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Course/Section: CpE31S2	**Date Submitted:** 10/16/2024
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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)

figure 8.1 Created a new repository

```
qcacbuduan@Workstation:~/CPE-212-Activity8$ cat ansible.cfg
[defaults]
inventory = inventory
remote_user = qcacbuduan
host_key_checking = True
private_key_file = ~/.ssh/ansible
deprecation_warnings=False
qcacbuduan@Workstation:~/CPE-212-Activity8$ cat inventory
[web_servers]
server1

[db_servers]
centosbuduan
```

figure 8.2 create config file and inventory file. For this activity, I will only do tasks on 1 Ubuntu server and 1 CentOS server.

```
- hosts: all
  become: true
  pre_tasks:

  - name: update repository index (CentOS)
    tags: always
    dnf:
      update_cache: yes
    changed_when: false
    when: ansible_distribution == "CentOS"
  - name: install updates (Ubuntu)
    tags: always
    apt:
      update_cache: yes
    changed_when: false
    when: ansible_distribution == "Ubuntu"

- hosts: all
  become: true
  roles:
   -   base

- hosts: workstations
  become: true
  roles:
   -   workstations

- hosts: web_servers
  become: true
  roles:
   -   web_servers

- hosts: db_servers
  become: true
```

figure 8.3 created act8.yml file. Running this in an ansible playbook will cause all servers to install updates. the concept of using roles is also applied in this file.

```
qcacbuduan@Workstation:~/CPE-212-Activity8$ ls
act8.yml  ansible.cfg  inventory  roles
qcacbuduan@Workstation:~/CPE-212-Activity8$ cd roles
qcacbuduan@Workstation:~/CPE-212-Activity8/roles$ mkdir base
qcacbuduan@Workstation:~/CPE-212-Activity8/roles$ ls
base  db_servers  web_servers
qcacbuduan@Workstation:~/CPE-212-Activity8/roles$
```

figure 8.4 created roles directory along with the server groups and tasks directory

```
qcacbuduan@Workstation:~/CPE-212-Activity8/roles/base$ cat main.yml
---
- name: install updates (CentOS)
  tags: always
  dnf:
    update_only: yes
    update_cache: yes
  when: ansible_distribution == "CentOS"

- name: install updates (Ubuntu)
  tags: always
  apt:
    upgrade: dist
    update_cache: yes
  when: ansible_distribution == "Ubuntu"
```

figure 8.5 inside the base directory, created file named main.yml. This will cause the playbook to check again for updates and install them.

```
qcacbuduan@Workstation:~/CPE-212-Activity8$ cat roles/db_servers/tasks/main.yml
---
- name: Install epel repo (prereq)
  yum:
   name: epel-release
   state: latest
  when: ansible_distribution == "CentOS"

- name: install nagios (centOS)
  yum:
    name: nagios
    state: latest
  when: ansible_distribution == "CentOS"

- name: start nagios (CentOS)
  service:
    name: nagios
    state: restarted
    enabled: true
  when: ansible_distribution == "CentOS"

- name: install nagios reqs (CentOS)
  yum:
   name:
    - gcc
    - glibc
    - gd-devel
    - httpd
    - php
    - freetype-devel
    - libpng-devel
   state: latest
  become: true
  when: ansible_distribution == "CentOS"
```

figure 8.6 inside the web_servers directory, I also created a file named main.yml. for the server in db_server group, it will first have to install a prerequisite package before you can install Nagios, after that, it will install and start Nagios along with its other requisites for Nagios to be functional and working.

```
qcacbuduan@Workstation:~/CPE-212-Activity8$ cat roles/web_servers/tasks/main.yml

---
- name: Install Nagios (Ubuntu)
  apt:
    name: nagios3-core
    state: latest
  when: ansible_distribution == "Ubuntu"

- name: start nagios (Ubuntu)
  service:
    name: nagios3
    state: restarted
    enabled: true
  when: ansible_distribution == "Ubuntu"

- name: install nagios reqs (Ubuntu)
  apt:
   name:
    - libpng-dev
    - libfreetype6-dev
    - gcc
    - libc6-dev
    - apache2
    - php
    - libgd-dev
   state: latest
  when: ansible_distribution == "Ubuntu"
```

