Name: Zamora, Angelo E.	**Date Performed:** 10-14-2024
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Instructor: Engr. Robin Valenzuela	**Semester and SY:** 1st Semester 2024 - 2025

Activity 8: Install, Configure, and Manage Availability Monitoring tools

1. Objectives

Create and design a workflow that installs, configure and manage enterprise monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.

2. Discussion

Availability monitoring is a type of monitoring tool that we use if the certain workload is up or reachable on our end. Site downtime can lead to loss of revenue, reputational damage and severe distress. Availability monitoring prevents adverse situations by checking the uptime of infrastructure components such as servers and apps and notifying the webmaster of problems before they impact on business.

3. Tasks

1. Create a playbook that installs Nagios in both Ubuntu and CentOS. Apply the concept of creating roles.
2. Describe how you did step 1. (Provide screenshots and explanations in your report. Make your report detailed such that it will look like a manual.)
3. Show an output of the installed Nagios for both Ubuntu and CentOS.
4. Make sure to create a new repository in GitHub for this activity.

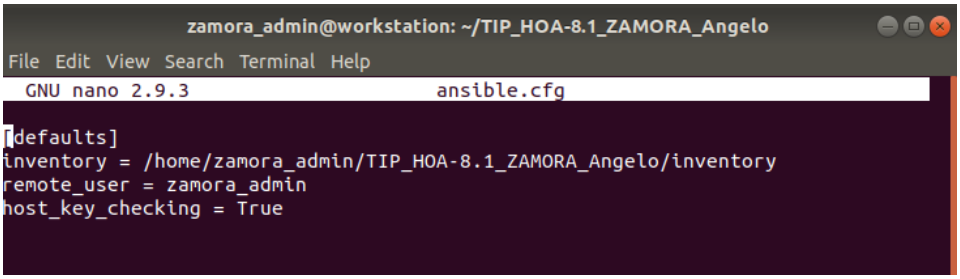
4. Output (screenshots and explanations)

- Step 1: Creating Repository

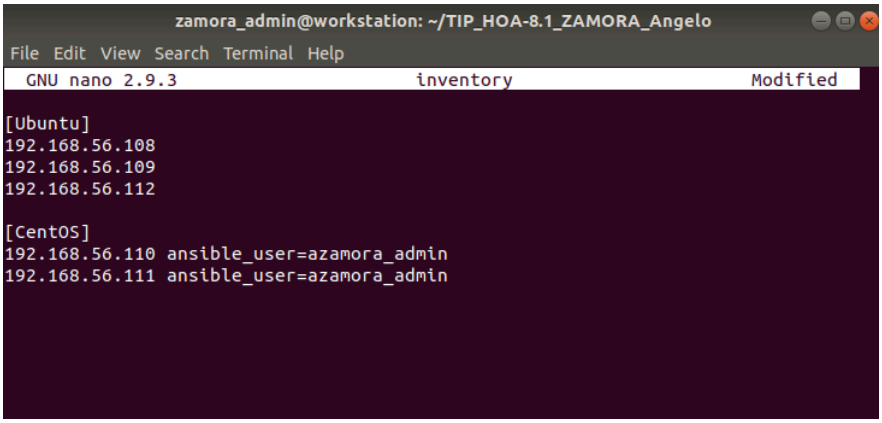
```
zamora_admin@workstation:~/TIP_HOA-8.1_ZAMORA_Angelo$ ls
ansible.cfg  inventory  README.md  roles
zamora_admin@workstation:~/TIP_HOA-8.1_ZAMORA_Angelo$
```

- Create a repo for the HOA 8.1 that contains the needed files to execute the task

Ansible Config File:



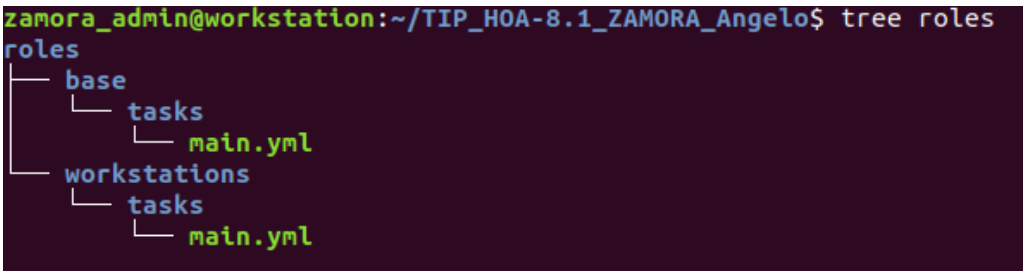
Inventory:



Here are my managed nodes that contain 3 Ubuntu Nodes and 2 CentOS Nodes.

