

Adv DevOps Practical 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 software for continuous monitoring of systems, networks, and infrastructures. It runs plugins stored on a server that is connected with a host or another server on your network or the Internet. In case of any failure, Nagios alerts about the issues so that the technical team can perform the recovery process immediately.

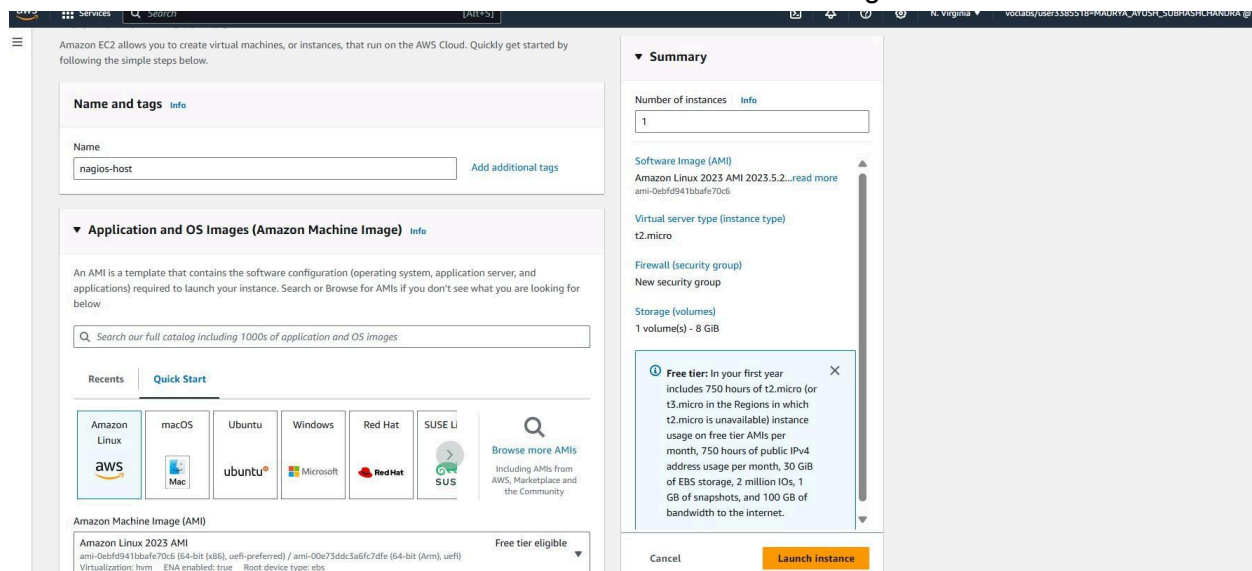
Nagios is used for continuous monitoring of systems, applications, service and business processes in a DevOps culture

Installation of Nagios

Prerequisites: AWS Free Tier

Steps:

1. Create an Amazon Linux EC2 Instance in AWS and name it - nagios-host



The screenshot displays the AWS Management Console interface for creating an EC2 instance and configuring its security group.

Instance Configuration:

- Instance type:** t2.micro (Free tier eligible)
- Software image (AMI):** Amazon Linux 2023 AMI 2023.5.2
- Virtual server type (instance type):** t2.micro
- Firewall (security group):** New security group
- Storage (volumes):** 1 volume(s) - 8 GiB

Key pair (login):

- Key pair name: emp_09
- Buttons: Create new key pair

Security group configuration:

- Create security group:** We'll create a new security group called 'launch-wizard-3' with the following rules:
- Allow SSH traffic from:** Anywhere (0.0.0.0/0)
- Allow HTTPS traffic from the internet:** To set up an endpoint, for example when creating a web server.
- Allow HTTP traffic from the internet:** To set up an endpoint, for example when creating a web server.
- Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.**

Instances (1/5) Info:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4
naigis-host	i-0011127bdfb2f467	Running	t2.micro	1/2 checks pass	View alarms	us-east-1a	ec2-44-204-11-28.compute-1.amazonaws.com	44.204.11.28
Master	i-0a37630f48e9a0f1c	Stopped	t2.micro	2/2 checks pass	View alarms	us-east-1a	-	-
node1	i-041444932a803c05e	Stopped	t2.micro	2/2 checks pass	View alarms	us-east-1a	ec2-54-158-206-1.compute-1.amazonaws.com	54.158.206.1
node2	i-0d5757b061c25ae1	Stopped	t2.micro	2/2 checks pass	View alarms	us-east-1a	ec2-44-202-235-83.compute-1.amazonaws.com	44.202.235.83
emp_0	i-075644f15a74811	Stopped	t2.micro	2/2 checks pass	View alarms	us-east-1a	-	-

Instance Details (i-0011127bdfb2f467 (naigis-host))

