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Activity 9: Install, Configure, and Manage Performance Monitoring tools

1. Objectives

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

2. Discussion

Performance monitoring is a type of monitoring tool that identifies current resource consumption of the workload, in this page we will discuss multiple performance monitoring tool.

Prometheus

Prometheus fundamentally stores all data as timeseries: streams of timestamped values belonging to the same metric and the same set of labeled dimensions. Besides stored time series, Prometheus may generate temporary derived time series as the result of queries. Source: Prometheus - Monitoring system & time series database

Cacti

Cacti is a complete network graphing solution designed to harness the power of RRDTool's data storage and graphing functionality. Cacti provides a fast poller, advanced graph templating, multiple data acquisition methods, and user management features out of the box. All of this is wrapped in an intuitive, easy to use interface that makes sense for LAN-sized installations up to complex networks with thousands of devices. Source: Cacti® - The Complete RRDTool-based Graphing Solution

3. Tasks

1. Create a playbook that installs Prometheus 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 Prometheus 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:

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane$ mkdir hoa9_ansible
```

Figure 1.1 Creating directory

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ sudo nano prometheus.yml
```

Figure 1.2 Creating the playbook for installing Prometheus

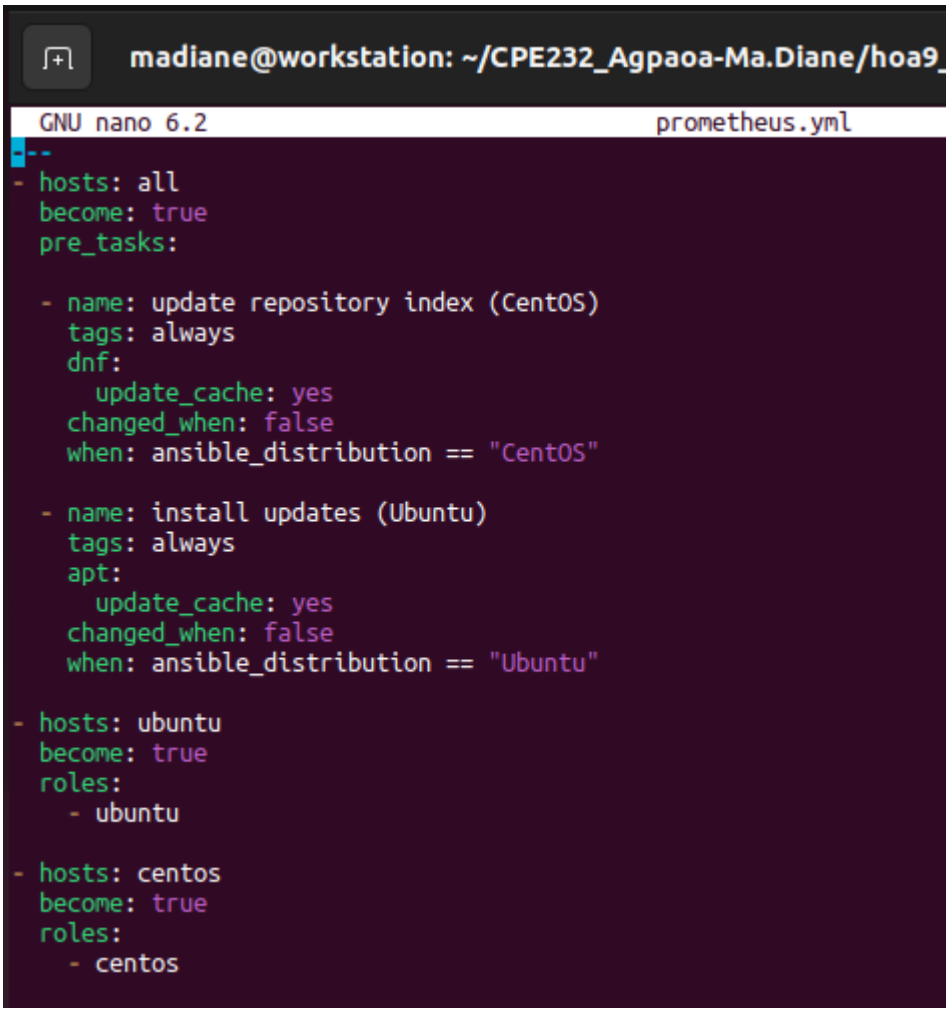

Figure 1.3 Contents of prometheus.yml

Step 2:

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ ls
ansible.cfg  inventory  prometheus.yml
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ mkdir roles
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ cd roles
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ mkdir centos u
buntu
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ ls
centos  ubuntu
```

Figure 1.4 Creating the roles directory and new directories

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ cd centos
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/centos$ mkdir tasks
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/centos$ cd tasks
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/centos/tasks$ sudo nano main.yml
[sudo] password for madiane:
```

Figure 1.5 Creating main.yml within tasks directory inside the centos directory

madiane@workstation: ~/CPE232_Agpaoa-Ma.Diane/hoa9_a...

GNU nano 6.2 main.yml

```
- name: Creating a group and user for Prometheus
  shell: |
    sudo groupadd --system prometheus
    sudo useradd -s /sbin/nologin --system -g prometheus prometheus

- name: Creating a directory
  shell: |
    sudo mkdir var/lib/prometheus
    for i in rules rules.d files_sd; do sudo mkdir -p /etc/prometheus/${i}; done

- name: Installing curl
  dnf:
    name:
      - curl
    state: latest

- name: Installing Prometheus
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.39.1/prometheus-2.39.1.linux-amd64.tar.gz
    dest: /usr/local/bin/
    remote_src: yes
    mode: 0755
    owner: root
    group: root

- name: Moving Prometheus to configuration template
  copy:
    src: prom.yml
    dest: /etc/prometheus/prom.yml
    owner: root
    group: root
    mode: 0755
```

```
- name: Moving the Prometheus systemd Service unit file
  copy:
    src: prom_cent.service
    dest: /etc/systemd/system/prom_cent.service
    owner: root
    group: root
    mode: 0755

- name: Starting/Restarting Prometheus
  service:
    name: prometheus
    state: restarted
    enabled: true

- name: Opening the port 9090 on the firewall
  shell: |
    sudo firewall-cmd --add-port=9090/tcp --permanent
    sudo firewall-cmd --reload
```

Figure 1.6 Content of main.yml in centos directory

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ cd roles
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ cd ubuntu
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/ubuntu$ mkdir tasks
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/ubuntu$ cd tasks
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/ubuntu/tasks$ sudo nano main.yml
```

Figure 1.7 Creating main.yml within tasks directory inside the Ubuntu directory

madiane@workstation: ~/CPE232_Agpaoa-Ma.Diane/hoa9_a...

GNU nano 6.2 main.yml

```
- name: Creating a directory
  shell: |
    sudo mkdir var/lib/prometheus
    for i in rules rules.d files_sd; do sudo mkdir -p /etc/prometheus/${i}; done

- name: Installing curl
  apt:
    name:
      - curl
    state: latest

- name: Installing Prometheus
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.39.1/prometheus-2.39.1.linux-amd64.tar.gz
    dest: /usr/local/bin/
    remote_src: yes
    mode: 0755
    owner: root
    group: root

- name: Moving Prometheus to configuration template
  tags: configuration
  copy:
    src: prom.yml
    dest: /etc/prometheus/prom.yml
    owner: root
    group: root
    mode: 0755
```

```
- name: Moving the Prometheus systemd Service unit file
  copy:
    src: prom.service
    dest: /etc/systemd/system/prom.service<<EOF
    owner: root
    group: root
    mode: 0755