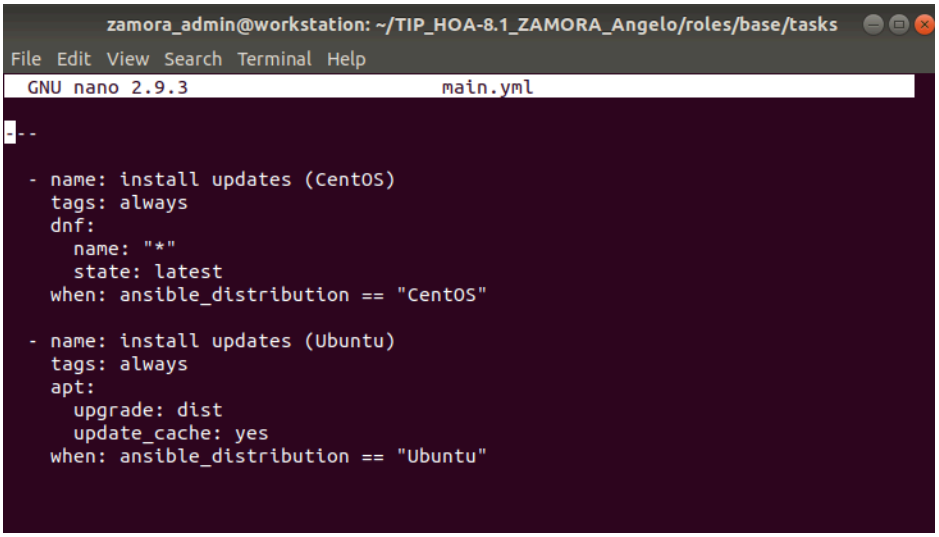
192.168.56.108 - Server 1
192.168.56.109 - Server 2
192.168.56.112 - Server 3
192.168.56.110 - CentOS Node 1
192.168.56.111 - CentOS Node 2

- Under the roles create a roles directory and under roles create two directories named base and workstations. Under each role's directory create another directory named tasks. Attached image should show the directory's content.



Step 2: Create the Plays for base and Workstations:

- Edit the main.yml under the base/tasks directory and the content should be:



Explanation: This one contains the play to update each distribution's packages and updates both for CentOS and Ubuntu and this will be our first play for the main playbook.

- Edit the main.yml under the workstations/tasks and the content should be like this:

```
Unset
---

  - name: Install required dependencies on Ubuntu
      apt:
      name:
      - gcc
      - libc6
      - make
      - wget
      - unzip
      - apache2
      - php
      - libgd-dev
      - openssl
      - libssl-dev
      - autoconf
      - bc
      - gawk
      - dc
      - build-essential
```