- Security groups:** sg-09d51590eb1851b46 (launch-wizard-3)
- Owner ID:** 217253764927
- Launch time:** Sun-Sep-29-2024 12:25:04 GMT+0530 (India Standard Time)

2. Under Security Group, make sure HTTP, HTTPS, SSH, ICMP are open from everywhere.

Security Groups (6) Info

Find resources by attribute or tag

Actions

Export security groups to CSV

Create security group

<1>

	Name	Security group ID	Security group name	VPC ID	Description	Owner
<input type="checkbox"/>	-	sg-070583550d576c53e	launch-wizard-2	vpc-0d4c0d8f48c2e4508	launch-wizard-2 created 2024-09-27T...	217253764927
<input type="checkbox"/>	-	sg-030c0a1b62a1e9894	NodeGroup	vpc-0d4c0d8f48c2e4508	Node	217253764927
<input type="checkbox"/>	-	sg-03f412e8ec9ec5946	launch-wizard-1	vpc-0d4c0d8f48c2e4508	launch-wizard-1 created 2024-09-27T...	217253764927
<input type="checkbox"/>	-	sg-000c20590a5551206	default	vpc-0d4c0d8f48c2e4508	default VPC security group	217253764927
<input type="checkbox"/>	-	sg-097fc30a345c1a537	MasterGroup	vpc-0d4c0d8f48c2e4508	Master	217253764927
<input type="checkbox"/>	-	sg-09d51590eb1851b46	launch-wizard-3	vpc-0d4c0d8f48c2e4508	launch-wizard-3 created 2024-09-29T...	217253764927

EC2 > Security Groups > sg-09d51590eb1851b46

sg-09d51590eb1851b46 - launch-wizard-3

Actions

Details

Security group name
launch-wizard-3

Security group ID
sg-09d51590eb1851b46

Description
launch-wizard-3 created 2024-09-29T06:49:51.498Z

VPC ID
vpc-064c06f94b2e4508

Owner
217253764927

Inbound rules count
1 Permission entry

Outbound rules count
1 Permission entry

[Inbound rules](#) | [Outbound rules](#) | [Tags](#)

Inbound rules (1)

☐

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sg-0ec19557ab93305...	IPv4	SSH	TCP	22	0.0.0.0/0	-

Manage tags

Edit inbound rules

Edit inbound rules**Inbound rules**

Security group rule ID
sg-0ec19557ab9330565

Type
SSH

Protocol
TCP

Port range
22

Source
Custom

Description - optional

0.0.0.0/0

Delete

Type
HTTP

Protocol
TCP

Port range
80

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Type
All ICMP - IPv6

Protocol
IPv6 ICMP

Port range
All

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Type
HTTPS

Protocol
TCP

Port range
443

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Type
All traffic

Protocol
All

Port range
All

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Type
Custom TCP

Protocol
TCP

Port range
5666

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Type
All ICMP - IPv4

Protocol
ICMP

Port range
All

Source
Anywhere...

Description - optional

0.0.0.0/0

Delete

Add rule

Security group name
launch-wizard-3

Security group ID
sg-09d51590eb1851b46

Description
launch-wizard-3 created 2024-09-29T06:49:51.498Z

VPC ID
vpc-064c06f94b2e4508

Owner
217253764927

Inbound rules count
7 Permission entries

Outbound rules count
1 Permission entry

[Inbound rules](#) | [Outbound rules](#) | [Tags](#)**Inbound rules (7)**

☐

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sg-034c50eef15e5fa00	IPv4	All ICMP - IPv6	IPv6 ICMP	All	0.0.0.0/0	-
-	sg-03840d3791dfcc60e	IPv4	HTTPS	TCP	443	0.0.0.0/0	-
-	sg-0efbad1d9008b14...	IPv4	All ICMP - IPv4	ICMP	All	0.0.0.0/0	-
-	sg-0ec19557ab93305...	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sg-00u0e56d560959f45	IPv4	HTTP	TCP	80	0.0.0.0/0	-
-	sg-064c062d09910fa04	IPv4	Custom TCP	TCP	5666	0.0.0.0/0	-
-	sg-0613b7b6ae9d30def	IPv4	All traffic	All	All	0.0.0.0/0	-

Manage tags

Edit inbound rules

You have to edit the inbound rules of the specified Security Group for this.


