Module 4: Ansible on Cloud

Demo Document - 4

Demo: Ansible playbook with Docker module.

Problem Statement:

Install and Manage Docker Container using Ansible.

NOTE: Docker and Ansible has to be installed on the machine before running the below playbook.

1. Login to EC2 host/machine.
   NOTE – Refer Module 13 Demo 2 for steps to create Amazon EC2 machine.

2. Create a directory called **docker_project** to develop the playbook as shown below.

   mkdir docker_project

```
root@ip-172-31-23-162:~# mkdir docker_project
root@ip-172-31-23-162:~#
```

3. Define the hosts in **hosts** file against which the playbook is run as shown below.

   Vi hosts ---- Open the file using Vi editor

   [webserver]

   18.117.197.17

   [webserver: vars]

   ansible_python_interpreter=usr/bin/python3

```
root@ip-172-31-23-162:~/docker_project# cat hosts
[webserver]
18.117.197.17

[webserver:vars]
ansible_python_interpreter=/usr/bin/python3
root@ip-172-31-23-162:~/docker_project#
```

4. Write the below playbook **ubuntu_playbook.yml** which has the code to install.
   - Dependencies
   - Docker repos,
   - Docker python module
   - Pull official ubuntu image,
   - Create 4 containers on the newly pulled image.

ubuntu_playbook.yml

```
---
- hosts: all
  become: true
  vars:
    create_containers: 4
    default_container_name: docker
    default_container_image: ubuntu
    default_container_command: sleep 1d

  tasks:
    - name: Install aptitude using apt
      apt: name=aptitude state=latest update_cache=yes force_apt_get=yes

    - name: Install required system packages
      apt: name={{ item }} state=latest update_cache=yes
      loop: [ 'apt-transport-https', 'ca-certificates', 'curl', 'software-properties-
common', 'python3-pip', 'virtualenv', 'python3-setuptools']

    - name: Add Docker GPG apt Key
      apt_key:
        url: https://download.docker.com/linux/ubuntu/gpg
        state: present

    - name: Add Docker Repository
      apt_repository:
        repo: deb https://download.docker.com/linux/ubuntu xenial stable
        state: present

    - name: Update apt and install docker-ce
      apt: update_cache=yes name=docker-ce state=latest

    - name: Install Docker Module for Python
      pip:
        name: docker
```

```
- name: Pull default Docker image
  docker_image:
    name: "{{ default_container_image }}"
    source: pull

- name: Create default containers
  docker_container:
    name: "{{ default_container_name }}{{ item }}"
    image: "{{ default_container_image }}"
    command: "{{ default_container_command }}"
    state: present
  with_sequence: count={{ create_containers }}
```

```
---
- hosts: all
  become: true
  vars:
    create_containers: 4
    default_container_name: docker
    default_container_image: ubuntu
    default_container_command: sleep 1d

  tasks:
    - name: Install aptitude using apt
      apt: name=aptitude state=latest update_cache=yes force_apt_get=yes
```

```
  default_container_image: ubuntu
  default_container_command: sleep 1d

tasks:
  - name: Install aptitude using apt
    apt: name=aptitude state=latest update_cache=yes force_apt_get=yes

  - name: Install required system packages
    apt: name={{ item }} state=latest update_cache=yes
    loop: [ 'apt-transport-https', 'ca-certificates', 'curl', 'software-properties-common', 'python3-pip', 'virtualenv', 'python3-setuptools

  - name: Add Docker GPG apt Key
    apt_key:
      url: https://download.docker.com/linux/ubuntu/gpg
      state: present

  - name: Add Docker Repository
    apt_repository:
      repo: deb https://download.docker.com/linux/ubuntu xenial stable
      state: present

  - name: Update apt and install docker-ce
    apt: update_cache=yes name=docker-ce state=latest

  - name: Install Docker Module for Python
    pip:
      name: docker

  - name: Pull default Docker image
    docker_image:
      name: "{{ default_container_image }}"
      source: pull

  - name: Create default containers
    docker_container:
      name: "{{ default_container_name }}{{ item }}"
      image: "{{ default_container_image }}"
      command: "{{ default_container_command }}"
      state: present
    with_sequence: count={{ create_containers }}
```

5. Run the playbook as shown below and check for the results.

ansible-playbook -i hosts ubuntu_playbook.yml

```
root@ip-172-31-23-162:~/docker_project# ansible-playbook -i hosts ubuntu_playbook.yml

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

TASK [Gathering Facts] *********************************************************************
ok: [18.117.197.17]

TASK [Install aptitude using apt] **********************************************************
changed: [18.117.197.17]

TASK [Install required system packages] ****************************************************
changed: [18.117.197.17] => (item=apt-transport-https)
ok: [18.117.197.17] => (item=ca-certificates)
ok: [18.117.197.17] => (item=curl)
ok: [18.117.197.17] => (item=software-properties-common)
changed: [18.117.197.17] => (item=python3-pip)
changed: [18.117.197.17] => (item=virtualenv)
ok: [18.117.197.17] => (item=python3-setuptools)

TASK [Add Docker GPG apt Key] **************************************************************
changed: [18.117.197.17]

TASK [Add Docker Repository] ***************************************************************
changed: [18.117.197.17]

TASK [Update apt and install docker-ce] ****************************************************
changed: [18.117.197.17]

TASK [Install Docker Module for Python] ****************************************************
changed: [18.117.197.17]

TASK [Pull default Docker image] ***********************************************************
changed: [18.117.197.17]

TASK [Create default containers] ***********************************************************
```

```
changed: [18.117.197.17] => (item=1)
changed: [18.117.197.17] => (item=2)
changed: [18.117.197.17] => (item=3)
changed: [18.117.197.17] => (item=4)

PLAY RECAP *********************************************************************************
18.117.197.17              : ok=9    changed=8    unreachable=0    failed=0

root@ip-172-31-23-162:~/docker_project#
```

6. Login to the remote host using your **public** and **private keys of EC2** and verify the containers created from ansible playbook **ubuntu_playbook.yml** successfully as shown below.

docker ps -a