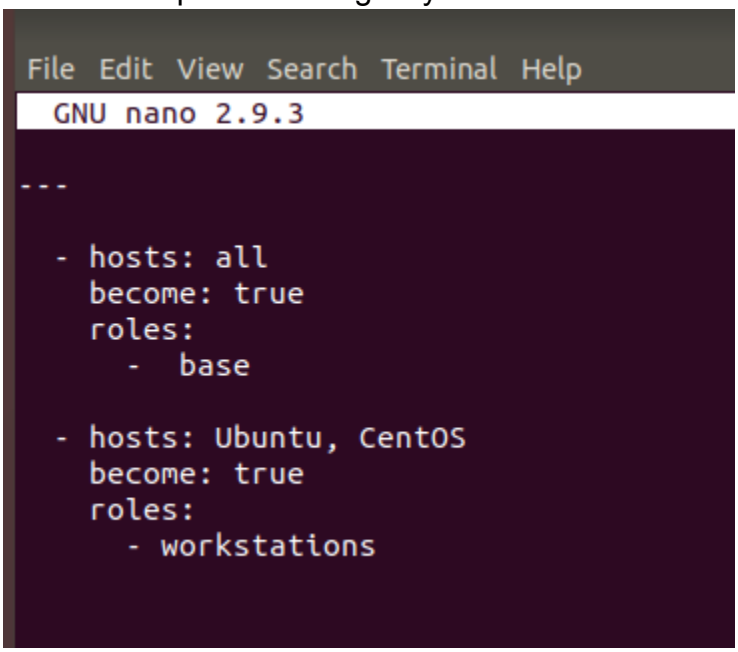
```
      - snmp
      - libnet-snmp-perl
      - gettext
      state: present
      when: ansible_distribution == "Ubuntu"

  - name: Install required dependencies on CentOS
      yum:
      name:
      - gcc
      - glibc
      - glibc-common
      - wget
      - unzip
      - httpd
      - php
      - gd
      - gd-devel
      - perl
      - postfix
      - openssl
      - openssl-devel
      - make
      - autoconf
      state: present
      when: ansible_distribution == "CentOS"

  - name: Download Nagios Core source code
      get_url:
      url:
"https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.5.6.tar.gz"
      dest: /tmp/nagios-4.5.6.tar.gz

  - name: Extract Nagios source code
      unarchive:
      src: /tmp/nagios-4.5.6.tar.gz
      dest: /tmp
      remote_src: yes

  - name: Download Nagios Plugins
      get_url:
      url: "https://nagios-plugins.org/download/nagios-plugins-2.4.11.tar.gz"
      dest: /tmp/nagios-plugins-2.4.11.tar.gz

  - name: Extract Nagios Plugins
      unarchive:
      src: /tmp/nagios-plugins-2.4.11.tar.gz
      dest: /tmp
      remote_src: yes
```

```
  - name: Create Nagios group
      group:
      name: nagios

  - name: Create Nagios user and group
      user:
      name: nagios
      group: nagios

  - name: Create nagcmd group
      group:
      name: nagcmd

  - name: Add nagios and apache/httpd users to nagcmd group
      user:
      name: "{{ item }}"
      groups: nagcmd
      append: yes
      loop:
      - nagios
      - "{{ 'www-data' if ansible_os_family == 'Debian' else 'apache' }}"

  - name: Compile and install Nagios Core
      shell: |
      cd /tmp/nagios-4.5.6
      ./configure --with-command-group=nagcmd
      make all
      make install
      make install-init
      make install-commandmode
      make install-config
      make install-webconf
      args:
      creates: /usr/local/nagios/bin/nagios

  - name: Install Nagios Plugins
      shell: |
      cd /tmp/nagios-plugins-2.4.11
      ./configure --with-nagios-user=nagios --with-nagios-group=nagios
      make
      make install
      args:
      creates: /usr/local/nagios/libexec/check_http

  - name: Set Nagios admin password
      command: htpasswd -b -c /usr/local/nagios/etc/htpasswd.users
nagios_admin "123qweasdzxc"

  - name: Enable and start Apache/Httpd service on Ubuntu
      service:
```

```
      name: apache2
      enabled: yes
      state: started
      when: ansible_distribution == "Ubuntu"

  - name: Enable and start Apache/Httpd service on CentOS
      service:
      name: httpd
      enabled: yes
      state: started
      when: ansible_distribution == "CentOS"

  - name: Enable and start Nagios service
      service:
      name: nagios
      enabled: yes
      state: started

  - name: Enable external command execution in Nagios
      lineinfile:
      path: /usr/local/nagios/etc/nagios.cfg
      regexp: '^#?check_external_commands='
      line: 'check_external_commands=1'

  - name: Restart Nagios service to apply changes
      service:
      name: nagios
      state: restarted

  - name: Restart Apache/Httpd to apply changes on Ubuntu
      service:
      name: apache2
      state: restarted
      when: ansible_distribution == "Ubuntu"

  - name: Restart Apache/Httpd to apply changes on CentOS
      service:
      name: httpd
      state: restarted
      when: ansible_distribution == "CentOS"
```

Explanation: Here is the setup and installation of Nagios. Here we used the url method to install the Nagios through the main source. We've also added or set the user's login which will be used for loggin in the localhost via nagios.

Step 3: Create the main playbook
Under the repo create nagios.yml and edit the file:



Explanation: This will activate the roles folder and run the main.yml files for each roles indicated here.

