Nagios Core Server
Installation and Configuration

Nagios® Core™ is an Open Source system and network monitoring application. It watches hosts and services that you specify, alerting you when things go bad and when they get better.

Some of the many features of Nagios Core include:

Monitoring of network services (SMTP, POP3, HTTP, NNTP, PING, etc.)
Monitoring of host resources (processor load, disk usage, etc.)
Simple plugin design that allows users to easily develop their own service checks
Parallelized service checks
Ability to define network host hierarchy using "parent" hosts, allowing detection of and distinction between hosts that are down and those that are unreachable
Contact notifications when service or host problems occur and get resolved (via email, pager, or user-defined method)
Ability to define event handlers to be run during service or host events for proactive problem resolution
Automatic log file rotation
Support for implementing redundant monitoring hosts
Optional web interface for viewing current network status, notification and problem history, log file, etc.

System Requirements

The only requirement of running Nagios Core is a machine running Linux (or UNIX variant) that has network access and a C compiler installed (if installing from source code).

A web server (preferrably Apache)

Thomas Boutell's gd library version 1.6.3 or higher (required by the statusmap and trends CGIs)

Licensing

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Nagios Server Installation

This document is designed to install Nagios core server on a Virtual Machine with Centos 9 installed. However the same steps may be followed on a physical machine also. These steps may also work on RedHat 9/ Rocky Linux 9 also.

Create a virtual machine with 1 or 2 CPU's , 4/8 GB RAM, Minimum 50 GB hard disk. Install Centos 9 on it. The Nagios core server provides a web based interface thus to access it a browser is required. Thus please install Centos 9 with GUI so the local browser can be used to access this web interface. After installation please set the timezone and date time properly. Also set proper hostname and IP Address.After installation logon to the OS. To install Nagios either root login or user with sudo permission is required. Here user with sudo permission is assumed.
After logon, open a terminal and run following command.

sudo yum update -y

After the update finishes successfully, if required run following command to upgrade the system.

sudo yum upgrade -y

Once the system is updated and upgraded, Nagios installation can be started.

Install pre-requisite packages using following command.

1. yum install -y gcc glibc glibc-common wget unzip httpd php php-cli gd gd-devel openssl-devel net-snmp perl perl-Net-SNMP *-y*

2. yum install -y make gettext autoconf net-snmp-utils epel-release automake

Disable SELINUX

1. sed -i 's/SELINUX=./SELINUX=disabled/g' /etc/selinux/config*

2. setenforce 0

Download Nagios core source code and extract it.

1. *cd /tmp*

2. wget -O nagioscore.tar.gz https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.2.tar.gz

3. tar xzf nagioscore.tar.gz

4. cd nagios-4.5.2/

Compile and install Nagios Core Server

1. *./configure* # there is a .(dot) before slash.

2. make all

3. make install-groups-users #Create nagios user and group

4. usermod -a -G nagios apache # add nagios user to apache group

5. make install # installs nagios to /usr/local/nagios directory

6. make install-commandmode # Adds nagios commands

7. make install-config # Adds nagios configuration files

8. make install-webconf # Adds the apache configuration for nagios

9. make install-daemoninit # Adds nagios as a service to the system

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

the above command creates a user in apache by the name nagiosadmin. You can provide any name. This command will prompt for a password. This username is used to login to the Nagios core server web interface.

Configure firewall to open http (port 80) port.

1. *firewall-cmd --zone=public --add-port=80/tcp* # opens port immediately

2. *firewall-cmd --zone=public --add-port=80/tcp --permanent* # Adds port in configuration file

Enable and start apahe web server.

systemtl enable httpd

systemctl start httpd

The Nagios core server basic installation is complete with these steps. To verify that Apache web server and basic Nagios server are correctly installed, open web browser on the server and type the url http://localhost/nagios.

The site will prompt for a username and password. If you followed the steps mentioned in this document then the username is nagiosadmin. Provide the password given. On successful login the following web page should be displayed.

However still the Nagios service is not running as displayed in the above image. We need to configure and start the Nagios service.

<u>Install Nagios Plugins</u>

1. *cd /tmp*

2. *sudo wget --no-check-certificate -O nagios-plugins.tar.gz https://github.com/nagios-plugins/nagios-plugins/archive/release-2.2.1.tar.gz*

3. *tar zxf nagios-plugins.tar.gz*

4. *cd /tmp/nagios-plugins-release-2.2.1/*

5. *./tools/setup* # *there is a .(dot) in the beginning before /*

6. *./configure*

7. *make*

8. *make install*

9. yum -y install nagios-plugins-nrpe # install NRPE plugin

Configure the nagios server.

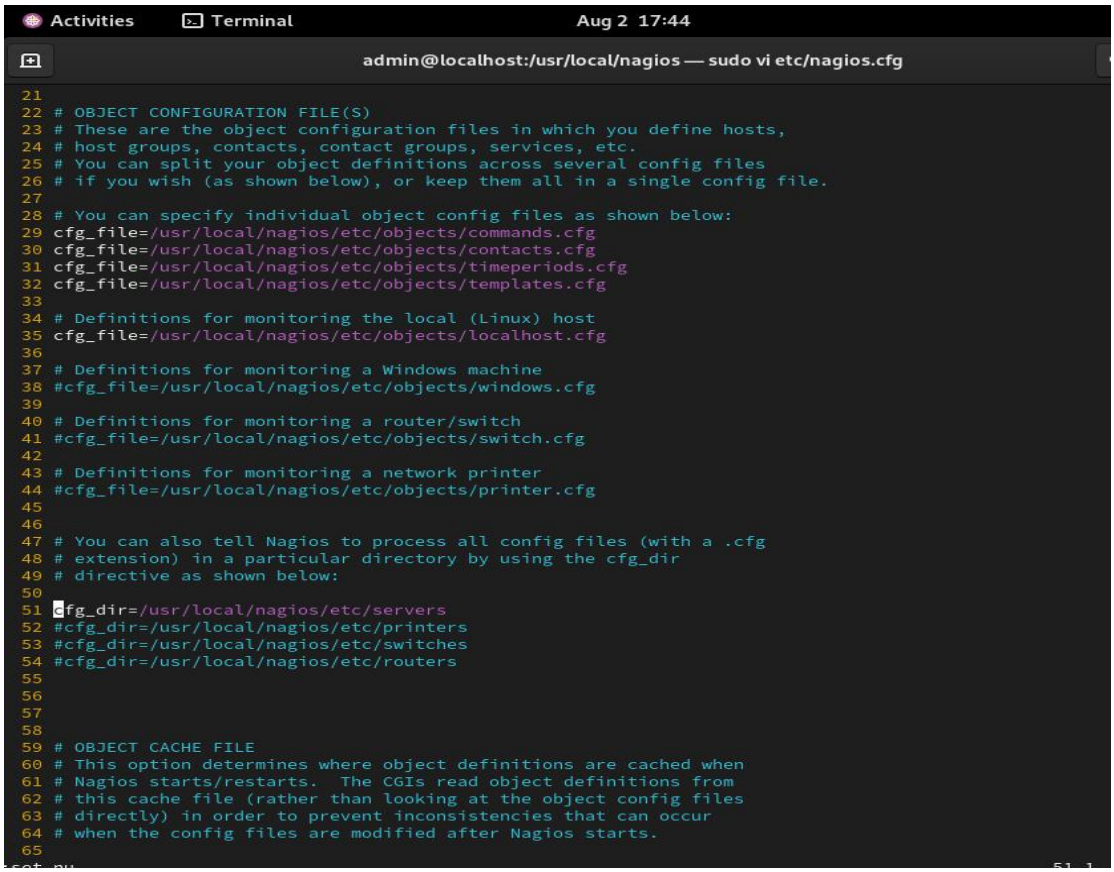
The nagios core server is installed in the /usr/local/nagios directory. Inside this directory the etc directory contains the nagios configuration files. The main configuration file is nagios.cfg.

Edit this file and enable servers directory. This will enable nagios to consider the configuration files stored in this server directory also.

cd /usr/local/nagios/etc

sudo vi nagios.cfg

In this file go to line number 51. Remove the # from this line as shown below.



Save the file.

Create the servers directory in the etc directory.

sudo mkdir /usr/local/nagios/etc/servers

There is a commands.cfg file. This file stores the commands that nagios server will execute. We have installed the NRPE plugin. We need to define a command for this plugin. Thus nagios server can execute this plugin to monitor the clients.

