*Name: Chaudhari Ganesh Dadabhau*

# Integration of Ansible with Docker

## Ansible TASK 1 :

Write an Ansible playbook to perform following operations in managed nodes

- Configure yum repository
- Configure Docker on top of managed node
- Start docker services
- configure Apache server(httpd) in docker with public access

**Ansible :**

Ansible is tool or framework which is used for automation. It works on push mechanism. we only need to tell the Ansible " what we want" not " how to do" so that it Declarative language. It is python library. Ansible only used for configuration purpose. it follow Idempotance rule.

**Docker :**

Docker is used to manage lifecycle of container. It is a tool designed to make it easier to create, deploy, and run applications by using containers. It provides isolated environment for docker images .

**Setup of Ansible :**

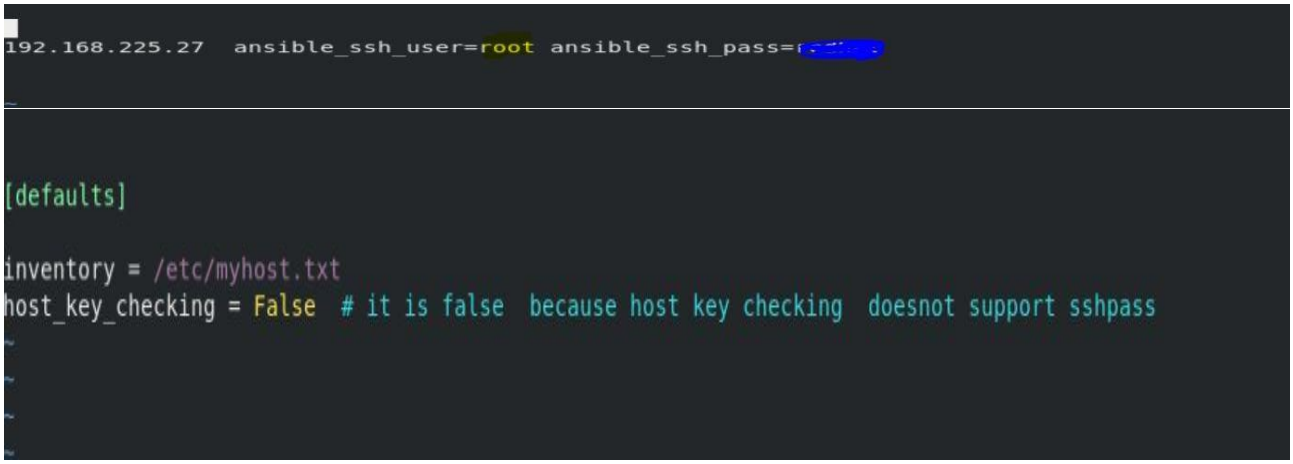
The system on which ansible setup is located is called controller node and the target system is called managed node. First we need to install ansible on controller node using pip3 because it is one of the python library and to check version of ansible we need to use ansible --version.

# pip3 install ansible

# ansible --version

We need to create inventory file which tell the ansible about target systems here **/etc/myhost.txt** is inventory file which contains the details of target machine like ip, username and password or public , private key with password. here i used ip and username ,password of target machine.

after that ansible must know the path of inventory file for that we need to create **/etc/ansible/ansible.cfg** and put path of inventory file.




For establishing connection between controller node and managed node we need to install **sshpass** on **controller node** but it is not present in yum repository then we need to download and install **epel-release-latest-8.noarch.rpm** . After installation ansible setup is completed and now you can check connection by using following command .


**Integration of Ansible with Docker**

1.Configuration of yum repository and installation of docker: we need configure yum repository because it helps for installation of docker. Then configure yum repository and install docker on top of managed node using YAML modules.

```
File  Edit  View  Search  Terminal  Help
- name: Integration of ansible with docker
  hosts: all

  tasks:
          # configuration of repository

          - name : Adding repolist for docker installation
            yum_repository:
                    name: "docker"
                    description: "docker repository setup"
                    baseurl: "https://download.docker.com/linux/centos/7/x86_64/stable"
                    gpgcheck: no

        # Installation of docker

          - name: installation of docker
            package:
                  name: "docker-ce-18.09.1-3.el7.x86_64"
                  state: present
```

2.Start the docker service ,create directory and copy content on managed node: To access docker we need to start docker service ,create folder **/ganesh** because we want to transfer data of that folder from managed node to server. and copy content from controller node to managed in **/ganesh/index1.html** folder so that we can transfer data on server. To do that use following modules

```
    # It is used to start docker service

      - service:
            name: "docker"
            state: started

    # Create directory

      - name: create directory
        file:
                path: /ganesh
                state: directory

   # Copying File to Managed node from Control node

      - name: copying directory
        copy:
          content: "Ansible is only used for configuration purpose and it is python library \n"
          dest: /ganesh/index1.html
```

3. Start firewalld service : If firewalld is closed then container installation will not be taken so start firewalld service using service module.

```
# used to start firewalld service which is necessary for port mapping
    - name: used to start firewalld
      service:
       name: firewalld
       state: started
```

4. Pull and launch the httpd server container: To run container docker image is required for that it pull image from docker hub if image isnot locally available. After we need to open port 80 of container and map port 4545 of managed node with port 80 of container using following modules.

```
# It launch the container for that it find image on host machine if it is not available then it pull from docker hub.

   - name: configuration of server
     docker_container:
            name: server
            image: httpd
            state: started
            exposed_ports:
            - 80
            ports:
            - 4545:80
            volumes:
                  -  /ganesh:/usr/local/apache2/htdocs
```

5. Stop firewalld and watch the container: Firewall should be closed because it won't give the access of container to the world through 4545 port of managed node. and watch container details using command mudule.