This is the output of the playbook:

```
zamora_admin@workstation:~/TIP_HOA-8.1_ZAMORA_Angelo$ ansible-playbook --ask-become-pass nagios.yml
SUDO password:

PLAY [all] *********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.108]
ok: [192.168.56.110]
ok: [192.168.56.109]
ok: [192.168.56.111]
ok: [192.168.56.112]

TASK [base : install updates (CentOS)] *****************************************
skipping: [192.168.56.108]
skipping: [192.168.56.109]
skipping: [192.168.56.112]
ok: [192.168.56.111]
ok: [192.168.56.110]

TASK [base : install updates (Ubuntu)] *****************************************
skipping: [192.168.56.110]
skipping: [192.168.56.111]
ok: [192.168.56.109]
ok: [192.168.56.112]
ok: [192.168.56.108]

PLAY [Ubuntu, CentOS] **********************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.109]
ok: [192.168.56.112]
ok: [192.168.56.111]
ok: [192.168.56.110]
ok: [192.168.56.108]

TASK [workstations : Install required dependencies on Ubuntu] ******************
skipping: [192.168.56.110]
skipping: [192.168.56.111]
changed: [192.168.56.109]
changed: [192.168.56.108]
changed: [192.168.56.112]

TASK [workstations : Install required dependencies on CentOS] ******************
skipping: [192.168.56.108]
skipping: [192.168.56.109]
skipping: [192.168.56.112]
changed: [192.168.56.110]
changed: [192.168.56.111]
```

```
TASK [workstations : Download Nagios Core source code] *************************
changed: [192.168.56.108]
changed: [192.168.56.109]
changed: [192.168.56.112]
changed: [192.168.56.111]
changed: [192.168.56.110]

TASK [workstations : Extract Nagios source code] *******************************
changed: [192.168.56.108]
changed: [192.168.56.109]
changed: [192.168.56.112]
changed: [192.168.56.110]
changed: [192.168.56.111]

TASK [workstations : Download Nagios Plugins] **********************************
changed: [192.168.56.109]
changed: [192.168.56.111]
changed: [192.168.56.108]
changed: [192.168.56.112]
changed: [192.168.56.110]

TASK [workstations : Extract Nagios Plugins] ***********************************
changed: [192.168.56.108]
changed: [192.168.56.109]
changed: [192.168.56.112]
changed: [192.168.56.110]
changed: [192.168.56.111]

TASK [workstations : Create Nagios group] **************************************
ok: [192.168.56.109]
ok: [192.168.56.112]
ok: [192.168.56.108]
ok: [192.168.56.111]
ok: [192.168.56.110]

TASK [workstations : Create Nagios user and group] *****************************
ok: [192.168.56.109]
ok: [192.168.56.110]
ok: [192.168.56.108]
ok: [192.168.56.111]
ok: [192.168.56.112]
```

```
TASK [workstations : Create nagcmd group] ***********************************
changed: [192.168.56.108]
changed: [192.168.56.111]
changed: [192.168.56.109]
changed: [192.168.56.112]
changed: [192.168.56.110]

TASK [workstations : Add nagios and apache/httpd users to nagcmd group] ********
changed: [192.168.56.112] => (item=nagios)
changed: [192.168.56.109] => (item=nagios)
changed: [192.168.56.108] => (item=nagios)
changed: [192.168.56.110] => (item=nagios)
changed: [192.168.56.111] => (item=nagios)
changed: [192.168.56.112] => (item=www-data)
changed: [192.168.56.109] => (item=www-data)
changed: [192.168.56.108] => (item=www-data)
changed: [192.168.56.110] => (item=apache)
changed: [192.168.56.111] => (item=apache)

TASK [workstations : Compile and install Nagios Core] ************************
changed: [192.168.56.111]
changed: [192.168.56.110]
changed: [192.168.56.112]
changed: [192.168.56.108]
changed: [192.168.56.109]

TASK [workstations : Install Nagios Plugins] *********************************
changed: [192.168.56.108]
changed: [192.168.56.112]
changed: [192.168.56.109]
changed: [192.168.56.111]
changed: [192.168.56.110]

TASK [workstations : Set Nagios admin password] ******************************
changed: [192.168.56.108]
changed: [192.168.56.109]
changed: [192.168.56.112]
changed: [192.168.56.110]
changed: [192.168.56.111]

TASK [workstations : Enable and start Apache/Httpd service on Ubuntu] **********
skipping: [192.168.56.110]
skipping: [192.168.56.111]
ok: [192.168.56.108]
ok: [192.168.56.109]
ok: [192.168.56.112]
```

```
TASK [workstations : Enable and start Apache/Httpd service on CentOS] **********
skipping: [192.168.56.108]
skipping: [192.168.56.109]
skipping: [192.168.56.112]
ok: [192.168.56.111]
ok: [192.168.56.110]

TASK [workstations : Enable and start Nagios service] ************************
ok: [192.168.56.110]
ok: [192.168.56.111]
changed: [192.168.56.108]
changed: [192.168.56.112]
changed: [192.168.56.109]

TASK [workstations : Enable external command execution in Nagios] ************
ok: [192.168.56.109]
ok: [192.168.56.112]
ok: [192.168.56.108]
ok: [192.168.56.110]
ok: [192.168.56.111]

TASK [workstations : Restart Nagios service to apply changes] *****************
changed: [192.168.56.109]
changed: [192.168.56.108]
changed: [192.168.56.112]
changed: [192.168.56.110]
changed: [192.168.56.111]

TASK [workstations : Restart Apache/Httpd to apply changes on Ubuntu] **********
skipping: [192.168.56.110]
skipping: [192.168.56.111]
changed: [192.168.56.108]
changed: [192.168.56.112]
changed: [192.168.56.109]

TASK [workstations : Restart Apache/Httpd to apply changes on CentOS] **********
skipping: [192.168.56.108]
skipping: [192.168.56.109]
skipping: [192.168.56.112]
changed: [192.168.56.111]
changed: [192.168.56.110]
```

```
TASK [workstations : Restart Apache/Httpd to apply changes on CentOS] ********
skipping: [192.168.56.108]
skipping: [192.168.56.109]
skipping: [192.168.56.112]
changed: [192.168.56.111]
changed: [192.168.56.110]

PLAY RECAP *********************************************************************
192.168.56.108             : ok=20   changed=13   unreachable=0    failed=0
192.168.56.109             : ok=20   changed=13   unreachable=0    failed=0
192.168.56.110             : ok=20   changed=12   unreachable=0    failed=0
192.168.56.111             : ok=20   changed=12   unreachable=0    failed=0
192.168.56.112             : ok=20   changed=13   unreachable=0    failed=0
```

