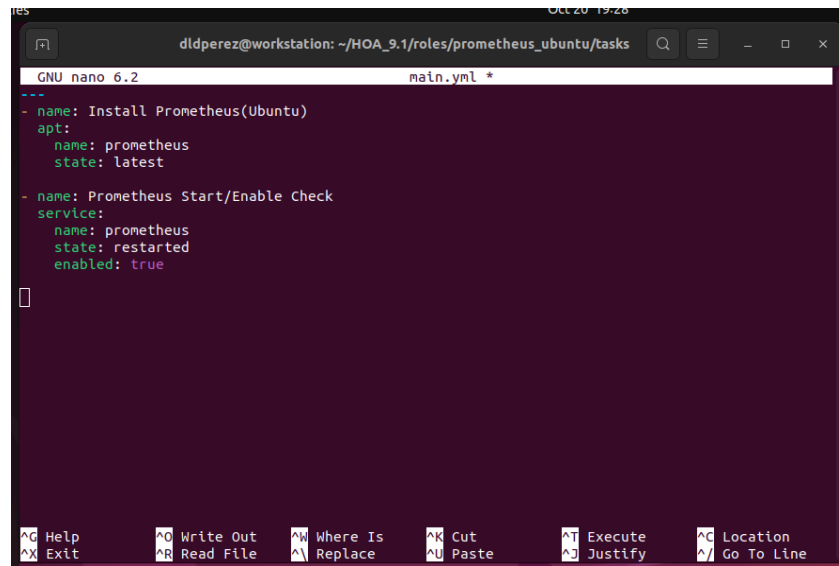


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Course/Section: CPE 212-CPE31S21	Date Submitted: 20/10/24
Instructor: Engr. Robin Valenzuela	Semester and SY: 24-25
Activity 9: Install, Configure, and Manage Performance Monitoring tools	
1. Objectives	
Create and design a workflow that installs, configure and manage enterprise performance tools using Ansible as an Infrastructure as Code (IaC) tool.	
2. Discussion	
<p>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.</p> <p>Prometheus</p> <p>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</p> <p>Cacti</p> <p>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</p>	
3. Tasks	
<ol style="list-style-type: none"> 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)



```
GNU nano 6.2 main.yml *
---
- name: Install Prometheus(Ubuntu)
  apt:
    name: prometheus
    state: latest

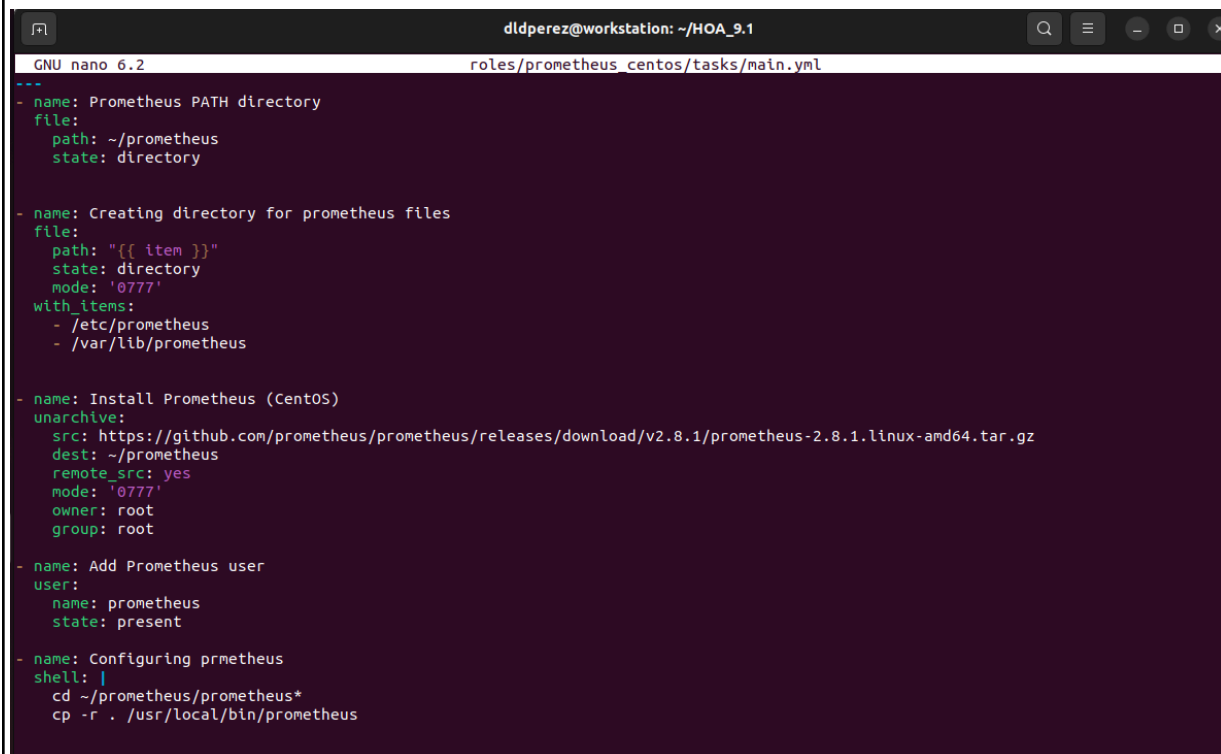
- name: Prometheus Start/Enable Check
  service:
    name: prometheus
    state: restarted
    enabled: true

[]

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location
^X Exit      ^R Read File ^_ Replace   ^U Paste     ^J Justify  ^_ Go To Line
```