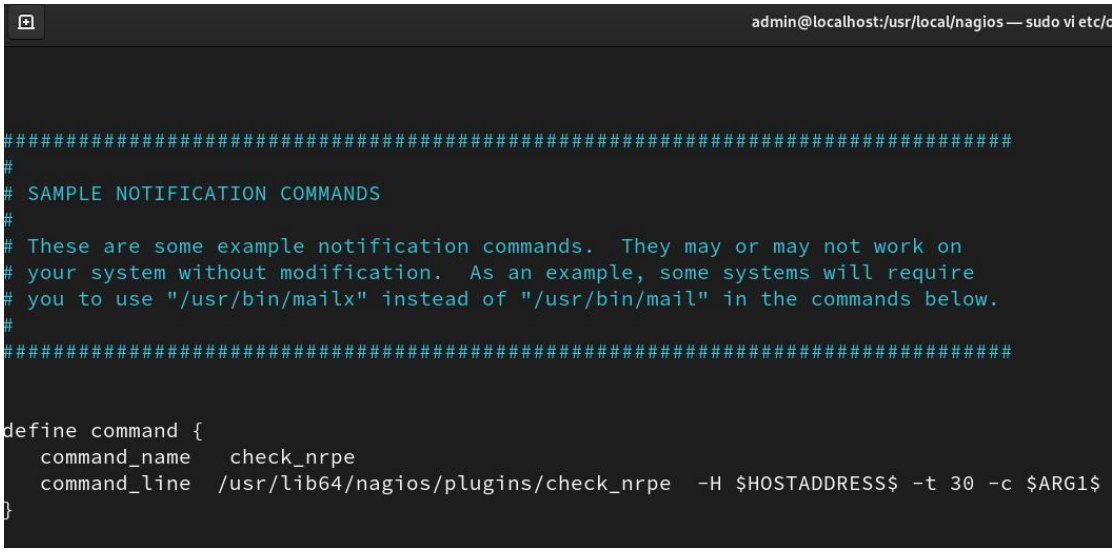
Edit the commands file and add the definition for the NRPE command.

sudo vi /usr/local/nagios/etc/objects/commands.cfg

In the file add following lines anywhere.

define command {
command_name check_nrpe
command_line /usr/lib64/nagios/plugins/check_nrpe -H $HOSTADDRESS$ -t 30 -c $ARG1$
}

This is shown in the below image.



Save the file.

Whenever any configuration file related to nagios server is modified or newly created, it is recommended that you verify it for any syntax errors. This will prevent nagios service from failing to restart.

To verify nagios for errors use following command

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

The output of the command should display 0 warnings and 0 errors as shown in the below image.

```
[admin@localhost nagios]$ sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.5.2
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2024-04-30
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 25 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
```

This command will just check for syntax errors. Any configuration error will not be detected. The nagios service will be started however the function related to that configuration will not work and nagios will fail to display monitoring result.

Open the NRPE port in the firewall.

firewall-cmd --permanent --add-port=5666/tcp

firewall-cmd --reload

Now start the nagios service and enable it for auto start using following commands.

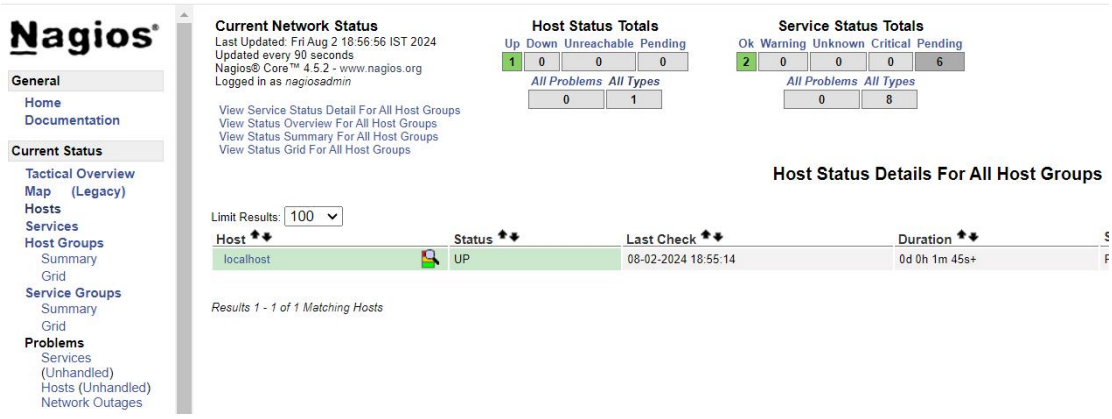
systemctl start nagios

systemctl enable nagios

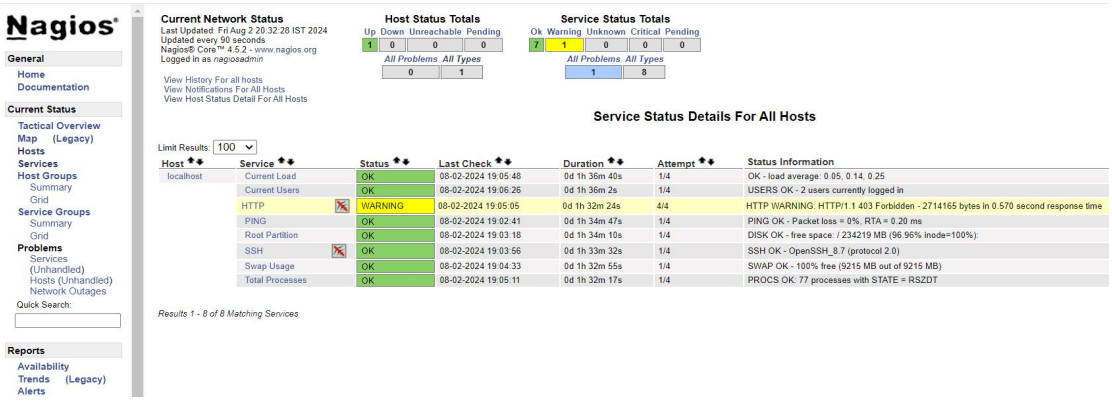
Now refresh the Nagios website URL in the browser.

Following page should be displayed. Now the Nagios Service is running and its information will be displayed. The PID will be different on different machines.

Click on the Hosts option on the left side of the page. It will display following page. The default configuration of Nagios includes configuration files for the local server.



Similarly Click on the Services option below the Hosts option. The following page is displayed.



The Nagios server by default monitors the local server for these services. Click on any service name like Current Load and it will display the details about that service.

Add a Linux server for monitoring to Nagios server.

This will be the Linux server that will be monitored by the Nagios. For this create another virtual machine. This virtual machine configuration can be 1/2 GB RAM, 1 CPU and 20GB hard disk. The configuration depends on the actual hardware configuration of your laptop.
Install any Linux OS this virtual machine. Here Centos 9 is installed.

After Installation of OS make sure to configure proper timezone. Also make sure the IP address is in the same network as the Nagios server. Check using ping. Update and upgrade the OS.

Install NRPE agent on this client.

The NRPE agent is installed from the source code.

1. yum install epel-release -y # Fedora EPEL repository installation (optional)

2. cd /tmp

3. wget https://assets.nagios.com/downloads/nagiosxi/agents/linux-nrpe-agent.tar.gz

4. tar xzf linux-nrpe-agent.tar.gz

5. sudo -i # The fullinstall script requires root privileges

6. cd /tmp/linux-nrpe-agent

7. ./fullinstall # NRPE agent install script. (dot before / in the command)

The above script executes and then it will prompt the following. Here enter the Nagios server IP address. This configures NRPE agent to accept communication from the Nagios server.

allowed_from: type-nagios_server_ip

Once the script execution is complete. Check if NRPE agent is running using following command.

systemctl status nrpe

```
admin@localhost:~
[admin@localhost ~]$ sudo systemctl status nrpe
● nrpe.service - Nagios Remote Plugin Executor
     Loaded: loaded (/usr/lib/systemd/system/nrpe.service; enabled; preset: disabled)
     Active: active (running) since Sat 2024-08-03 02:48:32 EDT; 21min ago
       Docs: http://www.nagios.org/documentation
   Main PID: 915 (nrpe)
      Tasks: 1 (limit: 22829)
     Memory: 1.4M
        CPU: 10ms
     CGroup: /system.slice/nrpe.service
             └─915 /usr/local/nagios/bin/nrpe -c /usr/local/nagios/etc/nrpe.cfg -f

Aug 03 02:48:32 localhost.localdomain systemd[1]: Started Nagios Remote Plugin Executor.
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Starting up daemon
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Server listening on 0.0.0.0 port 5666.
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Server listening on :: port 5666.
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Warning: Daemon is configured to accept command argume
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Listening for connections on port 5666
Aug 03 02:48:32 localhost.localdomain nrpe[915]: Allowing connections from: 127.0.0.1,192.168.198.167
[admin@localhost ~]$
```

The nrpe service should be running. At the end of the output read the line which displays the message "Allowing connections from:". Make sure the Nagios server IP is displayed and is correct.

The NRPE configuration file is located in the **/usr/local/nagios/etc** directory on the client. The name of the file is **nrpe.cfg**.

In this file on line 79 you will find the allowed_hosts parameter. This is where you can provide the Nagios server IP address. Thus in the above step if you have given incorrect Nagios server IP address then you can correct it here. This is shown below.

```
74 # file to allow only the specified host to c
75 # you are running this daemon on.
76 #
77 # NOTE: This option is ignored if NRPE is ru
78
79 allowed_hosts=127.0.0.1,192.168.198.167
80
81
82
```

Scroll down to line number 197 and you will find example commands specified. The check_users command will check the number of users active on this client. The check_load command will check the processor load. Similarly other command check hard disk space, total processes etc. For most of the commands the -w option specifies the warning conditions. The -c option specifies the critical conditions.

