shivpratik hande D15C 14 2024-25

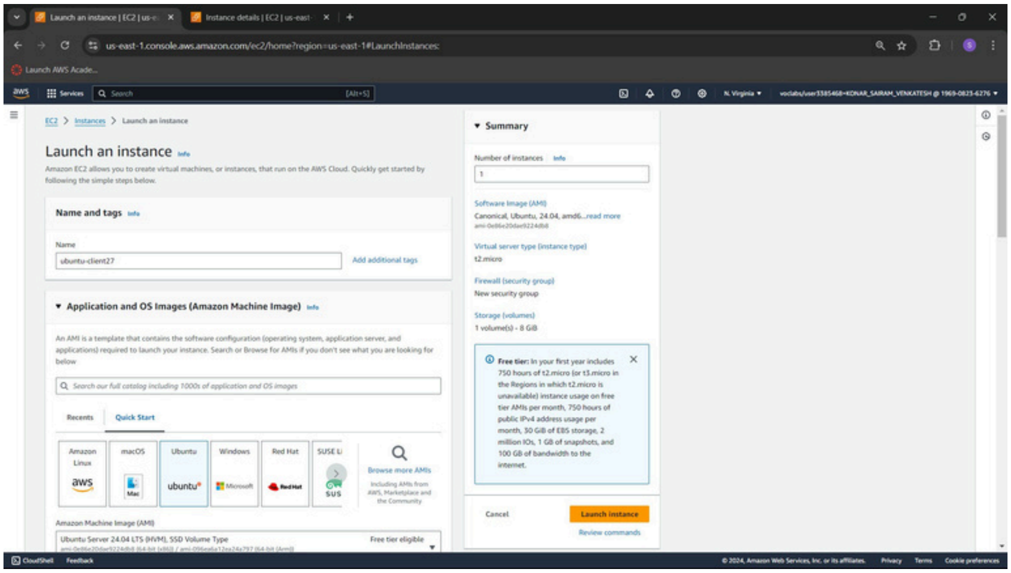
Aim: To perform Port, Service monitoring, Windows/Linux server monitoring using Nagios.

Prerequisites:

1) AnAmazonLinuxinstancewithnagiosalreadysetup.

Step 1: Set up ubuntu instance

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



us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

EC2 > Instances > Launch an instance

Launch an instance

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Name: ubuntu-client27

Application and OS Images (Amazon Machine Image)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Amazon Machine Image (AMI): Ubuntu Server 24.04 LTS (HVM), SSD Volume Type — Free tier eligible

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 24.04, amd6...read more

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

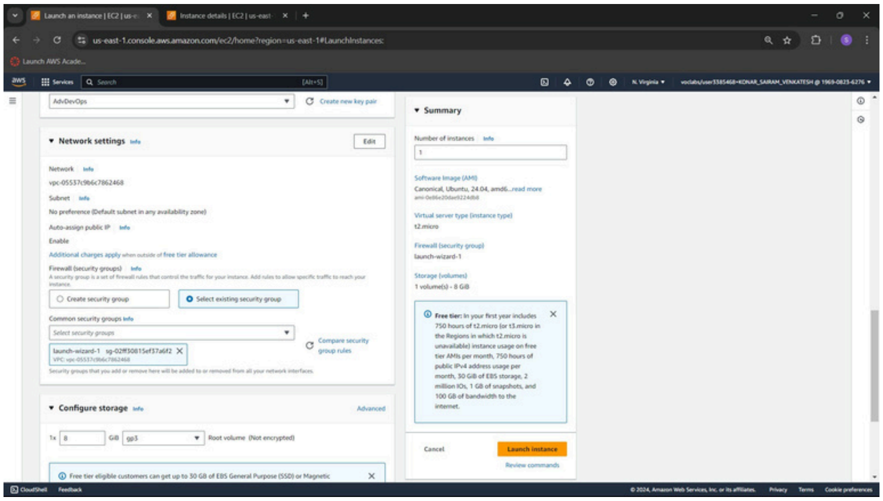
Storage (volumes): 1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Launch an instance | EC2 | us-e
Instance details | EC2 | us-east-
Launch AWS Acade...
Services
Search
[Alt+S]
N. Virginia
Add additional tags
Search our full catalog including 1000s of application and OS images
Recents
Quick Start
Amazon Linux
macOS
Ubuntu
Windows
Red Hat
SUSE Li
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Cancel
Launch instance
Review commands
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

Select The OS Image as Ubuntu.

2) MakesuretoselectthesameprivatekeythatyoucreatedfortheAmazonLinux instance. Also select the same security group as you created for the Linux instance.



Key pair: AdvDevOps

Network settings

Network: vpc-05537c9b6c7862468

Subnet: No preference (Default subnet in any availability zone)

Auto-assign public IP: Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups): A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

○ Create security group ● Select existing security group

Common security groups: launch-wizard-1 sg-02ff50815ef37a6f2 (VPC: vpc-05537c9b6c7862468)

Security groups that you add or remove here will be added to or removed from all your network interfaces.

