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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.

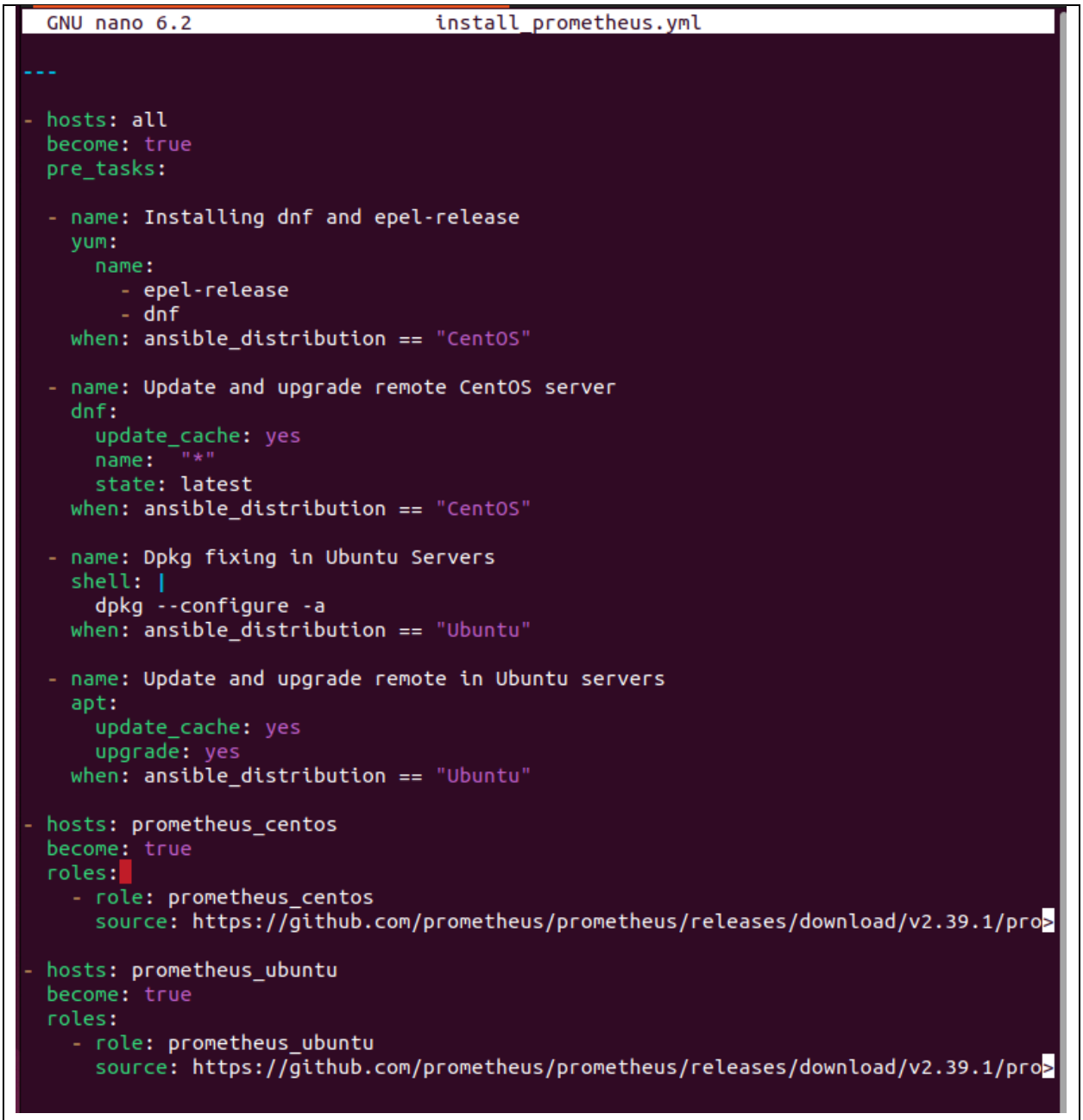
4. Output (screenshots and explanations)

```
aud@rey:~/ansible/CPE232-ACT9$ tree
.
├── ansible.cfg
├── files
│   └── prometheus.service
├── install_prometheus.yml
├── inventory
└── roles
    ├── prometheus_centos
    │   └── main.yml
    └── prometheus_ubuntu
        └── main.yml

4 directories, 6 files
```

- Files and directories inside the Activity 9 needed to install the Prometheus application.

```
aud@rey: ~/ansible/CPE232-ACT9          aud@rey: ~/ansible/CPE232-ACT9
  GNU nano 6.2                          inventory
[prometheus_ubuntu]
192.168.56.122 ansible_user=aud

[prometheus_centos]
192.168.56.128 ansible_user=auds
```

- Servers needed are set to install the Prometheus application.



