Experiment 10

Aim: To perform Port, Service monitoring, Windows/Linux server monitoring using Nagios.

Steps:

Prerequisites: AWS Free Tier, Nagios Server running on Amazon Linux Machine.

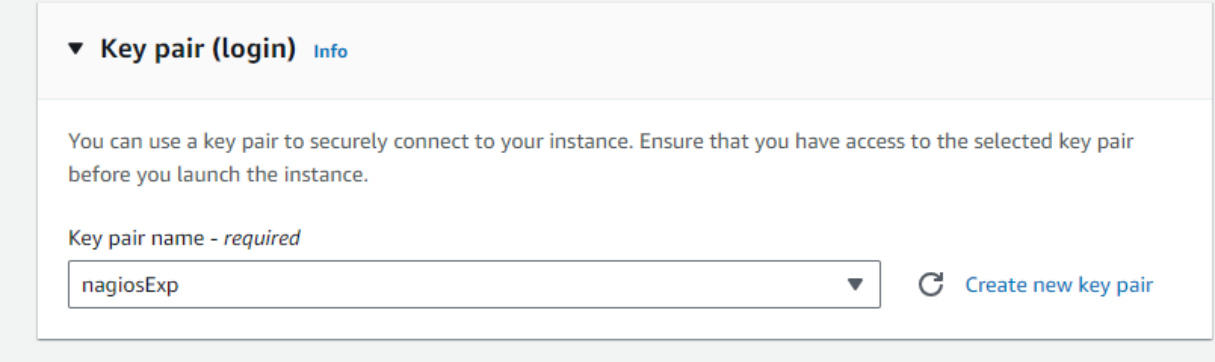
1. **To Confirm that Nagios is running on the server side, run this *sudo systemctl status nagios* on the "NAGIOS HOST" else if it is stopped run sudo service nagios start.**

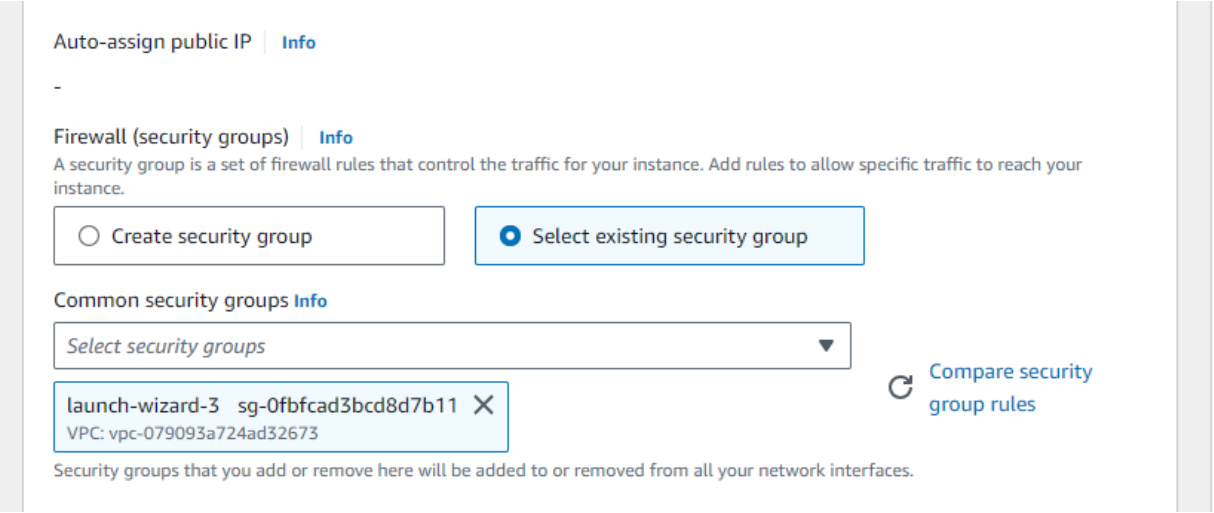
```
[ec2-user@ip-172-31-36-137 ~]$ sudo service httpd restart
Redirecting to /bin/systemctl restart httpd.service
[ec2-user@ip-172-31-36-137 ~]$ sudo service httpd status
Redirecting to /bin/systemctl status httpd.service
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; prese>
    Drop-In: /usr/lib/systemd/system/httpd.service.d
             └─php-fpm.conf
     Active: active (running) since Wed 2024-10-09 05:45:21 UTC; 1min 12s a>
       Docs: man:httpd.service(8)
   Main PID: 3255 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; B>
      Tasks: 177 (limit: 1112)
     Memory: 16.8M
```