Configure storage

1x 8 GiB gp3 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 24.04, amd6...read more

Virtual server type (instance type): t2.micro

Firewall (security group): launch-wizard-1

Storage (volumes): 1 volume(s) - 8 GiB

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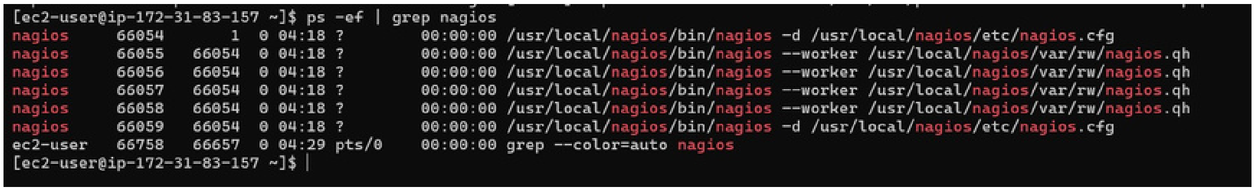
3) Now come back to the instances screen. Click on the instance ID of your instance. Then click on Connect. Click on SSH client. Copy the example command. Now, we have to connect our local OS terminal to the instance using SSH. For this, open terminal wher the private key file is located (.pem). Paste the copied SSH command and run it.

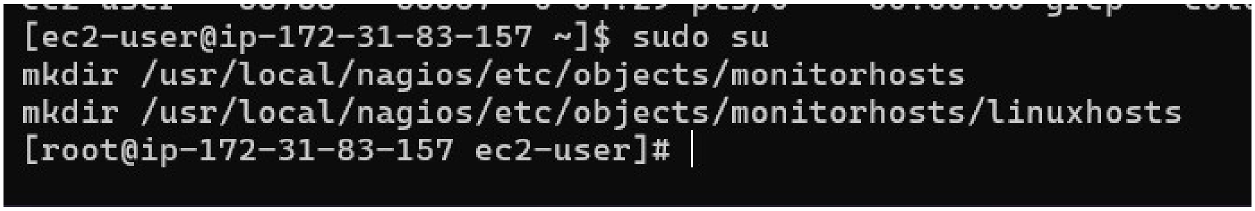
Step 2: Execute the following on Nagios Host machine (Linux)

1) Weneedtoverifywhetherthenagiosserviceisrunningornot.Fothat,runthis command.
ps -ef | grep nagios



```
[ec2-user@ip-172-31-83-157 ~]$ ps -ef | grep nagios
nagios     66054       1  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
nagios     66055   66054  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios     66056   66054  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios     66057   66054  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios     66058   66054  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios     66059   66054  0 04:18 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
ec2-user   66758   66657  0 04:29 pts/0    00:00:00 grep --color=auto nagios
[ec2-user@ip-172-31-83-157 ~]$ |
```

2) Now,makeyourselfastherootuser,andcreateafolderwiththepath '/usr/local/nagios/etc/objects/monitorhosts/linuxhosts'
sudo su
mkdir -p /usr/local/nagios/etc/objects/monitorhosts/linuxhosts

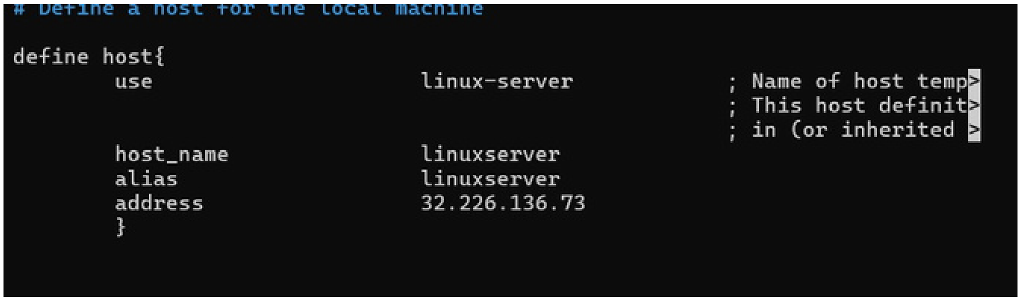


```
[ec2-user@ip-172-31-83-157 ~]$ sudo su
mkdir /usr/local/nagios/etc/objects/monitorhosts
mkdir /usr/local/nagios/etc/objects/monitorhosts/linuxhosts
[root@ip-172-31-83-157 ec2-user]# |
```

3) Weneedtocreateaconfigfileinthisfolder.So,copythecontentsoftheexisting localhost config to the new file 'linuxserver.cfg'. **cp /usr/local/nagios/etc/objects/localhost.cfg /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg**

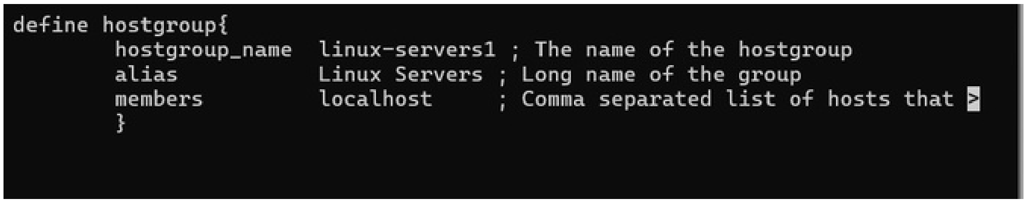
4) Weneedtomakesomechangesinthisconfigfile.Openitusingnanoeditor.
nano /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg

Change hostname and alias to linuxserver
Change address to public ip address of client instance (Ubuntu instance)



```
# Define a host for the local machine

define host{
        use                     linux-server            ; Name of host temp>
                                                        ; This host definit>
                                                        ; in (or inherited >

        host_name               linuxserver
        alias                   linuxserver
        address                 32.226.136.73
        }
```