Install Prometheus: Installs Prometheus using the **apt** module for Ubuntu, ensuring the latest version.

Enable Prometheus Service: Restarts the Prometheus service and ensures it's enabled to start on boot.



```
GNU nano 6.2 roles/prometheus_centos/tasks/main.yml
---
- name: Prometheus PATH directory
  file:
    path: ~/prometheus
    state: directory

- name: Creating directory for prometheus files
  file:
    path: "[[ item ]]"
    state: directory
    mode: '0777'
  with_items:
    - /etc/prometheus
    - /var/lib/prometheus

- 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: Add Prometheus user
  user:
    name: prometheus
    state: present

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

```
dldperez@workstation: ~/HOA_9.1/roles/prometheus_centos/tasks
GNU nano 6.2 main.yml *
cd ~/prometheus/prometheus*
cp -r . /usr/local/bin/prometheus

- name: Change Ownership of Prometheus Config file
  become: true
  shell: chown root:root /etc/prometheus/prometheus.yml

- name: Create Prometheus Config File
  copy:
    content: |
      global:
        scrape_interval: 10s
      scrape_configs:
        job_name: 'prometheus_master'
        scrape_interval: 5s
        static_configs:
          - targets: ['localhost:9090']
    dest: /etc/prometheus/prometheus.yml
    owner: prometheus
    group: prometheus

- name: Configure Prometheus Service File
  copy:
    content: |
      [Unit]
      Description=Prometheus
      Wants=network-online.target
      After=network-online.target

      [Service]
      User=prometheus
      Group=prometheus
      Type=simple
      ExecStart=/usr/local/bin/prometheus \
        --config.file /etc/prometheus/prometheus.yml \
        --storage.tsdb.path /var/lib/prometheus/ \

```

^G Help	^O Write Out	^W Where Is	^K Cut	^T Execute	^C Location
^X Exit	^R Read File	^_ Replace	^U Paste	^J Justify	^_ Go To Line

```
dldperez@workstation: ~/HOA_9.1/roles/prometheus_centos/tasks
GNU nano 6.2 main.yml *

- name: Configure Prometheus Service File
  copy:
    content: |
      [Unit]
      Description=Prometheus
      Wants=network-online.target
      After=network-online.target

      [Service]
      User=prometheus
      Group=prometheus
      Type=simple
      ExecStart=/usr/local/bin/prometheus \
        --config.file /etc/prometheus/prometheus.yml \
        --storage.tsdb.path /var/lib/prometheus/ \
        --web.console.templates=/etc/prometheus/consoles \
        --web.console.libraries=/etc/prometheus/console_libraries

      [Install]
      WantedBy=multi-user.target
    dest: /etc/systemd/systemd/system/prometheus.service
    owner: root
    group: root

- name: Reload systemd service
  shell: systemctl daemon-reload

- name: Start Prometheus service
  service:
    name: prometheus
    state: started

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^_ Go To Line
```

Install Prometheus: Downloads and installs Prometheus on CentOS.

Add Prometheus User: Creates a user named prometheus.

Configure Prometheus: Copies the configuration and service files.

Start Prometheus: Enables and starts the Prometheus service.