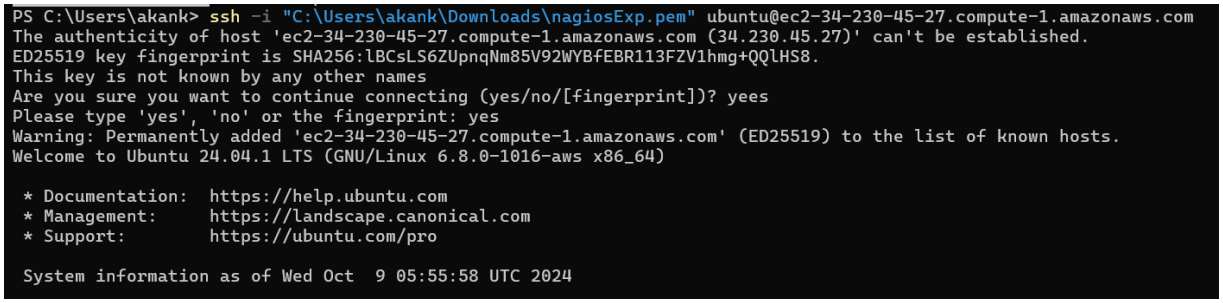
   you can proceed if you get this message.

2. **Before we begin, to monitor a Linux machine, create an Ubuntu 20.04 server EC2 Instance in AWS**.

   Provide it with the same security group as the Nagios Host and name it 'linux-client' alongside the host.







For now, leave this machine as is, and go back to your nagios HOST machine.

3. On the server, run this command

ps -ef | grep nagios

```
[ec2-user@ip-172-31-36-137 ~]$ ps -ef | grep nagios
nagios      2938       1  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
nagios      2939    2938  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      2940    2938  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      2941    2938  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      2942    2938  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      2943    2938  0 05:37 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
ec2-user    4301    4212  0 05:59 pts/2    00:00:00 grep --color=auto nagio
[ec2-user@ip-172-31-36-137 ~]$
```

4. Become a root user and create 2 folders

sudo su

mkdir /usr/local/nagios/etc/objects/monitorhosts

Mkdir

```
[ec2-user@ip-172-31-36-137 ~]$ sudo su
[root@ip-172-31-36-137 ec2-user]# mkdir -p /usr/local/nagios/etc/objects/monitorhosts/linuxhosts
[root@ip-172-31-36-137 ec2-user]#
```

run this command now

/usr/local/nagios/etc/objects/monitorhosts/linuxhosts

```
[root@ip-172-31-36-137 ec2-user]# cp /usr/local/nagios/etc/objects/localhost.cfg /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg
[root@ip-172-31-36-137 ec2-user]#
```

5. Copy the sample localhost.cfg file to linuxhost folder

cp /usr/local/nagios/etc/objects/localhost.cfg
/usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg

```
define host {

    use                     linux-server            ; Name of host template to use
                                                    ; This host definition will inherit all variables that are defined
                                                    ; in (or inherited by) the linux-server host template definition.
    host_name               localhost
    alias                   localhost
    address                 127.0.0.1
}



################################################################################
#
# HOST GROUP DEFINITION
#
################################################################################
                                                [ Read 159 lines ]
^G Help         ^O Write Out    ^W Where Is     ^K Cut          ^T Execute      ^C Location     M-U Undo        M-A Set Mark    M-] To Bracket
^X Exit         ^R Read File    ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line   M-E Redo        M-6 Copy        ^Q Where Was
```

6. Open linuxserver.cfg using nano and make the following changes

nano /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg

Change the hostname to linuxserver (EVERYWHERE ON THE FILE) Change address to the public IP address of your **LINUX CLIENT**.

