

<b>Name:</b> Cruz, Patrick Danielle C.	<b>Date Performed:</b> Sept 12, 2025
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<b>Instructor:</b> Engr. Robin Valenzuela	<b>Semester and SY:</b> 1st semester
<b>Activity 6: Targeting Specific Nodes and Managing Services</b>	
<b>1. Objectives:</b> <ul style="list-style-type: none"> <li>1.1 Individualize hosts</li> <li>1.2 Apply tags in selecting plays to run</li> <li>1.3 Managing Services from remote servers using playbooks</li> </ul>	
<b>2. Discussion:</b> <p>In this activity, we try to individualize hosts. For example, we don't want apache on all our servers, or maybe only one of our servers is a web server, or maybe we have different servers like database or file servers running different things on different categories of servers and that is what we are going to take a look at in this activity.</p> <p>We also try to manage services that do not automatically run using the automations in playbook. For example, when we install web servers or httpd for CentOS, we notice that the service did not start automatically.</p> <p><b>Requirement:</b>  In this activity, you will need to create another Ubuntu VM and name it Server 3. Likewise, you need to activate the second adapter to a host-only adapter after the installations. Take note of the IP address of the Server 3. Make sure to use the command <b>ssh-copy-id</b> to copy the public key to Server 3. Verify if you can successfully SSH to Server 3.</p>	

## Task 1: Targeting Specific Nodes

1. Create a new playbook and named it site.yml. Follow the commands as shown in the image below. Make sure to save the file and exit.

```
---
- hosts: all
  become: true
  tasks:

    - name: install apache and php for Ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
        update_cache: yes
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"
```

None

```
---
- hosts: all
  become: true
  tasks:
    - name: install apache and php for Ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
        update_cache: yes
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"
```

2. Edit the inventory file. Remove the variables we put in our last activity and group according to the image shown below:

```
[web_servers]
192.168.56.120
192.168.56.121

[db_servers]
192.168.56.122

[file_servers]
192.168.56.123
```



A screenshot of a terminal window titled "patrick@Workstation: ~/CPE232\_patcruz". The window shows the contents of a file named "inventory" edited with the "nano" text editor. The file contains the following configuration:

```
GNU nano 8.3
[inventory]
[web_server]
192.168.64.5
192.168.64.13

[db_servers]
192.168.64.15

[file_servers]
192.168.64.12 ansible_user=pat
```

Make sure to save the file and exit.

Right now, we have created groups in our inventory file and put each server in its own group. In other cases, you can have a server be a member of multiple groups, for example you have a test server that is also a web server.

3. Edit the *site.yml* by following the image below:

```
---
- hosts: all
  become: true
  pre_tasks:
    - name: install 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: web_servers
  become: true
  tasks:
    - name: install apache and php for Ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"
```

None

```
---
- hosts: all
  become: true
  pre_tasks:
    - name: install 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: web_server
  become: true
  tasks:
    - name: install apache and php for ubuntu servers
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"
```

Make sure to save the file and exit.

The **pre-tasks** command tells the ansible to run it before any other thing. In the **pre-tasks**, CentOS will install updates while Ubuntu will upgrade its distribution package. This will run before running the second play, which is targeted at **web\_servers**. In the second play, apache and php will be installed on both Ubuntu servers and CentOS servers.

Run the `site.yml` file and describe the result.

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.yml --ask-become-pass
BECOME password:

PLAY [all] ****
*****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.5]
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.15]
[WARNING]: Platform linux on host 192.168.64.13 is using the discovered Python
```

```
ok: [192.168.64.12]

TASK [install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]

TASK [install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
changed: [192.168.64.13]
changed: [192.168.64.15]
changed: [192.168.64.5]

PLAY [web_server] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]
```

```
TASK [install apache and php for ubuntu servers] ****
*****
ok: [192.168.64.13]
ok: [192.168.64.5]

TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]

PLAY RECAP ****
*****
192.168.64.12      : ok=2    changed=0    unreachable=0    failed=
0    skipped=1    rescued=0   ignored=0
192.168.64.13      : ok=4    changed=1    unreachable=0    failed=
0    skipped=2    rescued=0   ignored=0
192.168.64.15      : ok=2    changed=1    unreachable=0    failed=
0    skipped=1    rescued=0   ignored=0
192.168.64.5       : ok=4    changed=1    unreachable=0    failed=
0    skipped=2    rescued=0   ignored=0
```

Description: The playbook updates all servers, installs Apache and PHP on both Ubuntu and CentOS, and shows “changed” if something was installed or “ok” if it was already there. The recap at the end tells you which servers were updated successfully.

4. Let’s try to edit again the *site.yml* file. This time, we are going to add plays targeting the other servers. This time we target the *db\_servers* by adding it on the current *site.yml*. Below is an example: (Note add this at the end of the playbooks from task 1.3.