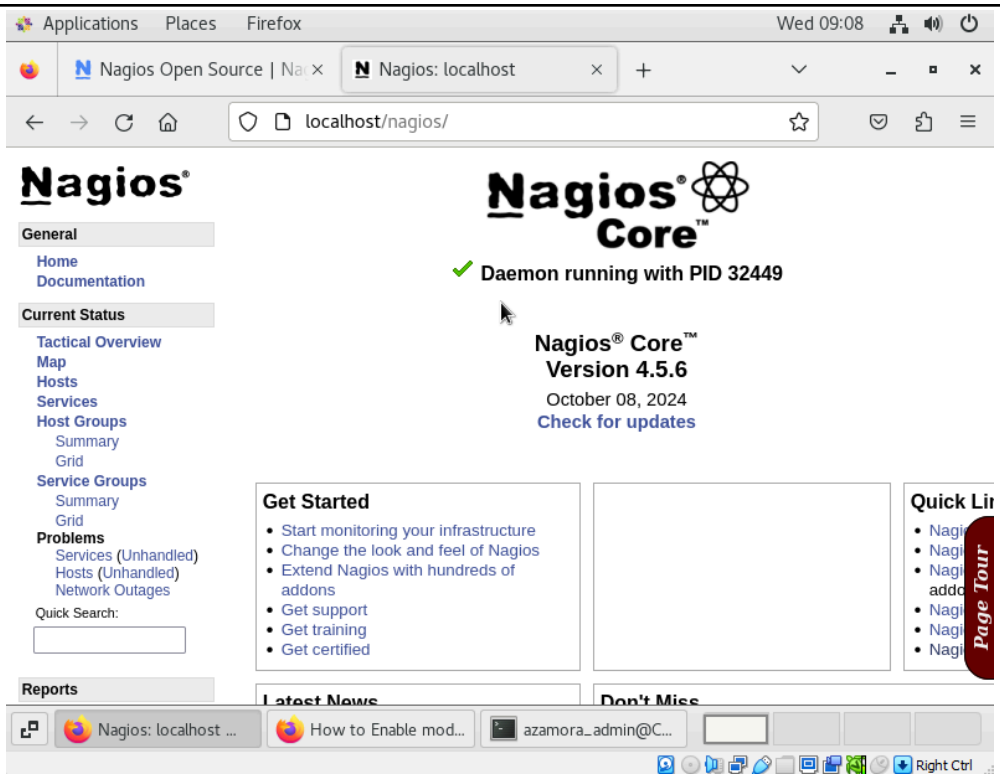
Step 4: Checking if Nagios is installed

- Use systemctl status nagios to your manage node if nagios is installed in your machine. Then type in your local browser localhost/nagios in every Node.