- This Ansible playbook is shared by the two servers

```
  GNU nano 6.2                                  main.yml
- name: Creating a directory (where the downloaded files will be stored)
  tags: directory
  file:
    path: ~/prometheus
    state: directory

- name: Downloading and extracting Prometheus
  tags: source
  unarchive:
    src: "{{source}}"
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Adding the Prometheus executables to a PATH
  tags: executables
  shell: |
    cd ~/prometheus/prometheus*
    cp -r . /usr/local/bin/prometheus

- name: Copying the Prometheus service file
  tags: servicefile
  copy:
    src: prometheus.service
    dest: /etc/systemd/system/
    owner: root
    group: root
    mode: 777

- name: Making sure that Prometheus is started and enabled
  tags: serviceon
  service:
    name: prometheus
    state: restarted
    enabled: true
```

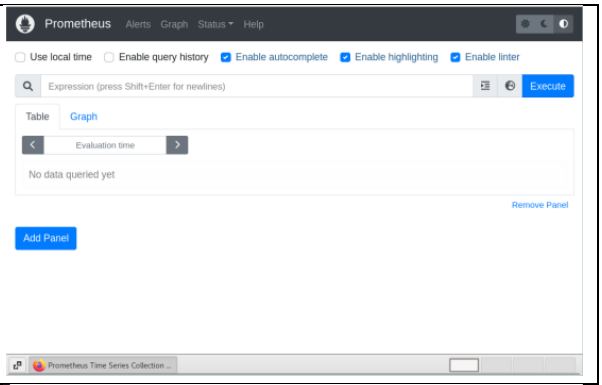
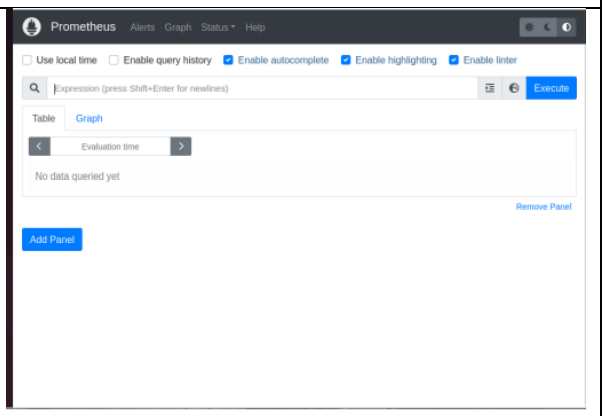
- A playbook dedicated for each server in ubuntu and centos.

```
  GNU nano 6.2                            prometheus.service
[Unit]
Description=Prometheus Service
After=network.target

[Service]
Type=simple
ExecStart=/usr/local/bin/prometheus/prometheus --config.file/usr/local/bin/prom>

[Install]
WantedBy=multi-user.target
```

- This file enables to the Prometheus to run after booting up.

```
aud@rey:~/ansible/CPE232-ACT9$ ansible-playbook --ask-become-pass install_prometheus.
yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.128]
ok: [192.168.56.122]

TASK [Installing dnf and epel-release] *****************************************
skipping: [192.168.56.122]
ok: [192.168.56.128]

TASK [Update and upgrade remote CentOS server] *********************************
skipping: [192.168.56.122]
ok: [192.168.56.128]

TASK [Dpkg fixing in Ubuntu Servers] *******************************************
skipping: [192.168.56.128]
changed: [192.168.56.122]

TASK [Update and upgrade remote in Ubuntu servers] *****************************
skipping: [192.168.56.128]
[WARNING]: The value "True" (type bool) was converted to "'True'" (type
string). If this does not look like what you expect, quote the entire value to
ensure it does not change.
ok: [192.168.56.122]

PLAY [prometheus_centos] *******************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.128]

PLAY [prometheus_ubuntu] *******************************************************

TASK [Gathering Facts] *********************************************************
ok: [192.168.56.122]
```

```
TASK [prometheus_centos : Creating a directory (where the downloaded files will be st
ored)] ***
changed: [192.168.56.128]

TASK [prometheus_centos : Downloading and extracting Prometheus] ********************
changed: [192.168.56.128]

TASK [prometheus_centos : Adding the Prometheus executables to a PATH] **************
changed: [192.168.56.128]

TASK [prometheus_centos : Copying the Prometheus service file] **********************
changed: [192.168.56.128]

TASK [prometheus_centos : Making sure that Prometheus is started and enabled] *******
changed: [192.168.56.128]

PLAY [prometheus_ubuntu] ************************************************************

TASK [Gathering Facts] **************************************************************
ok: [192.168.56.122]

TASK [prometheus_ubuntu : Creating a directory (where the downloaded files will be st
ored)] ***
changed: [192.168.56.122]

TASK [prometheus_ubuntu : Downloading and extracting Prometheus] ********************
changed: [192.168.56.122]

TASK [prometheus_ubuntu : Adding the Prometheus executables to a PATH] **************
changed: [192.168.56.122]
```

CentOS	
Ubuntu	

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?
   For system administrators, having a performance monitoring tool is a lifesaver. System administrators can visit it to check on the servers' present condition. This keeps track of the system's processes, hardware resources, faults, and much more. The Prometheus is one illustration that demonstrates this important feature. While Prometheus is capable of locating the cause of failures, alerting the system administrators, and continuously monitoring services for each individual device, it is not in charge of correcting flaws or errors. Although not mentioned in the activity, Cacti is also thought of as a monitoring tool and has the ability to produce performance management graphs.

Conclusions:

This activity achieves its goal to introduce other enterprise performance tools that apply the use of Ansible as a medium in automating the processes in a server. In the procedure part of the activity introduces the monitoring tool called Prometheus. The first step in completing this activity is to research for a possible installation guide for a Ubuntu and CentOS server. Then convert this set of instructions into a ansible playbook that installs and runs services in both servers. Upon observation throughout this activity, I realized that the method of installing and starting the services of Prometheus in both servers are the same. Overall, this activity gives me confidence in creating ansible playbooks and to implement roles to it.