3. SSH into Your EC2 instance or simply use EC2 Instance Connect from the browser.



Connect to instance [Info](#)

Connect to your instance i-0011127bbfdb2f467 (nagios-host) using any of these options


EC2 Instance Connect	Session Manager	SSH client	EC2 serial console
----------------------	-----------------	-------------------	--------------------


Instance ID

 i-0011127bbfdb2f467 (nagios-host)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is exp_09.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.
 `chmod 400 "exp_09.pem"`
4. Connect to your instance using its Public DNS:
 `ec2-44-204-11-28.compute-1.amazonaws.com`

Example:

 `ssh -i "exp_09.pem" ec2-user@ec2-44-204-11-28.compute-1.amazonaws.com`

 **Note:** In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Or open command prompt and paste ssh command.

[illegible]

```
sudo yum update
```

```
[ec2-user@ip-172-31-91-91 ~]$  
sudo yum update  
Last metadata expiration check: 0:19:03 ago on Sun Sep 29 06:56:15 2024.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[ec2-user@ip-172-31-91-91 ~]$
```

sudo yum install httpd php

```
[ec2-user@ip-172-31-91-91 ~]$ sudo yum install httpd php
Last metadata expiration check: 0:19:29 ago on Sun Sep 29 06:56:15 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                               18 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      10.0.0-12.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      1.0.9-8.amzn2023.0.2                  amazonlinux                               315 k
libsodium                               x86_64      1.0.18-4.amzn2023                      amazonlinux                               176 k
libsox                                     x86_64      2.1.14-3.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-sql                              x86_64      8.3.10-1.amzn2023.0.1                  amazonlinux                               154 k
Installing weak dependencies:
apr-util-spnasl                         x86_64      1.6.3-1.amzn2023.0.1                  amazonlinux                               17 k
mod_http2                              x86_64      2.0.29-1.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
php8.3-ldap                             x86_64      8.3.10-1.amzn2023.0.1                  amazonlinux                               528 k
php8.3-opcache                          x86_64      8.3.10-1.amzn2023.0.1                  amazonlinux                               379 k
php8.3-pdo                              x86_64      8.3.10-1.amzn2023.0.1                  amazonlinux                               89 k
php8.3-sodium                           x86_64      8.3.10-1.amzn2023.0.1                  amazonlinux                               41 k
=====
Total                                                                    22 MB/s | 10 MB    00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing |
  Installing | php8.3-common-8.3.10-1.amzn2023.0.1.x86_64 1/1
  Installing | apr-1.7.2-2.amzn2023.0.2.x86_64 1/28
  Installing | apr-util-spnasl-1.6.3-1.amzn2023.0.1.x86_64 3/28
  Installing | apr-util-1.6.3-1.amzn2023.0.1.x86_64 4/25
  Installing | mailcap-2.1.49-3.amzn2023.0.3.noarch 5/25
  Running scriptlet: httpd-filesystem-2.4.62-1.amzn2023.noarch 6/25
=====
```

sudo yum install gcc glibc glibc-common

```
[ec2-user@ip-172-31-91-91 ~]$ sudo yum install gcc glibc glibc-common
Last metadata expiration check: 0:20:41 ago on Sun Sep 29 06:56:15 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-decs                           x86_64      10.93-1.amzn2023.0.1                  amazonlinux                               92 k
annobin-plugin-gcc                      x86_64      11.4.1-2.amzn2023.0.2                  amazonlinux                               18 k
cpp                                      x86_64      8.0.4-5.amzn2023.0.2                  amazonlinux                               185 k
gcc                                      x86_64      2.34-52.amzn2023.0.11                  amazonlinux                               27 k
glibc-devel                             x86_64      2.34-52.amzn2023.0.11                  amazonlinux                               427 k
glibc-headers-x86                       x86_64      2.2.7-2.amzn2023.0.3                  amazonlinux                               6.4 k
kernel-headers                          x86_64      6.1.189-118.189.amzn2023              amazonlinux                               1.4 M
libgcc                                   x86_64      1.2.1-2.amzn2023.0.2                  amazonlinux                               62 k
libstdc++-devel                         x86_64      2.4.7-1.amzn2023.0.3                  amazonlinux                               28 k
libstdc++-devel-4.4.33-7.amzn2023      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
Total download size: 52 M
=====

Installed:
annobin-decs-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
gcc-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  glibc-2.2.7-2.amzn2023.0.3.x86_64                  kernel-headers-6.1.189-118.189.amzn2023.x86_64
libgcc-1.2.1-2.amzn2023.0.2.x86_64             libtool-ltdl-2.4.7-1.amzn2023.0.3.x86_64            libcrypt-devel-4.4.33-7.amzn2023.x86_64
make-1:4.3-5.amzn2023.0.2.x86_64

Complete!
```

