Part 4 - Install Nagios

Install the Nagios Server

In this step, we will install the required software to use nagios which utilises the Round Robin Database tool (RRDtool). For more information refer to https://www.nagios.org

The steps to complete this section are:

- Update software
- Install required software
- Install nagios
- Configure nagios
- Add targets to monitor

To install the required files open a terminal window and ssh to the server that will be used to install nagios.

```
ssh apnic@192.168.30.10
```

NOTE: Type `yes` if asked about wanting to continue connecting

Password = `training`

Update the software repository for Ubuntu

```
sudo apt-get update && sudo apt-get -y dist-upgrade
```

Password = `training`

Add a new repository for an older version of php. This step can be skipped if the LibreNMS lab was completed.

```
sudo add-apt-repository ppa:ondrej/php
```

Please **enter** to continue to add the repo.

Install required software

```
sudo apt-get install -y autoconf gcc libc6 make wget unzip apache2 php \
libapache2-mod-php8.1 libgd-dev libmcrypt-dev libssl-dev bc \
gawk dc build-essential snmp libnet-snmp-perl gettext
```

Download the nagios source code and extract the tar file.

```
cd /tmp
wget -O nagioscore.tar.gz https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.4.5.tar.gz
tar xzf nagioscore.tar.gz
```

Before building the Nagios source code, configure and specify the Apache web server configuration directory

```
cd /tmp/nagioscore-nagios-4.4.5/
sudo ./configure --with-httpd-conf=/etc/apache2/sites-enabled
```

```
*** Configuration summary for nagios 4.4.5 2019-08-20 ***:

 General Options:
 -------------------------
        Nagios executable:  nagios
        Nagios user/group:  nagios,nagios
       Command user/group:  nagios,nagios
             Event Broker:  yes
        Install ${prefix}:  /usr/local/nagios
    Install ${includedir}:  /usr/local/nagios/include/nagios
                Lock file:  /run/nagios.lock
   Check result directory:  /usr/local/nagios/var/spool/checkresults
           Init directory:  /lib/systemd/system
  Apache conf.d directory:  /etc/apache2/sites-enabled
             Mail program:  /bin/mail
                  Host OS:  linux-gnu
          IOBroker Method:  epoll

 Web Interface Options:
 ------------------------
                 HTML URL:  http://localhost/nagios/
                  CGI URL:  http://localhost/nagios/cgi-bin/
 Traceroute (used by WAP):


Review the options above for accuracy.  If they look okay,
type 'make all' to compile the main program and CGIs.

apnic@group30:/tmp/nagioscore-nagios-4.4.5$
```

Compile nagios with this command:

```
sudo make all
```

Create a Nagios user and group. These will be used to run the Nagios process:

```
sudo make install-groups-users
```

Add the nagios user to the www-data group

```
sudo usermod -a -G nagios www-data
```

Run these make commands to install Nagios binary files, service files, and its sample configuration files:

```
sudo make install
sudo make install-daemoninit
sudo make install-commandmode
sudo make install-config
```

To use Apache to serve Nagios' web interface, run the following to install the Apache configuration files and configure its settings:

```
sudo make install-webconf
```

Enable the Apache rewrite and cgi modules with the a2enmod command:

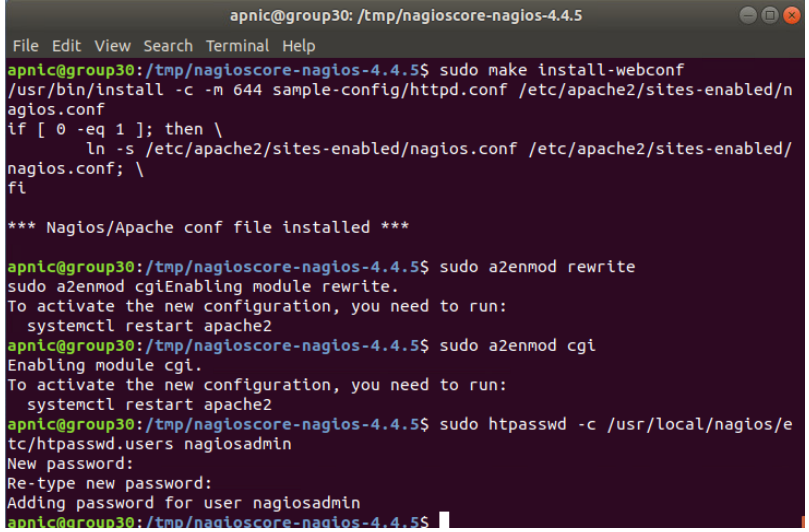
```
sudo a2enmod rewrite
sudo a2enmod cgi
```

Create an Apache user account that can be used to log into Nagios.

```
sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
```

Password = `training`

> This command will create a user account called **nagiosadmin** and will be prompted to provide a password for the account. Remember the password, as it will be needed to access the Nagios web interface.



