web interface.
sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin

```
[ec2-user@ip-172-31-39-94 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-172-31-39-94 nagios-4.5.5]$
```

Step 21: Restart the apache server to apply all the recent configurations.
sudo service httpd restart

```
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$ sudo service httpd restart
Redirecting to /bin/systemctl restart httpd.service
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$
```

Step 22: Now we go back to the downloads folder and extract the files of nagios plugin.
cd ~/downloads
tar zxvf nagios-plugins-2.4.11.tar.gz (Version may vary)

```
[ec2-user@ip-172-31-39-94 downloads]$ tar zxvf nagios-plugins-2.4.11.tar.gz
nagios-plugins-2.4.11/
nagios-plugins-2.4.11/build-aux/
nagios-plugins-2.4.11/build-aux/compile
nagios-plugins-2.4.11/build-aux/config.guess
nagios-plugins-2.4.11/build-aux/config.rpath
nagios-plugins-2.4.11/build-aux/config.sub
nagios-plugins-2.4.11/build-aux/install-sh
nagios-plugins-2.4.11/build-aux/ltmain.sh
nagios-plugins-2.4.11/build-aux/missing
nagios-plugins-2.4.11/build-aux/mkinstalldirs
nagios-plugins-2.4.11/build-aux/depcomp
nagios-plugins-2.4.11/build-aux/snippet/
nagios-plugins-2.4.11/build-aux/snippet/_Noreturn.h
nagios-plugins-2.4.11/build-aux/snippet/arg-nonnull.h
nagios-plugins-2.4.11/build-aux/snippet/c++defs.h
nagios-plugins-2.4.11/build-aux/snippet/warn-on-use.h
nagios-plugins-2.4.11/build-aux/test-driver
nagios-plugins-2.4.11/config_test/
nagios-plugins-2.4.11/config_test/Makefile
nagios-plugins-2.4.11/config_test/run_tests
```

```
nagios-plugins-2.4.11/plugins-root/t/check_dhcp.t
nagios-plugins-2.4.11/plugins-root/t/check_icmp.t
nagios-plugins-2.4.11/po/
nagios-plugins-2.4.11/po/Makefile.in.in
nagios-plugins-2.4.11/po/remove-potcdate.sin
nagios-plugins-2.4.11/po/Makevars
nagios-plugins-2.4.11/po/POTFILES.in
nagios-plugins-2.4.11/po/fr.po
nagios-plugins-2.4.11/po/de.po
nagios-plugins-2.4.11/po/fr.gmo
nagios-plugins-2.4.11/po/de.gmo
nagios-plugins-2.4.11/po/nagios-plugins.pot
nagios-plugins-2.4.11/po/stamp-po
nagios-plugins-2.4.11/po/ChangeLog
nagios-plugins-2.4.11/po/LINGUAS
nagios-plugins-2.4.11/release
[ec2-user@ip-172-31-39-94 downloads]$
```

Step 23: Again, we need to install the configurations for these files.
cd nagios-plugins-2.4.11 (version may vary)
./configure --with-nagios-user=nagios --with-nagios-group=nagios

```
[ec2-user@ip-172-31-39-94 ~]$ cd nagios-plugins-2.4.11
[ec2-user@ip-172-31-39-94 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
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 that generated files are newer than configure... done
configure: creating ./config.status
config.status: creating gl/Makefile
config.status: creating nagios-plugins.spec
config.status: creating tools/build_perl_modules
config.status: creating Makefile
config.status: creating tap/Makefile
config.status: creating lib/Makefile
config.status: creating plugins/Makefile
config.status: creating lib/tests/Makefile
config.status: creating plugins-root/Makefile
config.status: creating plugins-scripts/Makefile
config.status: creating plugins-scripts/utils.pm
config.status: creating plugins-scripts/utils.sh
config.status: creating perlmods/Makefile
config.status: creating test.pl
config.status: creating pkg/solaris/pkginfo
config.status: creating po/Makefile.in
config.status: creating config.h
config.status: config.h is unchanged
config.status: executing depfiles commands
config.status: executing libtool commands
config.status: executing po-directories commands
config.status: creating po/POTFILES
config.status: creating po/Makefile
[ec2-user@ip-172-31-39-94 nagios-plugins-2.4.11]$
```

