Rujuta Medhi D15A-28

EXPERIMENT:09

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.

Features of Nagios

Following are the important features of Nagios monitoring tool:
● Relatively scalable, Manageable, and Secure
● Good log and database system
● Informative and attractive web interfaces
● Automatically send alerts if condition changes
● If the services are running fine, then there is no need to do check that host is an alive
● Helps you to detect network errors or server crashes
● You can troubleshoot the performance issues of the server.
● The issues, if any, can be fixed automatically as they are identified during the monitoring
process
● You can monitor the entire business process and IT infrastructure with a single pass
● The product's architecture is easy to write new plugins in the language of your choice
● Nagios allows you to read its configuration from an entire directory which helps you to decide how to define individual files
● Utilizes topology to determine dependencies
● Monitor network services like HTTP, SMTP, HTTP, SNMP, FTP, SSH, POP, etc.
● Helps you to define network host hierarchy using parent hosts
● Ability to define event handlers that runs during service or host events for proactive

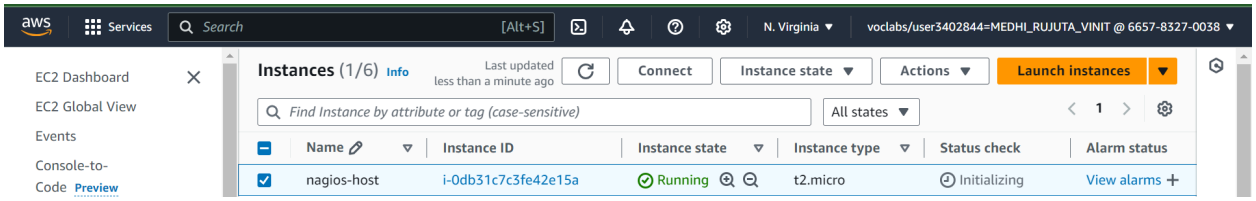
problem resolution

- Support for implementing redundant monitoring hosts

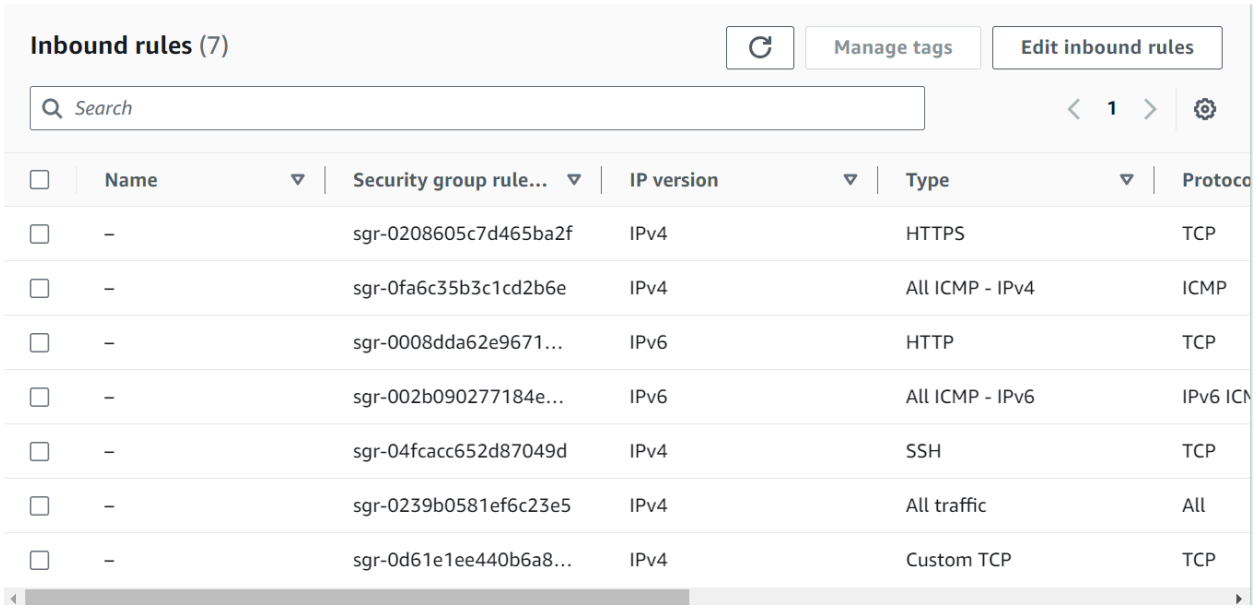
Implementation:

Installation of Nagios:

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



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



3. Update the package indices and install the following packages using yum

```
[ec2-user@ip-172-31-80-189 ~]$ sudo yum update
Last metadata expiration check: 0:13:07 ago on Thu Sep 26 08:28:45 2024.
Dependencies resolved.
Nothing to do.
Complete!
```

```
[ec2-user@ip-172-31-80-189 ~]$ sudo yum install httpd php
Last metadata expiration check: 0:13:29 ago on Thu Sep 26 08:28:45 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

```
[ec2-user@ip-172-31-80-189 ~]$ sudo yum install gcc glibc glibc-common
Last metadata expiration check: 0:14:04 ago on Thu Sep 26 08:28:45 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

```
[ec2-user@ip-172-31-80-189 ~]$ sudo yum install gd gd-devel
Last metadata expiration check: 0:20:01 ago on Thu Sep 26 08:28:45 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

4. 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

```
Last login: Thu Sep 26 08:41:37 2024 from 18.206.107.29
[ec2-user@ip-172-31-80-189 ~]$ sudo adduser -m nagios
[ec2-user@ip-172-31-80-189 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-80-189 ~]$
```

5. Create a new user group
sudo groupadd nagcmd

6. 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-172-31-80-189 ~]$ sudo usermod -a -G nagcmd nagios
[ec2-user@ip-172-31-80-189 ~]$ sudo usermod -a -G nagcmd apache
```

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

8. Use wget to download the source zip files.
wget
http://prdownloads.sourceforge.net/sourceforge/nagios/nagios-4.0.8.tar.gz
wget http://nagios-plugins.org/download/nagios-plugins-2.0.3.tar.gz

```
[ec2-user@ip-172-31-80-189 ~]$ mkdir ~/downloads
[ec2-user@ip-172-31-80-189 ~]$ cd ~/downloads
[ec2-user@ip-172-31-80-189 downloads]$ wget http://nagios-plugins.org/download/nagios-plugins-2.0.3.tar.gz
--2024-09-26 08:58:48--  http://nagios-plugins.org/download/nagios-plugins-2.0.3.tar.gz
Resolving nagios-plugins.org (nagios-plugins.org)... 45.56.123.251
Connecting to nagios-plugins.org (nagios-plugins.org)|45.56.123.251|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2659772 (2.5M) [application/x-gzip]
Saving to: 'nagios-plugins-2.0.3.tar.gz'

nagios-plugins-2.0.3.tar.gz       100%[=============================================================>]   2.54M  10.7MB/s    in 0.2s

2024-09-26 08:58:48 (10.7 MB/s) - 'nagios-plugins-2.0.3.tar.gz' saved [2659772/2659772]
```

```
[ec2-user@ip-172-31-80-189 nagios-plugins-2.0.3]$ wget http://prdownloads.sourceforge.net/sourceforge/nagios/nagios-4.0.8.tar.gz
--2024-09-26 09:45:07--  http://prdownloads.sourceforge.net/sourceforge/nagios/nagios-4.0.8.tar.gz
Resolving prdownloads.sourceforge.net (prdownloads.sourceforge.net)... 204.68.111.105
Connecting to prdownloads.sourceforge.net (prdownloads.sourceforge.net)|204.68.111.105|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: http://downloads.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz [following]
--2024-09-26 09:45:07--  http://downloads.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz
Resolving downloads.sourceforge.net (downloads.sourceforge.net)... 204.68.111.105
Reusing existing connection to prdownloads.sourceforge.net:80.
HTTP request sent, awaiting response... 302 Found
Location: http://psychz.dl.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz?viasf=1 [following]
--2024-09-26 09:45:07--  http://psychz.dl.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz?viasf=1
Resolving psychz.dl.sourceforge.net (psychz.dl.sourceforge.net)... 208.87.241.191
Connecting to psychz.dl.sourceforge.net (psychz.dl.sourceforge.net)|208.87.241.191|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1805059 (1.7M) [application/x-gzip]
Saving to: 'nagios-4.0.8.tar.gz'

nagios-4.0.8.tar.gz              100%[=============================================================>]   1.72M  2.63MB/s    in 0.7s

2024-09-26 09:45:08 (2.63 MB/s) - 'nagios-4.0.8.tar.gz' saved [1805059/1805059]
```

