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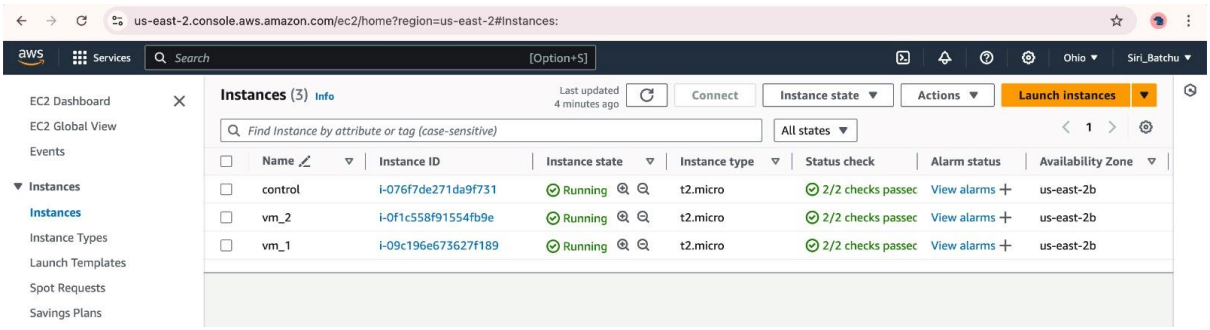
FA24: CMPE-272 Sec 49-Enterprise SW Platforms

Assignment 1:

- Configure two VMs, VM1 and VM2 either on your own hardware, or in a cloud environment. Configure Ansible to deploy a webserver on *VM1* and *VM2* on port 8080 with a web page that is accessible from a web browser, and displays the message: “Hello World from SJSU-X” where X is 1 or 2 depending on which webserver instance, VM1 or VM2.
- Include in the Ansible playbook, plays to deploy and un-deploy the webserver resources
- Submit a Word document, with screenshots showing your work, and a demo, and all ansible code/scripts via github

Solution:

1. Create three virtual machines (control, vm_1, vm_2) in Amazon ec2



2. Installation of Ansible in Ansible controller machine

```
[ec2-user@ip-172-31-16-151 ~]$ sudo yum install ansible -y
Last metadata expiration check: 0:37:36 ago on Mon Sep  9 02:46:10 2024.
Dependencies resolved.
================================================================================================================
 Package               Architecture        Version                       Repository                     Size
================================================================================================================
Installing:
 ansible               noarch              8.3.0-1.amzn2023.0.1          amazonlinux                    32 M
Installing dependencies:
 ansible-core          x86_64              2.15.3-1.amzn2023.0.4         amazonlinux                   2.5 M
 git-core              x86_64              2.40.1-1.amzn2023.0.3         amazonlinux                   4.3 M
 sshpass               x86_64              1.09-6.amzn2023.0.1           amazonlinux                    28 k

Transaction Summary
================================================================================================================
Install  4 Packages

Total download size: 39 M
Installed size: 549 M
Downloading Packages:
(1/4): git-core-2.40.1-1.amzn2023.0.3.x86_64.rpm                        31 MB/s | 4.3 MB     00:00
(2/4): ansible-core-2.15.3-1.amzn2023.0.4.x86_64.rpm                    15 MB/s | 2.5 MB     00:00
(3/4): sshpass-1.09-6.amzn2023.0.1.x86_64.rpm                          603 kB/s |  28 kB     00:00
(4/4): ansible-8.3.0-1.amzn2023.0.1.noarch.rpm                          58 MB/s |  32 MB     00:00
----------------------------------------------------------------------------------------------------------------
Total                                                                   64 MB/s |  39 MB     00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                         1/1
  Installing       : sshpass-1.09-6.amzn2023.0.1.x86_64                                                      1/4
  Installing       : git-core-2.40.1-1.amzn2023.0.3.x86_64                                                   2/4
  Installing       : ansible-core-2.15.3-1.amzn2023.0.4.x86_64                                               3/4
[ Installing       : ansible-8.3.0-1.amzn2023.0.1.noarch [=============================================  ] 4/4 ]

[ Installing       : ansible-8.3.0-1.amzn2023.0.1.noarch [================================================ ] 4/4 ]
[ Installing       : ansible-8.3.0-1.amzn2023.0.1.noarch [================================================== ] 4/4 ]
  Installing       : ansible-8.3.0-1.amzn2023.0.1.noarch [=================================================== ] 4/4
```

