

Advanced DevOps Lab

Experiment 09

Roll No.	24
Name	Iyer Sreekesh Subramanian
Class	D15-A
Subject	Advanced DevOps Lab

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.

Why We Need Nagios tool?

Here are the important reasons to use Nagios monitoring tool:

- Detects all types of network or server issues
- Helps you to find the root cause of the problem which allows you to get the permanent solution to the problem
- Active monitoring of your entire infrastructure and business processes
- Allows you to monitor and troubleshoot server performance issues
- Helps you to plan for infrastructure upgrades before outdated systems create failures
- You can maintain the security and availability of the service
- Automatically fix problems in a panic situation

Features of Nagios

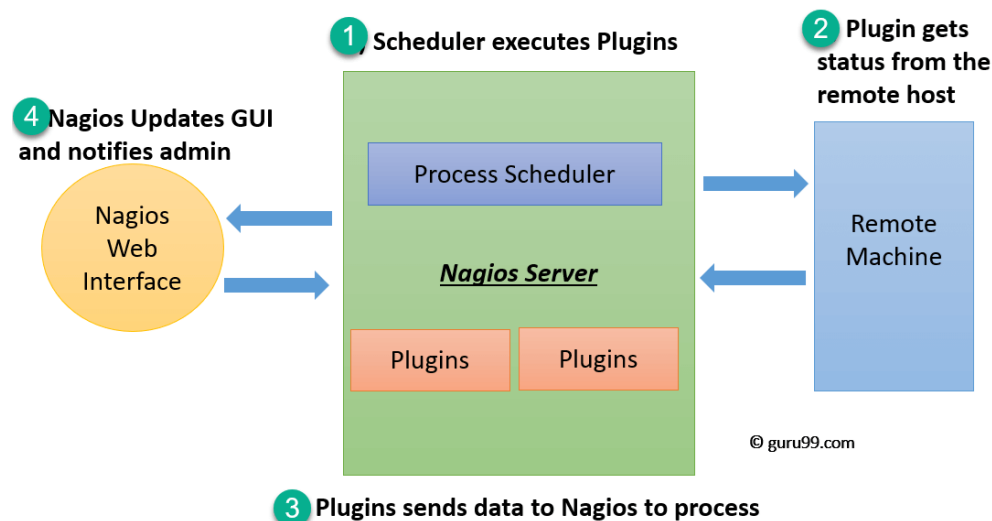
Following are the important features of Nagios monitoring tool:

- 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

Nagios Architecture

Nagios is a client-server architecture. Usually, on a network, a Nagios server is running on a host, and plugins are running on all the remote hosts which should be monitored.



1. The scheduler is a component of the server part of Nagios. It sends a signal to execute the plugins at the remote host.
2. The plugin gets the status from the remote host
3. The plugin sends the data to the process scheduler
4. The process scheduler updates the GUI and notifications are sent to admins.

Installation of Nagios

Prerequisites: AWS Free Tier

Steps:

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

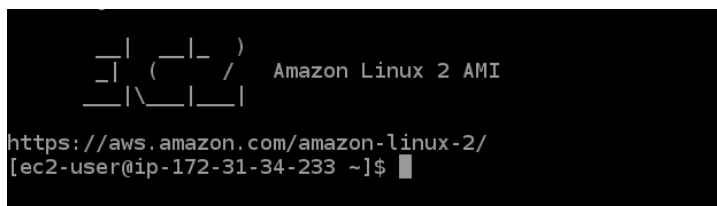
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
nagios-host	i-039f09266469ff8fc	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-13-233-128

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

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sg-06968184311c69...	IPv6	HTTP	TCP	80	::/0	-
-	sg-0ef2b7b0ba4fa3b	IPv6	All ICMP - IPv6	IPv6 ICMP	All	::/0	-
-	sg-0642522c2a7a765...	IPv4	HTTPS	TCP	443	0.0.0.0/0	-
-	sg-076c55f3b7dd80fe	IPv4	All traffic	All	All	0.0.0.0/0	-
-	sg-07a8c3049a00dbec6	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sg-04c83c4a2db4537...	IPv4	Custom TCP	TCP	5666	0.0.0.0/0	-
-	sg-04d54b6dd961b1...	IPv4	All ICMP - IPv4	ICMP	All	0.0.0.0/0	-

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.