```
- hosts: db_servers
become: true
tasks:

- name: install mariadb package (Centos)
  yum:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Centos"

- name: "Mariadb- Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true

- name: install mariadb packege (Ubuntu)
  apt:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Ubuntu"
```

None

```
- hosts: all
become: true
pre_tasks:
  - name: install 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: web_server
become: true
tasks:
  - name: install apache and php for ubuntu servers
    apt:
      name:
        - apache2
        - libapache2-mod-php
      state: latest
    when: ansible_distribution == "Ubuntu"

  - name: install apache and php for CentOS servers
    dnf:
      name:
        - httpd
        - php
      state: latest
    when: ansible_distribution == "CentOS"

- hosts: db_servers
become: true
tasks:
  - name: Install MariaDB package (CentOS)
    yum:
      name: mariadb-server
      state: latest
    when: ansible_distribution == "CentOS"

  - name: Mariadb - Restarting/Enabling
    service:
      name: mariadb
      state: restarted
      enabled: true
```

```
- name: Install MariaDB package (Ubuntu)
  apt:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Ubuntu"
```

Make sure to save the file and exit.

Run the *site.yml* file and describe the result.

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.yml --ask-become-pass
BECOME password:

PLAY [db_servers] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.15]

TASK [Install MariaDB package (CentOS)] ****
skipping: [192.168.64.15]

TASK [Mariadb - Restarting/Enabling] ****
changed: [192.168.64.15]

TASK [Install MariaDB package (Ubuntu)] ****
ok: [192.168.64.15]
```

```

core/2.18/reference_appendices/interpreter_discovery.html for more information.
ok: [192.168.64.15]

TASK [Install MariaDB package (CentOS)] ****
skipping: [192.168.64.15]

TASK [Mariadb - Restarting/Enabling] ****
changed: [192.168.64.15]

TASK [Install MariaDB package (Ubuntu)] ****
ok: [192.168.64.15]

PLAY RECAP ****
192.168.64.15 : ok=3    changed=1    unreachable=0    failed=0    s
kipped=1    rescued=0    ignored=0

patrick@Workstation:~/CPFE232_patrcruz$ █

```

5. Go to the remote server (Ubuntu) terminal that belongs to the db\_servers group and check the status for mariadb installation using the command: ***systemctl status mariadb***. Do this on the CentOS server also.

Describe the output.

- On my server2 192.168.64.115 the systemctl status mariadb command shows that MariaDB is active and running. The output displays the service name, status as active running, the main process ID, and uptime information. This confirms that MariaDB is correctly installed and started on the server.

```

patrick@Server2:~$ systemctl status mariadb
● mariadb.service - MariaDB 11.4.7 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: ➤
   Active: active (running) since Mon 2025-09-15 18:01:00 PST; 1min 36s ago
     Invocation: 80342e57d83643acaf9a502b9ece89ac
       Docs: man:mariadb(8)
              https://mariadb.com/kb/en/library/systemd/
    Process: 6839 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var>
    Process: 6841 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_ST>
    Process: 6843 ExecStartPre=/bin/sh -c [ ! -e /usr/bin/galera_recovery ] && >
    Process: 6916 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP_S>
    Process: 6918 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0/>
  Main PID: 6903 (mariadb)
    Status: "Taking your SQL requests now..." █
      Tasks: 10 (limit: 25901)
     Memory: 86M (peak: 90.4M)
        CPU: 1.088s
      CGroup: /system.slice/mariadb.service
              └─6903 /usr/sbin/mariadb

Sep 15 18:01:00 Server2 mariadb[6903]: 2025-09-15 18:01:00 0 [Note] Plugin 'ws>
Sep 15 18:01:00 Server2 mariadb[6903]: 2025-09-15 18:01:00 0 [Note] InnoDB: Lo>

```

6. Edit the *site.yml* again. This time we will append the code to configure installation on the *file\_servers* group. We can add the following on our file.

```
- hosts: file_servers
become: true
tasks:

- name: install samba package
  package:
    name: samba
    state: latest
```

None

```
- hosts: file_servers
become: true
tasks:
  - name: Install samba package
    package:
      name: samba
      state: latest
```

Make sure to save the file and exit.