3. Create Ansible hosts (hosts.ini) file to connect to VMs and configure webservers for deployment of webservers (deploy_webservers.yml)

...em ec2-user@18.116.48.168 | ...m ec2-user@18.216.207.181 | ...em ec2-user@18.117.228.93 | ...em ec2-user@18.116.48.168

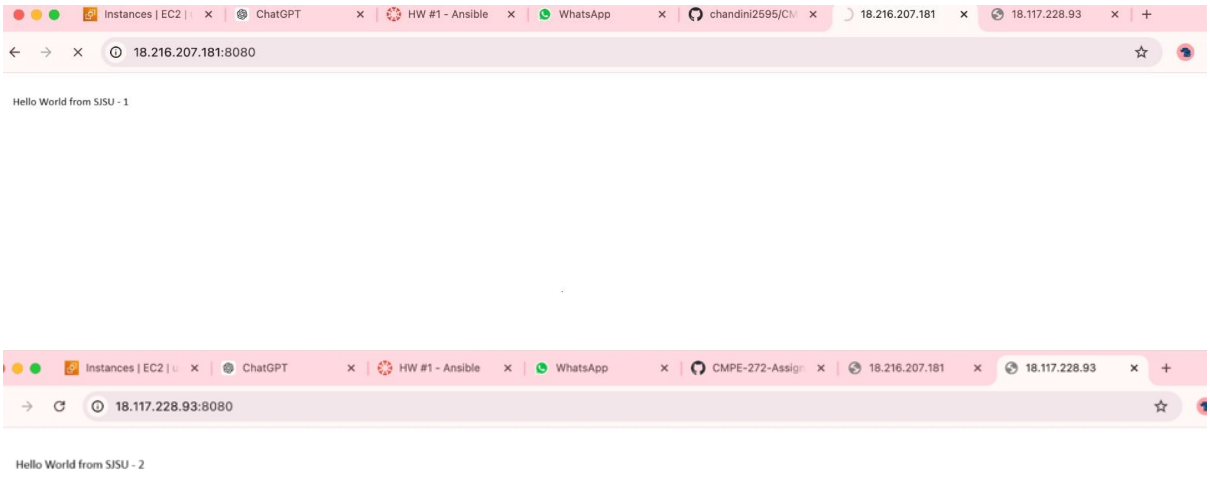
```
[webservers]
vm1 ansible_host=18.216.207.181 ansible_user=ec2-user server_id=1
vm2 ansible_host=18.117.228.93 ansible_user=ec2-user server_id=2
~
~
~
~
~
~
~
~
```

```
- name: Deploy webservers
  hosts: webservers
  become: yes
  vars:
    ansible_python_interpreter: /usr/bin/python3  # Ensure the correct Python interpreter is used
  tasks:
    - name: Ensure firewalld is installed
      package:
        name: firewalld
        state: present

    - name: Start and enable firewalld
      service:
        name: firewalld
        state: started
        enabled: yes

    - name: Ensure Apache is installed
      package:
        name: httpd
        state: present

    - name: Configure Apache to listen on port 8080
      lineinfile:
        path: /etc/httpd/conf/httpd.conf
        regexp: '^Listen '
        line: 'Listen 8080'
        state: present

    - name: Start and enable Apache service
      service:
        name: httpd
        state: restarted
        enabled: yes

    - name: Create custom web page
      copy:
        dest: /var/www/html/index.html
        content: |
          Hello World from SJSU-{{ server_id }}

    - name: Open port 8080 in firewalld
      firewalld:
        port: 8080/tcp
        permanent: yes
        state: enabled
        immediate: yes

    - name: Reload firewalld to apply changes
      command: firewall-cmd --reloadchanged: [vm1]
```

