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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

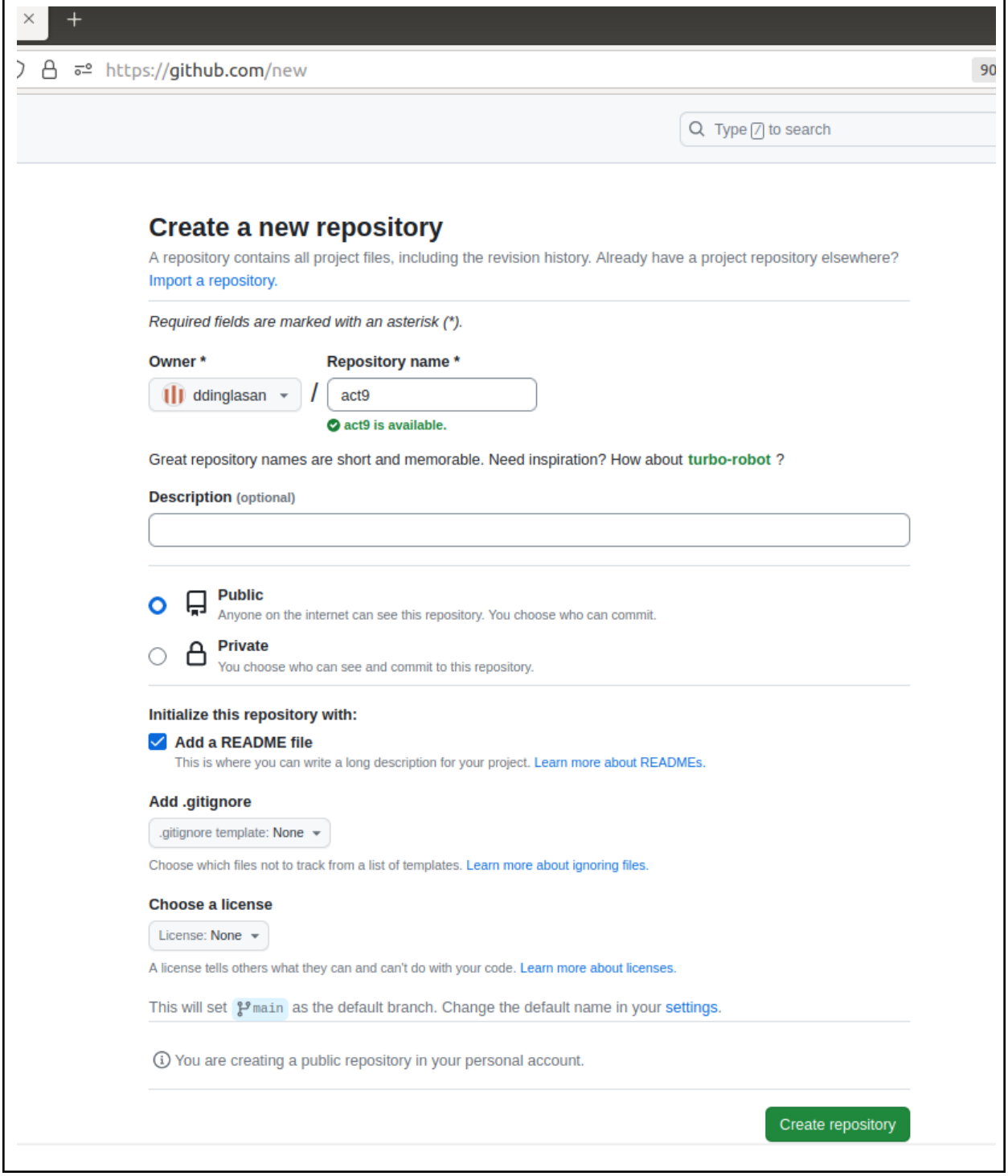
Cacti is a complete network graphing solution designed to harness the power of RRDTool's data storage and graphing functionality. Cacti provides a fast poller, advanced graph templating, multiple data acquisition methods, and user management features out of the box. All of this is wrapped in an intuitive, 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: create a new repository and clone the repository in the workstation.



```
dnzl@workstation:~$ git clone https://github.com/ddinglasan/act9.git
Cloning into 'act9'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
dnzl@workstation:~$
```

Step 2: Create the basic files needed(ansible.cfg & inventory) and create the roles needed for the Ubuntu and CentOS computer with the main.yml file for their own tasks. Also created a task.yml file to run the tasks of the roles.

```
dnzl@workstation:~/act9$ tree
.
├── ansible.cfg
├── inventory
├── README.md
├── roles
│   ├── CentOS
│   │   └── tasks
│   │       └── main.yml
│   └── Ubuntu
│       └── tasks
│           └── main.yml
└── task.yml
```