Restart Apache to load the new configuration.

```
sudo systemctl restart apache2
```

Access the Web Interface

Nagios is now running, to confirm this you need to log into the Nagios Web Interface. Point the web browser to the ip address or Fully Qualified Domain Name (FQDN) of your Nagios Core server.

Use Firefox and browse to the Nagios HTTP server `http://group30-server.apnictraining.net/nagios`

Username = `nagiosadmin` Password = `training`

> Only the Nagios Core engine has been installed. For the next section it is necessary to install some of the Nagios Plugins. The official Nagios Plugins package contains over 50 plugins that allow you to monitor basic services such as uptime, disk usage, swap usage, NTP, and others. For more information refer to https://www.nagios.org/downloads/nagios-plugins/

To install the required plugins, return to the open terminal window to download and extract the archive.

```
cd /tmp
wget --no-check-certificate -O nagios-plugins.tar.gz https://github.com/nagios-plugins/nagios-plugins/archive/release-2.2.1.tar.
tar zxf nagios-plugins.tar.gz
```

Compile and install the plugins package.

```
cd /tmp/nagios-plugins-release-2.2.1/
sudo ./tools/setup
```

Run the configure script to get ready to install Nagios plugin packages.

```
sudo ./configure
```

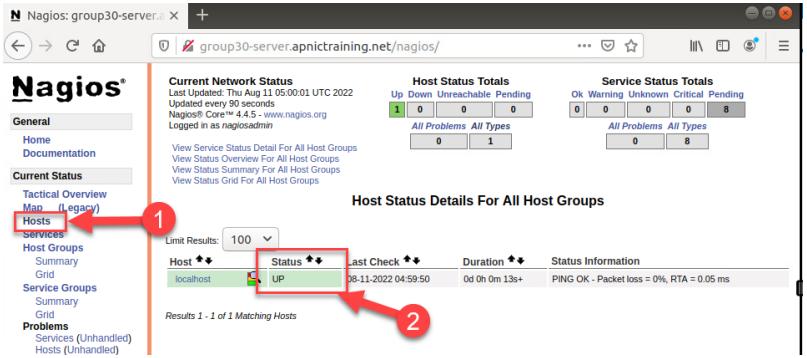
Run the make script and install Nagios plugin packages.

```
sudo make && sudo make install
```

Restart the nagios service

```
sudo systemctl restart nagios
```

Use Firefox and browse to the Nagios HTTP server `http://group30-server.apnictraining.net/nagios` On the left-hand menu select host and check the status of **localhost**.



Configure where nagios will look for configuration files for each server that will be monitored. Return to the open terminal window and type the following:

```
grep -n "\#cfg_dir" /usr/local/nagios/etc/nagios.cfg
sudo sed -i 's/\#cfg\_dir/cfg_dir/' /usr/local/nagios/etc/nagios.cfg
cd /usr/local/nagios/etc/
sudo mkdir servers printers switches routers
cd ~
```

To monitor any hosts with Nagios, add configuration files for each host specifying what to monitor into the **/usr/local/nagios/etc/servers** directory. Printers, switches and routers can also be monitored the same way.

On the Nagios server, create a new configuration file for each of the remote hosts that is to be monitored. The following example is to monitor core-router.apnictraining.net

Create a new file called **core-router.cfg** and copy to /usr/local/nagios/etc/servers