Change hostgroup_name under hostgroup to linux-servers1

```
define host {

    use                     linux-server1            ; Name of host template to use
                                                     ; This host definition will inherit all variables that are defined
                                                     ; in (or inherited by) the linux-server host template definition.
    host_name               linuxserver
    alias                   Linuxserver
    address                 34.230.45.27
}
```

```
#
# HOST GROUP DEFINITION
#
###############################################################################

# Define an optional hostgroup for Linux machines

define hostgroup {

    hostgroup_name          linux-servers1           ; The name of the hostgroup
    alias                   Linux Servers            ; Long name of the group
    members                 linuxserver          ; Comma separated list of hosts that belong to this group
}
```

Everywhere else on the file, change the hostname to linuxserver instead of localhost.

7. Open the Nagios Config file and add the following line

nano /usr/local/nagios/etc/nagios.cfg

```
# LOG FILE
# This is the main log file where service and host events are logged
# for historical purposes.  This should be the first option specified
# in the config file!!!

log_file=/usr/local/nagios/var/nagios.log
```

##Add this line

cfg_dir=/usr/local/nagios/etc/objects/monitorhosts/

```
# You can also tell Nagios to process all config files (with a .cfg
# extension) in a particular directory by using the cfg_dir
# directive as shown below:

#cfg_dir=/usr/local/nagios/etc/servers
#cfg_dir=/usr/local/nagios/etc/printers
#cfg_dir=/usr/local/nagios/etc/switches
#cfg_dir=/usr/local/nagios/etc/routers
cfg_dir=/usr/local/nagios/etc/objects/monitorhosts/
```

8. Verify the configuration files

```
[root@ip-172-31-36-137 ec2-user]# /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...
```

You are good to go if there are no errors.

9. Restart the nagios service

service nagios restart

```
nagios.service - Nagios Core 4.5.5
     Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; preset: disabled)
     Active: active (running) since Mon 2024-10-07 17:42:18 UTC; 21s ago
       Docs: https://www.nagios.org/documentation
    Process: 65198 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg (code=exited, status=0/SUCCESS)
    Process: 65204 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg (code=exited, status=0/SUCCESS)
   Main PID: 65207 (nagios)
      Tasks: 6 (limit: 1112)
     Memory: 5.6M
        CPU: 70ms
     CGroup: /system.slice/nagios.service
             ├─65207 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
             ├─65208 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─65209 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
             ├─65210 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
```

Now it is time to switch to the client machine.

10. SSH into the machine or simply use the EC2 InstanceConnectfeature.

```
ubuntu@ip-172-31-40-193:~$
```

11. Make a package index update and install gcc, nagios-nrpe-server and the plugins.

sudo apt update -y

```
ubuntu@ip-172-31-40-130:~$ sudo apt update -y
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [380 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
```

sudo apt install gcc -y

```
ubuntu@ip-172-31-40-130:~$ sudo apt install gcc -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cpp cpp-13 cpp-13-x86-64-linux-gnu cpp-x86-64-linux-gnu fontconfig-config fonts-dejavu-core
  fonts-dejavu-mono gcc-13 gcc-13-base gcc-13-x86-64-linux-gnu gcc-x86-64-linux-gnu libaom3 libasan8 libatomic1 libbinutils libc-dev-bin libc-devtools
  libc6-dev libcc1-0 libcrypt-dev libctf-nobfd0 libctf0 libde265-0 libdeflate0 libfontconfig1 libgcc-13-dev libgd3 libgomp1 libgprofng0
  libheif-plugin-aomdec libheif-plugin-aomenc libheif-plugin-libde265 libheif1 libhwasan0 libisl23 libitm1 libjbig0 libjpeg-turbo8 libjpeg8 liblerc4
  liblsan0 libmpc3 libquadmath0 libsframe1 libsharpyuv0 libtiff6 libtsan2 libubsan1 libwebp7 libxpm4 linux-libc-dev manpages-dev rpcsvc-proto
Suggested packages:
```

sudo apt install -y nagios-nrpe-server nagios-plugins

```
ubuntu@ip-172-31-40-130:~$ sudo apt install -y nagios-nrpe-server nagios-plugins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'monitoring-plugins' instead of 'nagios-plugins'
The following additional packages will be installed:
  libavahi-client3 libavahi-common-data libavahi-common3 libcups2t64 libdbi1t64 libldb2 libmysqlclient21 libnet-snmp-perl libpq5 libradcli4 libsmbclient0
  libsnmp-base libsnmp40t64 libtalloc2 libtdb1 libtevent0t64 liburiparser1 libwbclient0 monitoring-plugins-basic monitoring-plugins-common
  monitoring-plugins-standard mysql-common python3-gpg python3-ldb python3-markdown python3-samba python3-talloc python3-tdb rpcbind samba-common
  samba-common-bin samba-dsdb-modules samba-libs smbclient snmp
```