- name: Starting/Restarting Prometheus
  service:
    name: prometheus
    state: restarted
    enabled: true
```

Figure 1.8 Content of main.yml in ubuntu directory

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ mkdir config_file
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ ls
ansible.cfg  config_file  inventory  prometheus.yml  roles
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ cd mkdir config_file
bash: cd: too many arguments
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ cd config_file
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/config_file$ ls
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/config_file$ nano prom.yml
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/config_file$ nano prom.service
```

Figure 1.7 Creating the config_file that contains the prom.yml, prom.service, prom_cent.service

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ cd ubuntu
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/ubuntu$ ls
prom.service  prom.yml  tasks
```

Figure 1.8 Making a copy of prom.yml and prom.service in ubuntu directory

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles$ cd centos
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible/roles/centos$ ls
prom_cent.servie  prom.yml  tasks
```

Figure 1.9 Making a copy of prom.yml and prom_cent.service in centos directory

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane/hoa9_ansible$ ansible-playbook --ask-become-pass prometheus.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************************************************
ok: [192.168.56.115]
ok: [192.168.56.109]

TASK [update repository index (CentOS)] ****************************************************************************
skipping: [192.168.56.115]
ok: [192.168.56.109]

TASK [install updates (Ubuntu)] ************************************************************************************
skipping: [192.168.56.109]
ok: [192.168.56.115]

PLAY [ubuntu] ******************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
ok: [192.168.56.115]

TASK [ubuntu : Creating a directory] *******************************************************************************
[WARNING]: Consider using 'become', 'become_method', and 'become_user' rather than running sudo
changed: [192.168.56.115]

TASK [ubuntu : Installing curl] ************************************************************************************
ok: [192.168.56.115]

TASK [ubuntu : Installing Prometheus] ******************************************************************************
ok: [192.168.56.115]

TASK [ubuntu : Moving Prometheus to configuration template] ********************************************************
ok: [192.168.56.115]

TASK [ubuntu : Moving the Prometheus systemd Service unit file] ****************************************************
ok: [192.168.56.115]

TASK [ubuntu : Starting/Restarting Prometheus] *********************************************************************
fatal: [192.168.56.115]: FAILED! => {"changed": false, "msg": "Could not find the requested service prometheus: host"}

PLAY RECAP *********************************************************************************************************
192.168.56.109             : ok=2    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
192.168.56.115             : ok=8    changed=1    unreachable=0    failed=1    skipped=1    rescued=0    ignored=0
```

Figure 1.10 Running the prometheus.yml for installing Prometheus

There are errors that occur probably in the installation or configuration of the Prometheus is not successfully resulting for the last task to failed.

Step 3:

```
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane$ git add hoa9_ansible
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane$ git commit -m "HOA9"
On branch main
Your branch is ahead of 'origin/main' by 1 commit.
  (use "git push" to publish your local commits)

nothing to commit, working tree clean
madiane@workstation:~/CPE232_Agpaoa-Ma.Diane$ git push
Enumerating objects: 30, done.
Counting objects: 100% (30/30), done.
Compressing objects: 100% (23/23), done.
Writing objects: 100% (29/29), 4.88 KiB | 263.00 KiB/s, done.
Total 29 (delta 6), reused 1 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), completed with 1 local object.
To github.com:qmja/CPE232_Agpaoa-Ma.Diane.git
   2a41657..c229f8a  main -> main
```

Figure 1.11 Adding the directory of hoa9_ansible in the repository

GitHub Link: https://github.com/qmja/CPE232_Agpaoa-Ma.Diane/tree/main/hoa9_ansible

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?

   The benefits of having a performance monitoring tool are being able to monitor and identify current resource consumption of the workload. As a result, the user, administrator or company could avoid wasting the resources, increase of the device's performance and easier to see the consumption status.

Conclusions:

In conclusion, doing this activity helped me to learn about the importance and benefits of monitoring tool. I also learned about coding and debugging a playbook that I want to consolidate. However, I wasn't able to succeed in finishing the activity and perform the objectives.