Semester: V
Academic Year: 2025-26
Class / Branch: TE IT C
Subject: Advanced Devops Lab (ADL)
Name of Instructor: Prof. Vishal Badgujar

Name of Student:Pritesh Shetty
Student ID:23104128

EXPERIMENT NO. 09

Aim: To Understand Continuous monitoring and Installation and configuration of Nagios Core, Nagios Plugins and NRPE (Nagios Remote Plugin Executor) on Linux Machine.

Theory:

1 - Pre-requisite

First requirement is to install Apache and PHP first. Use the following commands to complete it. And use commands to install required packages for Nagios.

```
manjusha@apsit:~$ sudo apt-get update
manjusha@apsit:~$ sudo apt-get install wget build-essential unzip openssl
libssl-dev
manjusha@apsit:~$ sudo apt-get install apache2 php libapache2-mod-php php-gd
libgd-dev
```

```
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo apt-get update
[sudo] password for apsit:
Hit:1 https://deb.nodesource.com/node_20.x nodistro InRelease
Get:2 http://security.ubuntu.com/ubuntu bionic-security InRelease [102 kB]
Hit:3 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Get:4 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease [102 kB]
Hit:5 http://ppa.launchpad.net/deadsnakes/ppa/ubuntu bionic InRelease
Hit:6 http://ppa.launchpad.net/gencfsm/ppa/ubuntu bionic InRelease
Get:7 http://security.ubuntu.com/ubuntu bionic-security/main amd64 DEP-11 Metadata [76.8 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease [102 kB]
Get:9 http://security.ubuntu.com/ubuntu bionic-security/restricted amd64 DEP-11 Metadata [212 B]
Get:10 http://security.ubuntu.com/ubuntu bionic-security/universe amd64 DEP-11 Metadata [61.8 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Metadata [297 kB]
Get:12 http://security.ubuntu.com/ubuntu bionic-security/multiverse amd64 DEP-11 Metadata [2,464 B]
Get:13 http://in.archive.ubuntu.com/ubuntu bionic-updates/restricted amd64 DEP-11 Metadata [212 B]
Get:14 https://dl.google.com/linux/chrome/deb stable InRelease [1,825 B]
Get:15 http://in.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11 Metadata [303 kB]
Get:16 https://dl.google.com/linux/chrome/deb stable/main amd64 Packages [1,215 B]
Get:17 http://in.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:18 http://in.archive.ubuntu.com/ubuntu bionic-backports/main amd64 DEP-11 Metadata [8,116 B]
Get:19 http://in.archive.ubuntu.com/ubuntu bionic-backports/restricted amd64 DEP-11 Metadata [216 B]
Get:20 http://in.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-11 Metadata [10.0 kB]
Get:21 http://in.archive.ubuntu.com/ubuntu bionic-backports/multiverse amd64 DEP-11 Metadata [216 B]
Ign:22 https://pkg.jenkins.io/debian stable InRelease
Err:23 https://pkg.jenkins.io/debian stable Release
  404  Not Found [IP: 151.101.130.133 443]
Hit:24 https://download.sublimetext.com apt/stable/ InRelease
Reading package lists... Done
E: The repository 'http://pkg.jenkins.io/debian stable Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
```

```
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo apt-get install unzip -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
unzip is already the newest version (6.0-21ubuntu1.2).
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo apt-get install openssl -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
openssl is already the newest version (1.1.1-1ubuntu2.1~18.04.23).
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo apt-get install libssl-dev -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
Suggested packages:
  libssl-doc
The following NEW packages will be installed:
  libssl-dev
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 1,568 kB of archives.
After this operation, 7,854 kB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libssl-dev amd64 1.1.1-1ubuntu2.1~18.04.23 [1,568 kB]
Fetched 1,568 kB in 2s (673 kB/s)
Selecting previously unselected package libssl-dev:amd64.
(Reading database ... 251234 files and directories currently installed.)
Preparing to unpack .../libssl-dev_1.1.1-1ubuntu2.1~18.04.23_amd64.deb ...
Unpacking libssl-dev:amd64 (1.1.1-1ubuntu2.1~18.04.23) ...
Setting up libssl-dev:amd64 (1.1.1-1ubuntu2.1~18.04.23) ...
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo apt-get install apache2 php libapache2-mod-php php-gd libgd-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
libapache2-mod-php is already the newest version (1:7.2+60ubuntu1).
php is already the newest version (1:7.2+60ubuntu1).
php-gd is already the newest version (1:7.2+60ubuntu1).
apache2 is already the newest version (2.4.29-1ubuntu4.27).
libgd-dev is already the newest version (2.2.5-4ubuntu0.5).
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$
```