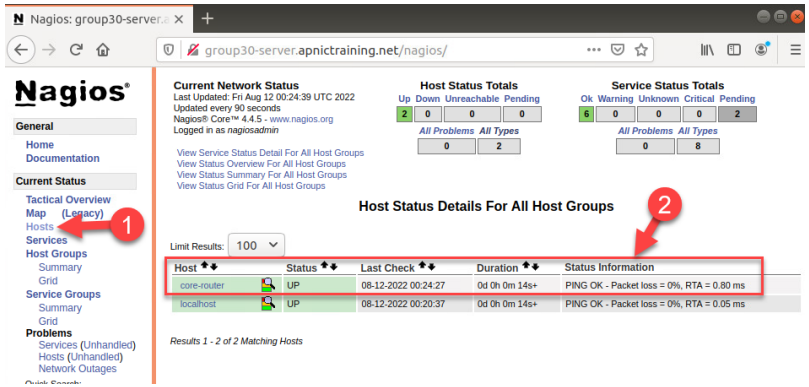
```
cat > ~/core-router.cfg <<EOL

define host {
    use                     generic-host
    host_name               core-router
    alias                   core-router
    address                 core-router.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
}

EOL

sudo cp ~/core-router.cfg /usr/local/nagios/etc/servers
```

If Part 1 SNMP Lab was skipped, the router will need to be setup before continuing to the next section - Configure SNMP on a Cisco device

Restart the nagios service

```
sudo systemctl restart nagios
```

After several minutes, Nagios will check the new hosts.



Create a new file called **core-switch.cfg** and copy to /usr/local/nagios/etc/servers

```
cat > ~/core-switch.cfg <<EOL

define host {
    use                     generic-host
    host_name               core-switch
    alias                   core-switch
    address                 core-switch.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
}

EOL

sudo cp ~/core-switch.cfg /usr/local/nagios/etc/servers
```

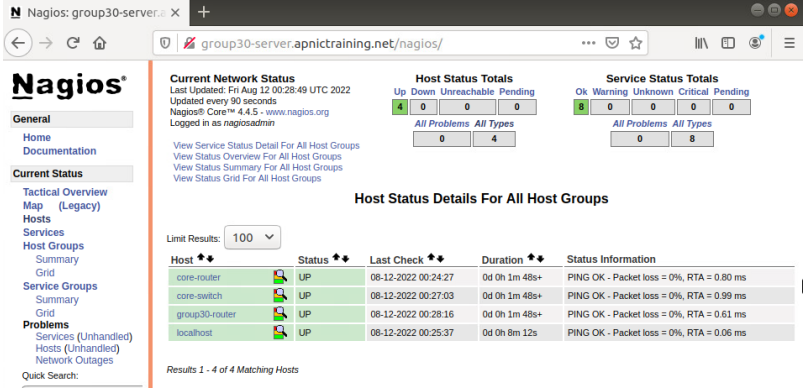
Create a new file called **group30-router.cfg** and copy to /usr/local/nagios/etc/servers

```
cat > ~/group30-router.cfg <<EOL

define host {
    use                     generic-host
    host_name               group30-router
    alias                   group30-router
    address                 group30-router.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
}

EOL

sudo cp ~/group30-router.cfg /usr/local/nagios/etc/servers
```

Restart the nagios service

```
sudo systemctl restart nagios
```

Use Firefox and browse to the Nagios HTTP server `http://group30-server.apnictraining.net/nagios` and confirm the new hosts can be seen.



In previous steps Nagios has been configured to monitor the uptime. Nagios will only tell if the host is up or down.

To monitor a service rather than a host is up or down, return to the open terminal window and type the following:

Create a new file called **group30-server.cfg** and copy to /usr/local/nagios/etc/servers

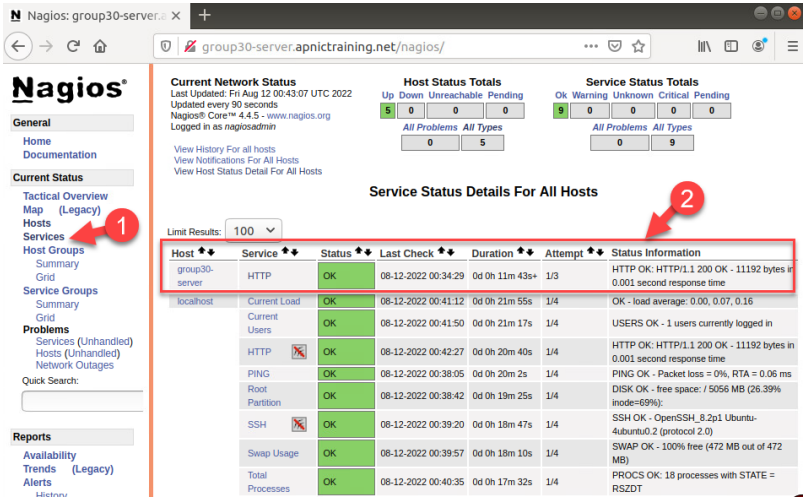
```
cat > ~/group30-server.cfg <<EOL

define host {
    use                     generic-host
    host_name               group30-server
    alias                   group30-server
    address                 group30-server.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
}

define service {
    use                     generic-service
    host_name               group30-server
    service_description     HTTP
    check_command           check_http
}

EOL

sudo cp ~/group30-server.cfg /usr/local/nagios/etc/servers
```