sudo yum install gd gd-devel

```
[ec2-user@ip-172-31-91-91 ~]$ sudo yum install gd gd-devel
Last metadata expiration check: 0:21:30 ago on Sun Sep 29 06:56:15 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
=====
```



```

Installed:
  brotli-1.0.9-4.amzn2023.0.2.x86_64
  cairo-1.17.6-2.amzn2023.0.1.x86_64
  fontconfig-devel-2.13.94-2.amzn2023.0.2.x86_64
  freetype-devel-2.13.2-5.amzn2023.0.1.x86_64
  glib2-devel-2.74.7-689.amzn2023.0.2.x86_64
  graphite2-1.3.14-7.amzn2023.0.2.x86_64
  harfbuzz-devel-7.0.0-2.amzn2023.0.1.x86_64
  langpacks-core-font-en-3.0-21.amzn2023.0.4.noarch
  libX11-1.7.2-3.amzn2023.0.4.x86_64
  libX11-xcb-1.7.2-3.amzn2023.0.4.x86_64
  libXext-1.3.4-6.amzn2023.0.2.x86_64
  libXrender-0.9.10-14.amzn2023.0.2.x86_64
  libffi-devel-3.4.4-1.amzn2023.0.1.x86_64
  libjpeg-turbo-2.1.4-2.amzn2023.0.5.x86_64
  libpng-2.1.6-37-10.amzn2023.0.6.x86_64
  libsepol-devel-3.4-3.amzn2023.0.3.x86_64
  libwebp-1.2.4-1.amzn2023.0.6.x86_64
  libxcb-devel-1.13.1-7.amzn2023.0.2.x86_64
  pcre2-utf16-10.40-1.amzn2023.0.3.x86_64
  sysprof-capture-devel-3.40.1-2.amzn2023.0.2.x86_64
  xz-devel-5.2.5-9.amzn2023.0.2.x86_64

  brotli-devel-1.0.9-4.amzn2023.0.2.x86_64
  cmake-filessystem-3.22.2-1.amzn2023.0.4.x86_64
  fonts-filessystem-1.2.0.5-12.amzn2023.0.2.noarch
  gd-2.3.3-5.amzn2023.0.3.x86_64
  google-noto-fonts-common-20201206-2.amzn2023.0.2.noarch
  graphite2-devel-1.3.14-7.amzn2023.0.2.x86_64
  harfbuzz-icu-7.0.0-2.amzn2023.0.1.x86_64
  libICE-1.0.10-6.amzn2023.0.2.x86_64
  libX11-common-1.7.2-3.amzn2023.0.4.noarch
  libXau-1.0.9-6.amzn2023.0.2.x86_64
  libXpm-3.5.15-2.amzn2023.0.3.x86_64
  libXt-1.2.0-4.amzn2023.0.2.x86_64
  libicu-67.1-7.amzn2023.0.3.x86_64
  libjpeg-turbo-devel-2.1.4-2.amzn2023.0.5.x86_64
  libpng-devel-2.1.6-37-10.amzn2023.0.6.x86_64
  libtiff-4.4.0-4.amzn2023.0.18.x86_64
  libwebp-devel-1.2.4-1.amzn2023.0.6.x86_64
  libxkb2-devel-2.10.4-1.amzn2023.0.6.x86_64
  pcre2-utf32-10.40-1.amzn2023.0.3.x86_64
  xml-common-0.6.3-56.amzn2023.0.2.noarch
  zlib-devel-1.2.11-33.amzn2023.0.5.x86_64

  bzip2-devel-1.0.8-6.amzn2023.0.2.x86_64
  fontconfig-2.13.94-2.amzn2023.0.2.x86_64
  freetype-2.13.2-5.amzn2023.0.1.x86_64
  gd-devel-2.3.3-5.amzn2023.0.3.x86_64
  google-noto-sans-vf-fonts-20201206-2.amzn2023.0.2.noarch
  harfbuzz-7.0.0-2.amzn2023.0.1.x86_64
  jbigkit-libs-2.1-21.amzn2023.0.2.x86_64
  libSM-1.2.3-8.amzn2023.0.2.x86_64
  libX11-devel-1.7.2-3.amzn2023.0.4.x86_64
  libXau-devel-1.0.9-6.amzn2023.0.2.x86_64
  libXpm-devel-3.5.15-2.amzn2023.0.3.x86_64
  libblkid-devel-2.37.4-1.amzn2023.0.4.x86_64
  libicu-devel-67.1-7.amzn2023.0.3.x86_64
  libmount-devel-2.37.4-1.amzn2023.0.4.x86_64
  libselinux-devel-3.4-5.amzn2023.0.2.x86_64
  libtiff-devel-4.4.0-4.amzn2023.0.18.x86_64
  libxcb-1.13.1-7.amzn2023.0.2.x86_64
  pcre2-devel-10.40-1.amzn2023.0.3.x86_64
  pixman-0.40.0-3.amzn2023.0.3.x86_64
  xorg-x11-proto-devel-2021.4-1.amzn2023.0.2.noarch