4. Execute the ansible playbook for the deployment of webservers in vm_1 and vm_2

```
...em ec2-user@18.116.48.168 | ...m ec2-user@18.216.207.181 | ...em ec2-user@18.117.228.93 | ...em ec2-user@18.116.48.168 | ...em ec2-user@18.117.228.93 | ...em ec2-user@18.116.48.168 +
-bash: port:: command not found
[ec2-user@ip-172-31-16-151 .ssh]$         permanent: yes
-bash: permanent:: command not found
[ec2-user@ip-172-31-16-151 .ssh]$         state: enabled
-bash: state:: command not found
[ec2-user@ip-172-31-16-151 .ssh]$         immediate: yes
-bash: immediate:: command not found
[ec2-user@ip-172-31-16-151 .ssh]$
[ec2-user@ip-172-31-16-151 .ssh]$     - name: Reload firewalld to apply changes
-bash: -: command not found
[ec2-user@ip-172-31-16-151 .ssh]$       command: firewall-cmd --reload
-bash: command:: command not found
[ec2-user@ip-172-31-16-151 .ssh]$ ansible-playbook -i hosts.ini deploy_webservers.yml

PLAY [Deploy webservers] ***********************************************************************************************************************************************************************************

TASK [Gathering Facts] *************************************************************************************************************************************************************************************
The authenticity of host '18.117.228.93 (18.117.228.93)' can't be established.
ED25519 key fingerprint is SHA256:QdfcFhaik5t9ccD8ZBQi4AIApFQ9H2IpJj0nSgEt5kc.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? ok: [vm1]
yes
ok: [vm2]

TASK [Ensure firewalld is installed] ***********************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Start and enable firewalld] **************************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Ensure Apache is installed] **************************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Configure Apache to listen on port 8080] *************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Start and enable Apache service] *********************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Create custom web page] ******************************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Open port 8080 in firewalld] *************************************************************************************************************************************************************************
ok: [vm1]
changed: [vm2]

TASK [Reload firewalld to apply changes] *******************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

PLAY RECAP *************************************************************************************************************************************************************************************************
vm1                        : ok=9    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
vm2                        : ok=9    changed=8    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

5. Webpage outcomes that can access from browser and display of message.



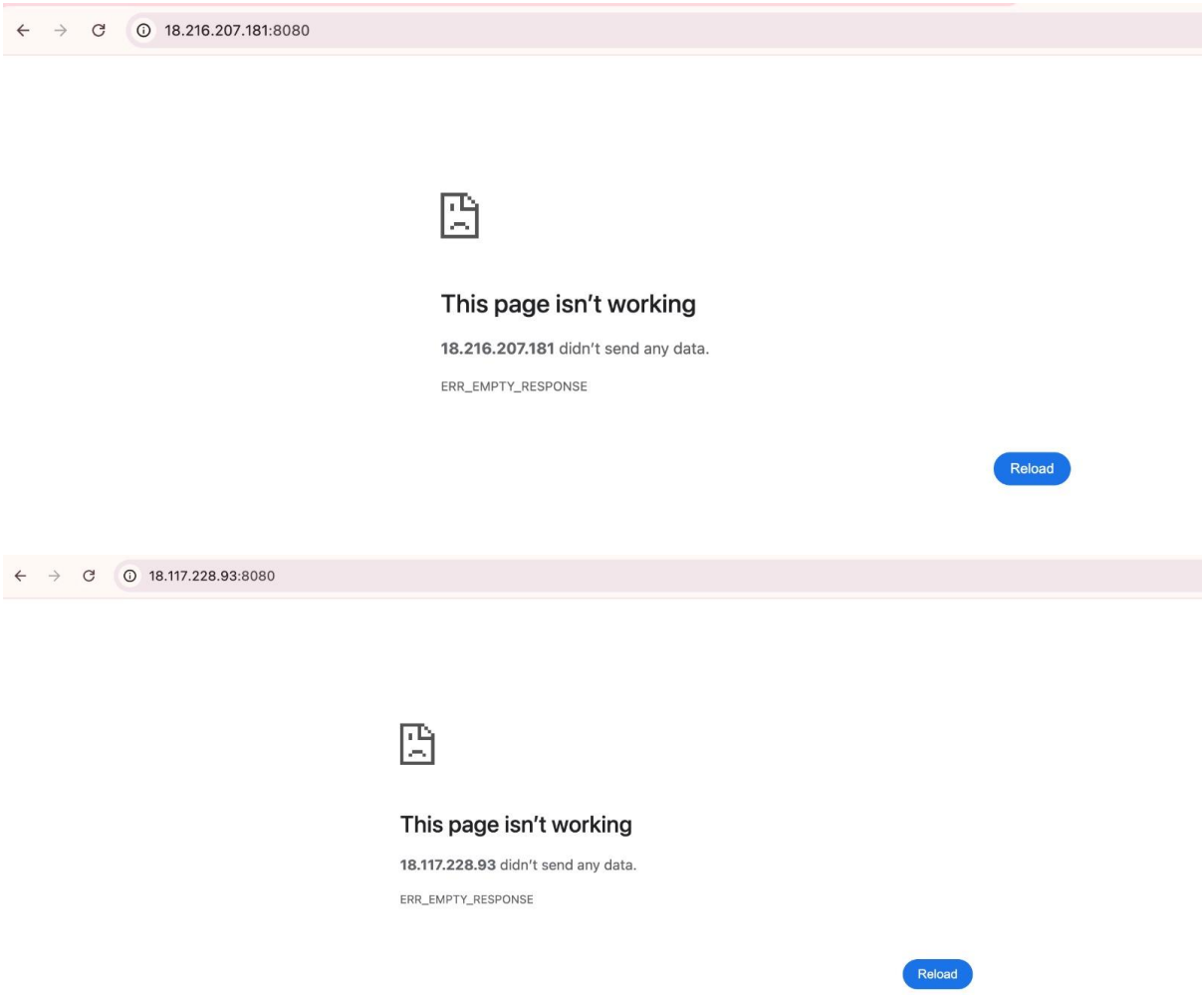
6. Create undeploy_webservers.yml file to undeploy webservers.

