

Assignment: Ansible -Hemanth Reddy Yaramala

Complete the Ansible Setup

Part a:

```
|hemanth@sh01:~$ python3 -m pip show ansible
Name: ansible
Version: 2.9.6
Summary: Radically simple IT automation
Home-page: https://ansible.com/
Author: Ansible, Inc.
Author-email: info@ansible.com
License: GPLv3+
Location: /usr/lib/python3/dist-packages
Requires:
Required-by:
|hemanth@sh01:~$ ansible --version
ansible 2.9.6
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/home/hemanth/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  executable location = /usr/bin/ansible
  python version = 3.8.10 (default, Mar 13 2023, 10:26:41) [GCC 9.4.0]
|hemanth@sh01:~$ ml Python/3.9.5-GCCcore-10.3.0
|hemanth@sh01:~$ ml ansible/2.12.3
|hemanth@sh01:~$ cd ansible
|hemanth@sh01:~/ansible$ ml Python/3.9.5-GCCcore-10.3.0
|hemanth@sh01:~/ansible$ ml ansible/2.12.3
|hemanth@sh01:~/ansible$ ansible -h
usage: ansible [-h] [--version] [-v] [--become-method BECOME_METHOD] [--become-user BECOME_USER] [-K | --become-password-file BECOME_PASSWORD_FILE]
                [-i INVENTORY] [--list-hosts] [-l SUBSET] [-P POLL_INTERVAL] [-B SECONDS] [-o] [-t TREE] [--private-key PRIVATE_KEY_FILE] [-u REMOTE_USER]
                [-c CONNECTION] [-T TIMEOUT] [--ssh-common-args SSH_COMMON_ARGS] [--sftp-extra-args SFTP_EXTRA_ARGS] [--scp-extra-args SCP_EXTRA_ARGS]
                [--ssh-extra-args SSH_EXTRA_ARGS] [-k | --connection-password-file CONNECTION_PASSWORD_FILE] [-C] [--syntax-check] [-D] [-e EXTRA_VARS]
                [-vault-id VAULT_IDS] [-ask-vault-password | --vault-password-file VAULT_PASSWORD_FILES] [-f FORKS] [-M MODULE_PATH]
                [-playbook-dir BASEDIR] [-task-timeout TASK_TIMEOUT] [-a MODULE_ARGS] [-m MODULE_NAME]
                pattern

Define and run a single task 'playbook' against a set of hosts

positional arguments:
  pattern           host pattern

optional arguments:
  --ask-vault-pass
                    ask for vault password
  --become-password-file BECOME_PASSWORD_FILE, --become-pass-file BECOME_PASSWORD_FILE
                    Become password file
  --connection-password-file CONNECTION_PASSWORD_FILE, --conn-pass-file CONNECTION_PASSWORD_FILE
                    Connection password file
```

Part b:

Configured ansible on control node

To list ansible config: ansible-config list

```
[hemanth@sh01:~/ansible$ ansible-config list
ACTION_WARNINGS:
  default: true
  description:
    - By default Ansible will issue a warning when received from a task action (module
      or action plugin)
    - These warnings can be silenced by adjusting this setting to False.
  env:
  - name: ANSIBLE_ACTION_WARNINGS
  ini:
    - key: action_warnings
      section: defaults
  name: Toggle action warnings
  type: boolean
  version_added: '2.5'
AGNOSTIC_BECOME_PROMPT:
  default: true
  description: Display an agnostic become prompt instead of displaying a prompt containing
    the command line supplied become method
  env:
  - name: ANSIBLE_AGNOSTIC_BECOME_PROMPT
  ini:
    - key: agnostic_become_prompt
      section: privilege_escalation
  name: Display an agnostic become prompt
  type: boolean
  version_added: '2.5'
  yaml:
    key: privilege_escalation.agnostic_become_prompt
[ANSIBLE_CONFIGABLE_VARIABLES]
```

To view the ansible config : ansible-config view

```
[hemanth@sh01:~/ansible$ 
[hemanth@sh01:~/ansible$ cd ..
[hemanth@sh01:~$ ml Python/3.9.5-GCCcore-10.3.0
[hemanth@sh01:~$ ml ansible/2.12.3
[hemanth@sh01:~$ echo $ANSIBLE_CONFIG
/a/util/ansible/ansible.cfg
[hemanth@sh01:~$ ansible-config view
# config file for ansible -- https://ansible.com/
# =====

# nearly all parameters can be overridden in ansible-playbook
# or with command line flags. ansible will read ANSIBLE_CONFIG,
# ansible.cfg in the current working directory, .ansible.cfg in
# the home directory or /etc/ansible/ansible.cfg, whichever it
# finds first

[defaults]
inventory=/a/util/ansible/hosts
scp_if_ssh = True
log_path=../../ansible.log

remote_tmp = /tmp/ansible-$USER

# Human-readable output
#stdout_callback = yaml

display_skipped_hosts = no
action_warnings = no
host_key_checking=False
;cache_dir=~/ansible/galaxy_cache:/a/util/ansible/roles
```