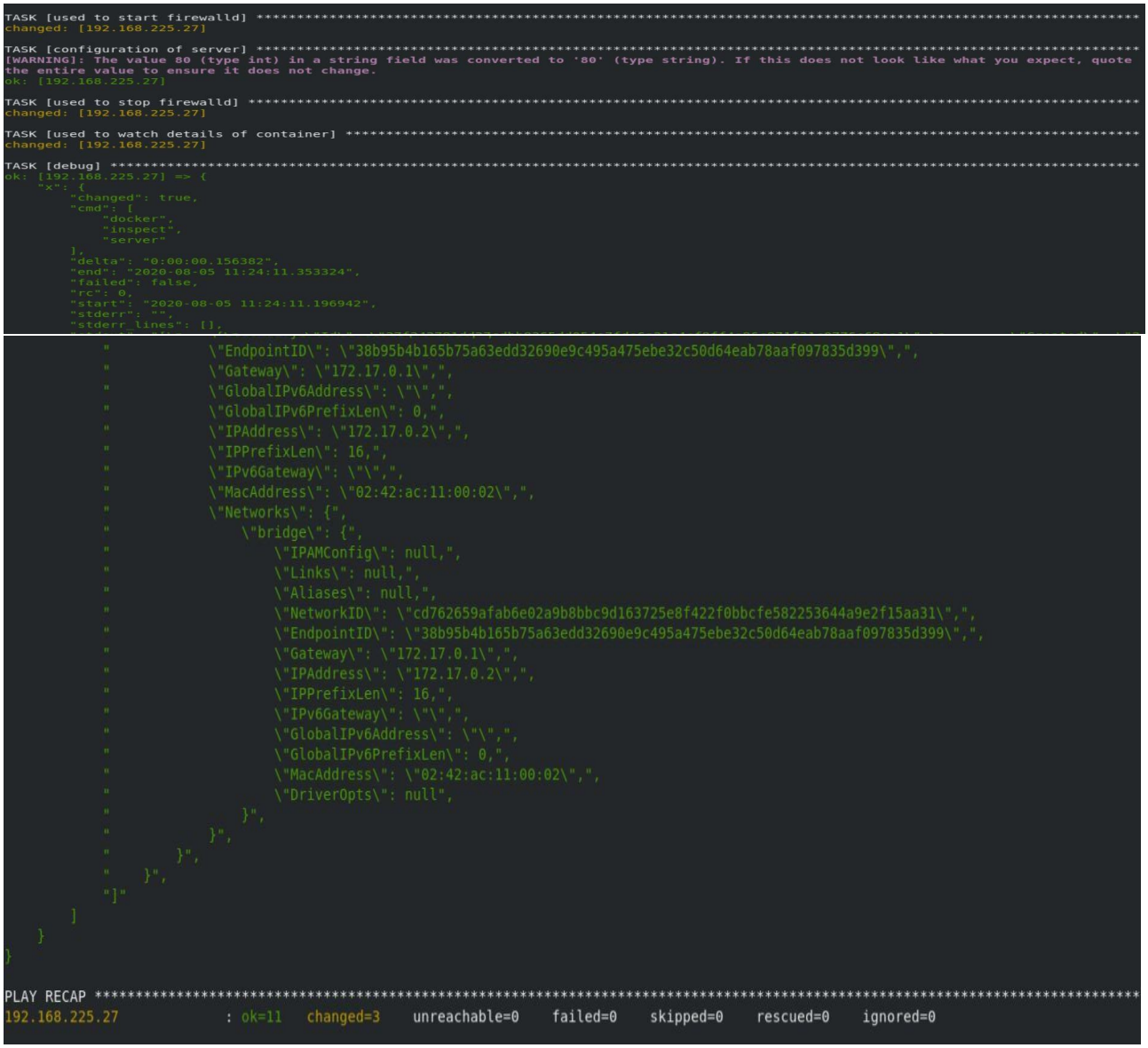
```
 # It is used to stop firewalld because to access container outside world through port 4545.
    - name: used to stop firewalld
      service:
           name: firewalld
           state: stopped

 # It is used to watch details of container

    - name: used to watch details of container
      command: "docker inspect server"
      register: x


 # used to watch the details of container
    - debug:
           var: x
```

To run container use :

# ansible-playbook docker.yml

**After running docker.yml see output:**

```
[root@localhost playbook]# ansible-playbook docker.yml

PLAY [Integration of ansible with docker] ***************************************************************************************************************

TASK [Gathering Facts] **********************************************************************************************************************************
ok: [192.168.225.27]

TASK [Adding repolist for docker installation] **********************************************************************************************************
ok: [192.168.225.27]

TASK [installation of docker] ***************************************************************************************************************************
ok: [192.168.225.27]

TASK [service] ******************************************************************************************************************************************
ok: [192.168.225.27]

TASK [create directory] *********************************************************************************************************************************
ok: [192.168.225.27]

TASK [copying directory] ********************************************************************************************************************************
ok: [192.168.225.27]
```




Server is accessible to world:


**Task 1 is Successfully completed**