```

5. Create a new Nagios User with its password. You'll have to enter the password twice for confirmation.

```

sudo adduser -m nagios
sudo passwd nagios
(password : ayushmau)

```

```

Complete!
[ec2-user@ip-172-31-91-91 ~]$ sudo adduser -m nagios
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:
BAD PASSWORD: The password contains the user name in some form
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-91-91 ~]$

```

6. Create a new user group **sudo groupadd nagcmd**

```

[ec2-user@ip-172-31-91-91 ~]$ sudo groupadd nagcmd
[ec2-user@ip-172-31-91-91 ~]$

```

7. Use these commands so that you don't have to use sudo for Apache and Nagios **sudo usermod -a -G nagcmd nagios**
sudo usermod -a -G nagcmd apache

```

[ec2-user@ip-172-31-91-91 ~]$ sudo usermod -a -G nagcmd nagios
sudo usermod -a -G nagcmd apache
[ec2-user@ip-172-31-91-91 ~]$

```

8. Create a new directory for Nagios downloads **mkdir ~/downloads**
cd ~/downloads

```

[ec2-user@ip-172-31-91-91 ~]$ mkdir ~/downloads
cd ~/downloads

```

9. Use git to download the source zip files.

git <https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.5.tar.gz>

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

```
[ec2-user@ip-172-31-91-91 nagios-4.5.5]$ cd ..
[ec2-user@ip-172-31-91-91 downloads]$ wget https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz
--2024-09-29 09:14:28-- 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-2.4 100%[=====>] 2.62M 6.92MB/s in 0.4s
```

10. Use tar to unzip and change to that directory. tar zxvf nagios-4.5.5.tar.gz

```
[ec2-user@ip-172-31-91-91 downloads]$ tar zxvf nagios-4.0.8.tar.gz
nagios-4.0.8/
nagios-4.0.8/.gitignore
nagios-4.0.8/Changelog
nagios-4.0.8/INSTALLING
nagios-4.0.8/LEGAL
nagios-4.0.8/LICENSE
nagios-4.0.8/Makefile.in
nagios-4.0.8/README
nagios-4.0.8/README.asciidoc
nagios-4.0.8/THANKS
nagios-4.0.8/UPGRADING
nagios-4.0.8/base/
nagios-4.0.8/base/.gitignore
```

11. Run the configuration script with the same group name you previously created.

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

Here we go an error

```
[ec2-user@ip-172-31-91-91 downloads]$ ./configure --with-command-group=nagcmd
-bash: ./configure: No such file or directory
[ec2-user@ip-172-31-91-91 downloads]$ |
```

Solution

Navigate to nagios folder in downloads

```
[ec2-user@ip-172-31-91-91 downloads]$ ls
nagios-4.0.8 nagios-4.0.8.tar.gz nagios-plugins-2.0.3.tar.gz
[ec2-user@ip-172-31-91-91 downloads]$ cd nagios-4.0.8
[ec2-user@ip-172-31-91-91 nagios-4.0.8]$ |
```

Error 2: Cannot find SSL headers.

Solution: Install openssl dev library

Steps: sudo yum install
openssl-devel

```
[ec2-user@ip-172-31-91-91 nagios-4.5.5]$ sudo yum install openssl-devel
Last metadata expiration check: 2:24:05 ago on Sun Sep 29 06:56:15 2024.
Dependencies resolved.
=====
Package           Arch      Version                               Repository      Size
=====
Installing:
openssl-devel      x86_64    1:3.0.8-1.amzn2023.0.14             amazonlinux     3.0 M
Transaction Summary
=====
Install 1 Package

Total download size: 3.0 M
Installed size: 4.7 M
Is this ok [y/N]: y
Downloading Packages:
```

Now run

./configure --with-command-group=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-172-31-91-91 nagios-4.5.5]$ |
```

12. Compile the source code. **make all**

```
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.5.5/base'
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o nagios.o ./nagios.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o broker.o broker.c
```

13. Install binaries, init script and sample config files. Lastly,
set permissions on the external command directory. **sudo**
make install sudo make install-init sudo make
install-config sudo make install-commandmode


```
[ec2-user@ip-172-31-91-91 nagios-4.5.5]$ make all

sudo make install
sudo make install-init
sudo make install-config
sudo make install-commandmode
cd ./base && make
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.5.5/base'
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o nagios.o ./nagios.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o broker.o broker.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o nebmods.o nebmods.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o ../common/shared.o ../common/shared.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o query-handler.o query-handler.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -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-overflo
w=]
    253 |         log_debug_info(DEBUGL_CHECKS, 1, "Found specialized
worker(s) for '%s'", (slash && *slash != '/') ? slash : cmd_name);
        |                                     ^
~~~~~
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o checks.o checks.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
CONFIG_H -DNSCORE -c -o config.o config.c
gcc -Wall -I.. -I. -I../lib -I../include -I../include -I.. -g -O2 -DHAVE_
```

