

Ansible-1

ASSIGNMENT



Name – Maithely Sharma
College – University of Petroleum and Energy Studies
EmployeeID – 4057

1. Run Ansible Ad-hoc commands:

1.1 To execute command in bash and see the result

```
ubuntu@ip-172-31-93-119:~$ ansible all -m shell -a "date"
ubuntu@3.88.9.20 | CHANGED | rc=0 >>
Sat Mar 21 18:14:10 UTC 2020
ubuntu@ip-172-31-93-119:~$
```

1.2 To check all running processes on node.

```
ubuntu@ip-172-31-93-119:~$ ansible all -m shell -a 'ps -e'
ubuntu@3.88.9.20 | CHANGED | rc=0 >>
  PID TTY          TIME CMD
    1 ?           00:00:02 systemd
    2 ?           00:00:00 kthreadd
    3 ?           00:00:00 kworker/0:0
    4 ?           00:00:00 kworker/0:0H
    6 ?           00:00:00 mm_percpu_wq
    7 ?           00:00:00 ksoftirqd/0
    8 ?           00:00:00 rcu_sched
    9 ?           00:00:00 rcu_bh
   10 ?           00:00:00 migration/0
   11 ?           00:00:00 watchdog/0
   12 ?           00:00:00 cpuhp/0
   13 ?           00:00:00 kdevtmpfs
   14 ?           00:00:00 kstater
```

1.3 To copying files to multiple nodes concurrently.

```

ubuntu@ip-172-31-93-119:/etc/ansible$ ansible all -m copy -a 'src=/home/ubuntu/f
ile.txt dest=/home/ubuntu/file.txt'
The authenticity of host '54.147.15.25 (54.147.15.25)' can't be established.
ECDSA key fingerprint is SHA256:VJbmpLDzU6fPu7I5Jwkb2w+7QI7P5biZiCuiUPNgwRU.
Are you sure you want to continue connecting (yes/no)? yes
ubuntu@54.147.15.25 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": true,
  "checksum": "f572d396fae9206628714fb2ce00f72e94f2258f",
  "dest": "/home/ubuntu/file.txt",
  "gid": 1000,
  "group": "ubuntu",
  "md5sum": "b1946ac92492d2347c6235b4d2611184",
  "mode": "0664",
  "owner": "ubuntu",
  "size": 6,
  "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1584815740.97-121625154425397/
source",
  "state": "file",
  "uid": 1000
}
ubuntu@ip-172-31-93-119:/etc/ansible$

```

1.4 To add and delete users.

At node:

```

ubuntu@ip-172-31-210-43:~$ tail /etc/passwd
syslog:x:102:106:./home/syslog:/usr/sbin/nologin
messagebus:x:103:107:./nonexistent:/usr/sbin/nologin
_apt:x:104:65534:./nonexistent:/usr/sbin/nologin
lxd:x:105:65534:./var/lib/lxd:/bin/false
uidd:x:106:110:./run/uidd:/usr/sbin/nologin
dnsmasq:x:107:65534:dnsmasq,,./var/lib/misc:/usr/sbin/nologin
landscape:x:108:112:./var/lib/landscape:/usr/sbin/nologin
sshd:x:109:65534:./run/sshd:/usr/sbin/nologin
pollinate:x:110:1:./var/cache/pollinate:/bin/false
ubuntu:x:1000:1000:Ubuntu:/home/ubuntu:/bin/bash
ubuntu@ip-172-31-210-43:~$

```

Now create a user at control node:

```

ubuntu@ip-172-31-93-119:~$ ansible all -m user -a 'name=maithely' --become
ubuntu@54.147.15.25 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": true,
  "comment": "",
  "create_home": true,
  "group": 1001,
  "home": "/home/maithely",
  "name": "maithely",
  "shell": "/bin/sh",
  "state": "present",
  "system": false,
  "uid": 1001
}
ubuntu@ip-172-31-93-119:~$

```

At node:you can see that user is created

```

ubuntu@ip-172-31-210-43:~$ tail /etc/passwd
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
lxd:x:105:65534::/var/lib/lxd:/bin/false
uidd:x:106:110::/run/uidd:/usr/sbin/nologin
dnsmasq:x:107:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
landscape:x:108:112::/var/lib/landscape:/usr/sbin/nologin
sshd:x:109:65534::/run/sshd:/usr/sbin/nologin
pollinate:x:110:1::/var/cache/pollinate:/bin/false
ubuntu:x:1000:1000:Ubuntu:/home/ubuntu:/bin/bash
maithely:x:1001:1001::/home/maithely:/bin/sh
ubuntu@ip-172-31-210-43:~$