9. Use tar to unzip and change to that directory.
tar zxvf nagios-4.0.8.tar.gz

```
[ec2-user@ip-172-31-80-189 downloads]$ tar zxvf nagios-plugins-2.0.3.tar.gz
nagios-plugins-2.0.3/
nagios-plugins-2.0.3/perlmods/
nagios-plugins-2.0.3/perlmods/Config-Tiny-2.14.tar.gz
nagios-plugins-2.0.3/perlmods/parent-0.226.tar.gz
nagios-plugins-2.0.3/perlmods/Test-Simple-0.98.tar.gz
nagios-plugins-2.0.3/perlmods/Makefile.in
nagios-plugins-2.0.3/perlmods/version-0.9903.tar.gz
nagios-plugins-2.0.3/perlmods/Makefile.am
nagios-plugins-2.0.3/perlmods/Module-Runtime-0.013.tar.gz
nagios-plugins-2.0.3/perlmods/Module-Metadata-1.000014.tar.gz
nagios-plugins-2.0.3/perlmods/Params-Validate-1.08.tar.gz
nagios-plugins-2.0.3/perlmods/Class-Accessor-0.34.tar.gz
nagios-plugins-2.0.3/perlmods/Try-Tiny-0.18.tar.gz
nagios-plugins-2.0.3/perlmods/Module-Implementation-0.07.tar.gz
nagios-plugins-2.0.3/perlmods/Makefile
nagios-plugins-2.0.3/perlmods/Perl-OSType-1.003.tar.gz
nagios-plugins-2.0.3/perlmods/install_order
nagios-plugins-2.0.3/perlmods/Nagios-Plugin-0.36.tar.gz
nagios-plugins-2.0.3/perlmods/Math-Calc-Units-1.07.tar.gz
nagios-plugins-2.0.3/perlmods/Module-Build-0.4007.tar.gz
```

10. Run the configuration script with the same group name you previously created.
./configure --with-command-group=nagcmd

```
checking for a BSD-compatible install... /usr/bin/install -c
checking build system type... x86_64-unknown-linux-gnu
checking host system type... x86_64-unknown-linux-gnu
checking for gcc... gcc
checking for C compiler default output file name... a.out
checking whether the C compiler works... yes
checking whether we are cross compiling... no
checking for suffix of executables...
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
```

```
[ec2-user@ip-172-31-80-189 nagios-4.0.8]$ sudo yum install -y httpd php gcc glibc glibc-common make net-snmp
Last metadata expiration check: 1:24:24 ago on Thu Sep 26 08:28:45 2024.
Package httpd-2.4.62-1.amzn2023.x86_64 is already installed.
Package php8.3-8.3.10-1.amzn2023.0.1.x86_64 is already installed.
Package gcc-11.4.1-2.amzn2023.0.2.x86_64 is already installed.
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.
Package make-1:4.3-5.amzn2023.0.2.x86_64 is already installed.
Dependencies resolved.
================================================================================================================================
 Package                          Architecture         Version                          Repository                Size
================================================================================================================================
Installing:
 net-snmp                         x86_64               1:5.9.3-2.amzn2023.0.2           amazonlinux              296 k
Installing dependencies:
 mariadb-connector-c              x86_64               3.1.13-1.amzn2023.0.3            amazonlinux              196 k
 mariadb-connector-c-config       noarch               3.1.13-1.amzn2023.0.3            amazonlinux              9.2 k
 net-snmp-agent-libs              x86_64               1:5.9.3-2.amzn2023.0.2           amazonlinux              696 k
 net-snmp-libs                    x86_64               1:5.9.3-2.amzn2023.0.2           amazonlinux              745 k
 perl-B                           x86_64               1.80-477.amzn2023.0.6            amazonlinux              179 k
 perl-Data-Dumper                 x86_64               2.174-460.amzn2023.0.2           amazonlinux               55 k
```