Here we enable check_users, check_load, check_hda1 and check_total_procs as shown below. To enable just remove the hash at the beginning of the line. If these commands are already enabled then you don't have to do anything.

```
197 # The following examples use hardcoded command arguments...
198
199 command[check_users]=/usr/local/nagios/libexec/check_users -w 5 -c 10
200 command[check_load]=/usr/local/nagios/libexec/check_load -w 15,10,5 -c 30,25,20
201 command[check_hda1]=/usr/local/nagios/libexec/check_disk -w 20% -c 10% -p /dev/hda1
202 #command[check_zombie_procs]=/usr/local/nagios/libexec/check_procs -w 5 -c 10 -s Z
203 command[check_total_procs]=/usr/local/nagios/libexec/check_procs -w 150 -c 200
204
```

Save the file.

Restart the nrpe service using *sudo systemctl restart nrpe* command.

The NRPE agent uses TCP port 5666. The installation script automatically opens the port in the firewall.

You can confirm it using command *sudo firewall-cmd --list-all*. The output will be as shown below.

```
[admin@localhost etc]$ sudo firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens160
  sources:
  services: cockpit dhcpv6-client ssh
  ports: 5666/tcp
  protocols:
  forward: yes
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:
```

Now the Nagios server needs to be configured so that it starts communicating with the client and starts monitoring it.

################### Perform following tasks on the Nagios Server #######################

Logon to Nagios Server.

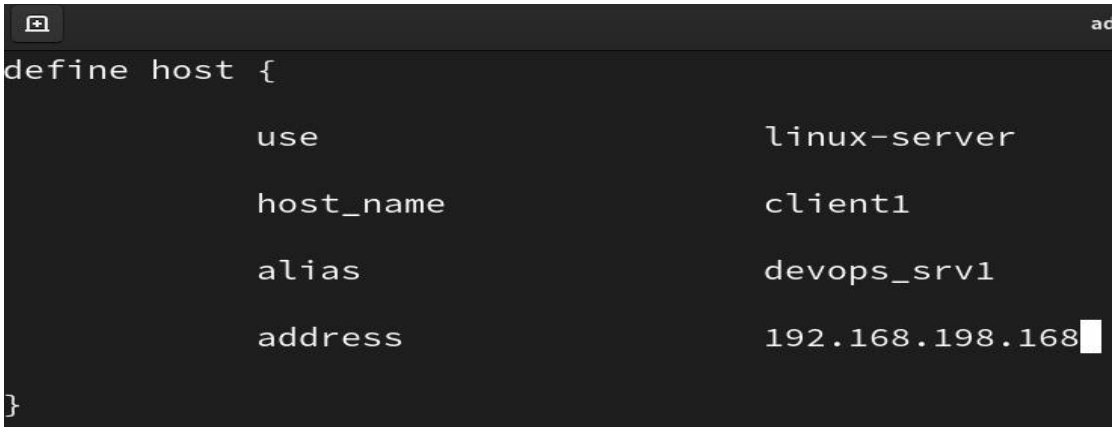
Open terminal. You need to create a file for this client in the servers directory. The name of the file is generally the name of the host. Here the name is given as client1.

```
sudo  vi   /usr/local/nagios/etc/servers/client1.cfg
```

Type the following in the file.

```
define host {
        use             linux-server
        host_name       centos0.client1
        alias           centos7.client1
        address         client_ip
}
```

Here specify the hostname in the host_name. In the alias you can specify the other name of the server. In the address specify the IP address of the client. This is shown as below.



Save the file.

Verify the Nagios configuration files for any syntax errors. Use following command.

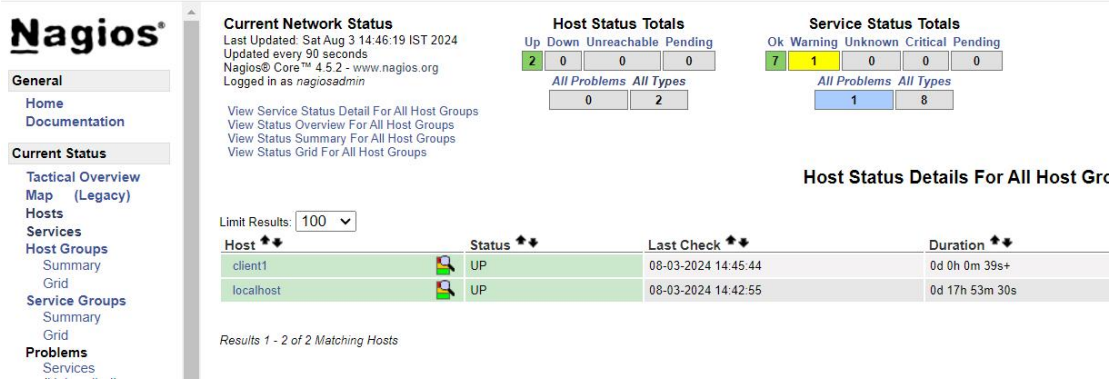
```
sudo  /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
```

There should be no errors or warnings.
Restart the Nagios service using following command.

```
sudo   systemctl  restart nagios
```

Now open the browser on the nagios server. Go to the URL http://localhost/nagios. Login as nagiosadmin user.

Click Hosts option on left side. The page that is displayed should show the new client added for monitoring as shown below.



However click the services option below Hosts. On that page you will not be able to see the client that we added above. This is because we have not informed the Nagios server about what we want to monitor on this client.

Thus edit the client1.cfg file and define the services to monitor. We will use the services that we enabled on the client in the nrpe.cfg file.

```
sudo vi /usr/local/nagios/etc/servers/client1.cfg
```

Add following below the define host section in the file.

```
define service {
    use                     generic-service
    host_name               client1
    service_description     Current Users
    check_command           check_nrpe!check_users
    }
define service {
    use                     generic-service
    host_name               client1
    service_description     Current Load
    check_command           check_nrpe!check_load
    }
define service {
    use                     generic-service
    host_name               client1
    service_description     Check Root partition
    check_command           check_nrpe!check_hda1
    }

define service {
    use                     generic-service
    host_name               client1
    service_description     Total Processes
    check_command           check_nrpe!check_total_procs
    }
```

This will look as shown below.

```
define host {

            use                     linux-server

            host_name               client1

            alias                   devops_srv1

            address                 192.168.198.168

}

define service {
        use                             generic-service
        host_name                     client1
        service_description         Current Users
        check_command             check_nrpe!check_users
        }

define service {
        use                             generic-service
        host_name                     client1
        service_description         Current Load
        check_command             check_nrpe!check_load
        }

define service {
        use                             generic-service
        host_name                     client1
        service_description         Check Root partition
        check_command             check_nrpe!check_hda1
        }

define service {
        use                             generic-service
        host_name                     client1
        service_description        Total Processes
        check_command             check_nrpe!check_total_procs
        }
```

Save the file.

Check the configuration files for any syntax error using following command.

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

There should be no errors or warnings.

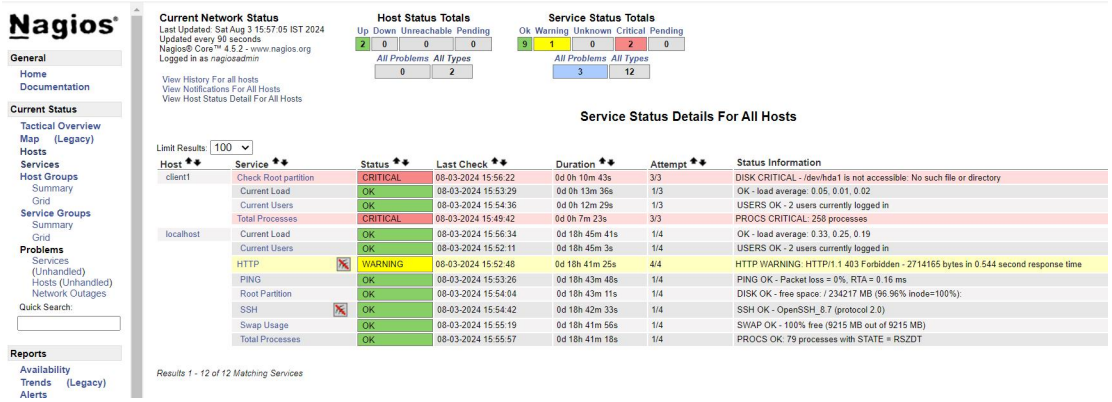
Restart the Nagios service using following command.

sudo systemctl restart nagios

Now go to the web interface of the Nagios server. Click Services option.

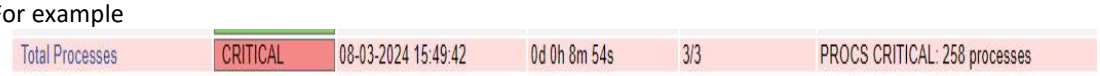
Now the client1 will be displayed. However initially the status of the services will be shown as pending.

Wait for some time. Then click the Services option. It will show the services as shown below.



For any service that is displayed as critical, please read the status information column carefully.

For example



In the above image the status information is Process Critical: 258 processes. This means Nagios is able to get the information about the service for monitoring.

Now look at the below image.