CentOS Nodes:

```
[azamora_admin@CentOS ~]$ systemctl status nagios
● nagios.service - Nagios Core 4.5.6
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; vendor preset: disa
bled)
   Active: active (running) since Wed 2024-10-16 09:02:19 PST; 3s ago
     Docs: https://www.nagios.org/documentation
  Process: 32443 ExecStopPost=/bin/rm -f /usr/local/nagios/var/rw/nagios.cmd (code=exit
ed, status=0/SUCCESS)
  Process: 32438 ExecStop=/bin/kill -s TERM ${MAINPID} (code=exited, status=0/SUCCESS)
  Process: 32446 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
.cfg (code=exited, status=0/SUCCESS)
  Process: 32445 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nag
ios.cfg (code=exited, status=0/SUCCESS)
 Main PID: 32449 (nagios)
    Tasks: 8
   CGroup: /system.slice/nagios.service
           ├─32449 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
           ├─32452 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/na...
           ├─32453 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/na...
           ├─32454 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/na...
           ├─32455 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/na...
           ├─32465 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
           ├─32466 /usr/local/nagios/libexec/check_ping -H 127.0.0.1 -w 3000.0,80% -...
           └─32467 /bin/ping -n -U -w 30 -c 5 127.0.0.1

Oct 16 09:02:19 CentOS nagios[32449]: qh: Socket '/usr/local/nagios/var/rw/nagios....ed
```

```
[azamora_admin@CentOS2 ~]$ systemctl status nagios
● nagios.service - Nagios Core 4.5.6
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; vendor preset: disa
bled)
   Active: active (running) since Wed 2024-10-16 09:03:45 PST; 17s ago
     Docs: https://www.nagios.org/documentation
 Main PID: 29229 (nagios)
   CGroup: /system.slice/nagios.service
           ├─29229 /usr/sbin/nagios -d /etc/nagios/nagios.cfg
           ├─29232 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
           ├─29233 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
           ├─29234 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
           ├─29235 /usr/sbin/nagios --worker /var/spool/nagios/cmd/nagios.qh
           └─29242 /usr/sbin/nagios -d /etc/nagios/nagios.cfg

Oct 16 09:03:45 CentOS2 nagios[29229]: qh: Socket '/var/spool/nagios/cmd/nagios.qh...ed
Oct 16 09:03:45 CentOS2 nagios[29229]: qh: core query handler registered
Oct 16 09:03:45 CentOS2 nagios[29229]: qh: echo service query handler registered
Oct 16 09:03:45 CentOS2 nagios[29229]: qh: help for the query handler registered
Oct 16 09:03:45 CentOS2 nagios[29229]: wproc: Successfully registered manager as @...er
Oct 16 09:03:45 CentOS2 nagios[29229]: wproc: Registry request: name=Core Worker 2...32
Oct 16 09:03:45 CentOS2 nagios[29229]: wproc: Registry request: name=Core Worker 2...33
Oct 16 09:03:45 CentOS2 nagios[29229]: wproc: Registry request: name=Core Worker 2...34
```



Explanation: When you prompt the address you will be prompt for a user login. You can modify it through the main.yml under workstations and find this line.

```
- name: Set Nagios admin password
  command: htpasswd -b -c /usr/local/nagios/etc/htpasswd.users zamora_admin "sample"
```