The use generic-service directive tells Nagios to inherit the values of a service template called generic-service , which is predefined by Nagios.

Restart the nagios service

```
sudo systemctl restart nagios
```

Use Firefox and browse to the Nagios HTTP server `http://group30-server.apnictraining.net/nagios` and open the services tab to verify.



The keyword parents define the parent-child relationship between nodes. For example as per the lab topology below is the connectivity diagram:

```
group30-server -> group30-router -> core-switch -> core-router
```

Where core-router is parent of core-switch and core-switch is parent of groupX-router.

To update each of the nodes configuration with the details about the parent link. Type the following commands:

```
sudo sed -i '/n\_period/a \ \ \ \ parents                core\-router' /usr/local/nagios/etc/servers/core-switch.cfg
sudo sed -i '/n\_period/a \ \ \ \ parents                core\-switch' /usr/local/nagios/etc/servers/group30-router.cfg
sudo sed -i '/n\_period/a \ \ \ \ parents                group30\-router' /usr/local/nagios/etc/servers/group30-server.cfg
```

You can edit the files with vi or nano and add the line at the end of the file instead of using the sed command. To view the changes

```
cd /usr/local/nagios/etc/servers/
cat *.cfg
```

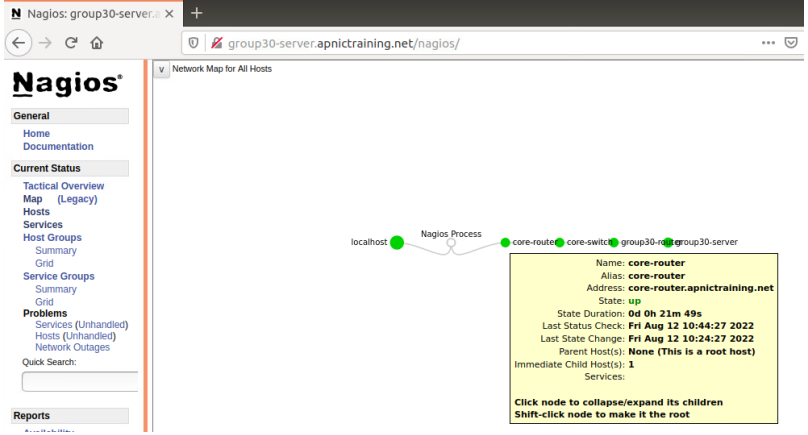
Look for the line that contains the word **parents**.

```
apnic@group30:~$     cd /usr/local/nagios/etc/servers/
apnic@group30:/usr/local/nagios/etc/servers$     cat *.cfg

define host {
    use                     generic-host
    host_name               core-router
    alias                   core-router
    address                 core-router.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
}


define host {
    use                     generic-host
    host_name               core-switch
    alias                   core-switch
    address                 core-switch.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
    parents                 core-router
}


define host {
    use                     generic-host
    host_name               group30-router
    alias                   group30-router
    address                 group30-router.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
    parents                 core-switch
}


define host {
    use                     generic-host
    host_name               group30-server
    alias                   group30-server
    address                 group30-server.apnictraining.net
    check_command           check-host-alive
    max_check_attempts      5
    check_period            24x7
    notification_interval   30
    notification_period     24x7
    parents                 group30-router
}

define service {
    use                     generic-service
    host_name               group30-server
    service_description     HTTP
    check_command           check_http
}

apnic@group30:/usr/local/nagios/etc/servers$
```

Restart the nagios service

```
sudo systemctl restart nagios
```

Use Firefox and browse to the Nagios HTTP server `http://group30-server.apnictraining.net/nagios` and open the map tab to verify.



Please click the Next button to begin Part 5 of this Lab.