In this image the status information states that /dev/hda1 is not accessible. It means the hard disk name is different on the client. Thus you need to go to the client edit the nrpe.cfg file. Modify the check_hda1 command.

Also if no route host is shown in the status information column then check - A. The nrpe service is running on the client. B. The port TCP 5666 is open in the firewall. C. The IP address of the client is correctly mentioned in the client cfg file on the nagios server.

Now on the client used for this lab the ***sudo fdisk -l*** command displays the name of the hard disk file as shown below.

```
[admin@localhost etc]$ sudo fdisk -l
Disk /dev/nvme0n1: 500 GiB, 536870912000 bytes, 1048576000 sectors
Disk model: VMware Virtual NVMe Disk
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x4d0011b0

Device         Boot     Start        End   Sectors  Size Id Type
/dev/nvme0n1p1 *         2048    2099199   2097152    1G 83 Linux
/dev/nvme0n1p2        2099200  497027071 494927872  236G 83 Linux
/dev/nvme0n1p3      497027072  515901439  18874368    9G 82 Linux swap / Solaris
/dev/nvme0n1p4      515901440 1048575999 532674560  254G  5 Extended
/dev/nvme0n1p5      515903488 1048575999 532672512  254G 83 Linux
```

Thus the name of the hard disk file is /dev/nvme0n1 and not /dev/hda.
In your client this name may be different. Thus find out the correct name.

Here we want to monitor the root (/) partition. In this client the /dev/nvme0n1p2 is mounted as root partition. Thus we need to specify this partition in the nrpe.cfg file.
Now go to the client machine and edit the nrpe.cfg file.

sudo vi /usr/local/nagios/etc/nrpe.cfg

Scroll down to line number 201 as shown below.

```
199 command[check_users]=/usr/local/nagios/libexec/check_users -w 5 -c 10
200 command[check_load]=/usr/local/nagios/libexec/check_load -w 15,10,5 -c 30,25,20
201 command[check_hda1]=/usr/local/nagios/libexec/check_disk -w 20% -c 10% -p /dev/hda1
202 #command[check_zombie_procs]=/usr/local/nagios/libexec/check_procs -w 5 -c 10 -s Z
203 command[check_total_procs]=/usr/local/nagios/libexec/check_procs -w 150 -c 200
```

In that check_hda1 command line at the end it is /dev/hda1. Change it to your hard disk file name as shown below.

```
199 command[check_users]=/usr/local/nagios/libexec/check_users -w 5 -c 10
200 command[check_load]=/usr/local/nagios/libexec/check_load -w 15,10,5 -c 30,25,20
201 command[check_hda1]=/usr/local/nagios/libexec/check_disk -w 20% -c 10% -p /dev/nvme0n1p2
202 #command[check_zombie_procs]=/usr/local/nagios/libexec/check_procs -w 5 -c 10 -s Z
203 command[check_total_procs]=/usr/local/nagios/libexec/check_procs -w 150 -c 200
```

You can change the name of the command from check_hda1 to check_root. But then you need to update this in the define service section of the client cfg file on the nagios server.

Save the file. Restart the nrpe service.

Now after some time check in the nagios web interface in the services option. Now the heck root partition service will be working.

Earlier

Service	Status	Last Check	Duration	Attempt	Status Information
Check Root partition	CRITICAL	08-03-2024 15:56:22	0d 0h 13m 43s	3/3	DISK CRITICAL - /dev/hda1 is not accessible: No such file or directory

Now

Host	Service	Status	Last Check	Duration	Attempt	Status Information
client1	Check Root partition	OK	08-03-2024 16:36:46	0d 0h 1m 44s	1/3	DISK OK - free space: /var/tmp 234350 MiB (97.02% inode=100%):

This is how you have successfully added a Linux server for monitoring in the Nagios.

Running bash script as nrpe command on linux host

There are NRPE plugins to monitor some of the parameters like CPU Load, Users etc. However you may need to monitor some other parameters or services running on clients. In suh cases you may write your own scripts or programs and execute them as NRPE commands.

Here we will write a script to monitor httpd service installed on the client. The NRPE agent will check the service. If the service is not installed it should show the status as critical. If the service is installed but it is not running then it will display the status as warning. If the service is running then the status will be displayed as OK.
For this we need to write a shell script on the client which will perform the service checking task. Then we need to define a command in the nrpe.cfg file providing the path of this script.
Finally we need to define a service for this script on the Nagios server in the client cfg file.

Write shell script

Login to the client. Open terminal. We will store our script in the /usr/local/nagios/libexec/ directory along with other nagios plugins.

There is already a check_http plugin. Thus we will create our script by name check_web.sh

sudo vi /usr/local/nagios/libexec/check_web.sh

Add following script in the following.

```
#!/usr/bin/bash
# First check if the httpd service is installed.
systemctl status httpd &> /dev/null
r=$?
case "$r" in
    4)
        echo "Critical!!!The service is not installed"
        exit 2
        ;;

    3)
        echo "Warning!!!The service is not running"
        exit 1
        ;;

    0)
        echo "OK!!!The service is running"
        exit 0
        ;;
    *)
        echo "Uknown Error....Critical"
        exit 2

esac
```

It will be as shown below.

Save the file.

Now we need to provide executable permission to the script.

sudo chmod +x /usr/local/nagios/libexec/check_web.sh

Next we need to define this script as a NRPE command in the nrpe.cfg file. This will allow NRPE to execute this script as a command.

sudo vi /usr/local/nagios/etc/nrpe.cfg

Add following line in the file.

command[check_web]=/usr/local/nagios/libexec/check_web.sh

The file will look as shown below. (Line 204 shows the above command)

```
198
199 command[check_users]=/usr/local/nagios/libexec/check_users -w 5 -c 10
200 command[check_load]=/usr/local/nagios/libexec/check_load -w 15,10,5 -c 30,25,20
201 command[check_hda1]=/usr/local/nagios/libexec/check_disk -w 20% -c 10% -p /dev/nvme0n1p2
202 #command[check_zombie_procs]=/usr/local/nagios/libexec/check_procs -w 5 -c 10 -s Z
203 command[check_total_procs]=/usr/local/nagios/libexec/check_procs -w 150 -c 200
204 command[check_web]=/usr/local/nagios/libexec/check_web.sh
205
```

Save the file.

Restart the NRPE service using command
sudo systemctl restart nrpe

############## Perform following steps on Nagios Server ################
Now we need to configure Nagios Server to execute this command for monitoring.
First we will check using command line whether NRPE is able to execute command remotely.

Login to the Nagios server. Open terminal. Use following command.

sudo /usr/lib64/nagios/plugins/check_nrpe -H 192.168.198.168 -c check_web

The output will be as shown below.

```
admin@localhost:~
[admin@localhost ~]$ sudo /usr/lib64/nagios/plugins/check_nrpe -H 192.168.198.168 -c check_web
Critical!!!The service is not installed
```

This confirms that the Nagios server is able to communicate to the NRPE agent on the client and execute our script. As the httpd service is not installed on the client the output of the script shows the status as critical.
Now we will define it as a service to monitor in the client configuration.
Edit the client configuration file.

sudo vi /usr/local/nagios/etc/servers/client1.cfg

Define a service for monitoring httpd service using our script.

```
define service {
        use                     generic-service
        host_name               client1
        service_description     Check httpd status
        check_command           check_nrpe!check_web
}
```

This is shown below.

```
define service {
        use                     generic-service
        host_name               client1
        service_description     Check httpd status
        check_command           check_nrpe!check_web
}
```

Save the file.

Verify the Nagios configuration files for any kind of errors.

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

There should not be any warning or errors.

Restart the nagios service using following command.

sudo systemctl restart nagios

Now go the web interface of the Nagios server.

Click on Services option.

The following output should be shown. It may take some time to update.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
client1	Check Root partition	OK	08-06-2024 15:07:55	2d 20h 53m 34s	1/3	DISK OK - free space: /var/tmp 234264 MiB (96.98% inode=100%):
	Check httpd status	CRITICAL	08-06-2024 15:08:59	2d 18h 5m 11s	3/3	Critical!!!The service is not installed

Now install the httpd service on the client. And then heck here the output after some time. It should be as shown below.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
client1	Check Root partition	OK	08-06-2024 15:07:55	2d 20h 56m 25s	1/3	DISK OK - free space: /var/tmp 234264 MiB (96.98% inode=100%):
	Check httpd status	WARNING	08-06-2024 15:17:08	0d 0h 0m 20s	3/3	Warning!!!The service is not running

Now start the httpd service on the client and then check the status here. It should be in Green colour as shown below.

Host	Service	Status	Last Check	Duration	Attempt	Status Information
client1	Check Root partition	OK	08-06-2024 15:37:55	2d 21h 18m 39s	1/3	DISK OK - free space: /var/tmp 234256 MiB (96.98% inode=100%):
	Check httpd status	OK	08-06-2024 15:39:24	0d 0h 0m 18s	1/3	OK!!!The service is running

This is how you can run any script or program through Nagios for monitoring a parameter of a client.