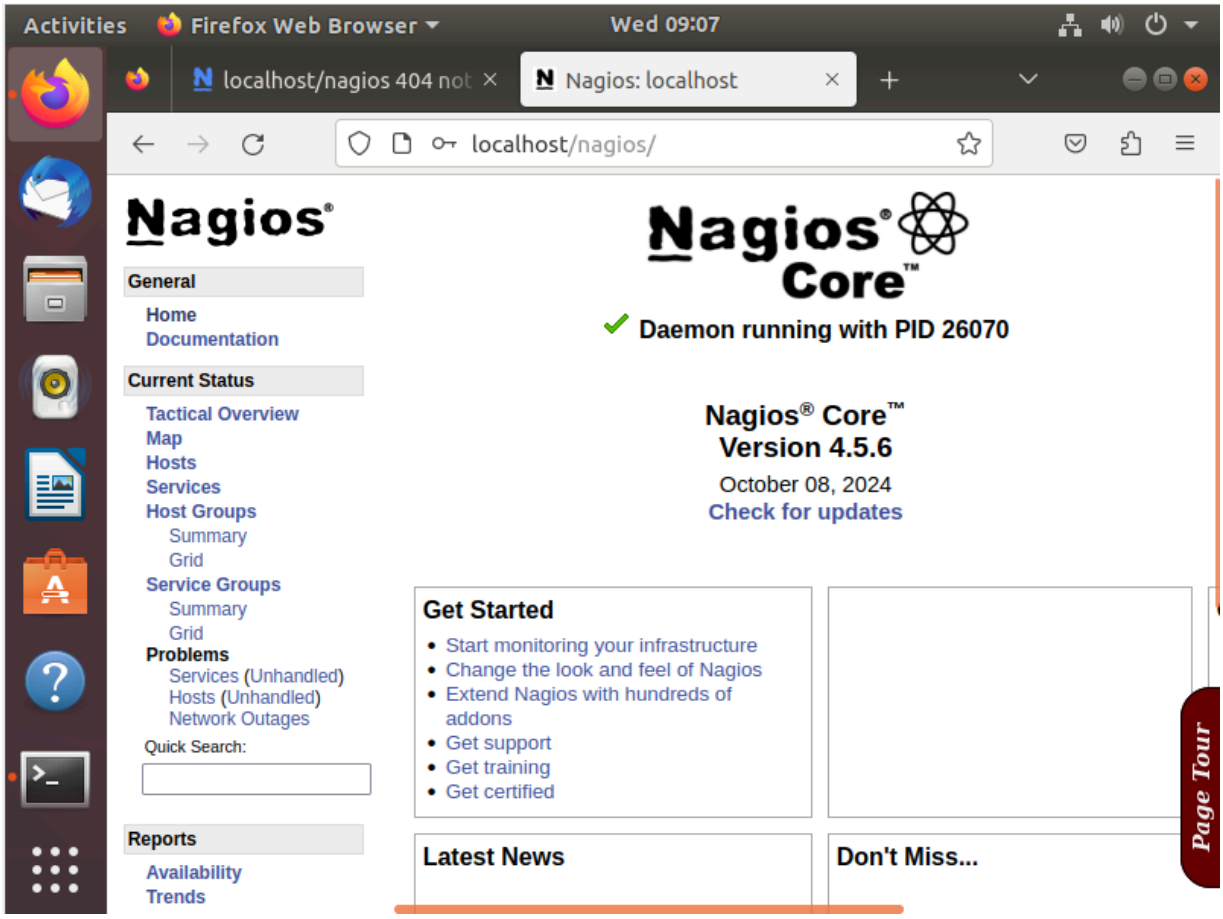
htpasswd -b -c /usr/local/nagios/etc/htpasswd.users “username "password"

Ubuntu Nodes:

```
zamora_admin@server1:~$ systemctl status nagios
● nagios.service - Nagios Core 4.5.6
   Loaded: loaded (/lib/systemd/system/nagios.service; enabled; vendor preset:
   Active: active (running) since Wed 2024-10-16 08:33:21 +08; 32min ago
     Docs: https://www.nagios.org/documentation
  Process: 26067 ExecStopPost=/bin/rm -f /usr/local/nagios/var/rw/nagios.cmd (c
  Process: 26066 ExecStop=/bin/kill -s TERM ${MAINPID} (code=exited, status=0/S
  Process: 26069 ExecStart=/usr/local/nagios/bin/nagios -d /usr/local/nagios/et
  Process: 26068 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nagios
 Main PID: 26070 (nagios)
    Tasks: 8 (limit: 4656)
   CGroup: /system.slice/nagios.service
           ├─26070 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
           ├─26071 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─26072 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─26073 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─26074 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─26075 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─26076 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           └─26082 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
lines 1-19/19 (END)
```

```
zamora_admin@server2:~$ systemctl status nagios
● nagios.service - Nagios Core 4.5.6
   Loaded: loaded (/lib/systemd/system/nagios.service; enabled; vendor preset:
   Active: active (running) since Wed 2024-10-16 08:33:21 +08; 32min ago
     Docs: https://www.nagios.org/documentation
 Main PID: 25870 (nagios)
    Tasks: 8 (limit: 4656)
   CGroup: /system.slice/nagios.service
           ├─25870 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
           ├─25871 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─25872 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─25873 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─25874 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─25875 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           ├─25876 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
           └─25877 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
lines 1-15/15 (END)
```

```
zamora_admin@server3:~$ systemctl status nagios
● nagios.service - Nagios Core 4.5.6
     Loaded: loaded (/lib/systemd/system/nagios.service; enabled; vendor preset:
     Active: active (running) since Wed 2024-10-16 08:33:21 +08; 33min ago
       Docs: https://www.nagios.org/documentation
   Main PID: 23514 (nagios)
      Tasks: 8 (limit: 4656)
     CGroup: /system.slice/nagios.service
             ├─23514 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
             ├─23515 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             ├─23516 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             ├─23517 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             ├─23518 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             ├─23519 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             ├─23520 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/
             └─23524 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios
lines 1-15/15 (END)
```