Step 3: Paste this on the main.yml of the Ubuntu role.

```
dnzl@workstation: ~/act9/roles/Ubuntu/tasks
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                                    main.yml

---
- name: install prometheus on ubuntu
  apt:
    name: prometheus
    state: present
  become: yes

- name: Nagios Start/Enable Check
  service:
    name: prometheus
    state: restarted
    enabled: true
```

Step 4: Paste this on the main.yml of the CentOS role.

dnzl@workstation: ~/act9/roles/CentOS/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml

```
---

- name: Prometheus PATH directory
  file:
    path: ~/prometheus
    state: directory


- name: Creating directory for Prometheus files
  file:
    path:
      - /etc/prometheus
      - /var/lib/prometheus
    mode: 0777
    state: directory

- name: Install Prometheus (CentOS)
  unarchive:
    src: https://github.com/prometheus/prometheus/releases/download/v2.8.1/prometheus-2.8.1.linux-amd64.tar.gz
    dest: ~/prometheus
    remote_src: yes
    mode: 0777
    owner: root
    group: root

- name: Configuring Prometheus
  shell: |
    cd ~/prometheus/prometheus*
    cp -r . /usr/local/bin/prometheus

- name: Prometheus config file duplicate
  copy:
    src: prometheus.service
    dest: /etc/systemd/system
    mode: 7777
    owner: root
    group: root

- name: Prometheus Start/Enable Check
  service:
```

```
    name: prometheus.service
    state: restarted
    enabled: true

- name: httpd Start/Enable Check
  service:
    name: httpd
    state: restarted
    enabled: true
```

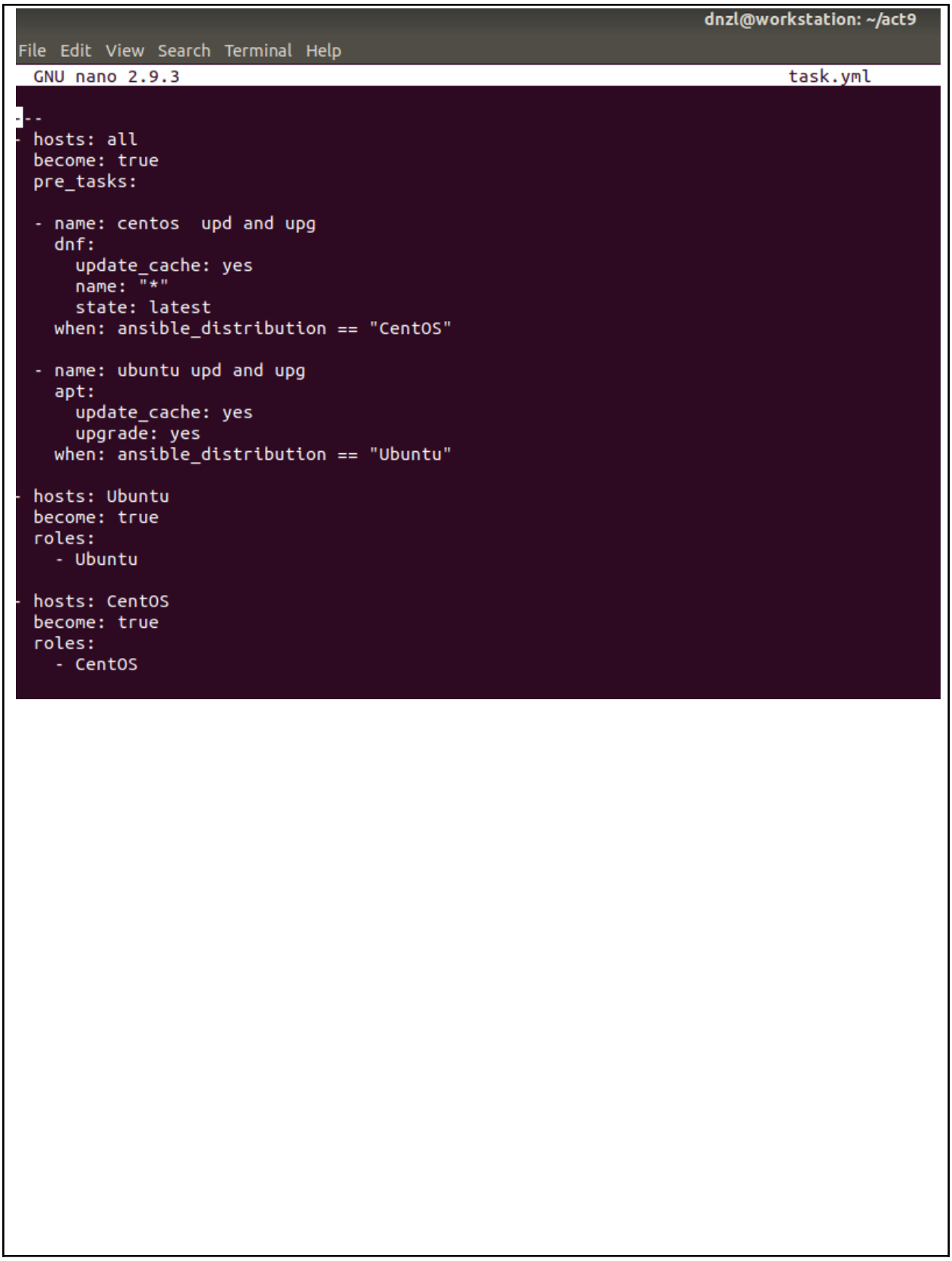
Step 5: Create a files directory and then create prometheus.service in the files directory.

```
dnzl@workstation:~/act9$ mkdir files
dnzl@workstation:~/act9$ cd files
dnzl@workstation:~/act9/files$ sudo nano prometheus.service
```