Change hostgroup_name to linux-servers1



```
define hostgroup{
        hostgroup_name  linux-servers1 ; The name of the hostgroup
        alias           Linux Servers ; Long name of the group
        members         localhost     ; Comma separated list of hosts that >
        }
```

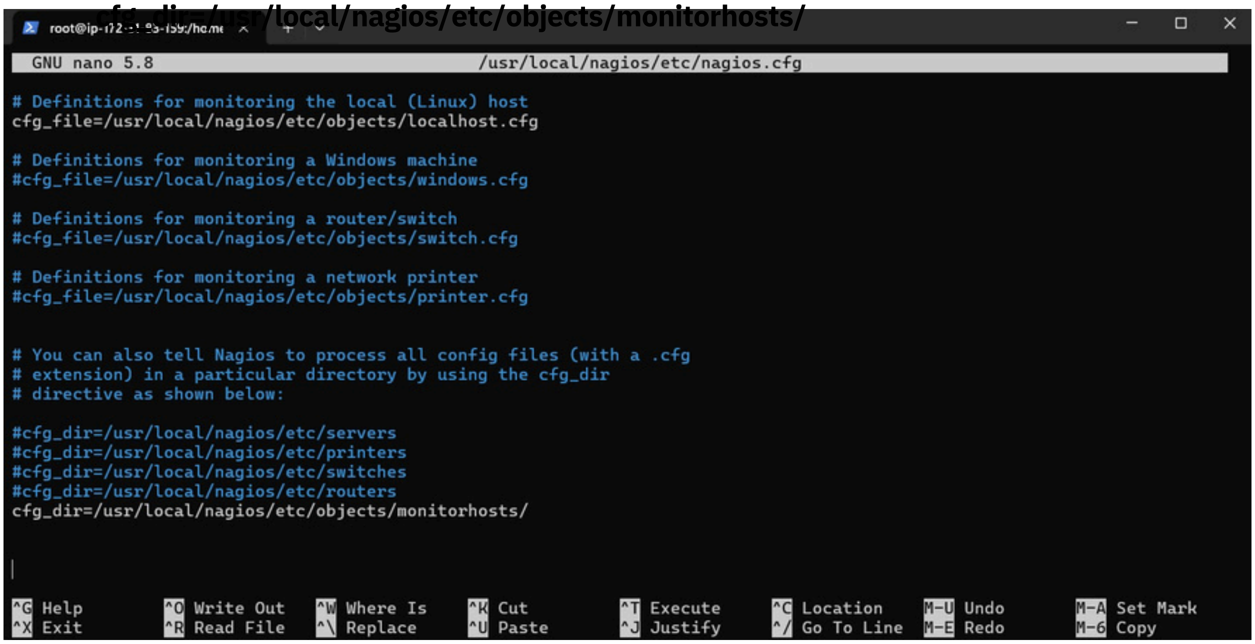
Change the occurrences of hostname further in the document from localhost to linuxserver

5) Now, we need to edit the nagios configuration file to add this directory.

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

Run this command and add the following line

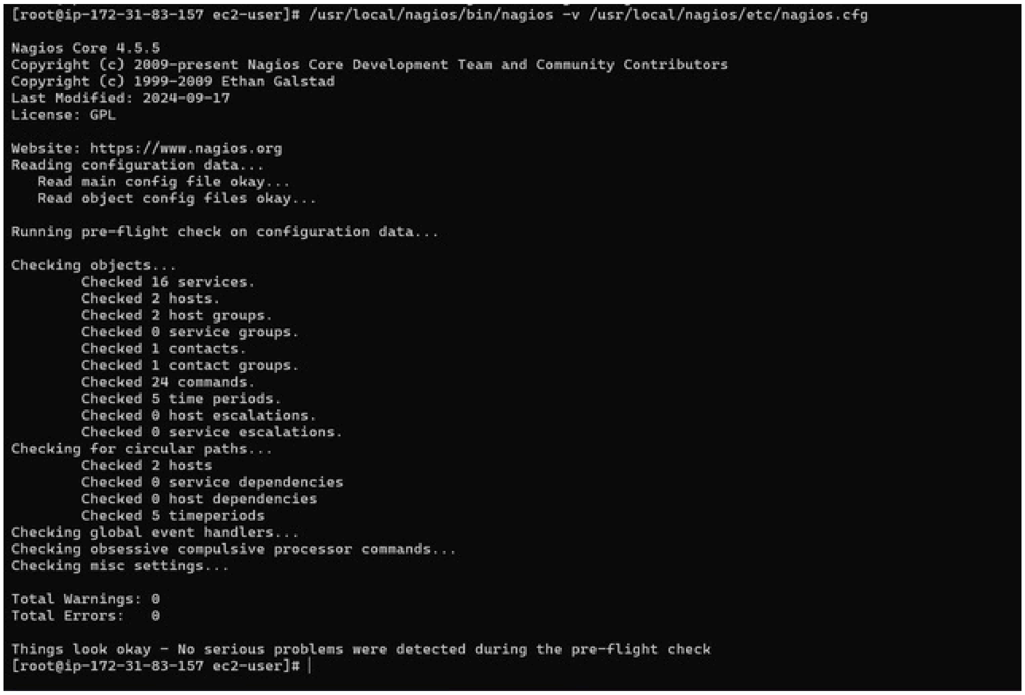
cfg_dir=/usr/local/nagios/etc/objects/monitorhosts/



```
  GNU nano 5.8                    /usr/local/nagios/etc/nagios.cfg

# Definitions for monitoring the local (Linux) host
cfg_file=/usr/local/nagios/etc/objects/localhost.cfg

# Definitions for monitoring a Windows machine
#cfg_file=/usr/local/nagios/etc/objects/windows.cfg

# Definitions for monitoring a router/switch
#cfg_file=/usr/local/nagios/etc/objects/switch.cfg

# Definitions for monitoring a network printer
#cfg_file=/usr/local/nagios/etc/objects/printer.cfg


# 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/


|
^G Help      ^O Write Out  ^W Where Is   ^K Cut       ^T Execute   ^C Location   M-U Undo     M-A Set Mark
^X Exit      ^R Read File  ^\ Replace    ^U Paste     ^J Justify   ^/ Go To Line M-E Redo     M-6 Copy
```