Run the *site.yml* file and describe the result.

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.yml --ask-become-pass
BECOME password:

PLAY [file_servers] ****
*****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 192.168.64.12 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more information.
ok: [192.168.64.12]
```

```
TASK [Install samba package] ****
*****
changed: [192.168.64.12]

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

Description: When I ran the playbook the ansible was connected to my file server, checked its system info, and installed Samba. If Samba was already installed, it just confirmed it and showed ok. If it installed Samba, it changed. In the recap, it showed my file server IP with no errors, meaning the task worked.

The testing of the *file\_servers* is beyond the scope of this activity, and as well as our topics and objectives. However, in this activity we were able to show that we can target hosts or servers using grouping in ansible playbooks.

## Task 2: Using Tags in running playbooks

In this task, our goal is to add metadata to our plays so that we can only run the plays that we want to run, and not all the plays in our playbook.

1. Edit the *site.yml* file. Add tags to the playbook. After the name, we can place the tags: *name\_of\_tag*. This is an arbitrary command, which means you can use any name for a tag.

```
---  
- hosts: all  
  become: true  
  pre_tasks:  
  
    - name: install updates (CentOS)  
      tags: always  
      dnf:  
        update_only: yes  
        update_cache: yes  
      when: ansible_distribution == "CentOS"  
  
    - name: install updates (Ubuntu)  
      tags: always  
      apt:  
        upgrade: dist  
        update_cache: yes  
      when: ansible_distribution == "Ubuntu"
```

```
- hosts: web_servers  
  become: true  
  tasks:  
  
    - name: install apache and php for Ubuntu servers  
      tags: apache,apache2,ubuntu  
      apt:  
        name:  
          - apache2  
          - libapache2-mod-php  
        state: latest  
      when: ansible_distribution == "Ubuntu"  
  
    - name: install apache and php for CentOS servers  
      tags: apache,centos,httpd  
      dnf:  
        name:  
          - httpd  
          - php  
        state: latest  
      when: ansible_distribution == "CentOS"
```

```
- hosts: db_servers
become: true
tasks:

- name: install mariadb package (CentOS)
  tags: centos, db,mariadb
  dnf:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "CentOS"

- name: "Mariadb- Restarting/Enabling"
  service:
    name: mariadb
    state: restarted
    enabled: true

- name: install mariadb packege (Ubuntu)
  tags: db, mariadb,ubuntu
  apt:
    name: mariadb-server
    state: latest
    when: ansible_distribution == "Ubuntu"

- hosts: file_servers
become: true
tasks:

- name: install samba package
  tags: samba
  package:
    name: samba
    state: latest
```

None

```
---
- hosts: all
  become: true
  pre_tasks:
    - name: Install updates (CentOS)
```

```
tags: always
dnf:
  update_only: yes
  update_cache: yes
when: ansible_distribution == "CentOS"

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

- hosts: web_server
  become: true
  tasks:
    - name: Install apache and php for Ubuntu servers
      tags: apache,apache2,ubuntu
      apt:
        name:
          - apache2
          - libapache2-mod-php
        state: latest
      when: ansible_distribution == "Ubuntu"

    - name: install apache and php for CentOS servers
      tags: apache,centos,httpd
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"

- hosts: db_servers
  become: true
  tasks:
    - name: Install mariadb package (CentOS)
      tags: centos,db,mariadb
      dnf:
        name: mariadb-server
        state: latest
      when: ansible_distribution == "CentOS"

    - name: "Mariadb - Restarting/Enabling"
      service:
        name: mariadb
        state: restarted
        enabled: true
```

```
- name: install mariadb package (Ubuntu)
  tags: db,mariadb,ubuntu
  apt:
    name: mariadb-server
    state: latest
  when: ansible_distribution == "Ubuntu"

- hosts: file_servers
  become: true
  tasks:
    - name: install samba package
      tags: samba
      package:
        name: samba
        state: latest
```

Make sure to save the file and exit.  
Run the **site.yml** file and describe the result.

