

1754405 – DAY 4 DEVOPS BOOTCAMP ASSIGNMENT

1.Created Master and Worker VMs for Ansible project:

INSTANCES

INSTANCE SCHEDULE

Filter

Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>		devops-tomcat-server	us-central1-a			10.128.0.10 (nic0)	35.225.159.34 <a href="#">↗</a>	SSH
<input type="checkbox"/>		docker-master	us-central1-a			10.128.0.19 (nic0)	None	SSH
<input type="checkbox"/>		docker-worker	us-central1-a			10.128.0.20 (nic0)	None	SSH
<input type="checkbox"/>		github-bootcamp	us-central1-a			10.128.0.17 (nic0)	None	SSH
<input type="checkbox"/>		jenkins-bootcamp	us-central1-a			10.128.0.18 (nic0)	34.136.116.164 <a href="#">↗</a>	SSH
<input type="checkbox"/>		master-ansible	us-central1-a			10.128.0.21 (nic0)	35.188.218.4 <a href="#">↗</a>	SSH
<input type="checkbox"/>		worker-ansible	us-central1-a			10.128.0.22 (nic0)	35.223.83.168 <a href="#">↗</a>	SSH

2. Configuring password-less SSH connection between master and slave by copying keys:

Getting the keys for configuration -

```
root@master-ansible:~# cd .ssh
root@master-ansible:~/.ssh# ll
total 8
drwx----- 2 root root 4096 May 27 08:53 ./
drwx----- 3 root root 4096 May 27 08:53 ../
-rw----- 1 root root    0 May 27 08:53 authorized_keys
root@master-ansible:~/.ssh# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:JS/fS/R/jK/S4Y6Kv3ocRAz6Wif6BJyt0vnx10w5NoQ root@master-ansible
The key's randomart image is:
+---[RSA 2048]-----+
|      .o      |
|      . o     |
|      . ... .  |
|      . + +. E . |
|      + S.o .. . |
|      . B =.o .B |
|      . * o...oB.* |
|      . + +o.oO*.o|
|      =+==+oooo+|
+---[SHA256]-----+
root@master-ansible:~/.ssh# ls -lrt
total 8
-rw----- 1 root root    0 May 27 08:53 authorized_keys
-rw-r--r-- 1 root root  401 May 27 09:34 id_rsa.pub
-rw----- 1 root root 1679 May 27 09:34 id_rsa
root@master-ansible:~/.ssh#
```

Password-less SSH configured :

ssh is successful from master --> worker node

```

root@master-ansible:~/.ssh# ll
total 24
drwx----- 2 root root 4096 May 27 09:56 ./
drwx----- 3 root root 4096 May 27 09:50 ../
-rw----- 1 root root    0 May 27 08:53 authorized_keys
-rw----- 1 root root 1679 May 27 09:55 id_rsa
-rw-r--r-- 1 root root  401 May 27 09:55 id_rsa.pub
-rw-r--r-- 1 root root  666 May 27 10:08 known_hosts
-rw----- 1 root root 1679 May 27 09:55 my.key
root@master-ansible:~/.ssh# ssh-copy-id root@35.223.83.168
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/root/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new key
s
root@35.223.83.168's password:
Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'root@35.223.83.168'"
and check to make sure that only the key(s) you wanted were added.

root@master-ansible:~/.ssh# cd ..
root@master-ansible:~# ssh root@35.223.83.168
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1043-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Thu May 27 10:18:57 UTC 2021

System load:  0.0               Processes:            112
Usage of /:   18.6% of 9.52GB   Users logged in:     1
Memory usage: 5%               IP address for ens4: 10.128.0.22
Swap usage:   0%

11 updates can be applied immediately.
6 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

New release '20.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Thu May 27 10:14:29 2021 from 35.188.218.4
root@worker-ansible:~#
root@worker-ansible:~#

```

### 3. Installing Ansible on Master node:

```
root@master-ansible: ~ - Google Chrome
ssh.cloud.google.com/projects/elevated-valve-306712/zones/us-central1-a/instances/master-ansible?authuser=0&hl=en_US&projectN
Setting up python-jinja2 (2.10-1ubuntu0.18.04.1) ...
Setting up python-cryptography (2.1.4-1ubuntu1.4) ...
Setting up python-paramiko (2.0.0-1ubuntu1.2) ...
Setting up ansible (2.9.22-1ppa~bionic) ...
Processing triggers for mime-support (3.60ubuntu1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
root@master-ansible:~#
root@master-ansible:~# ansible --version
ansible 2.9.22
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/root/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 2.7.17 (default, Feb 27 2021, 15:10:58) [GCC 7.5.0]
root@master-ansible:~#
root@master-ansible:~#
```

### 4. Configuring Host file with the worker node details :

```
root@master-ansible: ~ - Google Chrome
ssh.cloud.google.com/projects/elevated-valve-306712/zones/us-central1-a/ir
root@master-ansible:~# cat /etc/ansible/hosts
# This is the default ansible 'hosts' file.

[servers]
worker_node ansible_host=35.223.83.168

[all:vars]
ansible_python_interpreter=/usr/bin/python3

root@master-ansible:~#
root@master-ansible:~# ansible-inventory --list -y
all:
  children:
    servers:
      hosts:
        worker_node:
          ansible_host: 35.223.83.168
          ansible_python_interpreter: /usr/bin/python3
      ungrouped: {}
root@master-ansible:~#
```