12. Open nrpe.cfg file to make changes.

sudo nano /etc/nagios/nrpe.cfg

Under allowed_hosts, add your nagios host IP address like so

```
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

allowed_hosts=127.0.0.1,54.163.184.143


# COMMAND ARGUMENT PROCESSING
# This option determines whether or not the NRPE daemon will allow clients
# to specify arguments to commands that are executed.  This option only works
# if the daemon was configured with the --enable-command-args configure script
```

13. Restart the NRPE server

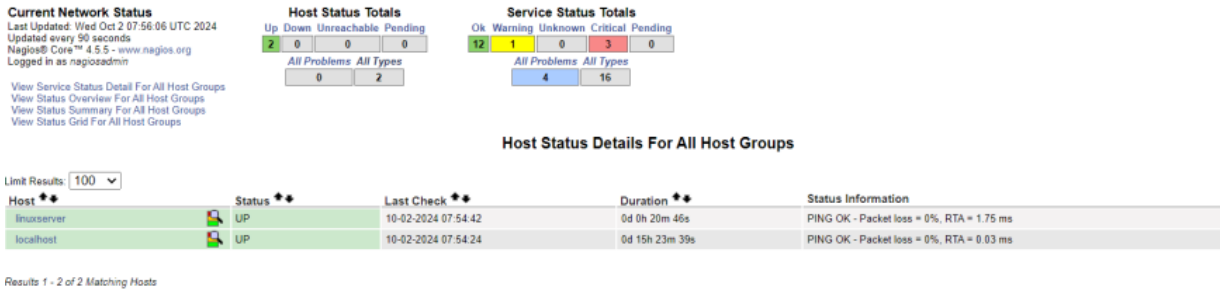
sudo systemctl restart nagios-nrpe-server

```
ubuntu@ip-172-31-40-130:~$ sudo systemctl restart nagios-nrpe-server
ubuntu@ip-172-31-40-130:~$
```

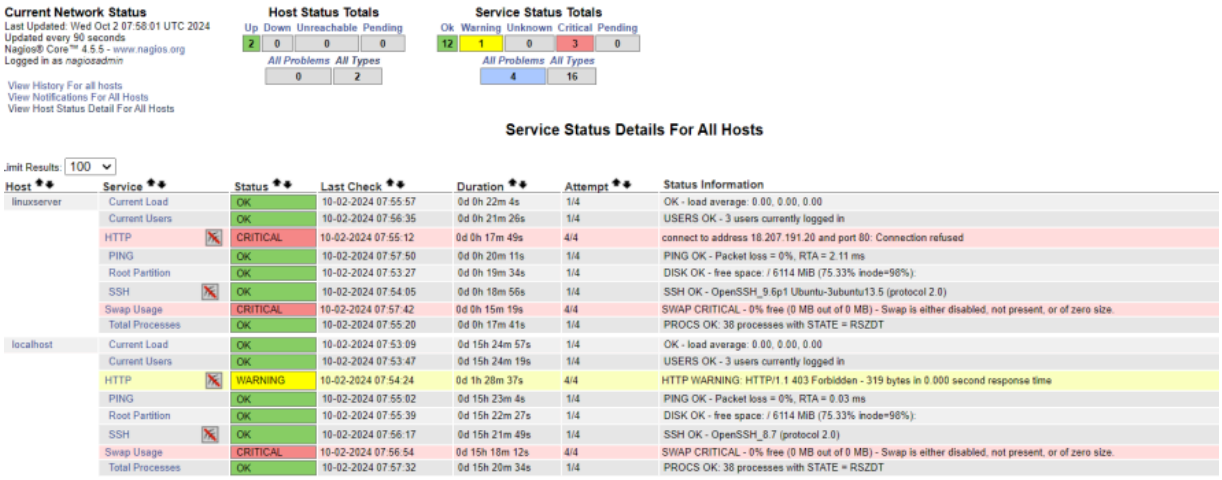
14. Now, check your nagios dashboard and you'll see a new host being added.