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.yml --ask-become-pass
BECOME password:

PLAY [all] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.15]
[WARNING]: Platform linux on host 192.168.64.13 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.13]
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
```

```
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
hon
interpreter at /usr/bin/python3.13, but future installation of another Pyt
hon
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more informa
tion.
ok: [192.168.64.5]
[WARNING]: Platform linux on host 192.168.64.12 is using the discovered Py
thon
interpreter at /usr/bin/python3.9, but future installation of another Pyth
on
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more informa
tion.
ok: [192.168.64.12]

TASK [Install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]
```

```
TASK [Install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
ok: [192.168.64.5]
ok: [192.168.64.15]
ok: [192.168.64.13]

PLAY [web_server] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]

TASK [Install apache and php for Ubuntu servers] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]

TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
```

```
PLAY [db_servers] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.15]

TASK [Install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]

TASK [Mariadb - Restarting/Enabling] ****
*****
changed: [192.168.64.15]

TASK [install mariadb package (Ubuntu)] ****
*****
ok: [192.168.64.15]

PLAY [file_servers] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.12]
```

```
PLAY RECAP ****
*****
192.168.64.12      : ok=4    changed=0    unreachable=0    failed=
0      skipped=1    rescued=0   ignored=0
192.168.64.13      : ok=4    changed=0    unreachable=0    failed=
0      skipped=2    rescued=0   ignored=0
192.168.64.15      : ok=5    changed=1    unreachable=0    failed=
0      skipped=2    rescued=0   ignored=0
192.168.64.5       : ok=4    changed=0    unreachable=0    failed=
0      skipped=2    rescued=0   ignored=0
```

2. On the local machine, try to issue the following commands and describe each result:

2.1 *ansible-playbook --list-tags site.yml*

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook --list-tags site.yml
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note
that
the implicit localhost does not match 'all'
[WARNING]: Could not match supplied host pattern, ignoring: web_server
[WARNING]: Could not match supplied host pattern, ignoring: db_servers
[WARNING]: Could not match supplied host pattern, ignoring: file_servers

playbook: site.yml

  play #1 (all): all      TAGS: []
    TASK TAGS: [always]

  play #2 (web_server): web_server      TAGS: []
    TASK TAGS: [apache, apache2, centos, httpd, ubuntu]

  play #3 (db_servers): db_servers      TAGS: []
    TASK TAGS: [centos, db, mariadb, ubuntu]

  play #4 (file_servers): file_servers  TAGS: []
    TASK TAGS: [samba]
```

*Explanation: This lists all available tags in your site.yml. The output shows each playbook such as web\_server, db\_servers, file\_servers and all tags inside, like centos, db, apache, samba. This helps you know which tags you can use.*

## 2.2 ansible-playbook --tags centos --ask-become-pass site.yml

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory --tags
centos --ask-become-pass site.yml
BECOME password:

PLAY [all] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.15]
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
```

```
TASK [Install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]

TASK [Install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
ok: [192.168.64.15]
ok: [192.168.64.13]
ok: [192.168.64.5]

PLAY [web_server] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]

TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
```

```
PLAY [db_servers] ****
*****
```

```
TASK [Gathering Facts] ****
*****
ok: [192.168.64.15]

TASK [Install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]

PLAY [file_servers] ****
*****
```

```
TASK [Gathering Facts] ****
*****
ok: [192.168.64.12]