6) Nowweverifytheconfigurationfiles.

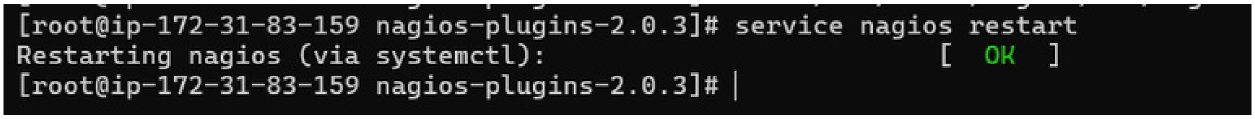
/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg



```
[root@ip-172-31-83-157 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...
   Read object config files okay...

Running pre-flight check on configuration data...

Checking objects...
        Checked 16 services.
        Checked 2 hosts.
        Checked 2 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 2 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
[root@ip-172-31-83-157 ec2-user]#
```

7) Oncethefilesareverified,weneedtorestarttheserver.

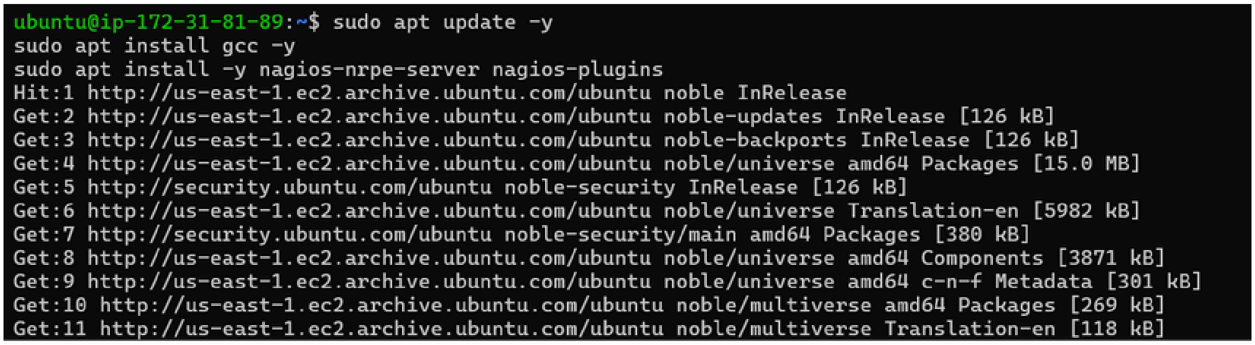
service nagios restart



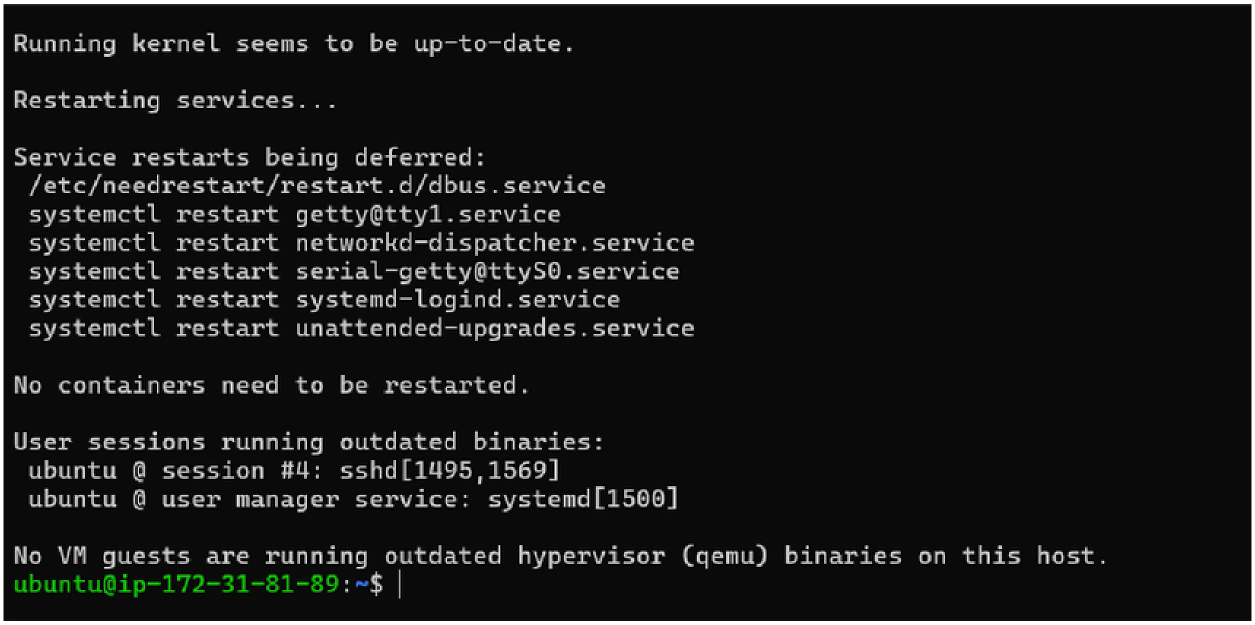
```
[root@ip-172-31-83-159 nagios-plugins-2.0.3]# service nagios restart
Restarting nagios (via systemctl):                         [  OK  ]
[root@ip-172-31-83-159 nagios-plugins-2.0.3]#
```

