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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)

```
workstation@workstation:~/HOA9$ tree
.
├── ansible.cfg
├── inventory
├── prometheus_install.yml
├── README.md
└── roles
    ├── common
    │   └── tasks
    │       └── main.yml
    └── prometheus
        └── tasks
            └── main.yml

5 directories, 6 files
```

- This is the tree of the playbook that will install prometheus on both Ubuntu and CentOS.

```
workstation@workstation: ~/HOA9/roles/common/tasks
File  Edit  View  Search  Terminal  Help
  GNU nano 2.9.3                                  main.yml

---
- name: Update package cache
  package:
    name: '*'
    state: latest
  when: ansible_distribution == "Ubuntu"

- name: Update package cache
  yum:
    name: '*'
    state: latest
  when: ansible_distribution == "CentOS"

- name: Install common dependencies
  package:
    name: "{{ item }}"
    state: present
  loop:
    - unzip
```

- I first created this so that it will update any package that needs to be updated. the “*” function is used as a wildcard function which means all packages will be updated.

workstation@workstation: ~/HOA9/roles/prometheus/tasks

File Edit View Search Terminal Help

GNU nano 2.9.3 main.yml

```
---
- name: Install Prometheus
  become: yes
  become_user: root
  block:
    - name: Import Grafana GPG Key
      apt_key:
        url: https://packages.grafana.com/gpg.key
      when: ansible_distribution == "Ubuntu"

    - name: Add Prometheus APT repository (Ubuntu)
      apt_repository:
        repo: "deb https://packages.grafana.com/oss/deb stable main"
      when: ansible_distribution == "Ubuntu"

    - name: Add Prometheus YUM repository (CentOS)
      yum_repository:
        name: prometheus
        baseurl: https://packagecloud.io/prometheus-rpm/release/el/{{ ansible_distribution_major_version }}/$basearch
        description: Prometheus repository
        gpgcheck: no
      when: ansible_distribution == "CentOS"

    - name: Install Prometheus in Ubuntu
      package:
        name: prometheus
        state: present
      when: ansible_distribution == "Ubuntu"

    - name: Install Prometheus in CentOS
      package:
        name: prometheus
        state: present
      when: ansible_distribution == "CentOS"
```

- I have now created a playbook that will install the Prometheus from the ubuntu and CentOS.

```
[ynollan@localhost ~]$ systemctl enable prometheus
Created symlink from /etc/systemd/system/multi-user.target.wants/prometheus.service to /usr/lib/systemd/system/p
[ynollan@localhost ~]$ systemctl start prometheus
[ynollan@localhost ~]$ systemctl status prometheus
● prometheus.service - The Prometheus monitoring system and time series database.
   Loaded: loaded (/usr/lib/systemd/system/prometheus.service; enabled; vendor preset: disabled)
   Active: active (running) since Thu 2023-10-19 09:11:27 EDT; 1min 6s ago
     Docs: https://prometheus.io
 Main PID: 29056 (prometheus)
    Tasks: 7
   CGroup: /system.slice/prometheus.service
           └─29056 /usr/bin/prometheus -config.file=/etc/prometheus/prometheus.yml -storage.local.path=/var/lib/

Oct 19 09:11:27 localhost.localdomain systemd[1]: Started The Prometheus monitoring system and time series datal
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Start
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Build
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Host
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Loadi
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Liste
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Loadi
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="0 ser
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Serve
Oct 19 09:11:27 localhost.localdomain prometheus[29056]: time="2023-10-19T09:11:27-04:00" level=info msg="Start
Hint: Some lines were ellipsized, use -l to show in full.
[ynollan@localhost ~]$
```

- Prometheus was successfully installed in CentOS.

```
temd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable prometheus
workstation@server1:~$ systemctl start prometheus
workstation@server1:~$ systemctl status prometheus
● prometheus.service - Monitoring system and time series database
   Loaded: loaded (/lib/systemd/system/prometheus.service; enabled; vendor prese
   Active: active (running) since Thu 2023-10-19 20:47:10 PST; 27min ago
     Docs: https://prometheus.io/docs/introduction/overview/
 Main PID: 4811 (prometheus)
    Tasks: 7 (limit: 4657)
   CGroup: /system.slice/prometheus.service
           └─4811 /usr/bin/prometheus

Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0090
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0110
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0117
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0122
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0182
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0260
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0336
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0340
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0343
Oct 19 20:47:11 server1 prometheus[4811]: level=info ts=2023-10-19T12:47:11.0349
lines 1-19/19 (END)
```

- prometheus was successfully installed in Ubuntu.

GITHUB REPOSITORY LINK:

https://github.com/yorehh/HOA9.git

Reflections:

Answer the following:

1. What are the benefits of having a performance monitoring tool?
   - One benefit of having a performance monitoring tool is that it can track your performance accurately and 24/7. They can also detect issues and anomalies in real-time, allowing the person to properly execute or troubleshoot the issue before making it critical. They can also provide insights on how resources will be used, and lastly, they can predict whether the system will reach its capacity.

Conclusions:

In this activity, I have learned how to install prometheus, a performance monitoring tool that fundamentally stores all data as timeseries. Overall, this activity helped me gain more knowledge on how to use ansible playbooks and I was also able to broaden my knowledge in connecting servers and updating packages of each servers through a manage node.