Step 6: Paste this on the prometheus.service file.

```
                                                dnzl@workstation: ~/act9/files
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                                        prometheus.service

[Unit]
Description=Prometheus Service
After=network.target

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

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

Step 7: Paste this on the task.yml in the main directory.


dnzl@workstation: ~/act9
File Edit View Search Terminal Help
GNU nano 2.9.3 task.yml

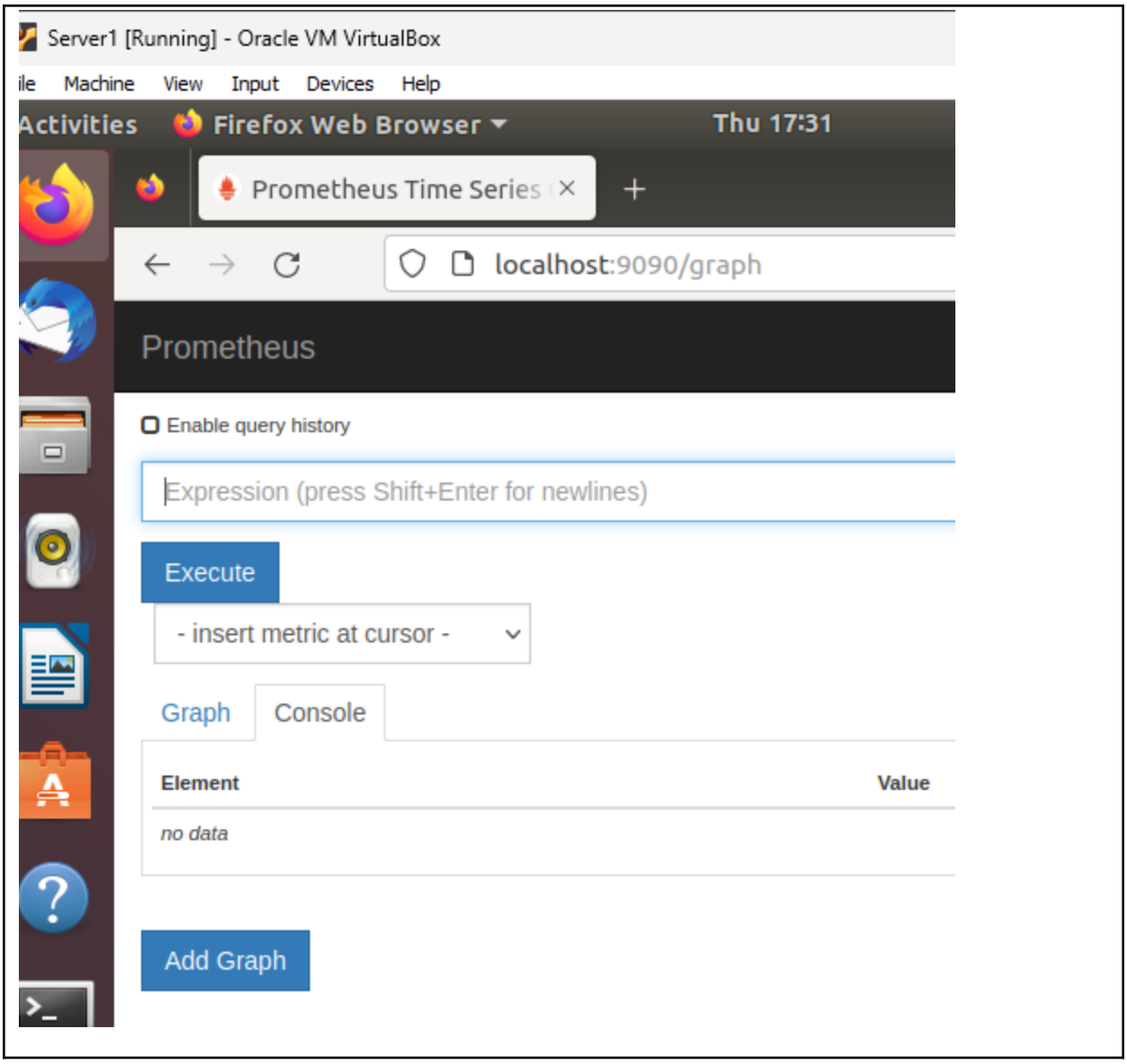
- hosts: all
become: true
pre_tasks:
- name: centos upd and upg
dnf:
update_cache: yes
name: "*"
state: latest
when: ansible_distribution == "CentOS"
- name: ubuntu upd and upg
apt:
update_cache: yes
upgrade: yes
when: ansible_distribution == "Ubuntu"
- hosts: Ubuntu
become: true
roles:
- Ubuntu
- hosts: CentOS
become: true
roles:
- CentOS

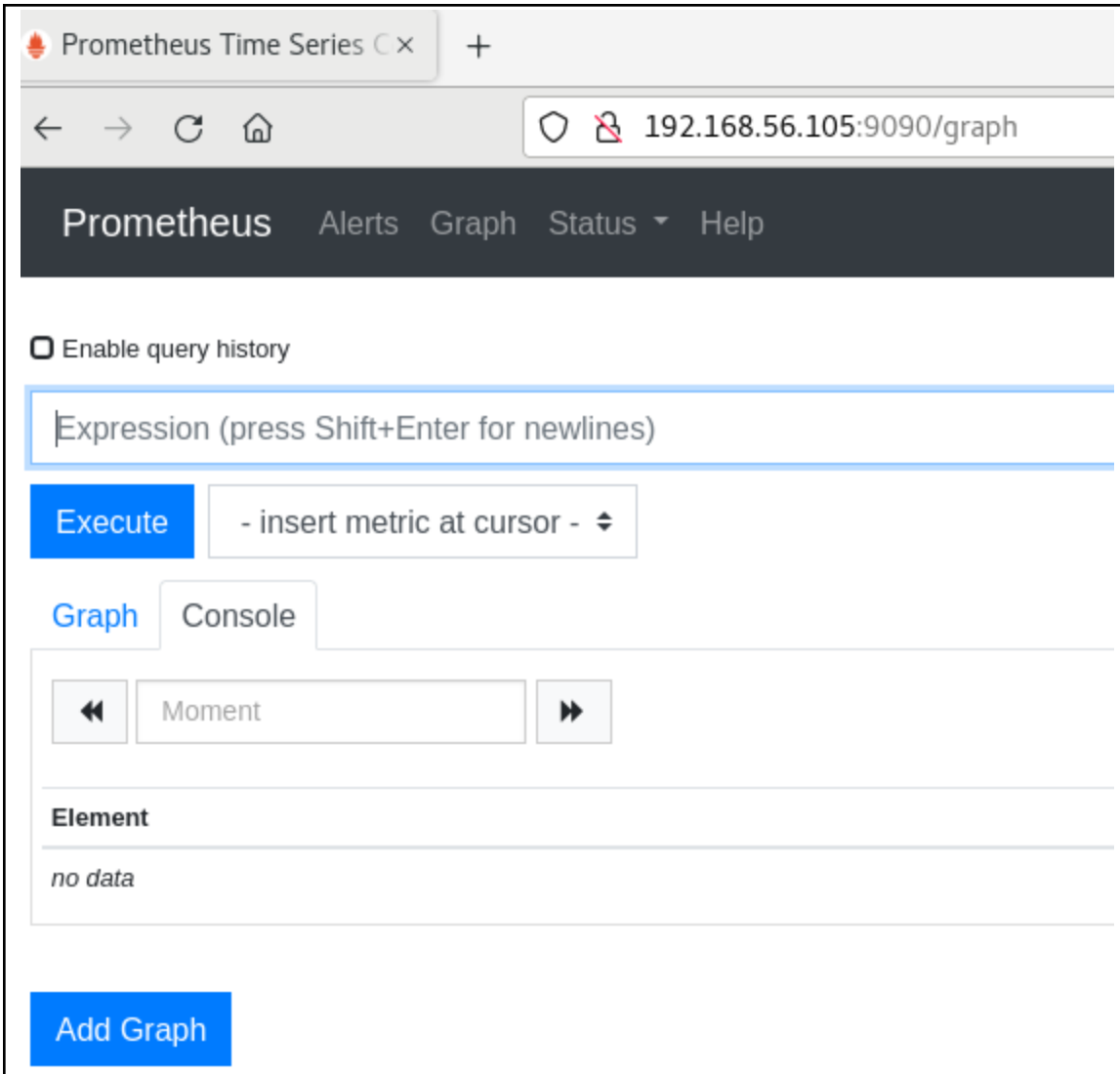
Step 8: Run the playbook with the command *ansible-playbook –ask-become-pass task.yml*

