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Activity 6: Targeting Specific Nodes and Managing Services	
1. Objectives: <ul style="list-style-type: none"> 1.1 Individualize hosts 1.2 Apply tags in selecting plays to run 1.3 Managing Services from remote servers using playbooks 	
2. Discussion: <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>	
Requirement: <p>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 ssh-copy-id to copy the public key to Server 3. Verify if you can successfully SSH to Server 3.</p>	
Task 1: Targeting Specific Nodes <ol style="list-style-type: none"> 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"

```

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vboxuser@workstation:~/HOA6

ed now it is to install the new keys
vboxuser@192.168.56.101's password:

Number of key(s) added: 2

A Now try logging into the machine, with: "ssh 'vboxuser@192.168.56.101'"
and check to make sure that only the key(s) you wanted were added.

vboxuser@workstation:~/HOA6\$ ansible-playbook --ask-become-pass site.yaml
BECOME password:

[*] ****

TASK [Gathering Facts] ****
ok: [192.168.56.103]
ok: [192.168.56.102]
ok: [192.168.56.104]
ok: [192.168.56.101]

TASK [install apache and php for ubuntu servers] ****
skipping: [192.168.56.104]
ok: [192.168.56.103]
ok: [192.168.56.102]

2. Edit the inventory file. Remove the vasudriables 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
```

Make sure to save the file and exit.

```
GNU nano 7.2                               inventory.yaml
[Ubuntu]
192.168.56.102
192.168.56.103

[centos]
192.168.56.104 ansible_user="esantos"

[workstation]
192.168.56.101

[ Read 9 lines ]
^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
```

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"
```

Make sure to save the file and exit.

```
GNU nano 7.2                               site.yaml
---
- hosts: all
  become: true
  pre_task:

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

- hosts: Ubuntu
  become: true
  tasks:

    - name: install apache and php for CentOS servers
      dnf:
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/

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.

```
vboxuser@workstation: ~/HOA6
ok: [192.168.56.103]
ok: [192.168.56.101]

PLAY [Ubuntu] ****
TASK [Gathering Facts] ****
ok: [192.168.56.102]
ok: [192.168.56.103]

TASK [install apache and php for CentOS servers] ****
skipping: [192.168.56.102]
skipping: [192.168.56.103]

PLAY RECAP ****
192.168.56.101      : ok=2    changed=0    unreachable=0    failed=0
skipped=0  rescued=0  ignored=0
192.168.56.102      : ok=3    changed=0    unreachable=0    failed=0
skipped=1  rescued=0  ignored=0
192.168.56.103      : ok=3    changed=0    unreachable=0    failed=0
skipped=1  rescued=0  ignored=0
192.168.56.104      : ok=1    changed=0    unreachable=0    failed=0
skipped=1  rescued=0  ignored=0

vboxuser@workstation:~/HOA6$
```

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

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:

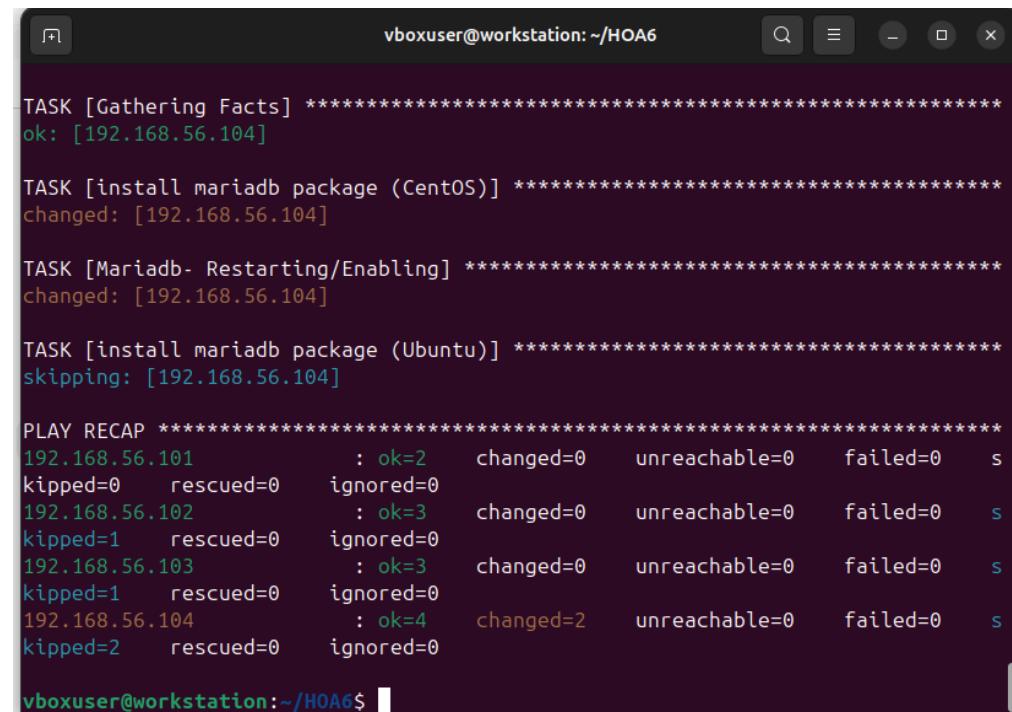
    - name: install mariadb package (Centos)
      yum:
        name: mariadb-server
        state: latest
      when: ansible_distribution == "CentOS"

    - 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"
```

Make sure to save the file and exit.

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



The screenshot shows a terminal window titled 'vboxuser@workstation: ~/HOA6'. The terminal displays the output of an Ansible playbook named 'site.yml'. The output shows the following tasks being run:

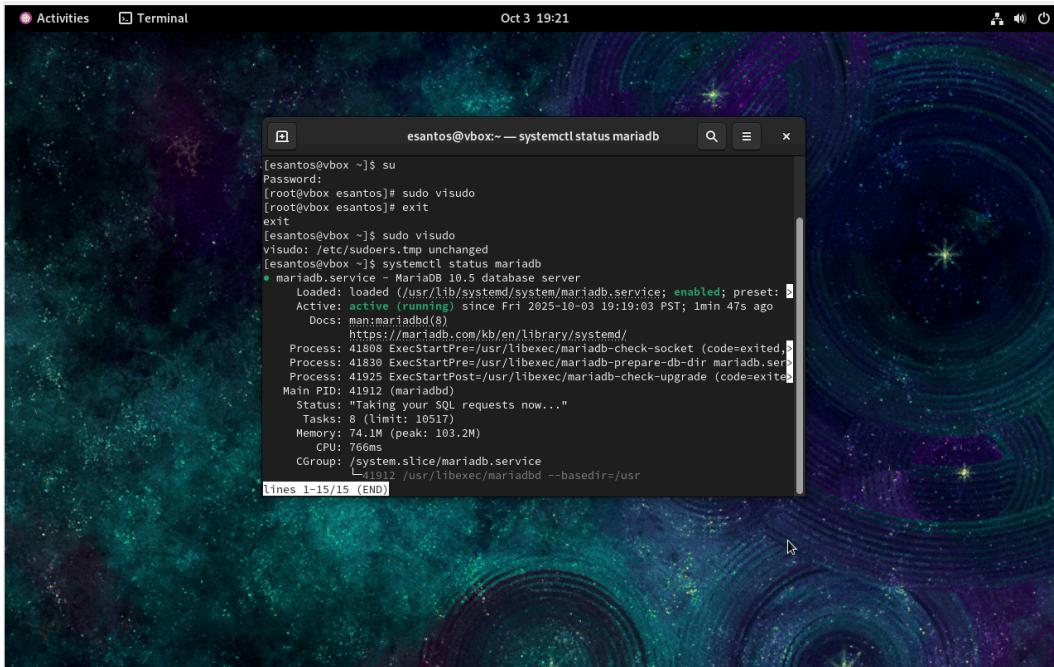
- TASK [Gathering Facts] ****
ok: [192.168.56.104]
- TASK [install mariadb package (CentOS)] ****
changed: [192.168.56.104]
- TASK [Mariadb- Restarting/Enabling] ****
changed: [192.168.56.104]
- TASK [install mariadb package (Ubuntu)] ****
skipping: [192.168.56.104]

PLAY RECAP ****

Host	ok	changed	unreachable	failed	skipped
192.168.56.101	2	0	0	0	0
192.168.56.102	3	0	0	0	0
192.168.56.103	3	0	0	0	0
192.168.56.104	4	2	0	0	0

vboxuser@workstation:~/HOA6\$

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.



The screenshot shows a terminal window titled "Terminal" with the command "esantos@vbox:~ -- systemctl status mariadb" entered. The output shows the status of the mariadb service, which is active (running). It provides details such as the service name, version (MariaDB 10.5), and various processes running under it, including MySQL and mariadb-check-socket.