14. Edit the config file and change the email address.

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

```
# 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.ayush.maurya@ves.ac.in ; <<***** CHANGE THIS TO YOUR EMAIL ADDRESS *****>>

#####
# CONTACT GROUPS
#####
# We only have one contact in this simple configuration file, so there is
# no need to create more than one contact group.

define contactgroup {
    contactgroup_name admins
    alias             Nagios Administrators
    members           nagiosadmin
}
```

And change email with your email

15. Configure the web interface. **sudo make install-webconf**

```
[ec2-user@ip-172-31-91-91 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-172-31-91-91 nagios-4.5.5]$
```

16. Create a nagiosadmin account for nagios login along with password. You'll have to specify the password twice.

sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin

```
[ec2-user@ip-172-31-91-91 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-172-31-91-91 nagios-4.5.5]$ |
```

Password: Ayushmau

17. Restart Apache **sudo**
service httpd restart

```
Adding password for user nagiosadmin  
[ec2-user@ip-172-31-91-91 nagios-4.5.5]$ sudo service httpd restart  
Redirecting to /bin/systemctl restart httpd.service  
[ec2-user@ip-172-31-91-91 nagios-4.5.5]$ |
```

18. Go back to the downloads folder and unzip the plugins zip file.

cd ~/downloads tar zxvf
nagios-plugins-2.4.11.tar.gz

```
[ec2-user@ip-172-31-91-91 downloads]$ cd ~/downloads  
[ec2-user@ip-172-31-91-91 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/
```

19. Compile and install plugins
cd nagios-plugins-2.4.11

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

```
[ec2-user@ip-172-31-91-91 downloads]$ cd 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 for gcc option to accept ISO C89... none needed
checking whether gcc understands -c and -o together... yes
checking whether make supports the include directive... yes (GNU style)
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
checking for egrep... /usr/bin/grep -E
checking for Minix Amsterdam compiler... no
checking for ar... ar
checking for ranlib... ranlib
```

**make sudo make
install**

```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$ make
sudo make install
make all-recursive
make[1]: Entering directory '/home/ec2-user/downloads/nagios-plugins-2.4.11'
Making all in gl
make[2]: Entering directory '/home/ec2-user/downloads/nagios-plugins-2.4.11/gl'
rm -f alloca.h-t alloca.h && \
{ echo '/* DO NOT EDIT! GENERATED AUTOMATICALLY! */'; \
cat ./alloca.in.h; \
} > alloca.h-t && \
mv -f alloca.h-t alloca.h
rm -f c++defs.h-t c++defs.h && \
sed -n -e '/_GL_CXXDEFS/, $p' \
< ../build-aux/snippet/c++defs.h \
> c++defs.h-t && \
mv c++defs.h-t c++defs.h
rm -f warn-on-use.h-t warn-on-use.h && \
sed -n -e '/^\.ifnndef/, $p' \
< ../build-aux/snippet/warn-on-use.h \
> warn-on-use.h-t && \
mv warn-on-use.h-t warn-on-use.h
rm -f arg-nonnull.h-t arg-nonnull.h && \
sed -n -e '/GL_ARG_NONNULL/, $p' \
< ../build-aux/snippet/arg-nonnull.h \
> arg-nonnull.h-t && \
mv arg-nonnull.h-t arg-nonnull.h
/usr/bin/mkdir -p arpa
make[1]: Leaving directory '/home/ec2-user/downloads/nagios-plugins-2.4.11'
make[2]: Leaving directory '/home/ec2-user/downloads/nagios-plugins-2.4.11/gl'
make[1]: Leaving directory '/home/ec2-user/downloads/nagios-plugins-2.4.11'
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$
```

20. Start Nagios

Add Nagios to the list of system

services **sudo chkconfig --add nagios**

sudo chkconfig nagios on

```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$ sudo chkconfig --add nagios
s
sudo chkconfig nagios on
Note: Forwarding request to 'systemctl enable nagios.service'.
Synchronizing state of nagios.service with SysV service script with /usr/lib
/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable nagios
Created symlink /etc/systemd/system/multi-user.target.wants/nagios.service →
/usr/lib/systemd/system/nagios.service.
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$
```

Verify the sample configuration files

sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Error


```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.0.8
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 08-12-2014
License: GPL

Website: http://www.nagios.org
Reading configuration data...
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)
Error processing main config file!
```

Solution:

Create the missing directory: If the directory is missing, create it with the necessary permissions:

```
sudo mkdir -p /usr/local/nagios/var/spool/checkresults sudo chown
nagios:nagios /usr/local/nagios/var/spool/checkresults sudo
chmod 775 /usr/local/nagios/var/spool/checkresults
```

```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo mkdir -p /usr/local/nagios/var/spool/checkresults
sudo chown nagios:nagios /usr/local/nagios/var/spool/checkresults
sudo chmod 775 /usr/local/nagios/var/spool/checkresults
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$
```

Now run again

sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

```
[ec2-user@ip-172-31-91-91 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...
  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
```

sudo service nagios start

```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$ sudo service nagios start
Starting nagios (via systemctl): [ OK ]
```

21. Check the status of Nagios

sudo systemctl status nagios

```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo systemctl status nagios
● nagios.service - LSB: Starts and stops the Nagios monitoring server
   Loaded: loaded (/etc/rc.d/init.d/nagios; generated)
   Active: active (running) since Sun 2024-09-29 08:04:30 UTC; 37s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 68037 ExecStart=/etc/rc.d/init.d/nagios start (code=exited, status=0/SUCCESS)
    Tasks: 6 (limit: 1112)
   Memory: 2.0M
      CPU: 47ms
   CGroup: /system.slice/nagios.service
           └─68059 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             └─68061 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
               └─68062 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                 └─68063 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                   └─68064 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                     └─68065 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg

Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: wproc: Registry request: name=Core Worker 68063;pid=68063
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: wproc: Registry request: name=Core Worker 68062;pid=68062
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: wproc: Registry request: name=Core Worker 68064;pid=68064
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: wproc: Registry request: name=Core Worker 68061;pid=68061
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: Warning: Could not open object cache file '/usr/local/nagios/var/objectcache.lock'
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: Error: Unable to create temp file '/usr/local/nagios/var/nagios.tmpx2N'
Sep 29 08:04:30 ip-172-31-91-91.ec2.internal nagios[68059]: Successfully launched command file worker with pid 68065
Sep 29 08:04:39 ip-172-31-91-91.ec2.internal nagios[68059]: Error: Unable to create temp file '/usr/local/nagios/var/nagios.tmpTmg'
Sep 29 08:04:49 ip-172-31-91-91.ec2.internal nagios[68059]: Error: Unable to create temp file '/usr/local/nagios/var/nagios.tmpAfy'
Sep 29 08:04:59 ip-172-31-91-91.ec2.internal nagios[68059]: Error: Unable to create temp file '/usr/local/nagios/var/nagios.tmpCtQ'
lines 1-26/26 (END)
```

Error:

The log messages suggest that Nagios is unable to create temporary files, particularly in the directory `/usr/local/nagios/var/`. This is typically caused by permission issues, or the directory might not exist.

Solution:

Firstly check whether `/usr/local/nagios/var/` is there or not. If yes.....

```
ls -ld /usr/local/nagios/var/
```

Change ownership: Set the correct ownership for the Nagios user and group:

```
sudo chown -R nagios:nagcmd /usr/local/nagios/var
```

Set permissions: Ensure the directory has the right permissions:

```
sudo chmod -R 775 /usr/local/nagios/var
```

Restart Nagios: After adjusting the ownership and permissions, restart the Nagios service:

sudo systemctl restart nagios

```
drwxr-xr-x. 4 root root 112 Sep 29 08:04 /usr/local/nagios/var/
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo chown -R nagios:nagcmd /usr/local/nagios/var
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo chmod -R 775 /usr/local/nagios/var
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$ sudo systemctl restart nagios
[ec2-user@ip-172-31-91-91 nagios-plugins-2.0.3]$
```