```

At control node delete the user

```

ubuntu@ip-172-31-93-119:~$ ansible all -m user -a 'name=maithely state=absent remove=yes' --become
ubuntu@54.147.15.25 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": true,
  "force": false,
  "name": "maithely",
  "remove": true,
  "state": "absent",
  "stderr": "userdel: maithely mail spool (/var/mail/maithely) not found\n",
  "stderr_lines": [
    "userdel: maithely mail spool (/var/mail/maithely) not found"
  ]
}
ubuntu@ip-172-31-93-119:~$

```


At node you can verify :

```
ubuntu@ip-172-31-210-43:~$ tail /etc/passwd
syslog:x:102:106::/home/syslog:/usr/sbin/nologin
messagebus:x:103:107::/nonexistent:/usr/sbin/nologin
_apt:x:104:65534::/nonexistent:/usr/sbin/nologin
lxd:x:105:65534::/var/lib/lxd:/bin/false
uidd:x:106:110::/run/uidd:/usr/sbin/nologin
dnsmasq:x:107:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
landscape:x:108:112::/var/lib/landscape:/usr/sbin/nologin
sshd:x:109:65534::/run/sshd:/usr/sbin/nologin
pollinate:x:110:1::/var/cache/pollinate:/bin/false
ubuntu:x:1000:1000:Ubuntu:/home/ubuntu:/bin/bash
ubuntu@ip-172-31-210-43:~$
```

2. Create nginx ansible-playbook and run the node, also check if nginx service and default page is running or not.

At control node : create a nginx.yml file

```
ubuntu@ip-172-31-93-119: /etc/ansible
- hosts: all
  tasks:
    - name: installing nginx
      apt:
        name: nginx
        state: latest
    - name: start nginx
      service:
        name: nginx
        state: started
```

```

ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook nginx.yml --become
PLAY [all] *****

TASK [Gathering Facts] *****
The authenticity of host '54.161.161.123 (54.161.161.123)' can't be established.
ECDSA key fingerprint is SHA256:VJbmpLDzU6fPu7I5Jwkb2w+7QI7P5biZICUiUPNgwRU.
Are you sure you want to continue connecting (yes/no)? yes
ok: [ubuntu@54.161.161.123]

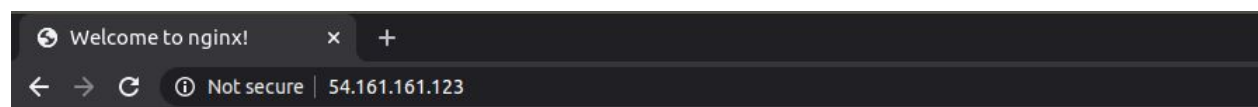
TASK [installing nginx] *****
changed: [ubuntu@54.161.161.123]

TASK [start nginx] *****
ok: [ubuntu@54.161.161.123]

PLAY RECAP *****
ubuntu@54.161.161.123      : ok=3    changed=1    unreachable=0    failed=0    skip=0

ubuntu@ip-172-31-93-119:/etc/ansible$

```



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

3. Create the roles for the same playbook and use custom conf file and index.html.

AT CONTROL NODE

Firstly for creating roles you have to run the command :

```

ubuntu@ip-172-31-93-119:/etc/ansible/roles$ sudo ansible-galaxy init nginx
- Role nginx was created successfully
ubuntu@ip-172-31-93-119:/etc/ansible/roles$ ls -la
total 12
drwxr-xr-x  3 root root 4096 Mar 30 08:36 .
drwxr-xr-x  3 root root 4096 Mar 30 06:43 ..
drwxr-xr-x 10 root root 4096 Mar 30 08:36 nginx

```

```
ubuntu@ip-172-31-93-119:/etc/ansible/roles$ tree nginx
nginx
├── README.md
├── defaults
│   └── main.yml
├── files
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── tasks
│   └── main.yml
├── templates
├── tests
│   ├── inventory
│   └── test.yml
└── vars
    └── main.yml
```

Now go in tasks folder, where you can see main.yml is created already

```
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx$ ls
README.md  files      meta       templates  vars
defaults   handlers  tasks      tests
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx$ cd tasks/
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/tasks$ ls
main.yml
```