```yaml
- name: Un-deploy webservers
  hosts: webservers
  become: yes
  tasks:
    - name: Stop and disable Apache service
      service:
        name: httpd
        state: stopped
        enabled: no

    - name: Remove Apache package
      package:
        name: httpd
        state: absent

    - name: Remove custom web page
      file:
        path: /var/www/html/index.html
        state: absent

    - name: Remove port 8080 from firewalld
      firewalld:
        port: 8080/tcp
        state: disabled
        permanent: yes

    - name: Reload firewalld to apply changes
      command: firewall-cmd --reload

    - name: Stop and disable firewalld
      service:
        name: firewalld
        state: stopped
        enabled: no
~
~
~
```

7. Execute the ansible playbook for the undeployment of webservers in vm_1 and vm_2.

```
[ec2-user@ip-172-31-16-151 .ssh]$ vi hosts.ini
[ec2-user@ip-172-31-16-151 .ssh]$ vi undeploy_webservers.yml
[ec2-user@ip-172-31-16-151 .ssh]$ vi undeploy_webservers.yml
[ec2-user@ip-172-31-16-151 .ssh]$ ansible-playbook -i hosts.ini undeploy_webservers.yml

PLAY [Un-deploy webservers] ****************************************************************************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************************************************
[WARNING]: Platform linux on host vm1 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/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [vm1]
[WARNING]: Platform linux on host vm2 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/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [vm2]

TASK [Stop and disable Apache service] *****************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Remove Apache package] ***************************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Remove custom web page] **************************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Remove port 8080 from firewalld] *****************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Reload firewalld to apply changes] ***************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

TASK [Stop and disable firewalld] **********************************************************************************************************************************************************************
changed: [vm1]
changed: [vm2]

PLAY RECAP *********************************************************************************************************************************************************************************************
vm1                        : ok=7    changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
vm2                        : ok=7    changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

8. Outcomes after successful undeployment of webservers.



Github link: https://github.com/SiriBatchu/CMPE-272-HW1