```
dnzl@workstation:~/act9$ ansible-playbook --ask-become-pass task.yml
BECOME password:

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

TASK [Gathering Facts] *********************************************************************************************************************************************
ok: [192.168.56.102]
ok: [192.168.56.105]

TASK [centos  upd and upg] *****************************************************************************************************************************************
skipping: [192.168.56.102]
ok: [192.168.56.105]

TASK [ubuntu upd and upg] ******************************************************************************************************************************************
skipping: [192.168.56.105]
ok: [192.168.56.102]

PLAY [Ubuntu] ******************************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************
ok: [192.168.56.102]

TASK [Ubuntu : install prometheus on ubuntu] ***********************************************************************************************************************
ok: [192.168.56.102]

TASK [Ubuntu : Nagios Start/Enable Check] **************************************************************************************************************************
changed: [192.168.56.102]

PLAY [CentOS] ******************************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************
ok: [192.168.56.105]

TASK [CentOS : Prometheus PATH directory] **************************************************************************************************************************
ok: [192.168.56.105]

TASK [CentOS : Creating directory for Prometheus files] ************************************************************************************************************
ok: [192.168.56.105]

TASK [CentOS : Install Prometheus (CentOS)] ************************************************************************************************************************
ok: [192.168.56.105]

TASK [CentOS : Configuring Prometheus] *****************************************************************************************************************************
changed: [192.168.56.105]
```

```
TASK [CentOS : Prometheus config file duplicate] *******************************************************************************************************************
changed: [192.168.56.105]

TASK [CentOS : Prometheus Start/Enable Check] **********************************************************************************************************************
changed: [192.168.56.105]

TASK [CentOS : httpd Start/Enable Check] ***************************************************************************************************************************
changed: [192.168.56.105]

PLAY RECAP *********************************************************************************************************************************************************
192.168.56.102             : ok=5    changed=1    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
192.168.56.105             : ok=10   changed=4    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
```

Step 9: Test if it runs on the Ubuntu and CentOS computer.


Server1 [Running] - Oracle VM VirtualBox
ile Machine View Input Devices Help
Activities
Firefox Web Browser
Thu 17:31
Prometheus Time Series
localhost:9090/graph
Prometheus
Enable query history
Expression (press Shift+Enter for newlines)
Execute
- insert metric at cursor -
Graph
Console
Element
Value
no data
Add Graph



Step 10: save in the repository

```
dnzl@workstation:~/act9$ git add *
dnzl@workstation:~/act9$ git commit -m finish
[main 23a4c3e] finish
 6 files changed, 124 insertions(+)
 create mode 100644 ansible.cfg
 create mode 100644 files/prometheus.service
 create mode 100644 inventory
 create mode 100644 roles/CentOS/tasks/main.yml
 create mode 100644 roles/Ubuntu/tasks/main.yml
 create mode 100644 task.yml
dnzl@workstation:~/act9$ git push origin
Username for 'https://github.com': ddinglasan
Password for 'https://ddinglasan@github.com':
Counting objects: 14, done.
Delta compression using up to 2 threads.
Compressing objects: 100% (9/9), done.
Writing objects: 100% (14/14), 1.78 KiB | 1.78 MiB/s, done.
Total 14 (delta 0), reused 0 (delta 0)
To https://github.com/ddinglasan/act9.git
   349b1c9..23a4c3e  main -> main
```

https://github.com/ddinglasan/act9.git

Reflections:

Answer the following:

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

Performance monitoring tools provide issue detection, optimize resource usage, improve user experience, security, capacity planning, and more, ensuring efficient, reliable, and secure IT operations.

Conclusions:

In this activity, I've learned how to install performance monitoring tool, specifically Prometheus, into Ubuntu and CentOS computers while what I learned these past activities like implementing roles.