2 – Create Nagios User

Create a new user account for Nagios in your system and assign a password.

```
manjusha@apsit:~$ sudo adduser nagios
```

Now create a group for Nagios setup "nagcmd" and add nagios user to this group. Also, add nagios user in the Apache group.

```
manjusha@apsit:~$sudo groupadd nagcmd
manjusha@apsit:~$sudo usermod -a -G nagcmd nagios
manjusha@apsit:~$sudo usermod -a -G nagcmd www-data
```

```
libgd-dev is already the newest version (2.2.5-4ubuntu0.5).
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo groupadd nagcmd
groupadd: group 'nagcmd' already exists
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo groupadd pritesh
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo adduser nagios
Adding user `nagios' ...
Adding new group `nagios' (1001) ...
Adding new user `nagios' (1001) with group `nagios' ...
Creating home directory `/home/nagios' ...
Copying files from `/etc/skel' ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for nagios
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] y
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo usermod -a -G pritesh nagios
usermod: Permission denied.
usermod: cannot lock /etc/passwd; try again later.
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo usermod -a -G pritesh nagios
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ sudo usermod -a -G nagcmd www-data
apsit@apsit-HP-280-Pro-G6-Microtower-PC:~$ cd /opt/
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt$ sudo wget https://assets.nagios.com/downloads/nagioscore/releases/nagios4.4.3.tar.gz
--2025-09-24 11:04:03--  https://assets.nagios.com/downloads/nagioscore/releases/nagios4.4.3.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... 301 Moved Permanently
Location: https://assets.nagios.com/redirects/redirect.php?url=https://assets.nagios.com/downloads/nagioscore/releases/nagios4.4.3.tar.gz [following]
--2025-09-24 11:04:04--  https://assets.nagios.com/redirects/redirect.php?url=https://assets.nagios.com/downloads/nagioscore/releases/nagios4.4.3.tar.gz
Reusing existing connection to assets.nagios.com:443.
HTTP request sent, awaiting response... 404 Not Found
2025-09-24 11:04:04 ERROR 404: Not Found.
```

Step 3 – Install Nagios Core Service

After installing required dependencies and adding user accounts and Nagios core installation.
Download latest Nagios core service from the official site.

```
manjusha@apsit:~$cd /opt/

manjusha@apsit:~$sudo wget
https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.3.tar.gz
manjusha@apsit:~$sudo tar xzf nagios-4.4.3.tar.gz
```

```
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt$ sudo wget https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.3.tar.gz
--2025-09-24 11:04:48--  https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.3.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: 11302228 (11M) [application/x-gzip]
Saving to: 'nagios-4.4.3.tar.gz.2'

nagios-4.4.3.tar.gz.2           100%[================================================================================>]  10.78M  2.88MB/s   in 3.7s

2025-09-24 11:04:53 (2.88 MB/s) - 'nagios-4.4.3.tar.gz.2' saved [11302228/11302228]

apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt$ sudo tar xzf nagios-4.4.3.tar.gz
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt$ ls
containerd   google       nagios-4.4.3.tar.gz    nagios-4.4.3.tar.gz.2  nagios-plugins-2.2.1        nagios-plugins-2.2.1.tar.gz.1  tomcat
Dockerhub    nagios-4.4.3  nagios-4.4.3.tar.gz.1  nagios-plugins-        nagios-plugins-2.2.1.tar.gz  nagios-plugins-2.2.1.tar.gz.2  zaproxy
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt$ cd nagios-4.4.3
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ ls
aclocal.m4       common       configure      doxy.conf     indent.sh    LICENSE     module         README.md    t        update-version
autoconf-macros  config.guess  configure.ac   functions     INSTALLING   Makefile    nagios.spec    sample-config  tap    UPGRADING
base             config.log    contrib        html          install-sh  Makefile.in  nagios.sysconfig startup     test    worker
cgi              config.status CONTRIBUTING.md include       LEGAL       make-tarball pkginfo        subst        THANKS  xdata
Changelog        config.sub    docs           indent-all.sh lib         mkpackage    pkginfo.in     subst.in     t-tap
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo ./c
cgi/         common/       config.guess   config.status config.sub    configure      contrib/
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo ./configure --with-command-group=nagcmd
checking for a BSD-compatible install... /usr/bin/install -c
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
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
checking whether make sets $(MAKE)... yes
checking whether ln -s works... yes
checking for strip... /usr/bin/strip
checking how to run the C preprocessor... gcc -E
```