11. Compile the source code.
make all

12. 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-172-31-80-189 nagios-4.0.8]$ sudo make install
sudo make install-init
sudo make install-config
sudo make install-commandmode
cd ./base && make install
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.0.8/base'
make install-basic
make[2]: Entering directory '/home/ec2-user/downloads/nagios-4.0.8/base'
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/bin
/usr/bin/install -c -m 774 -o nagios -g nagios nagios /usr/local/nagios/bin
/usr/bin/install -c -m 774 -o nagios -g nagios nagiostats /usr/local/nagios/bin
make[2]: Leaving directory '/home/ec2-user/downloads/nagios-4.0.8/base'
make strip-post-install
make[2]: Entering directory '/home/ec2-user/downloads/nagios-4.0.8/base'
/usr/bin/strip /usr/local/nagios/bin/nagios
/usr/bin/strip /usr/local/nagios/bin/nagiostats
make[2]: Leaving directory '/home/ec2-user/downloads/nagios-4.0.8/base'
make[1]: Leaving directory '/home/ec2-user/downloads/nagios-4.0.8/base'
cd ./cgi && make install
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.0.8/cgi'
make install-basic
```

```
*** 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 nagios -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

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

13. Edit the config file and change the email address.
sudo nano /usr/local/nagios/etc/objects/contacts.cfg

```
# template which is defined elsewhere.

define contact{
       contact_name                    nagiosadmin             ; Short name of user
       use                             generic-contact         ; Inherit default values from generic-contact template (
       alias                           Nagios Admin            ; Full name of user

       email                           rujutamedhi@gmail.com   ; <<***** CHANGE THIS TO YOUR EMAIL ADDRESS ******
       }
```

14. Configure the web interface.
sudo make install-webconf

```
[ec2-user@ip-172-31-80-189 nagios-4.0.8]$ sudo make install-webconf
/usr/bin/install -c -m 644 sample-config/httpd.conf /etc/httpd/conf.d/nagios.conf

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

[ec2-user@ip-172-31-80-189 nagios-4.0.8]$
```

15. 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-172-31-80-189 nagios-4.0.8]$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
[ec2-user@ip-172-31-80-189 nagios-4.0.8]$
```

16. Restart Apache
sudo service httpd restart

```
Adding password for user nagiosadmin
[ec2-user@ip-172-31-80-189 nagios-4.0.8]$ sudo service httpd restart
Redirecting to /bin/systemctl restart httpd.service
[ec2-user@ip-172-31-80-189 nagios-4.0.8]$
```

17. Go back to the downloads folder and unzip the plugins zip file.
cd ~/downloads
tar zxvf nagios-plugins-2.0.3.tar.gz

18. Compile and install plugins
cd nagios-plugins-2.0.3
./configure --with-nagios-user=nagios --with-nagios-group=nagios
make
sudo make install

19. Start Nagios
Add Nagios to the list of system services
sudo chkconfig --add nagios
sudo chkconfig nagios on
Verify the sample configuration files
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

```
[ec2-user@ip-172-31-80-189 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...
   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 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-172-31-80-189 nagios-plugins-2.0.3]$ sudo service nagios start
Starting nagios (via systemctl):                           [  OK  ]
```

20. Check the status of Nagios
sudo systemctl status nagios

```
[ec2-user@ip-172-31-80-189 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 Thu 2024-09-26 10:10:23 UTC; 3min 24s ago
       Docs: man:systemd-sysv-generator(8)
    Process: 128105 ExecStart=/etc/rc.d/init.d/nagios start (code=exited, status=0/SUCCESS)
      Tasks: 6 (limit: 1112)
     Memory: 2.6M
        CPU: 103ms
     CGroup: /system.slice/nagios.service
             ├─128127 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             ├─128129 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─128130 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─128131 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─128132 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             └─128133 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg

Sep 26 10:10:23 ip-172-31-80-189.ec2.internal nagios[128127]: nerd: Channel opathchecks registered successfully
Sep 26 10:10:23 ip-172-31-80-189.ec2.internal nagios[128127]: nerd: Fully initialized and ready to rock!
Sep 26 10:10:23 ip-172-31-80-189.ec2.internal nagios[128127]: wproc: Successfully registered manager as @wproc with query hand
Sep 26 10:10:23 ip-172-31-80-189.ec2.internal nagios[128127]: wproc: Registry request: name=Core Worker 128132;pid=128132
```

Forbidden

You don't have permission to access this resource.

Error:
[ec2-user@ip-172-31-80-189 nagios-plugins-2.0.3]$ sudo make install-init make: *** No rule to make target 'install-init'. Stop.

21. Received error forbidden:
To solve these errors run:
Install the OpenSSL development libraries and any other required dependencies:
sudo yum install openssl-devel -y
sudo yum install httpd gcc glibc glibc-common perl php gcc-c++ make wget -y
sudo yum install php-mysqlnd -y

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