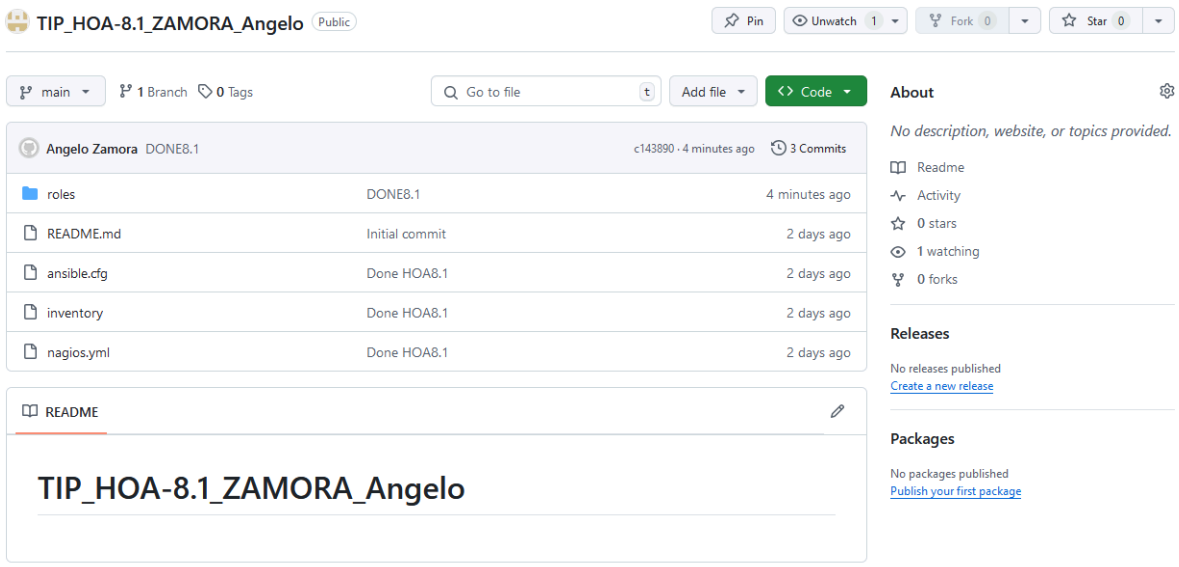


Explanation: When you prompt the address you will be prompt for a user login. You can modify it through the main.yml under workstations and find this line.

```
- name: Set Nagios admin password
  command: htpasswd -b -c /usr/local/nagios/etc/htpasswd.users zamora_admin "sample"
```

htpasswd -b -c /usr/local/nagios/etc/htpasswd.users “username "password"

Github Link: https://github.com/GeloaceRT/TIP_HOA-8.1_ZAMORA_Angelo



Reflections:

Answer the following:

1. What are the benefits of having an availability monitoring tool? Numerous advantages come with using an availability monitoring solution for Ubuntu server administration, such as preemptive issue detection, real-time performance data, and timely notifications that reduce downtime. These technologies enhance capacity planning and resource usage by studying historical data, which also improves user experience. They offer a comprehensive solution for preserving server performance and dependability. They also facilitate compliance reporting and frequently connect easily with other administration tools.

Conclusions:

I can expedite the installation, configuration, and management of enterprise monitoring tools by utilizing Ansible as an Infrastructure as Code tool. This will guarantee that our infrastructure is continuously monitored and maintained. This method makes it easy to expand and modify our monitoring tactics as our business changes, all while streamlining the deployment process and advancing best practices in configuration management.

All things considered, putting Ansible to use in a systematic process improves our capacity to proactively handle possible downtime issues before they worsen, safeguarding our revenue and reputation. With these monitoring tools in place, I can immediately discover and rectify any issues, assuring optimal availability and performance for our crucial workloads. This gives me greater confidence and this will be a great method to install monitoring tools via Ansible. I've learned how to install Nagios as one of the monitoring tools. I've learned quite a few things via errors along

the way like setting up the prerequisites to install Nagios properly on CentOS 7 and setting roles more efficiently to make sure everything is up and running. This activity fulfills the ILO’s and Objectives of what is expected of us.