```
dldperez@workstation: ~/HOA_9.1
GNU nano 6.2 site.yml *
---
- hosts: all
  become: true

  pre_tasks:
    - name: Instal Updates (CentOS)
      dnf:
        update_only: yes
        update_cache: yes
        when: ansible_distribution == "CentOS"

    - name: Install updates (Ubuntu)
      apt:
        upgrade: dist
        update_cache: yes
        when: ansible_distribution == "Ubuntu"

- hosts: prometheus_ubuntu
  become: true
  roles:
    - prometheus_ubuntu

- hosts: prometheus_centos
  become: true
  roles:
    - prometheus_centos
```

site.yml configuration

```
dldperez@workstation:~/HOA_9.1$ cat ansible.cfg
[defaults]
inventory = inventory
remote_user = dldperez
host_key_checking = True
deprecation_warnings = False
```

ansible.cfg configuration

```
dldperez@workstation: ~/HOA_9.1
GNU nano 6.2 inventory *
[workstation]
#192.168.56.112 ansible_user=dldperez

[prometheus_ubuntu]
#server1
#192.168.56.113 ansible_user=dldperez

#server3
#192.168.56.115 ansible_user=dldperez

#server2_ubuntu
#192.168.56.116 ansible_user=dldperez

[prometheus_centos]
#server2
192.168.56.114 ansible_user=dldperez
```

inventory configuration: Only Centos for now because my laptop can't handle it when another server is open.

```
dldperez@workstation:~/HOA_9.1$ ansible all -m ping
192.168.56.114 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python"
  },
  "changed": false,
  "ping": "pong"
}
```

Ansible connection to the centos: Success.

```
dldperez@workstation: ~/HOA_9.1
dldperez@workstation:~/HOA_9.1$ ansible-playbook --ask-become-pass site.yml
BECOME password:

PLAY [all] *****
TASK [Gathering Facts] *****
ok: [192.168.56.114]

TASK [Instal Updates (CentOS)] *****
ok: [192.168.56.114]

TASK [Install updates (Ubuntu)] *****
skipping: [192.168.56.114]

PLAY [prometheus_ubuntu] *****
skipping: no hosts matched

PLAY [prometheus_centos] *****
TASK [Gathering Facts] *****
ok: [192.168.56.114]

TASK [prometheus_centos : Prometheus PATH directory] *****
ok: [192.168.56.114]

TASK [prometheus_centos : Creating directory for prometheus files] *****
ok: [192.168.56.114] => (item=/etc/prometheus)
ok: [192.168.56.114] => (item=/var/lib/prometheus)

TASK [prometheus_centos : Install Prometheus (CentOS)] *****
ok: [192.168.56.114]

TASK [prometheus_centos : Add Prometheus user] *****
ok: [192.168.56.114]

TASK [prometheus_centos : Configuring prometheus] *****
changed: [192.168.56.114]

TASK [prometheus_centos : Create Prometheus Config File] *****
changed: [192.168.56.114]

TASK [prometheus_centos : Change Ownership of Prometheus Config file] *****
[WARNING]: Consider using the file module with owner rather than running 'chown'. If you need to use command because file is
insufficient you can add 'warn: false' to this command task or set 'command_warnings=False' in ansible.cfg to get rid of this
message.
changed: [192.168.56.114]

TASK [prometheus_centos : Configure Prometheus Service File] *****
changed: [192.168.56.114]

TASK [prometheus_centos : Reload systemd service] *****
changed: [192.168.56.114]

TASK [prometheus_centos : Start Prometheus service] *****
changed: [192.168.56.114]

PLAY RECAP *****
192.168.56.114 : ok=13 changed=6 unreachable=0 failed=0 skipped=1 rescued=0 ignored=0
dldperez@workstation:~/HOA_9.1$
```

It is successful on CentOS. Lets Double check it.