PLAY RECAP ****
*****
192.168.64.12      : ok=3    changed=0    unreachable=0    failed=0
0      skipped=1    rescued=0   ignored=0
192.168.64.13      : ok=3    changed=0    unreachable=0    failed=0
0      skipped=2    rescued=0   ignored=0
192.168.64.15      : ok=3    changed=0    unreachable=0    failed=0
0      skipped=2    rescued=0   ignored=0
192.168.64.5       : ok=3    changed=0    unreachable=0    failed=0
0      skipped=2    rescued=0   ignored=0
```

*Explanation: This runs only tasks with the centos tag. The output will show Gathering Facts first, then only CentOS-related tasks like installing Apache/HTTPD and MariaDB on CentOS hosts. Other tasks will be marked skipped.*

### 2.3 ansible-playbook --tags db --ask-become-pass site.yml

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory --tags db --ask-become-pass site.yml
BECOME password:

PLAY [all] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
hon
interpreter at /usr/bin/python3.13, but future installation of another Pyt
hon
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more information.
ok: [192.168.64.5]
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Py
```

```
****.
ok: [192.168.64.13]

TASK [Install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]

TASK [Install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
ok: [192.168.64.5]
ok: [192.168.64.15]
ok: [192.168.64.13]

PLAY [web_server] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]

PLAY [db_servers] ****
*****
```

```

TASK [Gathering Facts] ****
*****
ok: [192.168.64.15]

TASK [Install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]

TASK [install mariadb package (Ubuntu)] ****
*****
ok: [192.168.64.15]

PLAY [file_servers] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.12]

PLAY RECAP ****
*****
192.168.64.12 : ok=3    changed=0    unreachable=0    failed=
0  skipped=1   rescued=0   ignored=0
192.168.64.13 : ok=3    changed=0    unreachable=0    failed=
0  skipped=1   rescued=0   ignored=0
192.168.64.15 : ok=4    changed=0    unreachable=0    failed=
0  skipped=2   rescued=0   ignored=0
192.168.64.5  : ok=3    changed=0    unreachable=0    failed=
0  skipped=1   rescued=0   ignored=0

```

*Explanation: This runs only database-related tasks MariaDB install + restart. The output shows only the db\_servers play being executed. All Apache and Samba tasks are skipped.*

#### 2.4 `ansible-playbook --tags apache --ask-become-pass site.yml`

```

patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory --tags
apache --ask-become-pass site.yml
BECOME password:

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

TASK [Gathering Facts] \*\*\*\*

[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python interpreter at /usr/bin/python3.13, but future installation of another Python interpreter could change the meaning of that path. See [https://docs.ansible.com/ansible-core/2.18/reference\\_appendices/interpreter\\_discovery.html](https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html) for more information.

ok: [192.168.64.5]

[WARNING]: Platform linux on host 192.168.64.13 is using the discovered Python interpreter at /usr/bin/python3.13, but future installation of another Python

```
TASK [Install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]

TASK [Install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
ok: [192.168.64.5]
ok: [192.168.64.15]
ok: [192.168.64.13]

PLAY [web_server] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.13]
ok: [192.168.64.5]

TASK [Install apache and php for Ubuntu servers] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]
```

```
TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]

PLAY [db_servers] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.15]

PLAY [file_servers] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.12]

PLAY RECAP ****
*****
```

```
PLAY RECAP ****
*****
 192.168.64.12      : ok=3    changed=0    unreachable=0    failed=
 0      skipped=1    rescued=0   ignored=0
 192.168.64.13      : ok=4    changed=0    unreachable=0    failed=
 0      skipped=2    rescued=0   ignored=0
 192.168.64.15      : ok=3    changed=0    unreachable=0    failed=
 0      skipped=1    rescued=0   ignored=0
 192.168.64.5       : ok=4    changed=0    unreachable=0    failed=
 0      skipped=2    rescued=0   ignored=0

patrick@Workstation:~/CPE232_patcruz$
```

*Explanation: This runs only Apache install tasks for both Ubuntu and CentOS. The output shows web\_server play running and installing Apache/HTTPD + PHP. MariaDB and Samba tasks are skipped.*

## 2.5 `ansible-playbook --tags "apache,db" --ask-become-pass site.yml`

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory --tags
  "apache,db" --ask-become-pass site.yml
BECOME password:

PLAY [all] ****
*****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more information.
ok: [192.168.64.5]
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Python
interpreter at /usr/bin/python3.13, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more information.
```