Step 3: Execute the following on Nagios Client machine (Ubuntu)

1) First,wecheckforanynewupdates,thenweinstallgcc,nagiosnrpeserverandnagios plugins.
   sudo apt update -y
   sudo apt install gcc -y
   sudo apt install -y nagios-nrpe-server nagios-plugins



```
ubuntu@ip-172-31-81-89:~$ sudo apt update -y
sudo apt install gcc -y
sudo apt install -y nagios-nrpe-server nagios-plugins
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://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:5 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
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]
```

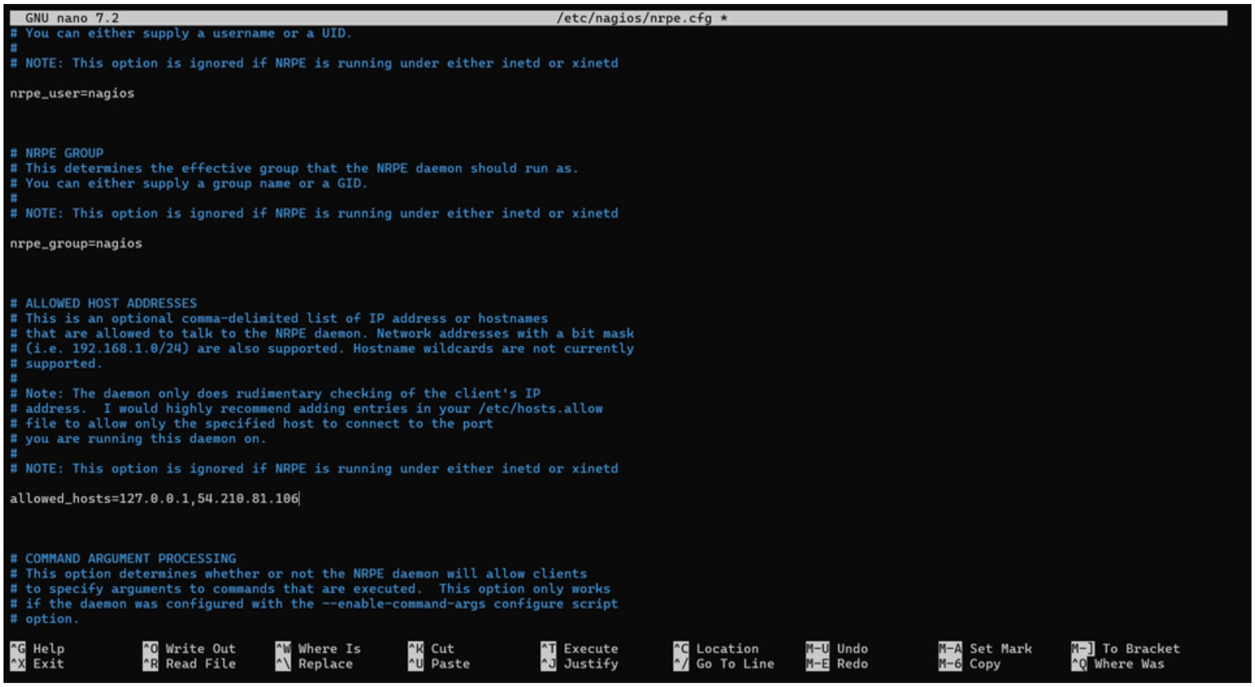


```
Running kernel seems to be up-to-date.

Restarting services...

Service restarts being deferred:
 /etc/needrestart/restart.d/dbus.service
 systemctl restart getty@tty1.service
 systemctl restart networkd-dispatcher.service
 systemctl restart serial-getty@ttyS0.service
 systemctl restart systemd-logind.service
 systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
 ubuntu @ session #4: sshd[1495,1569]
 ubuntu @ user manager service: systemd[1500]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-81-89:~$ |
```

2) WeneedtoaddthepublicIPaddressofourhostNagiosmachine(Linux)tothenrpe configuration file.

sudo nano /etc/nagios/nrpe.cfg

Under allowed_hosts, add the nagios host ip address (public)