figure 8.7 inside the db_servers directory, I also created a file named main.yml. In the server under the web_servers group, you can directly install and start Nagios along with its following reqs without having to install any other packages before it.

```
PLAY [web_servers] *************************************************************

TASK [Gathering Facts] *********************************************************
ok: [server1]

TASK [web_servers : Install Nagios (Ubuntu)] ***********************************
ok: [server1]

TASK [web_servers : start nagios (Ubuntu)] *************************************
changed: [server1]

TASK [web_servers : install nagios reqs (Ubuntu)] ******************************
ok: [server1]

PLAY [db_servers] **************************************************************

TASK [Gathering Facts] *********************************************************
ok: [centosbuduan]

TASK [db_servers : Install epel repo (prereq)] *********************************
changed: [centosbuduan]

TASK [db_servers : install nagios (centOS)] ************************************
changed: [centosbuduan]

TASK [db_servers : start nagios (CentOS)] **************************************
changed: [centosbuduan]

TASK [db_servers : install nagios reqs (CentOS)] *******************************
ok: [centosbuduan]

PLAY RECAP *********************************************************************
centosbuduan               : ok=9    changed=3    unreachable=0    failed=0    skipped=2
    rescued=0    ignored=0
server1                    : ok=8    changed=1    unreachable=0    failed=0    skipped=2
```

figure 8.8 running act8.yml playbook

```
qcacbuduan@server1:~$ nagios3 --version

Nagios Core 3.5.1
Copyright (c) 2009-2011 Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 08-30-2013
License: GPL

Website: http://www.nagios.org
This program is free software; you can redistribute it and/or modify
it under the terms of the GNU General Public License version 2 as
published by the Free Software Foundation.

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along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.
```

figure 8.9 verifying if the installation worked for ubuntu server

```
[qcacbuduan@centosbuduan ~]$ nagios --version

Nagios Core 4.4.14
Copyright (c) 2009-present Nagios Core Development Team and Community Contributo
rs
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2023-08-01
License: GPL

Website: https://www.nagios.org
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along with this program; if not, write to the Free Software
Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.
```

figure 8.10 verifying if the installation worked for CentOS server

```
[qcacbuduan@centosbuduan ~]$ systemctl status nagios
● nagios.service - Nagios Core 4.4.14
   Loaded: loaded (/usr/lib/systemd/system/nagios.service; enabled; vendor prese
t: disabled)
   Active: active (running) since Mon 2024-10-14 11:32:45 PST; 21min ago
     Docs: https://www.nagios.org/documentation
  Process: 6898 ExecStart=/usr/sbin/nagios -d /etc/nagios/nagios.cfg (code=exite
d, status=0/SUCCESS)
  Process: 6892 ExecStartPre=/usr/sbin/nagios -v /etc/nagios/nagios.cfg (code=ex
ited, status=0/SUCCESS)
 Main PID: 6900 (nagios)
```

figure 8.11 nagios status in centOS

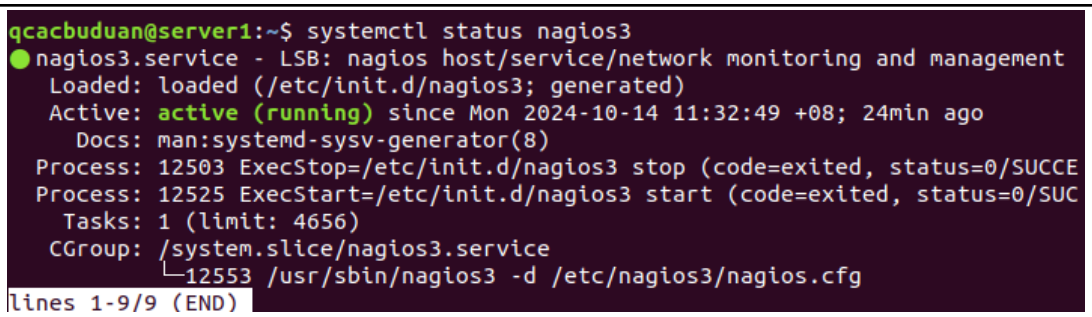

figure 8.12 nagios status in Ubuntu

Reflections:

Answer the following:

1. What are the benefits of having an availability monitoring tool?

   - Some of the benefits of having an availability monitoring tool in managing servers is that it enables proactive issue detection by sending real-time alerts when a server goes down. Second, these tools gather and analyze performance metrics, helping us to optimize resource allocation effectively. Third, they significantly contribute to reducing downtime, ensuring that services remain accessible. Lastly, many availability monitoring tools offer automated reporting, which helps us to check the server performance over time.

Conclusions:

After doing this activity, I was able to apply the concept of roles in ansible-playbook in installing Nagios package. Nagios is a monitoring system where it provides monitoring and alerting services for servers, switches and applications. It alerts users when things go wrong and alerts them a second time when the problem has been resolved. This is especially useful when it comes to managing our remote servers since it won't be efficient if we fix the problems in our servers one by one. It makes our job as an administrator easier to maintain and fix our servers.