*Explanation: This runs tasks tagged with apache OR db. The output shows both web\_server play Apache install and db\_servers play MariaDB install + restart running. Samba tasks are skipped.*

```
TASK [Install updates (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]
skipping: [192.168.64.15]
ok: [192.168.64.12]

TASK [Install updates (Ubuntu)] ****
*****
skipping: [192.168.64.12]
ok: [192.168.64.5]
ok: [192.168.64.15]
ok: [192.168.64.13]  []

PLAY [web_server] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.13]
ok: [192.168.64.5]

TASK [Install apache and php for Ubuntu servers] ****
*****
ok: [192.168.64.5]
ok: [192.168.64.13]
```

```
TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]

PLAY [db_servers] ****
*****

TASK [Gathering Facts] ****
*****
ok: [192.168.64.15]  []

TASK [Install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]

TASK [install mariadb package (Ubuntu)] ****
*****
```

```
TASK [install mariadb package (Ubuntu)] ****
*****
ok: [192.168.64.15]

PLAY [file_servers] ****
*****
TASK [Gathering Facts] ****
*****
ok: [192.168.64.12]

PLAY RECAP ****
*****
192.168.64.12      : ok=3    changed=0    unreachable=0    failed=0
                      skipped=1   rescued=0    ignored=0
192.168.64.13      : ok=4    changed=0    unreachable=0    failed=0
                      skipped=2   rescued=0    ignored=0
192.168.64.15      : ok=4    changed=0    unreachable=0    failed=0
                      skipped=2   rescued=0    ignored=0
192.168.64.5       : ok=4    changed=0    unreachable=0    failed=0
                      skipped=2   rescued=0    ignored=0
```

### Task 3: Managing Services

1. Edit the file site.yml and add a play that will automatically start the httpd on CentOS server.

```
- name: install apache and php for CentOS servers
  tags: apache,centos,httpd
  dnf:
    name:
      - httpd
      - php
    state: latest
  when: ansible_distribution == "CentOS"

- name: start httpd (Centos)
  tags: apache, centos,httpd
  service:
    name: httpd
    state: started
  when: ansible_distribution == "CentOS"
```

Figure 3.1.1

```
None

- hosts: web_server
  become: true
  tasks:
    - name: install apache and php for CentOS servers
      tags: apache,centos,httpd
      dnf:
        name:
          - httpd
          - php
        state: latest
      when: ansible_distribution == "CentOS"

    - name: start httpd (CentOS)
      tags: apache,centos,httpd
      service:
        name: httpd
        state: started
      when: ansible_distribution == "CentOS"
```

Make sure to save the file and exit.

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.y
ml --ask-become-pass
BECOME password:

PLAY [web_server] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.5 is using the discovered Pyt
hon
interpreter at /usr/bin/python3.13, but future installation of another Pyt
hon
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more informa
tion.
ok: [192.168.64.5]
[WARNING]: Platform linux on host 192.168.64.13 is using the discovered Pyt
hon
interpreter at /usr/bin/python3.13, but future installation of another Pyt
hon
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-core/2.18/reference\_appendices/interpreter\_discovery.html for more informa
tion.
ok: [192.168.64.13]
```

```
ok: [192.168.64.13]

TASK [install apache and php for CentOS servers] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]

TASK [start httpd (CentOS)] ****
*****
skipping: [192.168.64.5]
skipping: [192.168.64.13]

PLAY RECAP ****
*****
192.168.64.13      : ok=1    changed=0    unreachable=0    failed=
0    skipped=2    rescued=0    ignored=0
192.168.64.5      : ok=1    changed=0    unreachable=0    failed=
0    skipped=2    rescued=0    ignored=0
```

You would also notice from our previous activity that we already created a module that runs a service.

```
- hosts: db_servers
become: true
tasks:

- name: install mariadb package (Centos)
tags: centos, db,mariadb
dnf:
  name: mariadb-server
  state: latest
  when: ansible_distribution == "CentOS"

- name: "Mariadb- Restarting/Enabling"
service:
  name: mariadb
  state: restarted
  enabled: true
```

Figure 3.1.2

None

```
- hosts: db_servers
become: true
```

```
tasks:
  - name: install mariadb package (CentOS)
    tags: centos, db, mariadb
    dnf:
      name: mariadb-server
      state: latest
    when: ansible_distribution == "CentOS"

  - name: "Mariadb - Restarting/Enabling"
    service:
      name: mariadb
      state: restarted
      enabled: true
```

```
patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.y
ml --ask-become-pass
BECOME password:

PLAY [db_servers] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.15 is using the discovered Py
thon
interpreter at /usr/bin/python3.13, but future installation of another Pyt
hon
interpreter could change the meaning of that path. See
https://docs.ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more informa
tion.
ok: [192.168.64.15]

TASK [install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]
```

```

tion.
ok: [192.168.64.15]