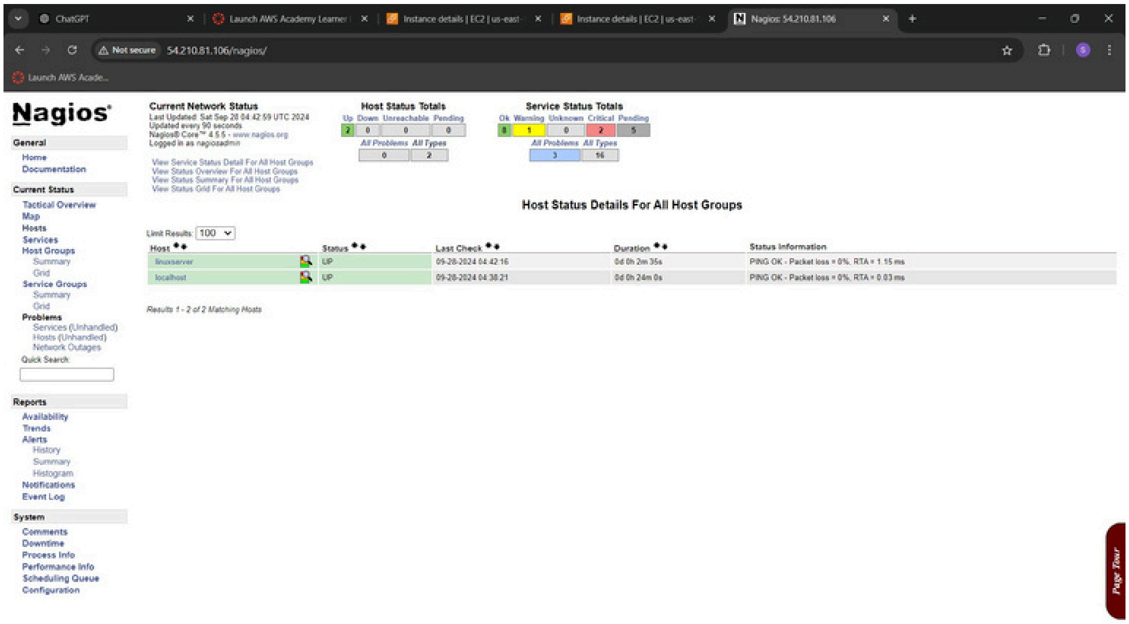


```
  GNU nano 7.2                                          /etc/nagios/nrpe.cfg *
# You can either supply a username or a UID.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

nrpe_user=nagios



# NRPE GROUP
# This determines the effective group that the NRPE daemon should run as.
# You can either supply a group name or a GID.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

nrpe_group=nagios



# ALLOWED HOST ADDRESSES
# This is an optional comma-delimited list of IP address or hostnames
# that are allowed to talk to the NRPE daemon. Network addresses with a bit mask
# (i.e. 192.168.1.0/24) are also supported. Hostname wildcards are not currently
# supported.
#
# Note: The daemon only does rudimentary checking of the client's IP
# address.  I would highly recommend adding entries in your /etc/hosts.allow
# file to allow only the specified host to connect to the port
# you are running this daemon on.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

allowed_hosts=127.0.0.1,54.210.81.106



# 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
# option.
^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
```

Step 4: Check the Nagios Dashboard

1) GotoNagiosdashboard,clickonhosts.

Here, we can see that the linuxserver is also added as a host.



Current Network Status
Last Updated: Sat Sep 28 04:42:59 UTC 2024
Updated every 90 seconds
Nagios® Core™ 4.5.5 - www.nagios.org
Logged in as nagiosadmin

View Service Status Detail For All Host Groups
View Status Overview For All Host Groups
View Status Summary For All Host Groups
View Status Grid For All Host Groups