```
[root@server2 dldperez]# /usr/local/bin/prometheus/prometheus --version
prometheus, version 2.8.1 (branch: HEAD, revision: 4d60eb36dcbed725fcac5b27018574118f12fffb)
  build user:      root@bfdd6a22a683
  build date:      20190328-18:04:08
  go version:      go1.11.6
[root@server2 dldperez]#
```

It is installed and the version is 2.8.1

```

[root@server2 dldperez]# sudo systemctl status prometheus
* prometheus.service - Prometheus
   Loaded: loaded (/etc/systemd/system/prometheus.service; enabled; preset: disabled)
   Active: failed (Result: exit-code) since Sun 2024-10-20 10:42:43 EDT; 13s ago
     Duration: 99ms
   Process: 57550 ExecStart=/usr/local/bin/prometheus --config.file /etc/prometheus/prometheus.yml --storage.tsdb.path /var/lib/prometheus/ --web.c
 Main PID: 57550 (code=exited, status=1/FAILURE)
    CPU: 24ms

Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.27465259Z caller=web.go:418 component=web msg="Start listening for conn
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.275241497Z caller=main.go:505 msg="Scrape discovery manager stopped"
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.294361294Z caller=manager.go:736 component="rule manager" msg="Stopping
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.294478845Z caller=manager.go:742 component="rule manager" msg="Rule mana
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.295042816Z caller=main.go:539 msg="Scrape manager stopped"
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.296168397Z caller=notifier.go:521 component=notifier msg="Stopping noti
Oct 20 10:42:43 server2 prometheus[57550]: level=info ts=2024-10-20T14:42:43.296186901Z caller=main.go:708 msg="Notifier manager stopped"
Oct 20 10:42:43 server2 prometheus[57550]: level=error ts=2024-10-20T14:42:43.296375327Z caller=main.go:717 err="error loading config from \"/etc/pr
Oct 20 10:42:43 server2 systemd[1]: prometheus.service: Main process exited, code=exited, status=1/FAILURE
Oct 20 10:42:43 server2 systemd[1]: prometheus.service: Failed with result 'exit-code'.
lines 1-18/18 (END)

```

Ubuntu server, prometheus installation.

```

dldperez@workstation: ~/HOA_
GNU nano 6.2 inventory
[workstation]
#192.168.56.112 ansible_user=dldperez

[prometheus_ubuntu]
#server1
192.168.56.113 ansible_user=dldperez

#server3
#192.168.56.115 ansible_user=dldperez

#server2_ubuntu
#192.168.56.116 ansible_user=dldperez

[prometheus_centos]
#server2
#192.168.56.114 ansible_user=dldperez

```

We will use server1.


```
dldperez@workstation: ~/H0A_9.1$ ansible-playbook --ask-become-pass site.yml
BECOME password:

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [192.168.56.113]

TASK [Instal Updates (CentOS)] *****
skipping: [192.168.56.113]

TASK [Install updates (Ubuntu)] *****
changed: [192.168.56.113]

PLAY [prometheus_ubuntu] *****

TASK [Gathering Facts] *****
ok: [192.168.56.113]

TASK [prometheus_ubuntu : Install Prometheus(Ubuntu)] *****
changed: [192.168.56.113]

TASK [prometheus_ubuntu : Prometheus Start/Enable Check] *****
changed: [192.168.56.113]

PLAY [prometheus_centos] *****
skipping: no hosts matched

PLAY RECAP *****
192.168.56.113      : ok=5    changed=3    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