Adding Windows server for monitoring to Nagios Server

This will be the Windows server that will be monitored by the Nagios. For this create another virtual machine. This virtual machine configuration can be 2 GB RAM, 1 CPU and 60GB hard disk. The configuration depends on the actual hardware configuration of your laptop. Make sure this mahine is in the same network as the Nagios server.
Install any Windows OS this virtual machine. Here Windows Server 2016 is installed.

After the Windows server Installation , set the correct timezone, date and time, Computer name and IP address. Restart the server after changing the name of the server.

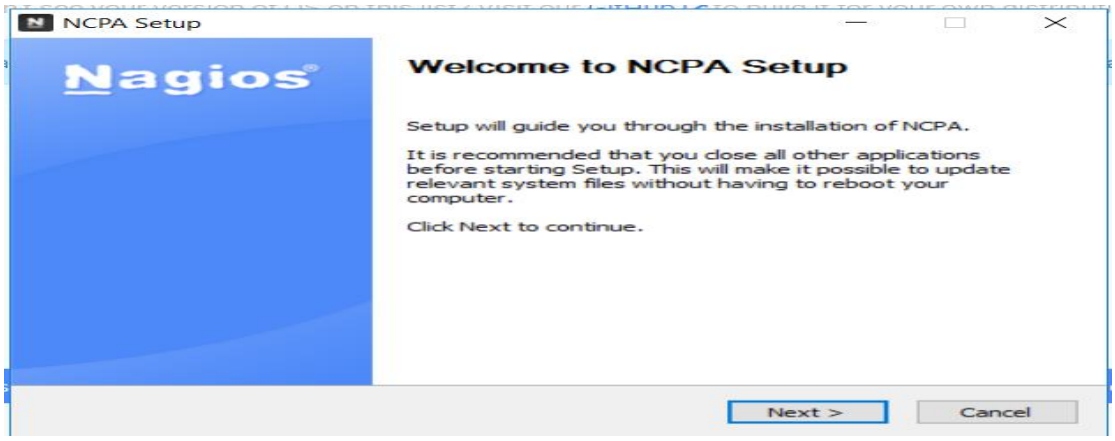
Install NCPA on Windows Server.

1. Go to the following URL

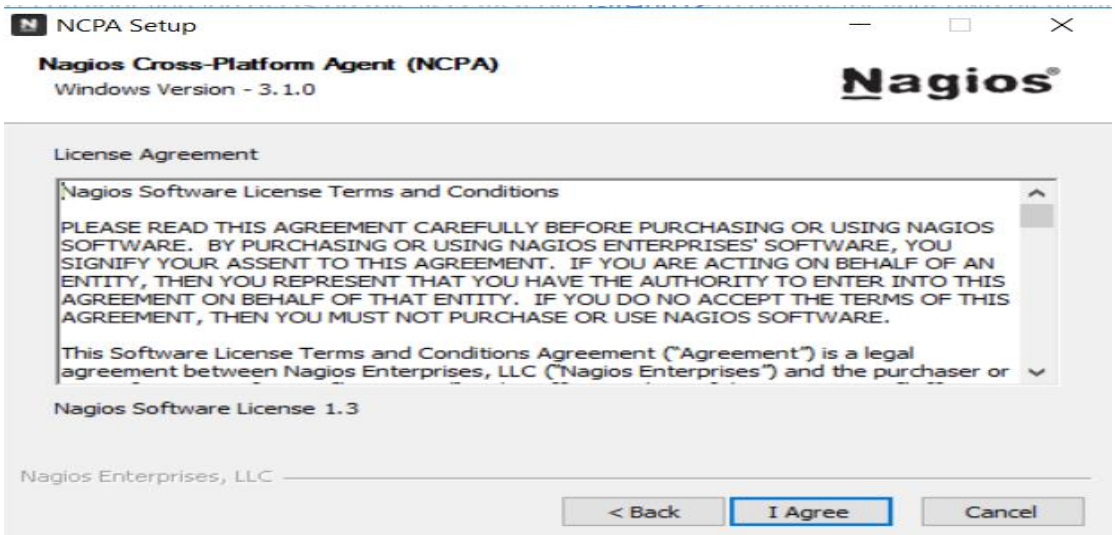
https://www.nagios.org/ncpa/#downloads

Click EXE installer for Windows. Save the installer file. Once the download completes, double click the file to start the installation.

Following window opens.

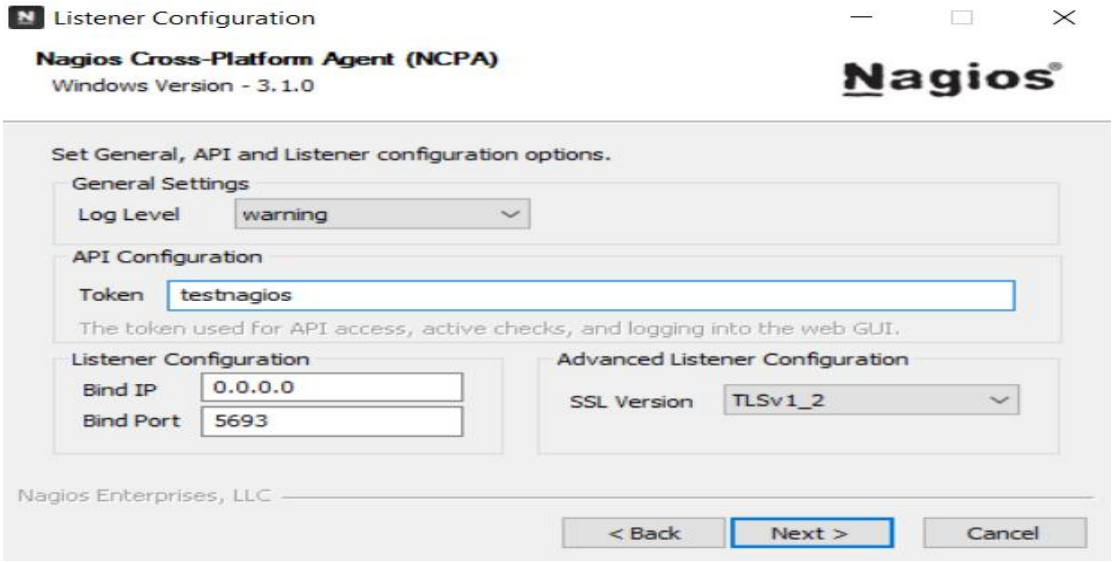


Click Next.



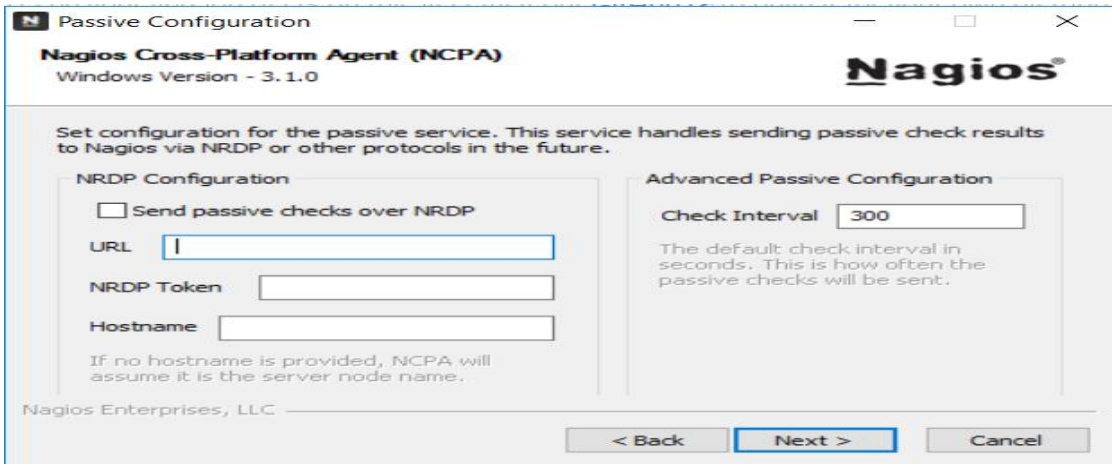
Click I Agree to accept the license agreement.

On the following screen specify Token in API Configuration. This token is any string that will work as a password between Nagios Server and this Windows server. Here testnagios string is given as token. You need to provide this token while you configure Nagios server.

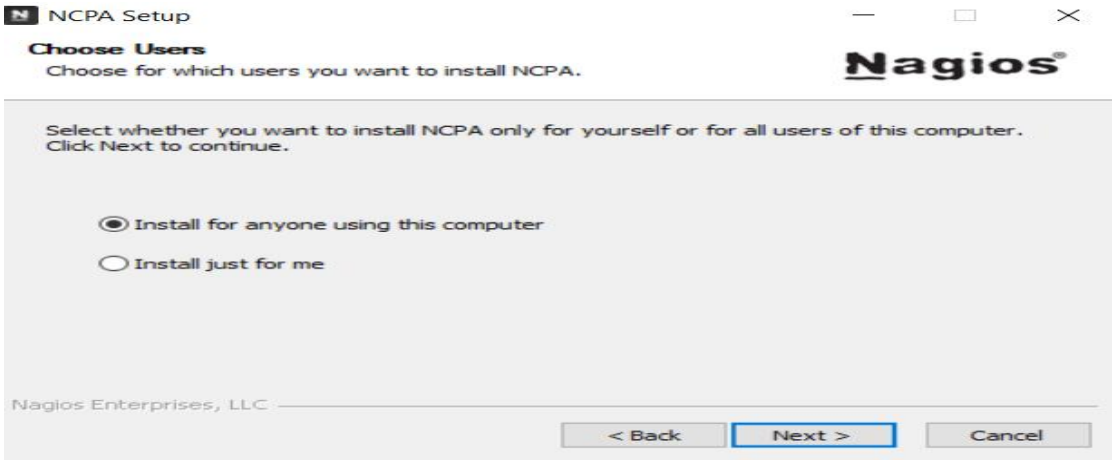


Keep all other options as default. Click Next.