TASK [install mariadb package (CentOS)] ****
*****
skipping: [192.168.64.15]

TASK [Mariadb - Restarting/Enabling] ****
*****
changed: [192.168.64.15]

PLAY RECAP ****
*****
192.168.64.15 : ok=2    changed=1    unreachable=0    failed=
0    skipped=1    rescued=0    ignored=0

```

This is because in CentOS, installed packages' services are not run automatically. Thus, we need to create the module to run it automatically.

2. To test it, before you run the saved playbook, go to the CentOS server and stop the currently running httpd using the command `sudo systemctl stop httpd`. When prompted, enter the sudo password. After that, open the browser and enter the CentOS server's IP address. You should not be getting a display because we stopped the httpd service already.

```

[pat@localhost ~]$ sudo systemctl stop httpd
[sudo] password for pat:
[pat@localhost ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; pres>
   Drop-In: /usr/lib/systemd/system/httpd.service.d
             └─php-fpm.conf
      Active: inactive (dead) since Tue 2025-09-16 19:34:55 PST; 7s ago
        Duration: 2min 29.145s
          Docs: man:httpd.service(8)
        Process: 17191 ExecStart=/usr/sbin/httpd $OPTIONS -DFOREGROUND (code=>
       Main PID: 17191 (code=exited, status=0/SUCCESS)
         Status: "Total requests: 2; Idle/Busy workers 100/0;Requests/sec: 0.>
           CPU: 462ms

Sep 16 19:32:25 localhost.localdomain systemd[1]: Starting The Apache HTT>
Sep 16 19:32:25 localhost.localdomain httpd[17191]: AH00558: httpd: Could>
Sep 16 19:32:25 localhost.localdomain httpd[17191]: Server configured, li>
Sep 16 19:32:25 localhost.localdomain systemd[1]: Started The Apache HTT>
Sep 16 19:34:54 localhost.localdomain systemd[1]: Stopping The Apache HTT>
Sep 16 19:34:55 localhost.localdomain systemd[1]: httpd.service: Deactiva>
Sep 16 19:34:55 localhost.localdomain systemd[1]: Stopped The Apache HTT>
lines 1-19/19 (END)

```

3. Go to the local machine and this time, run the *site.yml* file. Then after running the file, go again to the CentOS server and enter its IP address on the browser. Describe the result.

To automatically enable the service every time we run the playbook, use the command *enabled: true* similar to Figure 7.1.2 and save the playbook.

```
None  
GNU nano 8.3                                     site.yml  
- hosts: file_servers  
become: true  
tasks:  
  - name: install apache and php for CentOS servers  
    tags: apache,centos,httpd  
    dnf:  
      name:  
        - httpd  
        - php  
      state: latest  
    when: ansible_distribution == "CentOS"  
  