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

```

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

```

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
```

```
[ec2-user@ip-172-31-43-1 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
```

6. Create a new user group

```
sudo groupadd nagcmd
```

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
```

8. Create a new directory for Nagios downloads

```
mkdir ~/downloads
cd ~/downloads
```

9. 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-172-31-43-1 ~]$ mkdir downloads
[ec2-user@ip-172-31-43-1 ~]$ cd downloads
[ec2-user@ip-172-31-43-1 downloads]$ wget http://prdownloads.sourceforge.net/sourceforge/nagios/nagios-4.0.8.tar.gz
--2021-10-23 22:38:58-- 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]
--2021-10-23 22:38:58-- 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
```

10. Use tar to unzip and change to that directory.

```
tar zxvf nagios-4.0.8.tar.gz
```

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

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

```
[ec2-user@ip-172-31-43-1 nagios-4.0.8]$ ./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
```

12. Compile the source code.

```
make all
```

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
```

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

If you have questions about configuring or running Nagios,
please make sure that you:

- Look at the sample config files
- Read the documentation on the Nagios Library at:
  http://library.nagios.com

before you post a question to one of the mailing lists.
Also make sure to include pertinent information that could
help others help you. This might include:

- What version of Nagios you are using
- What version of the plugins you are using
- Relevant snippets from your config files
- Relevant error messages from the Nagios log file

For more information on obtaining support for Nagios, visit:

  http://support.nagios.com

*****

Enjoy.

[ec2-user@ip-172-31-43-1 nagios-4.0.8]$ |
```

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

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

```
GNU nano 2.9.8 /usr/local/nagios/etc/objects/co
#####
# 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 fro
    alias           Nagios Admin       ; Full name of user

    email           sreekeshiyer@gmail.com ; <<***** CHANGE THIS TO YOU
}
```

15. Configure the web interface.

```
sudo make install-webconf
```

```
[ec2-user@ip-172-31-46-218 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 ***
```

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-172-31-46-218 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-172-31-46-218 nagios-4.0.8]$ |
```

17. Restart Apache

```
sudo service httpd restart
```

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

```
cd ~/downloads  
tar zxvf nagios-plugins-2.0.3.tar.gz
```

```
[ec2-user@ip-172-31-46-218 ~]$ cd ~/downloads/  
[ec2-user@ip-172-31-46-218 downloads]$ tar zxvf nagios-plugins-2.0.3.tar.gz
```

19. Compile and install plugins

```
cd nagios-plugins-2.0.3  
./configure --with-nagios-user=nagios --with-nagios-group=nagios  
make  
sudo make install
```

20. 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
```

If there are no errors, you can go ahead and start Nagios.