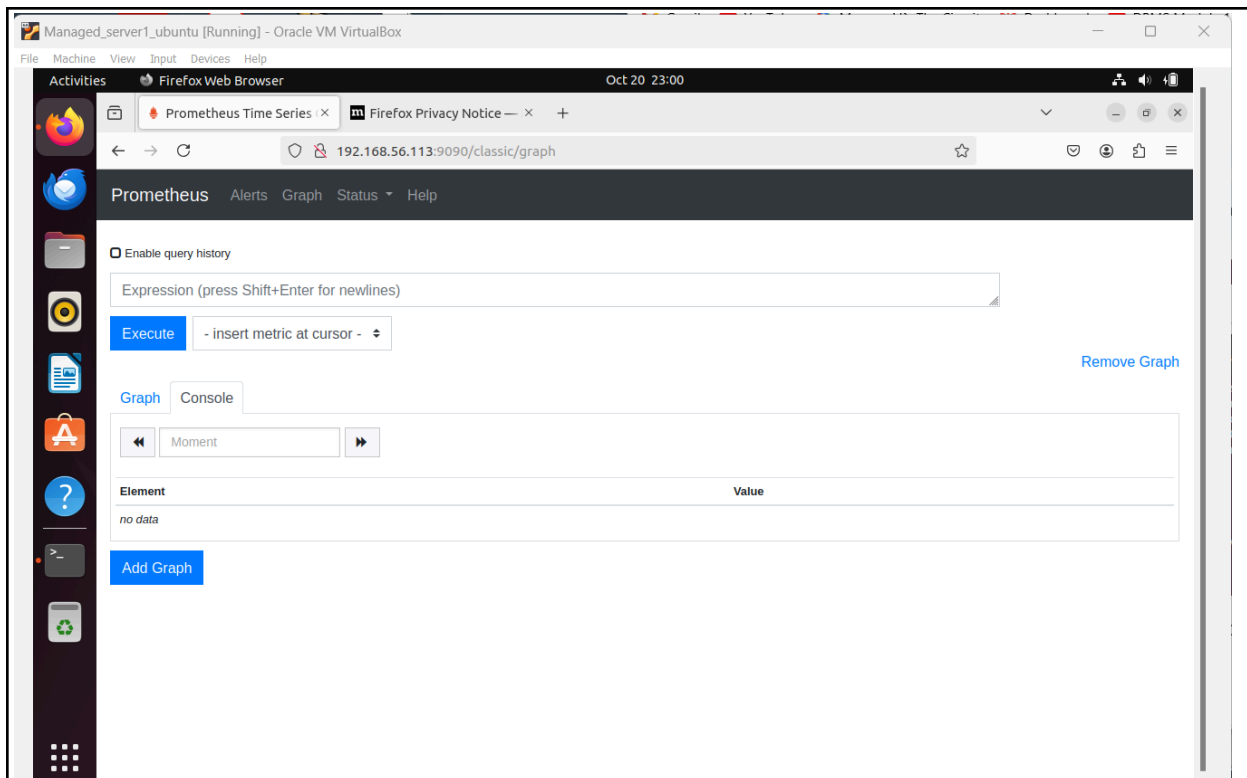
dldperez@workstation: ~/H0A_9.1$
```

It is successful on Ubuntu. Let's double check it.

```
dldperez@server1: ~
dldperez@server1:~$ systemctl status prometheus
● prometheus.service - Monitoring system and time series database
   Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor pr
   Active: active (running) since Sun 2024-10-20 22:56:56 +08; 1min 49s ago
     Docs: https://prometheus.io/docs/introduction/overview/
    man:prometheus(1)
   Main PID: 18310 (prometheus)
      Tasks: 9 (limit: 2270)
     Memory: 25.2M
        CPU: 668ms
    CGroup: /system.slice/prometheus.service
            └─18310 /usr/bin/prometheus

dldperez@server1:~$
```

It is active and running.



It is also working on the browser.

Reflections:

Answer the following:

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

There are a lot of benefits in having a performance monitoring tool, first is that we can monitor the performance and get detailed information on how it is working. We can even detect early issues that may occur. Thus improving the efficiency and productivity.

Conclusions:

In this laboratory activity, I learned how to install and set up prometheus using ansible on Ubuntu and Centos by creating roles and playbooks. It is not as easy as installing an application. It needs a lot of important details and commands that needs to be satisfied first.