  - name: start and enable httpd (CentOS)  
    tags: apache,centos,httpd  
    service:  
      name: httpd  
      state: started  
      enabled: true  
    when: ansible_distribution == "CentOS"
```

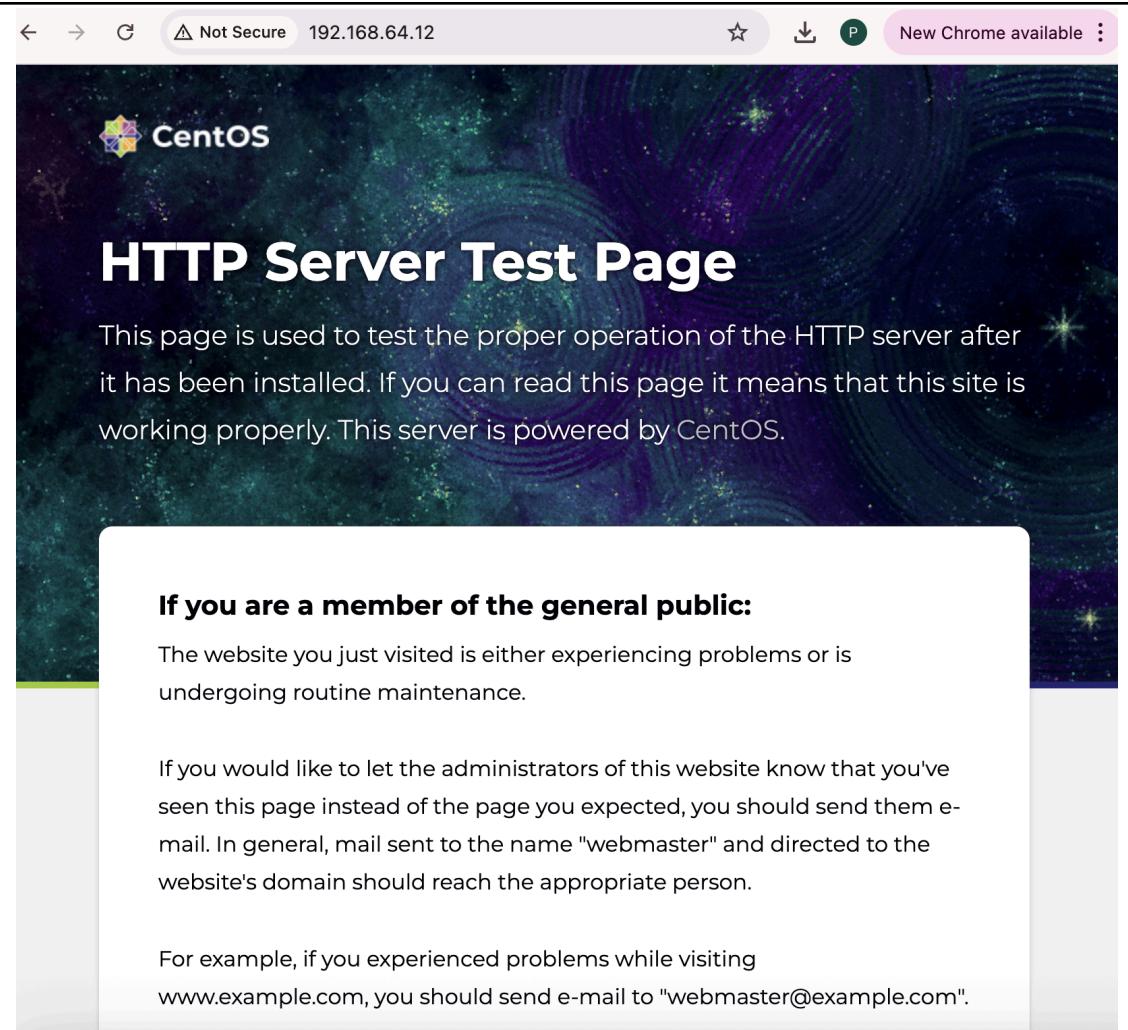
```
[patrick@Workstation:~/CPE232_patcruz$ ansible-playbook -i inventory site.yaml --ask-become-pass
BECOME password:
*****
PLAY [file_servers] ****
*****
TASK [Gathering Facts] ****
*****
[WARNING]: Platform linux on host 192.168.64.12 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more information.
ok: [192.168.64.12]

TASK [install apache and php for CentOS servers] ****
*****
ok: [192.168.64.12]

TASK [start and enable httpd (CentOS)] ****
*****
changed: [192.168.64.12]
```

```
TASK [start and enable httpd (CentOS)] ****
*****
changed: [192.168.64.12]

PLAY RECAP ****
*****
192.168.64.12 : ok=3    changed=1    unreachable=0    failed=
0    skipped=0    rescued=0    ignored=0
```



description: After executing the site.yml playbook, Ansible successfully connected to the CentOS server, installed Apache and PHP packages if they were not present, and started the httpd service. Upon entering the CentOS server's IP address in a web browser, the Apache default test page was displayed, confirming that the web server was running properly. Additionally, since the playbook included the enabled: true directive, the httpd service was configured to start automatically on every system reboot, ensuring consistent web server availability

#### Reflections:

Answer the following:

1. What is the importance of putting our remote servers into groups?

- Grouping remote servers makes management easier because we can target specific roles like web servers, database servers, or file servers. This helps us run tasks only where they are needed instead of applying them to every server.
2. What is the importance of tags in playbooks?
- Tags let us choose which tasks to run without executing the whole playbook. This saves time, avoids repeating unnecessary tasks, and focuses on what we really want to update or configure.
3. Why do you think some services need to be managed automatically in playbooks?
- Some services must be managed automatically to make sure they are always running and enabled after reboots. This keeps the system stable and avoids manual work every time we make changes.