```
sudo service nagios start
```

```
ec2-user@ip-172-31-46-218 ~]$ sudo service nagios start  
Starting nagios (via systemctl): [ OK ]  
ec2-user@ip-172-31-46-218 ~]$
```

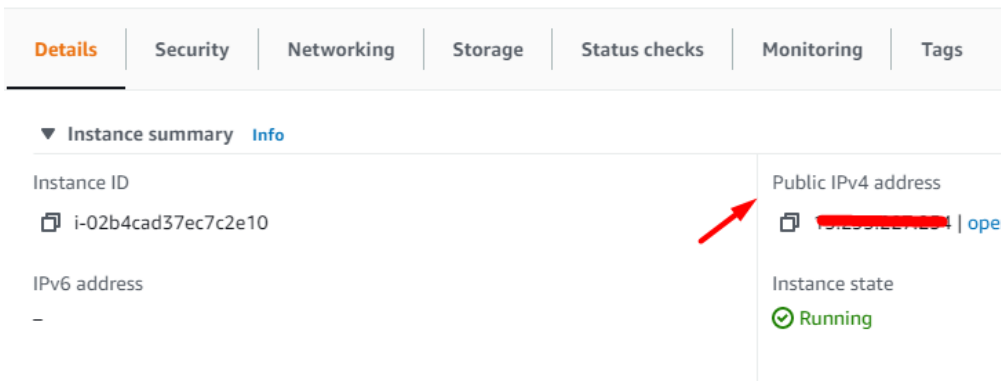
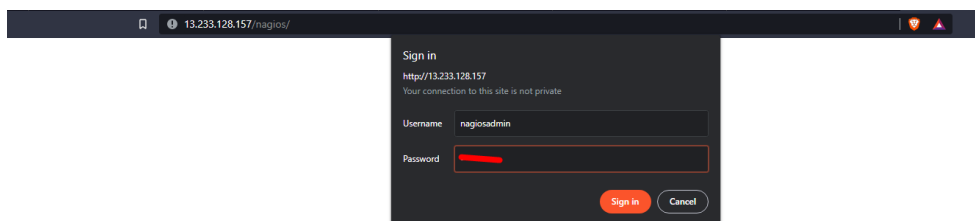

21. Check the status of Nagios

```
sudo systemctl status nagios
```

```
[ec2-user@ip-172-31-46-218 ~]$ sudo systemctl status nagios
● nagios.service - LSB: Starts and stops the Nagios monitoring server
   Loaded: loaded (/etc/rc.d/init.d/nagios; bad; vendor preset: disabled)
   Active: active (running) since Sun 2021-10-24 08:05:00 UTC; 1min 21s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 30073 ExecStart=/etc/rc.d/init.d/nagios start (code=exited, status=0/SUCCESS)
    CGroup: /system.slice/nagios.service
            └─30094 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
            └─30096 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var
            └─30097 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var
            └─30098 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var
            └─30099 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var
            └─30100 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
```

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

Instance: i-02b4cad37ec7c2e10

23. Open up your browser and look for **http://<your_public_ip_address>/nagios**

Enter username as nagiosadmin and password which you set in Step 16.

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

Nagios®

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Documentation

Current Status
Tactical Overview
Map
Hosts
Services
Host Groups
Summary
Oxid
Service Groups
Summary
Oxid
Problems
Services (Unmonitored)
Hosts (Unmonitored)
Network Outages
Quick Search

Reports
Availability
Trends
Alerts
History
Summary
Histogram
Notifications
Event Log

System
Comments
Downtime
Process Info
Performance Info
Scheduling Queue
Configuration

Nagios® Core™
✓ Daemon running with PID 30094

Nagios® Core™
Version 4.0.8
August 12, 2014
Check for updates

A new version of Nagios Core is available!
Visit nagios.org to download Nagios 4.4.6.

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- Get training
- Get certified

Quick Links

- Nagios Library (tutorials and docs)
- Nagios Labs (development blog)
- Nagios Exchange (plugins and add-ons)
- Nagios Support (tech support)
- Nagios.com (company)
- Nagios.org (project)

Latest News

- Nagios Update: XI 5.6.6
- Nagios Update: XI 5.6.5
- Nagios Update: XI 5.6.4
- More news...

Don't Miss...

- Monitoring Log Data with Nagios - Nagios Log Server can handle all log data in one central location.
- Can Nagios monitor netflow? - Yes! Nagios Network Analyzer can take in a variety of raw data. Learn More
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This means that Nagios was correctly installed and configured with its plugins so far.

Conclusion:

Thus, we learned about Nagios and successfully set it up as a host on our Amazon Linux machine.