Step 24: We need to compile all components of this software according to the instruction in the Makefile. For that, use the commands:
make
sudo make install

```
fi
make[1]: Leaving directory '/home/ec2-user/nagios-plugins-2.4.11/po'
make[1]: Entering directory '/home/ec2-user/nagios-plugins-2.4.11'
make[2]: Entering directory '/home/ec2-user/nagios-plugins-2.4.11'
make[2]: Nothing to be done for 'install-exec-am'.
make[2]: Nothing to be done for 'install-data-am'.
make[2]: Leaving directory '/home/ec2-user/nagios-plugins-2.4.11'
make[1]: Leaving directory '/home/ec2-user/nagios-plugins-2.4.11'
[ec2-user@ip-172-31-39-94 nagios-plugins-2.4.11]$
```

Step 25: We need to register the Nagios service with the system, which would make it able to manage the server status. So run the following commands
sudo chkconfig --add nagios
sudo chkconfig nagios on

Step 26: We need to verify the Nagios configuration for any syntax errors or issues before starting or restarting the Nagios service.
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

```
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$ 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...
   Read main config file okay...
Error: Unexpected token or statement in file '/usr/local/nagios/etc/objects/contacts.cfg' on line 1.
   Error processing object config files!


***> One or more problems was encountered while processing the config files...

     Check your configuration file(s) to ensure that they contain valid
     directives and data definitions.  If you are upgrading from a previous
     version of Nagios, you should be aware that some variables/definitions
     may have been removed or modified in this version.  Make sure to read
     the HTML documentation regarding the config files, as well as the
     'Whats New' section to find out what has changed.
```

Error: Error in configuration file '/usr/local/nagios/etc/nagios.cfg' - Line 452 (Check result path '/usr/local/nagios/var/spool/checkresults' is not a valid directory)
It is an error in processing main config file!

Solution: Create the missing directory, set the permissions, verify it.

- sudo mkdir -p /usr/local/nagios/var/spool/checkresults (Create)
- sudo chown nagios:nagios /usr/local/nagios/var/spool/checkresults
- sudo chmod 775 /usr/local/nagios/var/spool/checkresults (permissions)

Now rerun the commmad
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

```
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$ 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...
   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
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$
```

Step 27:

sudo service nagios start

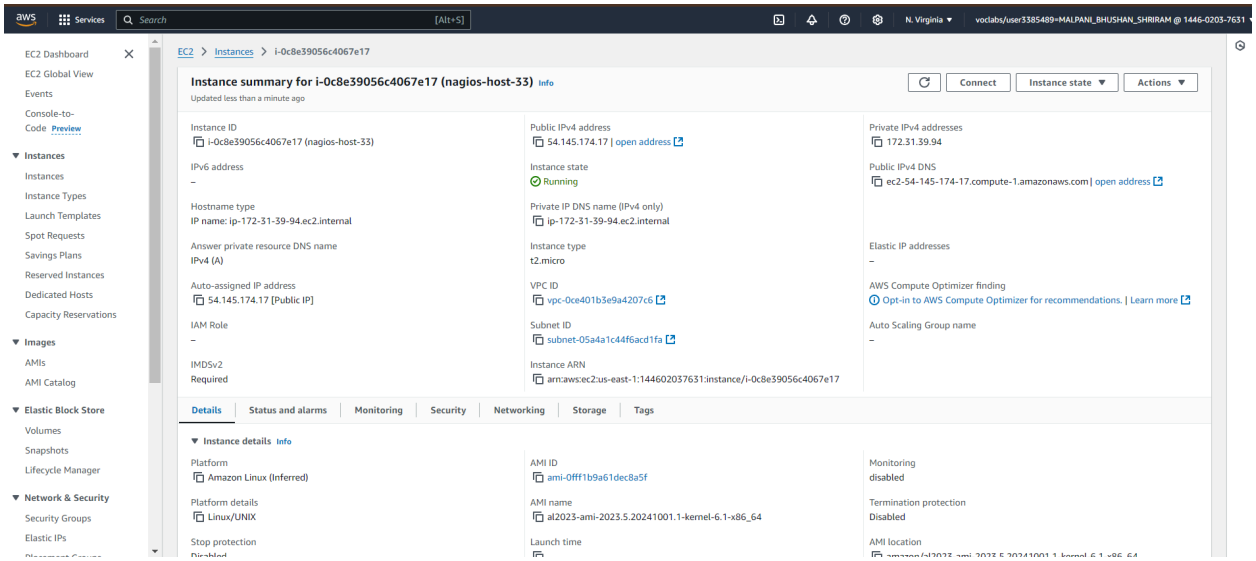
```
[ec2-user@ip-172-31-39-94 nagios-4.5.5]$ sudo service nagios start
Redirecting to /bin/systemctl start nagios.service
```