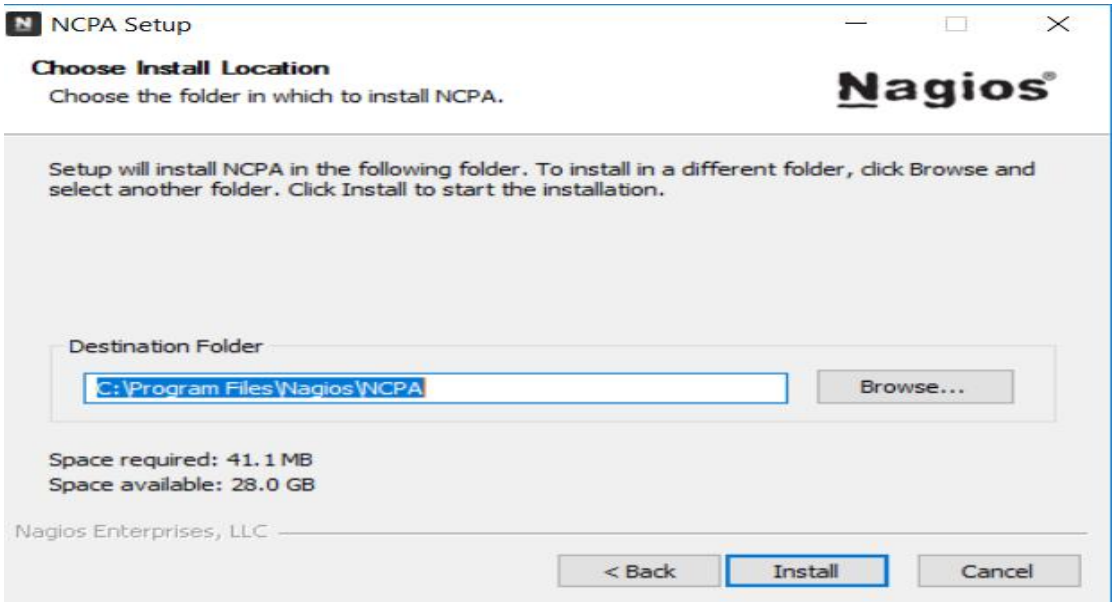
The following screen is displayed.



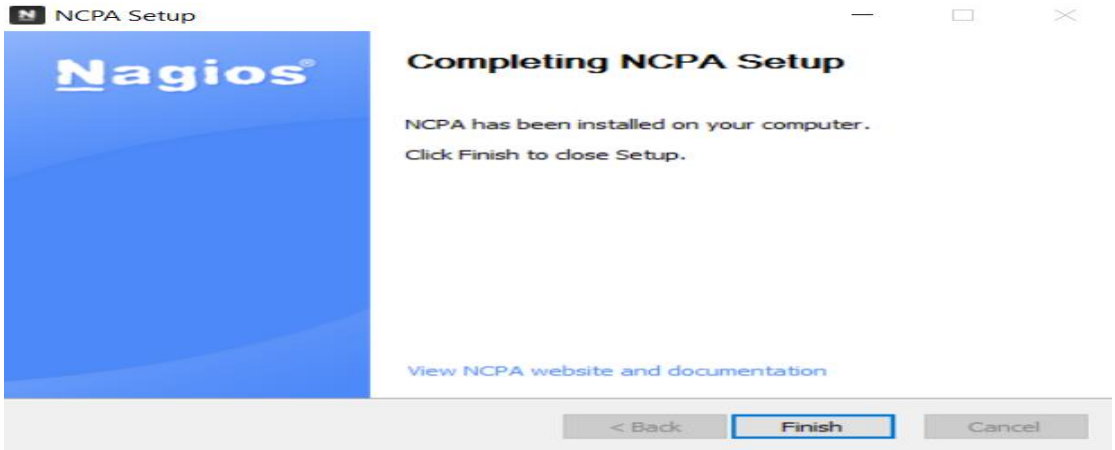
No configuration is required. Click Next.



Select the appropriate option as per your requirement. Click Next.

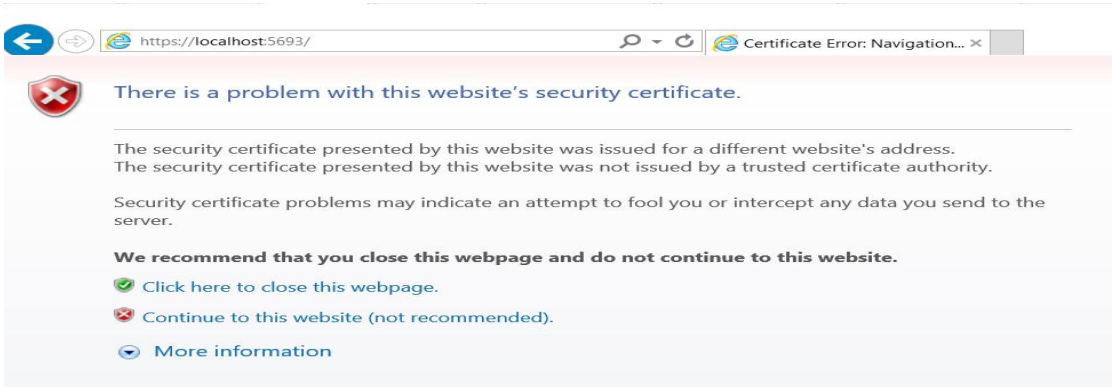


Keep the default installation directory as shown above. Click Install.

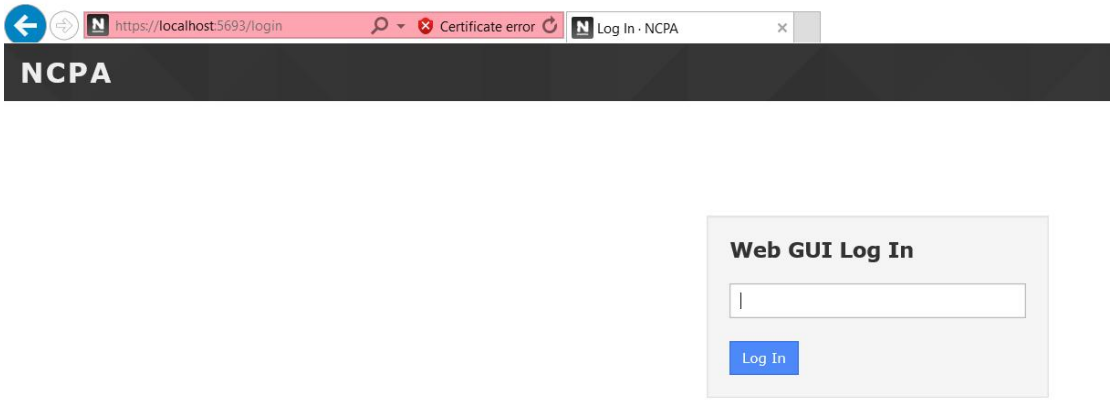


Once the installation is complete, above screen is displayed. Click Finish.

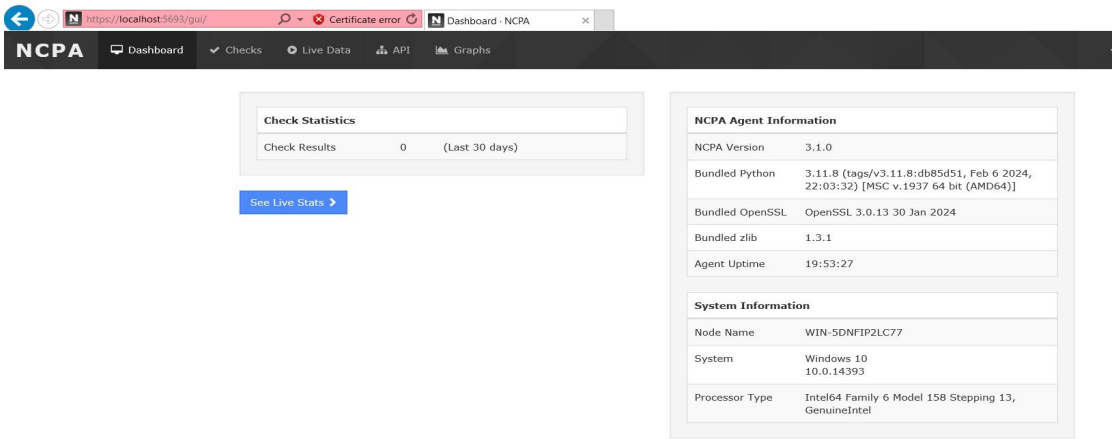
This how the NCPA agent is installed on the Windows server. Now verify the installation.
Open browser on the Windows server. Go to the URL https://localhost:5693 . The NCPA uses the port number 5693. The following web page may open.