c. Password less login

```
[hemanth@sh01:~$ ssh i-hemanth
Warning: the ECDSA host key for 'i-hemanth' differs from the key for the IP address '172.31.80.100'
Offending key for IP in /home/hemanth/.ssh/known_hosts:10
Matching host key in /home/hemanth/.ssh/known_hosts:16
[Are you sure you want to continue connecting (yes/no)? yes

System information as of Fri Mar 31 04:20:51 PDT 2023

System load:          0.24
Usage of /:           48.5% of 193.81GB
Memory usage:         33%
Swap usage:           0%
Processes:            188
Users logged in:     0
IPv4 address for br-7ba9ed9e3311: 172.18.0.1
IPv4 address for docker0:        172.17.0.1
IPv4 address for ens5:          172.31.80.100

Welcome to Advanced Computing Infrastructure
Last login: Fri Mar 31 00:03:00 2023 from 172.31.89.108
hemanth@ip-172-31-80-100:~$ ]
```

2.Gathered system information using Ansible

```
[hemanth@sh01:~$ cd ansible
[hemanth@sh01:~/ansible$ ansible -i hosts green --list-hosts
hosts (4):
  i-kush
  i-venkata
  i-roja
  i-hemanth
hemanth@sh01:~/ansible$ ]
```

Create a yaml file to get fstab and hosts information from team green

```
[hemanth@sh01:~/ansible$ cd ..
[hemanth@sh01:~$ cat hosts_fstab.yml
- name: Collect fstab and hosts files
  hosts: green
  tasks:
    - name: Collect facts
      setup:
    - name: Collect /etc/hosts
      fetch:
        src: /etc/hosts
        dest: /data/csye7374/spring23/ansible/hemanth/facts/hosts/{{ inventory_hostname }}
        flat: true
    - name: Collect /etc/fstab
      fetch:
        src: /etc/fstab
        dest: /data/csye7374/spring23/ansible/hemanth/facts/fstab/{{ inventory_hostname }}
        flat: true

[hemanth@sh01:~$ cat /data/csye7374/spring23/ansible/hemanth/hosts_fstab.yml
- name: Collect fstab and hosts files
  hosts: green
  tasks:
    - name: Collect facts
      setup:
    - name: Collect /etc/hosts
      fetch:
        src: /etc/hosts
        dest: /data/csye7374/spring23/ansible/hemanth/facts/hosts/{{ inventory_hostname }}
        flat: true
    - name: Collect /etc/fstab
      fetch:
        src: /etc/fstab
        dest: /data/csye7374/spring23/ansible/hemanth/facts/fstab/{{ inventory_hostname }}
        flat: true]
```

Ansible execution

```
[hemanth@sh01:~$ ansible-playbook -i /a/util/ansible/hosts hosts_fstab.yml
PLAY [Collect fstab and hosts files] ****
TASK [Gathering Facts] ****
fatal: [i-kush]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect to host i-kush port 22: No route to host", "unreachable": true}
fatal: [i-venkata]: UNREACHABLE! => {"changed": false, "msg": "Failed to connect to the host via ssh: ssh: connect to host i-venkata port 22: No route to host", "unreachable": true}
ok: [i-hemanth]
ok: [i-roja]

TASK [Collect facts] ****
ok: [i-hemanth]
ok: [i-roja]

TASK [Collect /etc/hosts] ****
changed: [i-hemanth]
changed: [i-roja]

TASK [Collect /etc/fstab] ****
changed: [i-hemanth]
changed: [i-roja]

PLAY RECAP ****
i-hemanth : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
i-kush     : ok=0    changed=0    unreachable=1    failed=0    skipped=0    rescued=0    ignored=0
i-roja    : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
i-venkata  : ok=0    changed=0    unreachable=1    failed=0    skipped=0    rescued=0    ignored=0

[hemanth@sh01:~$ tree -L 2 /data/csy7374/spring23/ansible/hemanth
/data/csy7374/spring23/ansible/hemanth
└── facts
    └── fstab
        └── hosts
```

#when everyone in the group turned on their instances and everything it is shown like this .But in the above screenshot only roja and Hemanth were turned on

```
PLAY [Collect hosts and fstab files] ****
TASK [Gathering Facts] ****
ok: [i-hemanth]
ok: [i-kush]
ok: [i-roja]
ok: [i-venkata]

TASK [Collect facts] ****
ok: [i-hemanth]
ok: [i-kush]
ok: [i-venkata]
ok: [i-roja]

TASK [Fetch /etc/hosts] ****
changed: [i-hemanth]
changed: [i-kush]
ok: [i-venkata]
changed: [i-roja]

TASK [Fetch /etc/fstab] ****
changed: [i-hemanth]
changed: [i-kush]
changed: [i-roja]
changed: [i-venkata]

PLAY RECAP ****
i-hemanth : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
i-kush     : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
i-roja    : ok=6    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
i-venkata  : ok=6    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