After extracting naviate to nagios source directory and install using make command.

```
manjusha@apsit:~$cd nagios-4.4.3

manjusha@apsit:~$sudo ./configure --with-command-group=nagcmd
manjusha@apsit:~$sudo make all
manjusha@apsit:~$sudo make install
```

```
manjusha@apsit:~$sudo make install-init
manjusha@apsit:~$sudo make install-daemoninit
manjusha@apsit:~$sudo make install-config
manjusha@apsit:~$sudo make install-commandmode
manjusha@apsit:~$sudo make install-exfoliation
```

Now copy event handlers scripts under libexec directory. These binaries provides multiple events triggers for your Nagios web interface.

```
manjusha@apsit:~$sudo cp -R contrib/eventhandlers/ /usr/local/nagios/libexec/

manjusha@apsit:~$sudo chown -R nagios:nagios
/usr/local/nagios/libexec/eventhandlers
```

```
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo make install-init
/usr/bin/install -c -m 755 -d -o root -g root /lib/systemd/system
/usr/bin/install -c -m 755 -o root -g root startup/default-service /lib/systemd/system/nagios.service
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo make install-daemoninit
/usr/bin/install -c -m 755 -d -o root -g root /lib/systemd/system
/usr/bin/install -c -m 755 -o root -g root startup/default-service /lib/systemd/system/nagios.service

*** Init script installed ***

apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo make install-config
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc/objects
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/nagios.cfg /usr/local/nagios/etc/nagios.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/cgi.cfg /usr/local/nagios/etc/cgi.cfg
/usr/bin/install -c -b -m 660 -o nagios -g nagios sample-config/resource.cfg /usr/local/nagios/etc/resource.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/templates.cfg /usr/local/nagios/etc/objects/templates.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/commands.cfg /usr/local/nagios/etc/objects/commands.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/contacts.cfg /usr/local/nagios/etc/objects/contacts.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/timeperiods.cfg /usr/local/nagios/etc/objects/timeperiods.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/localhost.cfg /usr/local/nagios/etc/objects/localhost.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/windows.cfg /usr/local/nagios/etc/objects/windows.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/printer.cfg /usr/local/nagios/etc/objects/printer.cfg
/usr/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/switch.cfg /usr/local/nagios/etc/objects/switch.cfg

*** Config files installed ***

Remember, these are *SAMPLE* config files.  You'll need to read
the documentation for more information on how to actually define
services, hosts, etc. to fit your particular needs.

apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo make install-commandmode
/usr/bin/install -c -m 775 -o nagios -g nagcmd -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***

apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo make install-exfoliation

*** Exfoliation theme installed ***
NOTE: Use 'make install-classicui' to revert to classic Nagios theme

apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo cp -R contrib/eventhandlers/ /usr/local/nagios/libexec/
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$ sudo chown -R nagios:nagios /usr/local/nagios/libexec/eventhandlers
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-4.4.3$
```

Step 4 – Setup Apache with Authentication

Now create an Apache configuration file for your Nagios server as below:

```
manjusha@apsit:~$sudo nano /etc/apache2/conf-available/nagios.conf
```

Add below lines to nagios.conf file.

ScriptAlias /nagios/cgi-bin "/usr/local/nagios/sbin"

```
<Directory "/usr/local/nagios/sbin">

    Options ExecCGI
    AllowOverride None
    Order allow,deny
    Allow from all
    AuthName "Restricted Area"
    AuthType Basic
    AuthUserFile /usr/local/nagios/etc/htpasswd.users
    Require valid-user
</Directory>

Alias /nagios "/usr/local/nagios/share"
```

```
<Directory "/usr/local/nagios/share">
    Options None
    AllowOverride None
    Order allow,deny
    Allow from all
    AuthName "Restricted Area"
    AuthType Basic
    AuthUserFile /usr/local/nagios/etc/htpasswd.users
    Require valid-user
</Directory>
```

To setup apache authentication for user **nagiosadmin**

```
manjusha@apsit:~$sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users
nagiosadmin
```

Enable Apache configuration and restart Apache service to make the new settings take effect.cd

```
manjusha@apsit:~$sudo a2enconf nagios
manjusha@apsit:~$sudo a2enmod cgi rewrite
manjusha@apsit:~$sudo service apache2 restart
```