Go to your nagios page and click on host in left.

Click on linuxserver to see the host details



You can click Services to see all services and ports being monitored.



Current Network Status
Last Updated: Wed Oct 2 07:58:01 UTC 2024
Updated every 90 seconds
Nagios® Core™ 4.5.5 - www.nagios.org
Logged in as *nagiosadmin*

View History For all hosts
View Notifications For All Hosts
View Host Status Detail For All Hosts

Host Status Totals

Up	Down	Unreachable	Pending
2	0	0	0

All Problems	All Types
0	2

Service Status Totals

Ok	Warning	Unknown	Critical	Pending
12	1	0	3	0

All Problems	All Types
4	16

Service Status Details For All Hosts

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
linuxserver	Current Load	OK	10-02-2024 07:55:57	0d 0h 22m 4s	1/4	OK - load average: 0.00, 0.00, 0.00
	Current Users	OK	10-02-2024 07:56:35	0d 0h 21m 26s	1/4	USERS OK - 3 users currently logged in
	HTTP	CRITICAL	10-02-2024 07:55:12	0d 0h 17m 49s	4/4	connect to address 18.207.191.20 and port 80: Connection refused
	PING	OK	10-02-2024 07:57:50	0d 0h 20m 11s	1/4	PING OK - Packet loss = 0%, RTA = 2.11 ms
	Root Partition	OK	10-02-2024 07:53:27	0d 0h 19m 34s	1/4	DISK OK - free space: / 6114 MiB (75.33% inode=98%):
	SSH	OK	10-02-2024 07:54:05	0d 0h 18m 56s	1/4	SSH OK - OpenSSH_9.6p1 Ubuntu-3ubuntu13.5 (protocol 2.0)
	Swap Usage	CRITICAL	10-02-2024 07:57:42	0d 0h 15m 19s	4/4	SWAP CRITICAL - 0% free (0 MB out of 0 MB) - Swap is either disabled, not present, or of zero size.
	Total Processes	OK	10-02-2024 07:55:20	0d 0h 17m 41s	1/4	PROCS OK: 38 processes with STATE = RSZDT
localhost	Current Load	OK	10-02-2024 07:53:09	0d 15h 24m 57s	1/4	OK - load average: 0.00, 0.00, 0.00
	Current Users	OK	10-02-2024 07:53:47	0d 15h 24m 19s	1/4	USERS OK - 3 users currently logged in
	HTTP	WARNING	10-02-2024 07:54:24	0d 1h 28m 37s	4/4	HTTP WARNING: HTTP/1.1 403 Forbidden - 319 bytes in 0.000 second response time
	PING	OK	10-02-2024 07:55:02	0d 15h 23m 4s	1/4	PING OK - Packet loss = 0%, RTA = 0.03 ms
	Root Partition	OK	10-02-2024 07:55:39	0d 15h 22m 27s	1/4	DISK OK - free space: / 6114 MiB (75.33% inode=98%):
	SSH	OK	10-02-2024 07:56:17	0d 15h 21m 49s	1/4	SSH OK - OpenSSH_8.7 (protocol 2.0)
	Swap Usage	CRITICAL	10-02-2024 07:56:54	0d 15h 18m 12s	4/4	SWAP CRITICAL - 0% free (0 MB out of 0 MB) - Swap is either disabled, not present, or of zero size.
	Total Processes	OK	10-02-2024 07:57:32	0d 15h 20m 34s	1/4	PROCS OK: 38 processes with STATE = RSZDT

As you can see, we have our linuxserver up and running. It is showing critical status on HTTP due to permission errors and swap because there is no partition created.

Recommended

- Terminate both of your EC-2 instances to avoid charges.
- Delete the security group if you created a new one (it won't affect your bill, you may avoid it)

Conclusion:

Make sure to start the nagios instance created in the previous experiment as without it there would be a failure. While performing the experiment I did not replaced the localhost name to linuxserver I did it only at one place so do make sure to replace the localhost name to linuxserver everywhere in the editor. After running all the necessary commands the experiment was performed successfully.