```
3 directories, 3 files
[hemanth@sh01:~$ tree -L 3 /data/csy7374/spring23/ansible/hemanth
/data/csy7374/spring23/ansible/hemanth
└── facts
    └── fstab
        └── i-hemanth
            └── i-roja
    └── hosts
        └── i-hemanth
            └── i-roja

3 directories, 4 files
```

```
[hemanth@sh01:~$ tree -L 3 /data/csy7374/spring23/ansible/${USER}/facts
/data/csy7374/spring23/ansible/hemanth/facts
└── fstab
    ├── i-hemanth
    └── i-roja
└── hosts
    ├── i-hemanth
    └── i-roja

2 directories, 4 files
```

Provisioning of users yaml file:

```
[hemanth@sh01:~$ cat users_provision.yml
- hosts: i-hemanth
  become: yes
  tasks:
    - name: create slurm users
      user:
        name: slurm
        group: slurm
        uid: 8051
        gid: 8051
        comment: "Slurm cluster"
    - name: create munge user
      user:
        name: munge
        group: munge
        uid: 8052
        gid: 8052
        comment: "Slurm munge"
[hemanth@sh01:~$ vim users_provision.yml
[hemanth@sh01:~$ ansible-playbook users_provision.yml
PLAY [i-hemanth] ****
TASK [Gathering Facts] ****
ok: [i-hemanth]

TASK [create slurm users] ****
ok: [i-hemanth]

TASK [create munge user] ****
fatal: [i-hemanth]: FAILED! => {"changed": false, "msg": "usermod: user munge is currently used by process 583\\n", "name": "munge", "rc": 8}

PLAY RECAP ****
i-hemanth : ok=2    changed=0    unreachable=0    failed=1    skipped=0    rescued=0    ignored=0
```

```
[hemanth@sh01:~$ cat /data/csy7374/spring23/ansible/hemanth/users_provision.yml
- hosts: i-hemanth
  become: yes
  tasks:
    - name: create slurm users
      user:
        name: slurm
        group: slurm
        uid: 8051
        comment: "Slurm cluster"
    - name: create munge user
      user:
        name: munge
        group: munge
        uid: 8052
        comment: "Slurm munge"
hemanth@sh01:~$ ]
```

```
[ubuntu@ip-172-31-80-100:~$ id slurm
uid=8051(slurm) gid=8051(slurm) groups=8051(slurm)
[ubuntu@ip-172-31-80-100:~$ id munge
uid=115(munge) gid=8052(munge) groups=8052(munge)
ubuntu@ip-172-31-80-100:~$ ]
```

Yaml file to synchronize the hosts:

```
[hemanth@sh01:~$ cat synch_hosts.yaml
---
- hosts: i-hemanth
  become: yes

  tasks:
    - name: Sync etc hosts
      synchronize:
        src: "/etc/hosts"
        dest: "/etc/hosts"
        mode: push
hemanth@sh01:~$ ansible-playbook synch_hosts.yaml
PLAY [i-hemanth] ****
TASK [Gathering Facts] ****
ok: [i-hemanth]
TASK [Sync etc hosts] ****
changed: [i-hemanth]
PLAY RECAP ****
i-hemanth : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
hemanth@sh01:~$ cp synch_hosts.yaml /data/csy7374/spring23/ansible/hemanth/ ]
```

```
[hemanth@sh01:~$ cat /data/csy7374/spring23/ansible/hemanth/synch_hosts.yaml
---
- hosts: i-hemanth
  become: yes

  tasks:
    - name: Sync etc hosts
      synchronize:
        src: "/etc/hosts"
        dest: "/etc/hosts"
        mode: push

[hemanth@sh01:~$ ]
```

Proof of synchronization:

```
[ubuntu@ip-172-31-80-100:~$ cat /etc/hosts
127.0.0.1 localhost

172.31.89.108      sh01

172.31.92.175      i-akshata
172.31.91.101      i-dhruv
172.31.80.100      i-hemanth
172.31.86.77       i-kush
172.31.86.88       i-mayur
172.31.86.29       i-nandikonda
172.31.84.203      i-olasunkanmi
172.31.86.49       i-pawan
172.31.86.111      i-pramod
172.31.82.77       i-prem
172.31.91.76       i-rajat
172.31.86.30       i-roja
172.31.88.35       i-rushikesh
172.31.86.200      i-sahithi
172.31.86.112      i-shreekara
172.31.86.10       i-varsha
172.31.86.50       i-varun
172.31.86.69       i-venkata
172.31.80.41       i-yecheng

172.31.86.98      t-black
172.31.86.96      t-blue
172.31.86.100     t-brown
172.31.86.97      t-green
172.31.86.99      t-red

ubuntu@ip-172-31-80-100:~$ ]
```