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
8	1	0	2	5

All Problems	All Types
3	16

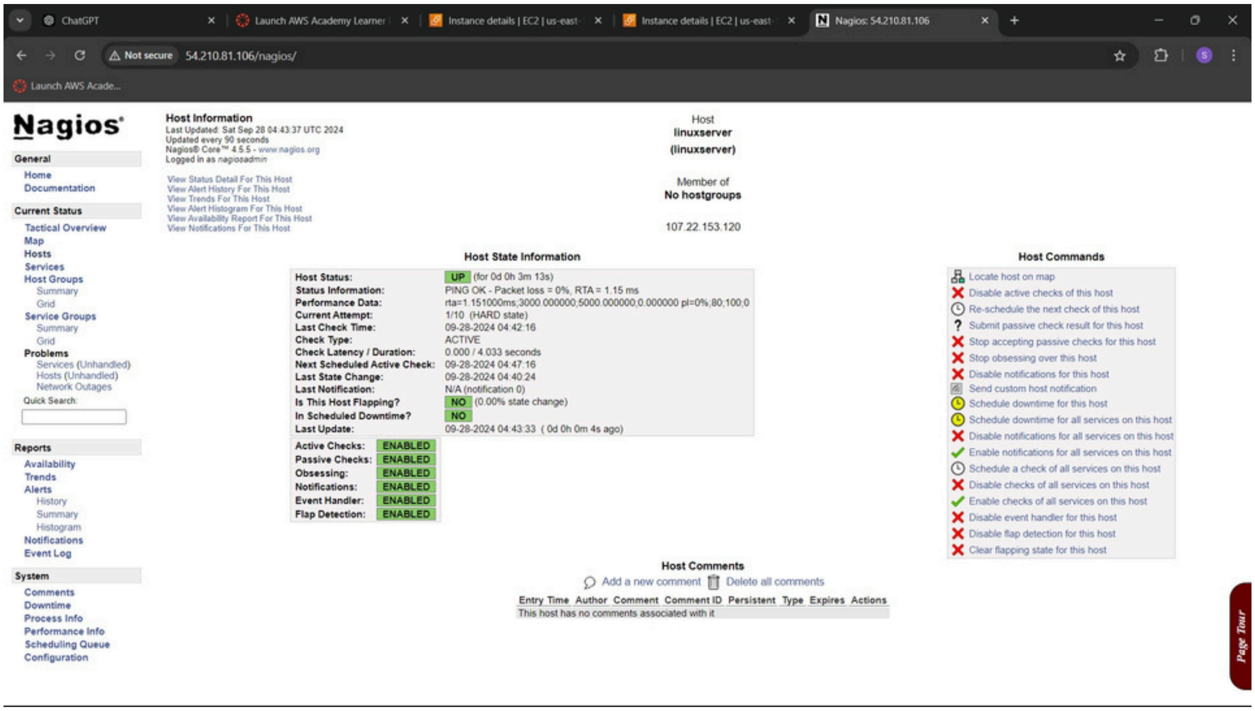
Host Status Details For All Host Groups

Limit Results: 100

Host	Status	Last Check	Duration	Status Information
linuxserver	UP	09-28-2024 04:42:16	0d 0h 2m 35s	PING OK - Packet loss = 0%, RTA = 1.15 ms
localhost	UP	09-28-2024 04:38:21	0d 0h 24m 0s	PING OK - Packet loss = 0%, RTA = 0.03 ms

Results 1 - 2 of 2 Matching Hosts

2) Clickonlinuxserver.Here,wecancheckalltheinformationaboutlinuxserverhost.


ChatGPT
Launch AWS Academy Learner
Instance details | EC2 | us-east-
Instance details | EC2 | us-east-
Nagios: 54.210.81.106
Not secure
54.210.81.106/nagios/
Launch AWS Acade...
Nagios
General
Home
Documentation
Current Status
Tactical Overview
Map
Hosts
Services
Host Groups
Summary
Grid
Service Groups
Summary
Grid
Problems
Services (Unhandled)
Hosts (Unhandled)
Network Outages
Quick Search:
Reports
Availability
Trends
Alerts
History
Summary
Histogram
Notifications
Event Log
System
Comments
Downtime
Process Info
Performance Info
Scheduling Queue
Configuration
Host Commands
Locate host on map
Disable active checks of this host
Re-schedule the next check of this host
Submit passive check result for this host
Stop accepting passive checks for this host
Stop obsessing over this host
Disable notifications for this host
Send custom host notification
Schedule downtime for this host
Schedule downtime for all services on this host
Disable notifications for all services on this host
Enable notifications for all services on this host
Schedule a check of all services on this host
Disable checks of all services on this host
Enable checks of all services on this host
Disable event handler for this host
Disable flap detection for this host
Clear flapping state for this host
Page Tour

Host Information
Last Updated: Sat Sep 28 04:43:37 UTC 2024
Updated every 90 seconds
Nagios® Core™ 4.5.5 - www.nagios.org
Logged in as nagiosadmin

View Status Detail For This Host
View Alert History For This Host
View Trends For This Host
View Alert Histogram For This Host
View Availability Report For This Host
View Notifications For This Host

Host
linuxserver
(linuxserver)

Member of
No hostgroups

107.22.153.120

Host State Information

Host Status:	UP (for 0d 0h 3m 13s)
Status Information:	PING OK - Packet loss = 0%, RTA = 1.15 ms
Performance Data:	rta=1.151000ms;3000.000000;5000.000000;0.000000 pl=0%;80;100;0
Current Attempt:	1/10 (HARD state)
Last Check Time:	09-28-2024 04:42:16
Check Type:	ACTIVE
Check Latency / Duration:	0.000 / 4.033 seconds
Next Scheduled Active Check:	09-28-2024 04:47:16
Last State Change:	09-28-2024 04:40:24
Last Notification:	N/A (notification 0)
Is This Host Flapping?	NO (0.00% state change)
In Scheduled Downtime?	NO
Last Update:	09-28-2024 04:43:33 (0d 0h 0m 4s ago)