5.Verifying Ansible from Master --> Worker:

```
root@master-ansible:~# ansible all -m ping -u root
worker_node | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
root@master-ansible:~# ansible all -m raw -a "hostname;w" -u root
worker_node | CHANGED | rc=0 >>
worker-ansible
 11:14:44 up  2:09,  2 users,  load average: 0.00, 0.00, 0.00
USER      TTY      FROM          LOGIN@      IDLE   JCPU   PCPU WHAT
root      pts/0    35.188.218.4   11:14      0.00s  0.00s  0.00s w
shanmugh pts/1    35.235.241.49  09:50      5:23   0.13s  0.01s sshd: shanmugha13 [priv]
Shared connection to 35.223.83.168 closed.

root@master-ansible:~#
root@master-ansible:~#
```

ANSIBLE PLAYBOOK:

```
root@master-ansible: ~ - Google Chrome
ssh.cloud.google.com/projects/elevated-valve-306712/zones/us-central1-a/instances/master-ansible?authuser=0
root@master-ansible:~# cat devops_playbook.yml
---
- hosts: all
  become: true
  tasks:
    - name: install maven
      apt:
        pkg: maven
        state: present
      notify:
        - run update
    - name: install tomcat
      apt:
        pkg: tomcat9
        state: present
    - name: uninstall git
      apt:
        pkg: git
        state: absent
    - name: install docker
      apt:
        pkg: docker.io
        state: present
    - name: start docker service
      service:
        name: docker
        state: started
        enabled: true
    - name: deploy addressbook application
      command: sudo docker run -it -d -p 8085:8080 shubhamkushwah123/addressbook:1.0
  handlers:
    - name: run update
      apt:
        update_cache: yes
root@master-ansible:~#
```

Running the playbook in Master Node to deploy packages and docker container in Worker node:

```
root@master-ansible: ~ - Google Chrome
ssh.cloud.google.com/projects/elevated-valve-306712/zones/us-central1-a/instances/master-ansible?authuser=0&hl=en_US&projectNu...
root@master-ansible:~# ansible-playbook devops_playbook.yml

PLAY [all] *****
TASK [Gathering Facts] *****
ok: [worker_node]

TASK [install maven] *****
changed: [worker_node]

TASK [install tomcat] *****
changed: [worker_node]

TASK [uninstall git] *****
changed: [worker_node]

TASK [install docker] *****
changed: [worker_node]

TASK [start docker service] *****
ok: [worker_node]

TASK [deploy addressbook application] *****
[WARNING]: Consider using 'become', 'become_method', and 'become_user' rather than running sudo
changed: [worker_node]

RUNNING HANDLER [run update] *****
changed: [worker_node]

PLAY RECAP *****
worker_node                : ok=8    changed=6    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

root@master-ansible:~#
```

Container created in Worker Node:

```
root@worker-ansible:~# docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS
PORTS         NAMES
d924c9902bca   shubhamkushwah123/addressbook:1.0  "/bin/sh -c '\"cata...  About a minute ago  Up About a minute
0.0.0.0:8085->8080/tcp    amazing_lichterman
root@worker-ansible:~#
root@worker-ansible:~#
```

- .
- .
- .
- .

**OUTPUT IN WEBPAGE:** Container is deployed successfully and can be reached from Worker IP

Filter contacts...New contact

First Name	Last Name	Email
George	White	george@white.com
Daniel	Thompson	daniel@thompson.com
Timothy	Jones	timothy@jones.com
Peter	Wilson	peter@wilson.com
Dan	Robinson	dan@robinson.com
Dan	Davis	dan@davis.com
Olivia	Davis	olivia@davis.com
Dan	Smith	dan@smith.com
Daniel	Anderson	daniel@anderson.com
Alice	Thomas	alice@thomas.com
Linda	Harris	linda@harris.com
Daniel	Robinson	daniel@robinson.com
Mike	Young	mike@young.com
Umberto	Anderson	umberto@anderson.com
Scott	Thompson	scott@thompson.com
Rene	Martin	rene@martin.com
Lisa	Martin	lisa@martin.com
Peter	Martin	peter@martin.com
Brian	Wilson	brian@wilson.com
Scott	Miller	scott@miller.com

Type here to search

**Worker IP showed below :**

INSTANCES		INSTANCE SCHEDULE						
Filter <input type="text" value="Enter property name or value"/>								
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<input type="checkbox"/>		docker-master	us-central1-a			10.128.0.19 (nic0)	None	SSH
<input type="checkbox"/>		docker-worker	us-central1-a			10.128.0.20 (nic0)	None	SSH
<input type="checkbox"/>		github-bootcamp	us-central1-a			10.128.0.17 (nic0)	None	SSH
<input type="checkbox"/>		jenkins-bootcamp	us-central1-a			10.128.0.18 (nic0)	34.136.116.164	SSH
<input type="checkbox"/>		master-ansible	us-central1-a			10.128.0.21 (nic0)	35.188.218.4	SSH
<input type="checkbox"/>		worker-ansible	us-central1-a			10.128.0.22 (nic0)	35.223.83.168	SSH