Step 5 – Installing Nagios Plugins

After installing and configuring Nagios core service, Download latest nagios-plugins source and install using follocdwing commands.

```
manjusha@apsit:~$cd /opt
manjusha@apsit:~$sudo wget http://www.nagios-plugins.org/download/nagios-
plugins-2.2.1.tar.gz
manjusha@apsit:~$sudo tar xzf nagios-plugins-2.2.1.tar.gznagios
```

```
manjusha@apsit:~$cd nagios-plugins-2.2.1
```

Now compile and install Nagios plugins

```
manjusha@apsit:~$sudo   ./configure   --with-nagios-user=nagios   --with-nagios-group=nagios --with-openssl
manjusha@apsit:~$sudo make
manjusha@apsit:~$sudo make install
```

```
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-plugins-2.2.1$ sudo make
make  all-recursive
make[1]: Entering directory '/opt/nagios-plugins-2.2.1'
Making all in gl
make[2]: Entering directory '/opt/nagios-plugins-2.2.1/gl'
rm -f alloca.h-t alloca.h && \
{ echo '/* DO NOT EDIT! GENERATED AUTOMATICALLY! */'; \
  cat ./alloca.in.h; \
} > alloca.h-t && \
mv -f alloca.h-t alloca.h
/bin/mkdir -p arpa
rm -f arpa/inet.h-t arpa/inet.h && \
{ echo '/* DO NOT EDIT! GENERATED AUTOMATICALLY! */'; \
  sed -e 's|@''GUARD_PREFIX''@|GL|g' \
      -e 's|@''INCLUDE_NEXT''@|include_next|g' \
      -e 's|@''PRAGMA_SYSTEM_HEADER''@|#pragma GCC system_header|g' \
```

Ste

p 6 – Verify Settings

Use the Nagios commands to verify the Nagios installation and configuration file. After successfully verify start the Nagios core service.

```
manjusha@apsit:~$/usr/local/nagios/bin/nagios                           -v
/usr/local/nagios/etc/nagios.cfg
manjusha@apsit:~$ sudo service nagios start
```

Also configure Nagios to auto start on system boot.

```
make[2]: Leaving directory '/opt/nagios-plugins-2.2.1'
make[1]: Leaving directory '/opt/nagios-plugins-2.2.1'
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-plugins-2.2.1$ /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
bash: /usr/local/nagios/bin/nagios: Permission denied
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-plugins-2.2.1$ sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

Nagios Core 4.4.3
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2019-01-15
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 24 commands.
        Checked 5 time periods.
        Checked 0 host escalations.
        Checked 0 service escalations.
Checking for circular paths...
        Checked 1 hosts
        Checked 0 service dependencies
        Checked 0 host dependencies
        Checked 5 timeperiods
Checking global event handlers...
Checking obsessive compulsive processor commands...
Checking misc settings...

Total Warnings: 0
Total Errors:   0

Things look okay - No serious problems were detected during the pre-flight check
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-plugins-2.2.1$ sudo service nagios start
apsit@apsit-HP-280-Pro-G6-Microtower-PC:/opt/nagios-plugins-2.2.1$
```

Step 7 – Access Nagios Web Interface

Access your nagios setup by access nagios server using hostname or ip address followed by /nagios.

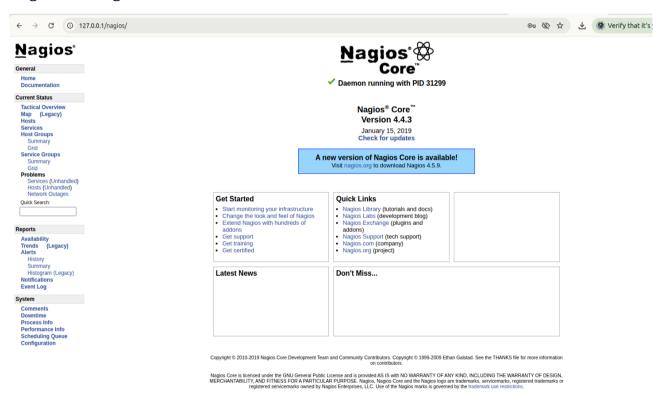**http://127.0.0.1/nagios/**

Prompting for Apache Authentication Password –

username: nagiosadmin
Password : 123456 (which you enter while configuration)

Nagios After login screen –

We have successfully installed and configured Nagios Monitoring Server core service in our system now we need to install NRPE on all remote Linux systems to monitor with Nagios.

Conclusion: Successfully eastablished nagios and apache server.