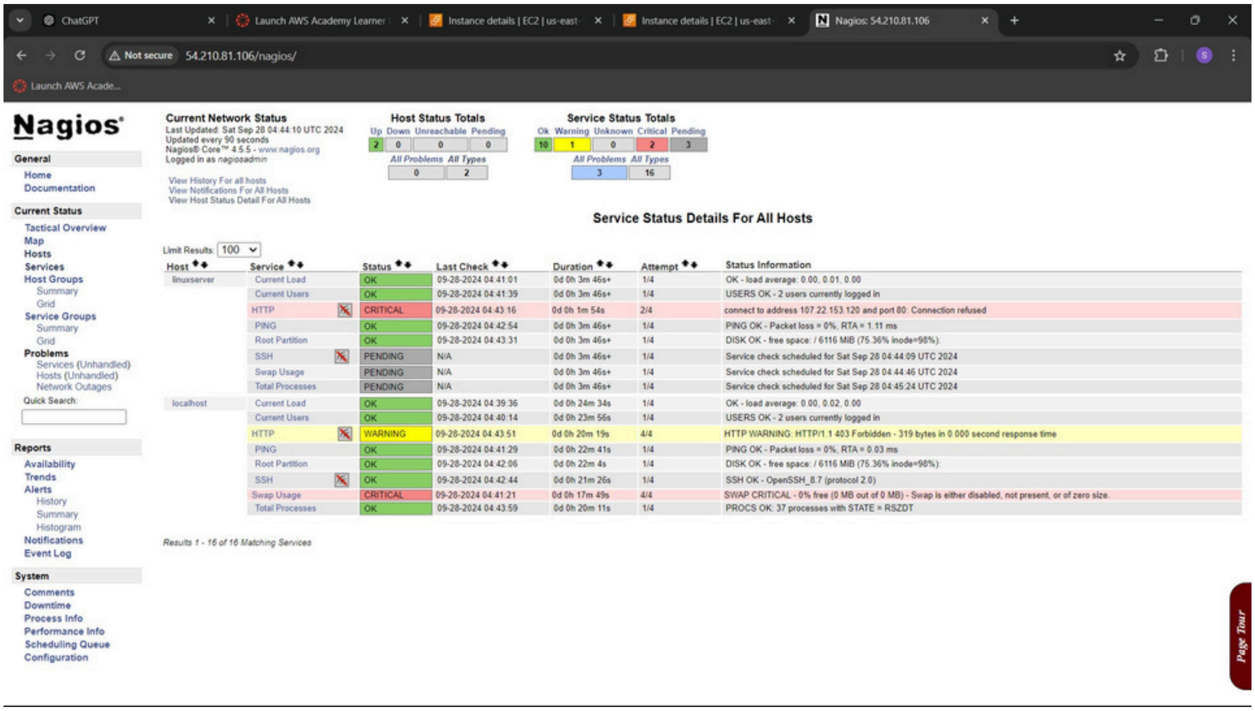
Active Checks:	ENABLED
Passive Checks:	ENABLED
Obsessing:	ENABLED
Notifications:	ENABLED
Event Handler:	ENABLED
Flap Detection:	ENABLED

Host Comments

Add a new comment Delete all comments

Entry Time	Author	Comment	Comment ID	Persistent	Type	Expires	Actions
This host has no comments associated with it							

3) Clickonservices.Hereweanseealltheservicesthatarebeingmonitoredby
linuxserver.



Current Network Status
Last Updated: Sat Sep 28 04:44:10 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
10	1	0	2	3

All Problems	All Types
3	16

Service Status Details For All Hosts

Limit Results: 100

Host	Service	Status	Last Check	Duration	Attempt	Status Information
linuxserver	Current Load	OK	09-28-2024 04:41:01	0d 0h 3m 46s+	1/4	OK - load average: 0.00, 0.01, 0.00
	Current Users	OK	09-28-2024 04:41:39	0d 0h 3m 46s+	1/4	USERS OK - 2 users currently logged in
	HTTP	CRITICAL	09-28-2024 04:43:16	0d 0h 1m 54s	2/4	connect to address 107.22.153.120 and port 80: Connection refused
	PING	OK	09-28-2024 04:42:54	0d 0h 3m 46s+	1/4	PING OK - Packet loss = 0%, RTA = 1.11 ms
	Root Partition	OK	09-28-2024 04:43:31	0d 0h 3m 46s+	1/4	DISK OK - free space: / 6116 MiB (75.36% inode=98%):
	SSH	PENDING	N/A	0d 0h 3m 46s+	1/4	Service check scheduled for Sat Sep 28 04:44:09 UTC 2024
	Swap Usage	PENDING	N/A	0d 0h 3m 46s+	1/4	Service check scheduled for Sat Sep 28 04:44:46 UTC 2024
	Total Processes	PENDING	N/A	0d 0h 3m 46s+	1/4	Service check scheduled for Sat Sep 28 04:45:24 UTC 2024
localhost	Current Load	OK	09-28-2024 04:39:36	0d 0h 24m 34s	1/4	OK - load average: 0.00, 0.02, 0.00
	Current Users	OK	09-28-2024 04:40:14	0d 0h 23m 56s	1/4	USERS OK - 2 users currently logged in
	HTTP	WARNING	09-28-2024 04:43:51	0d 0h 20m 19s	4/4	HTTP WARNING: HTTP/1.1 403 Forbidden - 319 bytes in 0.000 second response time
	PING	OK	09-28-2024 04:41:29	0d 0h 22m 41s	1/4	PING OK - Packet loss = 0%, RTA = 0.03 ms
	Root Partition	OK	09-28-2024 04:42:06	0d 0h 22m 4s	1/4	DISK OK - free space: / 6116 MiB (75.36% inode=98%):
	SSH	OK	09-28-2024 04:42:44	0d 0h 21m 26s	1/4	SSH OK - OpenSSH_8.7 (protocol 2.0)
	Swap Usage	CRITICAL	09-28-2024 04:41:21	0d 0h 17m 49s	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	09-28-2024 04:43:59	0d 0h 20m 11s	1/4	PROCS OK: 37 processes with STATE = RSZDT

Results 1 - 16 of 16 Matching Services

In this case, we have monitored -
Servers: 1 linux server
Services: swap
Ports: 22, 80 (ssh, http)
Processes: User status, Current load, total processes, root partition, etc.

Conclusion:

In this experiment, we learned to perform port service monitoring and server monitoring using Nagios. For this, we need the Linux instance used to host the Nagios dashboard and server. Also, we would need an Ubuntu instance which would be linked to a second host. We need to set up some configurations on the Linux instance and add the IP address of the Ubuntu instance. After that, we need to make the same initial setup on the ubuntu instance as the linu instance. Add the Ip address of linux instance in allowed hosts. After restarting the NRPE server, we can see the 'linuxserver' host added.