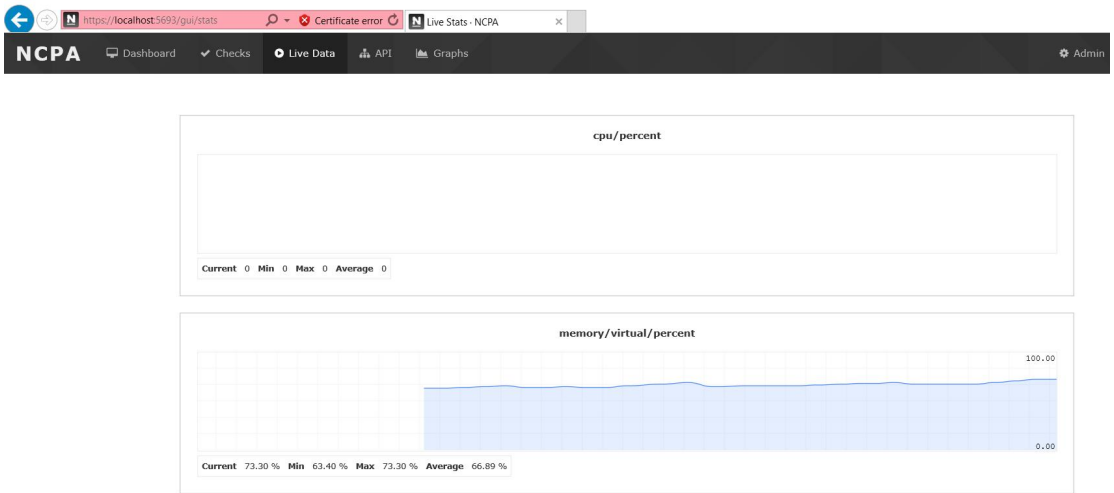
Click Continue to the website option. The following web page will be displayed.



Here type the token specified during NCPA installation. In this guide the token given is **testnagios**. Click Log In button. Following web page should be displayed.



Click Live Stats buton. The following page should open.



This verifies that NCPA is installed and working properly.
Now add this server to Nagios for monitoring.

Configure Nagios Server to Monitor the Windows Server

Perform the following tasks on the Nagios server.

Log in to the Nagios server. Open terminal and execute following commands.

cd /tmp
Wget https://assets.nagios.com/downloads/ncpa/check_ncpa.tar.gz

```
[admin@localhost ~]$ cd /tmp
[admin@localhost tmp]$ wget https://assets.nagios.com/downloads/ncpa/check_ncpa.tar.gz
--2024-08-23 14:29:23--  https://assets.nagios.com/downloads/ncpa/check_ncpa.tar.gz
Resolving assets.nagios.com (assets.nagios.com)... 45.79.49.120, 2600:3c00::f03c:92ff:fef7:45ce
Connecting to assets.nagios.com (assets.nagios.com)|45.79.49.120|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 5047 (4.9K) [application/x-gzip]
Saving to: 'check_ncpa.tar.gz'

check_ncpa.tar.gz       100%[=============================>]   4.93K  --.-KB/s    in 0s

2024-08-23 14:29:25 (75.1 MB/s) - 'check_ncpa.tar.gz' saved [5047/5047]
```

tar xvf check_ncpa.tar.gz
chown nagios:nagios check_ncpa.py
chmod 775 check_ncpa.py
mv check_ncpa.py /usr/local/nagios/libexec

```
[admin@localhost tmp]$ tar xvf check_ncpa.tar.gz
check_ncpa.py
CHANGES.rst
[admin@localhost tmp]$ sudo chown nagios:nagios check_ncpa.py
[admin@localhost tmp]$ sudo chmod 755 check_ncpa.py
[admin@localhost tmp]$ sudo mv check_ncpa.py /usr/local/nagios/libexec/
[admin@localhost tmp]$
```

There is a commands.cfg file. This file stores the commands that Nagios server will execute. We have installed the NCPA plugin. We need to define a command for this plugin. Thus Nagios server can execute this plugin to monitor the clients.

Edit the commands file and add the definition for the NRPE command.

sudo vi /usr/local/nagios/etc/objects/commands.cfg

In the file add following lines anywhere.

```
define command {
   command_name    check_ncpa
   command_line    $USER1$/check_ncpa.py -H $HOSTADDRESS$ $ARG1$
}
```

This is as shown below.

```
define command {
    command_name    check_ncpa
    command_line    $USER1$/check_ncpa.py -H $HOSTADDRESS$ $ARG1$
}
```

Save the file.

Now create a file for this Windows server in the servers directory. The name of the file is generally the name of the host. Here the name is given as win-srv1.

```
sudo vi /usr/local/nagios/etc/servers/win-srv1.cfg
```

We will define the host and the services to monitor on this host in this file. Type the following in the file.

```
define host {
  host_name            Win-srv1
  address              192.168.198.171
  check_command        check_ncpa!-t 'testnagios' -P 5693 -M system/agent_version
  max_check_attempts   5
  check_interval       5
  retry_interval       1
  check_period         24x7
  contacts             nagiosadmin
  notification_interval 60
  notification_period  24x7
  notifications_enabled 1
  icon_image           ncpa.png
  statusmap_image      ncpa.png
  register             1
}

define service {
  host_name            Win-srv1
  service_description  CPU Usage
  check_command        check_ncpa!-t 'testnagios' -P 5693 -M cpu/percent -w 20 -c 40 -q
'aggregate=avg'
  max_check_attempts   5
  check_interval       5
  retry_interval       1
  check_period         24x7
  notification_interval 60
  notification_period  24x7
  contacts             nagiosadmin
  register             1
}

define service {
  host_name            Win-srv1
  service_description  Memory Usage
  check_command        check_ncpa!-t 'testnagios' -P 5693 -M memory/virtual -w 50 -c 80 -u G
  max_check_attempts   5
  check_interval       5
  retry_interval       1
```

```
    check_period          24x7
    notification_interval   60
    notification_period     24x7
    contacts              nagiosadmin
    register              1
}

define service {
    host_name             Win-srv1
    service_description     Process Count
    check_command          check_ncpa!-t 'testnagios' -P 5693 -M processes -w 150 -c 200
    max_check_attempts      5
    check_interval          5
    retry_interval          1
    check_period          24x7
    notification_interval   60
    notification_period     24x7
    contacts              nagiosadmin
    register              1
}
```

Please make sure you type proper token in the check_ncpa command as highlighted above. This is the string given as token during installation of NCPA on Windows server.

Save the file.

Verify the Nagios configuration files for any kind of errors.

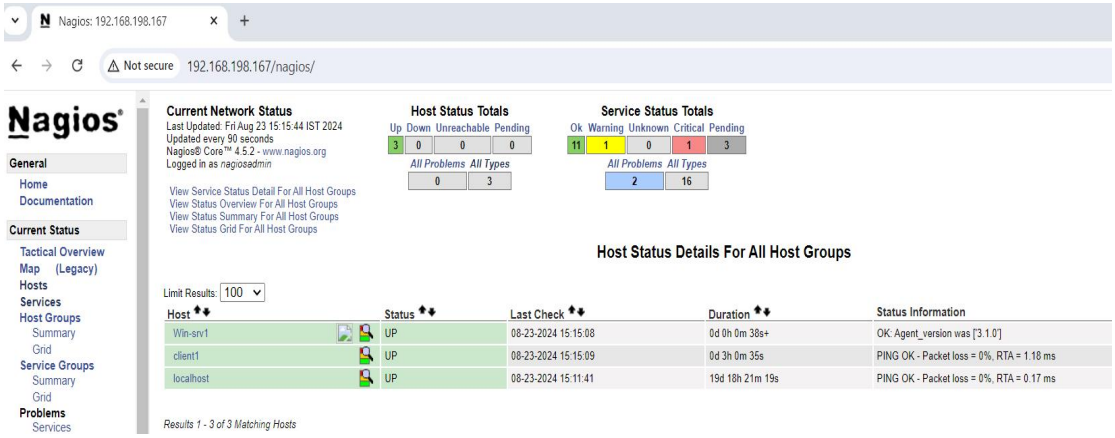
sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

There should not be any warning or errors.

Restart the nagios service using following command.