```
[esantos@vbox ~]$ su
Password:
[root@vbox esantos]# sudo visudo
[root@vbox esantos]# exit
exit
[esantos@vbox ~]$ sudo visudo
visudo: /etc/sudoers.tmp unchanged
[esantos@vbox ~]$ systemctl status mariadb
● mariadb.service - MariaDB 10.5 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: )
   Active: active (running) since Fri 2025-10-03 19:19:03 PST; 1min 47s ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Process: 41898 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir mariadb.ser...
   Process: 41925 ExecStartPost=/usr/libexec/mariadb-check-upgrade (code=exited)
   Main PID: 41912 (mariadb)
      Status: "Taking your SQL requests now..."
         Tasks: 8 (limit: 10517)
        Memory: 74.1M (peak: 103.2M)
          CPU: 766ms
        CGroup: /system.slice/mariadb.service
                 └─41912 /usr/libexec/mariadb --basedir=/usr

lines 1-15/15 (END)
```

Describe the output.

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
```

Make sure to save the file and exit.

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

```
vboxuser@workstation: ~/HOA6
TASK [install mariadb package (CentOS)] ****
ok: [192.168.56.104]

TASK [Mariadb- Restarting/Enabling] ****
changed: [192.168.56.104]

TASK [install mariadb package (Ubuntu)] ****
skipping: [192.168.56.104]
[WARNING]: Could not match supplied host pattern, ignoring: file_serves

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

PLAY RECAP ****
192.168.56.101      : ok=2    changed=0    unreachable=0    failed=0    s
kipped=0  rescued=0  ignored=0
192.168.56.102      : ok=3    changed=0    unreachable=0    failed=0    s
kipped=1  rescued=0  ignored=0
192.168.56.103      : ok=3    changed=0    unreachable=0    failed=0    s
kipped=1  rescued=0  ignored=0
192.168.56.104      : ok=4    changed=1    unreachable=0    failed=0    s
kipped=2  rescued=0  ignored=0

vboxuser@workstation:~/HOA6$
```

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

```

Make sure to save the file and exit.

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

2. On the local machine, try to issue the following commands and describe each result:
 - 2.1 *ansible-playbook --list-tags site.yml*
 - 2.2 *ansible-playbook --tags centos --ask-become-pass site.yml*
 - 2.3 *ansible-playbook --tags db --ask-become-pass site.yml*
 - 2.4 *ansible-playbook --tags apache --ask-become-pass site.yml*
 - 2.5 *ansible-playbook --tags “apache,db” --ask-become-pass site.yml*

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

Make sure to save the file and exit.

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

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.
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.

Reflections:

Answer the following:

1. What is the importance of putting our remote servers into groups?
it is important to run all the update and installing all in one server
2. What is the importance of tags in playbooks?
the tags implement to run all important packages in all server
3. Why do think some services need to be managed automatically in playbooks?
because it is difficult and time consuming to manipulate manually the playbooks