Now run again

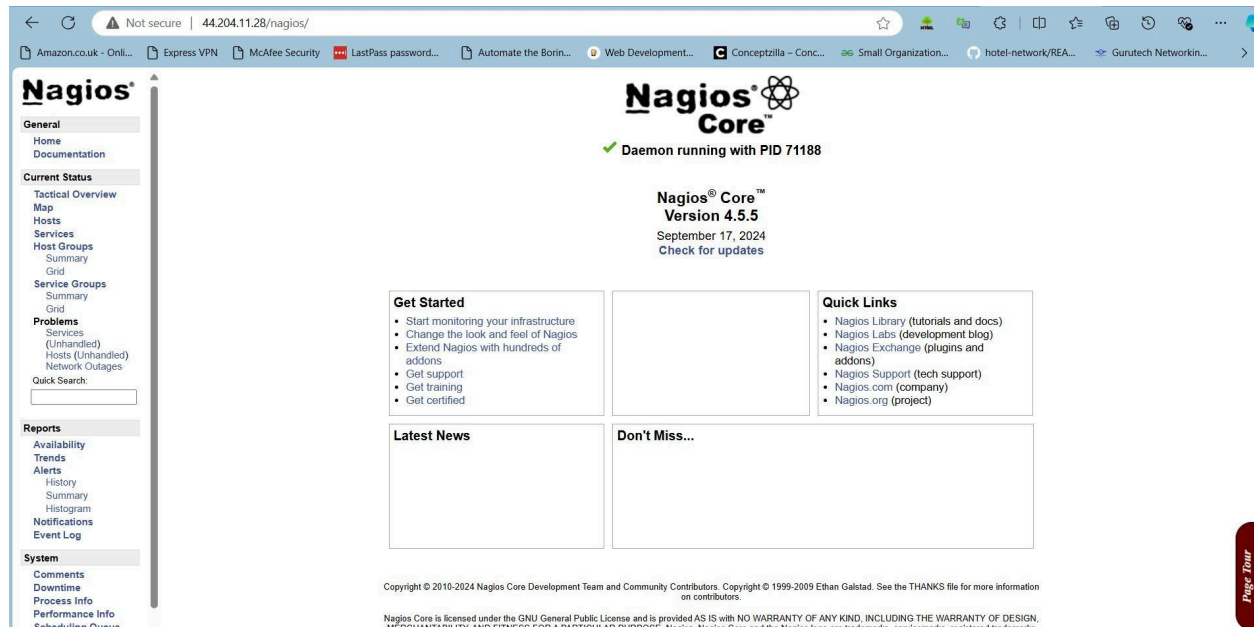
```
[ec2-user@ip-172-31-91-91 nagios-plugins-2.4.11]$ sudo systemctl status nagios
● nagios.service - Nagios Core 4.5.5
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; preset: disabled)
   Active: active (running) since Sun 2024-09-29 08:51:47 UTC; 42min ago
     Docs: https://www.nagios.org/documentation
    Tasks: 6 (limit: 1112)
   Memory: 2.9M
     CPU: 562ms
   CGroup: /system.slice/nagios.service
           └─71188 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             └─71190 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
               └─71191 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                 └─71192 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                   └─71193 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
                     └─71194 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg

Sep 29 08:51:47 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: Registry request: name=Core Worker 71191;pid=71191
Sep 29 08:51:47 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: Registry request: name=Core Worker 71190;pid=71190
Sep 29 08:51:47 ip-172-31-91-91.ec2.internal nagios[71188]: Successfully launched command file worker with pid 71194
Sep 29 08:59:22 ip-172-31-91-91.ec2.internal nagios[71188]: SERVICE ALERT: localhost:HTTP:WARNING:Hard:4:HTTP WARNING: HTTP/1.1 403 Forbidden - 319 bytes in
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: SERVICE NOTIFICATION: nagiosadmin;localhost;Swap Usage;CRITICAL;notify-service-by-email;SWAP CR
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: NOTIFY job 10 from worker Core Worker 71192 is a non-check helper but exited with return
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: host=localhost; service=Swap Usage; contact=nagiosadmin
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: early_timeout=0; exited_ok=1; wait_status=32512; error_code=0;
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: stderr line 01: /bin/sh: line 1: /bin/mail: No such file or directory
Sep 29 09:11:52 ip-172-31-91-91.ec2.internal nagios[71188]: wproc: stderr line 02: /usr/bin/printf: write error: Broken pipe
Lines 1=25/25 (END)
```

22. Go back to EC2 Console and copy the Public IP address of this instance

23. Open up your browser and look for http://<your_public_ip_address>/nagios Enter username as admin and password which you set in Step 16.

24. After entering the correct credentials, you will see this page.



The screenshot displays the Nagios Core web interface in a browser window. The address bar shows the URL `44.204.11.28/nagios/`. The interface features a sidebar on the left with a menu containing sections like General, Current Status, Problems, Reports, and System. The main content area shows the Nagios Core logo, a status message "Daemon running with PID 71188", and the version "Nagios Core Version 4.5.5" dated "September 17, 2024". Below this, there are four boxes: "Get Started" with links to start monitoring, change look/feel, extend Nagios, get support, get training, and get certified; "Quick Links" with links to Nagios Library, Nagios Labs, Nagios Exchange, Nagios Support, Nagios.com, and Nagios.org; "Latest News" and "Don't Miss..." sections which are currently empty. At the bottom, there is a copyright notice for 2010-2024 and a disclaimer about the GNU General Public License.

This means that Nagios was correctly installed and configured with its plugins so far.

Conclusion:

In this practical , we successfully installed and configured Nagios Core along with Nagios plugins and NRPE on an Amazon EC2 instance. We created a Nagios user, set up necessary permissions, and resolved common installation errors. Finally, we verified the setup by accessing the Nagios web interface, confirming that our monitoring system was fully operational.