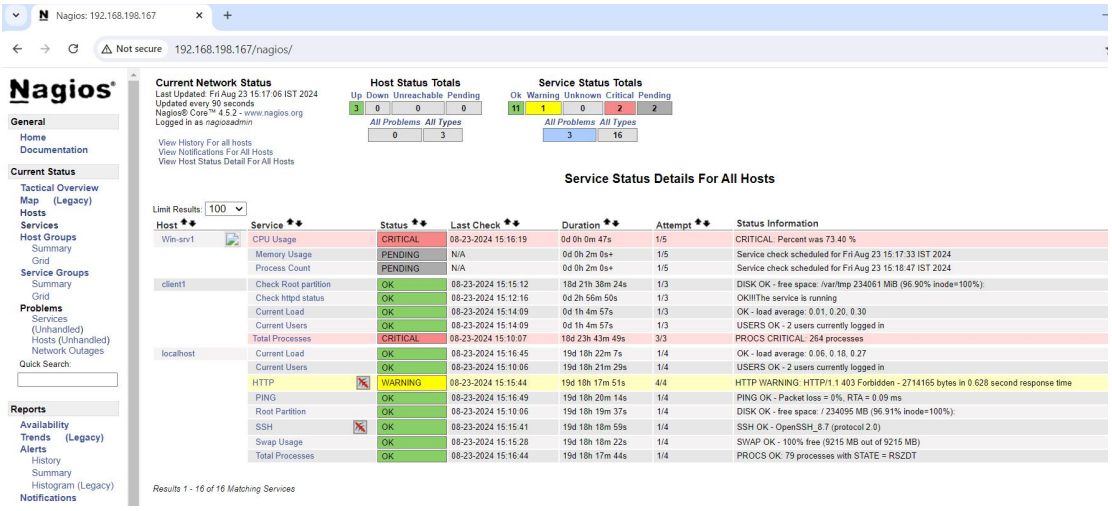
sudo systemctl restart nagios

Now go the web interface of the Nagios server.

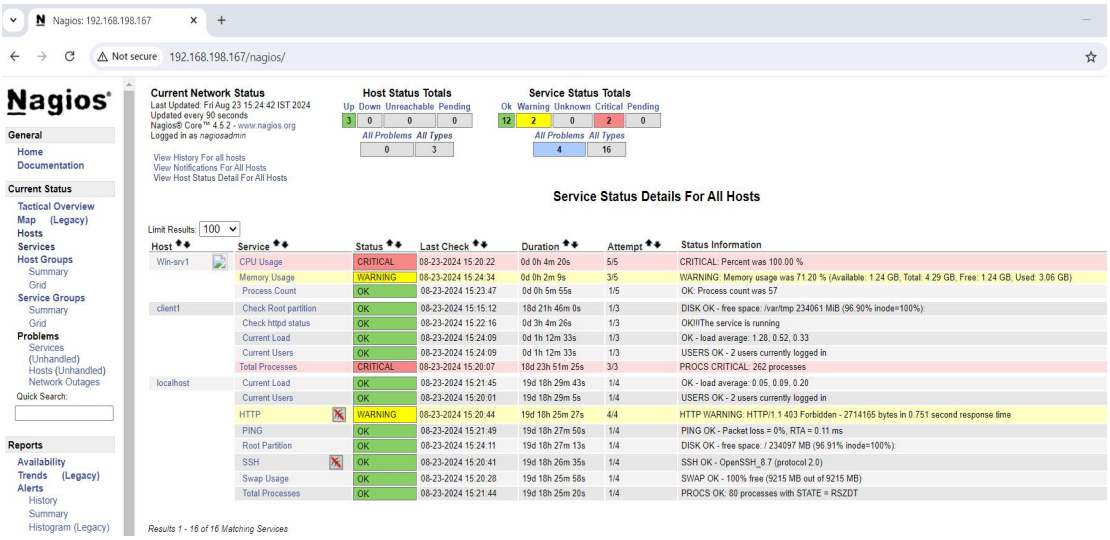


You will see the Windows server in the Hosts.

Click Services button. The Winsrv1 host entry should be present.



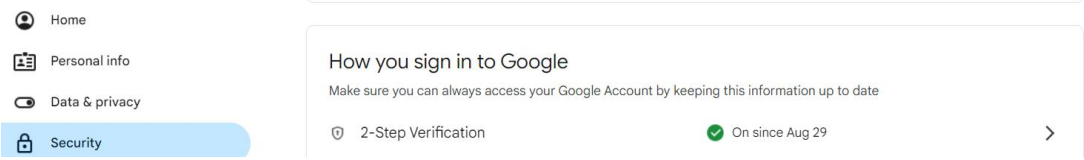
Some of the services may display status as pending. Wait for some time and you should see the updates about these monitored services.



Configuring Nagios server to send Email alerts using GMail.

Create a separate GMail account for this lab. Login to this new GMail account. Select the option

On the page that opens, click security option and then click 2 Step verification option to enable it.



Then log out and login again. Again go to Manage your Google Account option. Search for App password option. Go to the App password page. Create a password. Copy the password displayed. You need to provide it in the Nagios configuration file.

Cyrus SASL (Simple Authentication and Security Layer) is a framework that provides authentication and encryption services in various applications. In the context of email, Cyrus SASL can be used to enable secure authentication for SMTP (Simple Mail Transfer Protocol) servers.

sudo yum install postfix -y

sudo yum install cyrus-sasl cyrus-sasl-lib cyrus-sasl-plain

sudo mkdir -p /etc/postfix/sasl/

sudo vi /etc/postfix/sasl/sasl_passwd

Type following line in the file.

[smtp.gmail.com]:587 username@gmail.com:applicationpassword

Save the file.

sudo postmap /etc/postfix/sasl/sasl_passwd

The above command creates a database file.

sudo chown root:root /etc/postfix/sasl/sasl_passwd /etc/postfix/sasl/sasl_passwd.db

sudo chown 0600 /etc/postfix/sasl/sasl_passwd /etc/postfix/sasl/sasl_passwd.db

following commands will modify the postfix configuration file /etc/postfix/main.cf to add the required configuration.

sudo postconf -e relayhost=[smtp.gmail.com]:587
sudo postconf -e smtp_sasl_auth_enable=yes
sudo postconf -e smtp_sasl_security_options=noanonymous
sudo Postconf -e smtp_sasl_password_maps=hash:/etc/postfix/sasl/sasl_passwd
sudo Postconf -e smtp_tls_security_level=encrypt
sudo postconf -e smtp_tls_security_level=verify
sudo Postconf -e smtp_tls_CAfile=/etc/ssl/certs/ca-bundle.crt

Then edit the following file.

sudo vi /etc/aliases

Add the following line.

root: username@gmail.com

Save the file.

sudo systemctl enable postfix

sudo systemctl restart postfix

sudo dnf install s-nail -y

echo "Test" |/usr/bin/s-nail -vvv -s "Test Subject" username@gmail.com

After this if everything is properly configured, you should receive an email on your gmail acount.

sudo vim /usr/local/nagios/etc/objects/commands.cfg

The following section may be already present. Comment the existing section and put the following section in this file.

```
define command {

 command_name    notify-host-by-email
 command_line    /usr/bin/printf "%b" "***** Nagios *****\n\nNotification Type: $NOTIFICATIONTYPE$\nHost: $HOSTNAME$\nState: $HOSTSTATE$\nAddress: $HOSTADDRESS$\nInfo: $HOSTOUTPUT$\n\nDate/Time: $LONGDATETIME$\n" | mailx -vvv -s "** $NOTIFICATIONTYPE$ Host Alert: $HOSTNAME$ is $HOSTSTATE$ **" $CONTACTEMAIL$
}


 define command {

   command_name    notify-service-by-email
   command_line    /usr/bin/printf "%b" "***** Nagios *****\n\nNotification Type: $NOTIFICATIONTYPE$\n\nService: $SERVICEDESC$\nHost: $HOSTALIAS$\nAddress: $HOSTADDRESS$\nState: $SERVICESTATE$\n\nDate/Time: $LONGDATETIME$\n\nAdditional Info:\n\n$SERVICEOUTPUT$\n" | mailx -vvv -s "** $NOTIFICATIONTYPE$ Service Alert: $HOSTALIAS$/$SERVICEDESC$ is $SERVICESTATE$ **" $CONTACTEMAIL$
}
```

Save file.

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

Existing section will look as shown below.

```
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           username1@gmail.com ; <<***** CHANGE THIS TO YOUR EMAIL ADDRESS ******
}
```

Add following ontact as shown below.

```
define contact{
      contact_name                webadmin
      use                         generic-contact
      alias                       Web Admin
      email                       username1@orelit.com
      service_notification_commands   notify-service-by-email
      host_notification_commands      notify-host-by-email
      service_notification_period     24×7
      host_notification_period        24×7
      service_notification_options    w,u,c,r,f
      host_notification_options       d,u,r,f
}
```

The contactgroup section is also present. Add the names of the contacts in the members.

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

Save the file

Now configure the host definition file to send emails.

sudo vi /usr/local/nagios/etc/servers/client1.cfg

Add following

```
define host {

	use		linux-server

	host_name		client1

	alias		devops_srv1

	address		192.168.198.168

	contact_groups		admins

}

define service {
	use		generic-service
	host_name		client1
	service_description	Check httpd status
	check_command		check_nrpe!check_web
	contacts		webadmin
}
```

Save file.
Check the nagios configuration for any errors using following command.

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

If there are no warnings or errors, then restart the nagios service.

sudo systemctl restart nagios

Now stop the httpd service on the Linux client. Wait for some time and check if you receive an email. Start the httpd service and again wait for some time and then check if an email is received.