sudo systemctl status nagios

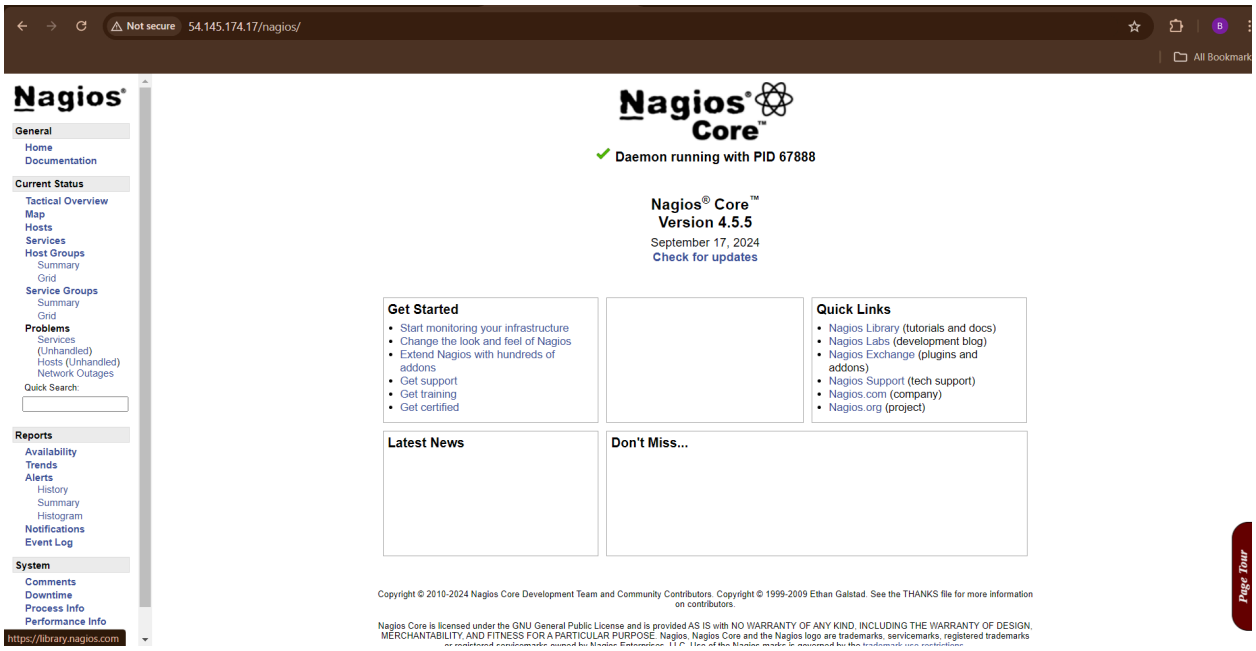
```
● nagios.service - Nagios Core 4.5.5
     Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; preset: disabled)
     Active: active (running) since Sun 2024-10-06 10:41:35 UTC; 16s ago
       Docs: https://www.nagios.org/documentation
    Process: 67265 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg (code=exited, status=0/SUCCESS)
    Process: 67272 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg (code=exited, status=0/SUCCESS)
   Main PID: 67273 (nagios)
      Tasks: 6 (limit: 1112)
     Memory: 5.7M
        CPU: 65ms
     CGroup: /system.slice/nagios.service
             ├─67273 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             ├─67275 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─67276 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─67277 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─67278 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             └─67318 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg

Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: qh: Socket '/usr/local/nagios/var/rw/nagios.qh' successfully initialized
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: qh: core query handler registered
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: qh: echo service query handler registered
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: qh: help for the query handler registered
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: wproc: Successfully registered manager as @wproc with query handler
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: wproc: Registry request: name=Core Worker 67277;pid=67277
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: wproc: Registry request: name=Core Worker 67278;pid=67278
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: wproc: Registry request: name=Core Worker 67275;pid=67275
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: wproc: Registry request: name=Core Worker 67276;pid=67276
Oct 06 10:41:35 ip-172-31-39-94.ec2.internal nagios[67273]: Successfully launched command file worker with pid 67318
```

Step 28: Now, go to EC2 instance and click on instance id. Then, click on the copy icon just before the public ip address on public IP.



Step 29: Open a new tab. In the address bar type http://<publicipaddress>/nagios.
This would be in the output



Conclusion:

In this experiment, we have learned how to install and configure Nagios Core, Nagios Plugins and NRPE on a Linux machine. We are using an Amazon Linux OS instance configured with the need security rules. We need to make sure that the Nagios-core and Nagios-plugins links that are used are the ones which are up-to dat (wget commands).It is needed to extract and configure these files so that no issues are detected while starting the server. Once all the setup

is complete, we can start the nagios server. Using the public IP address of the EC2 instance, we can access the nagios dashboard by navigating that IP to nagios.