Now create a file install.yml

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/tasks
---
- name: installing nginx
  apt:
    name: nginx
    state: latest
~
```

Similarly create a file serice.yml

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119: /etc/ansible/roles/nginx/tasks

- - -
- name: start nginx
  service:
    name: nginx
    state: started
```

Also create the conf.yml file

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119: /etc/ansible/roles/nginx/ta... x

- - -
- name: copying conf file
  copy:
    src: file
    dest: /etc/nginx/sites-available
- name: creating link
  file:
    src: /etc/nginx/sites-available
    dest: /etc/nginx/sites-enable
    state: link
- name: copying conf file
  copy:
    src: index.html
    dest: /var/www/html/
```

Now import the above three files in main.yml

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119: /etc/ansible/roles/nginx/ta... x

- - -
# tasks file for nginx
- import_tasks: install.yml
- import_tasks: serice.yml
- import_tasks: conf.yml
```



```

ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/tasks$ ls -la
total 24
drwxr-xr-x  2 root root 4096 Mar 30 16:47 .
drwxr-xr-x 10 root root 4096 Mar 30 08:36 ..
-rw-r--r--  1 root root  329 Mar 30 16:46 conf.yml
-rw-r--r--  1 root root  103 Mar 30 14:36 install.yml
-rw-r--r--  1 root root  109 Mar 30 16:47 main.yml
-rw-r--r--  1 root root  103 Mar 30 14:38 serice.yml
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/tasks$

```

Now create 2 files in /etc/ansible/roles/nginx/file:

- 1.index.html
2. File

```

ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx$ cd files/
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/files$ ls
file  index.html
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/files$ cat file
server{
    listen 80;
    root /var/www/html/;
    index index.html;
}
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/files$ cat index.html
this is an INDEX FILE
ubuntu@ip-172-31-93-119:/etc/ansible/roles/nginx/files$

```

Now go in ansible folder and create a nginxinstall.yml file which will be executed for roles

```

File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119:/etc/ansible
---
- hosts: all
  roles:
    - nginx
~
~

```

Check syntax and run the playbook

```

ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook nginxinstall.yml --syntax-check
playbook: nginxinstall.yml

```

```
ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook nginxinstall.yml --become

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [ubuntu@54.161.161.123]

TASK [nginx : installing nginx] *****
ok: [ubuntu@54.161.161.123]

TASK [nginx : start nginx] *****
ok: [ubuntu@54.161.161.123]

TASK [nginx : copying conf file] *****
changed: [ubuntu@54.161.161.123]

TASK [nginx : creating link] *****
changed: [ubuntu@54.161.161.123]

TASK [nginx : copying conf file] *****
changed: [ubuntu@54.161.161.123]

PLAY RECAP *****
ubuntu@54.161.161.123      : ok=6    changed=3    unreachable=0    failed=0    skip=0
```

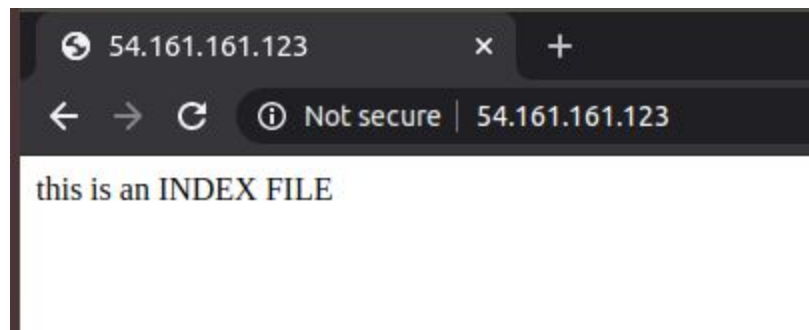
AT CLIENT NODE:

Check the nginx service

```
File Edit View Search Terminal Tabs Help
ubuntu@ip-172-31-93-119: /etc/ansible

Last login: Mon Mar 30 13:53:42 2020 from 45.127.45.192
ubuntu@ip-172-31-210-43:~$ ls -la | grep nginx
ubuntu@ip-172-31-210-43:~$ ls -la | grep nginx
ubuntu@ip-172-31-210-43:~$ sudo service nginx status
● nginx.service - A high performance web server and a reverse proxy se
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor
   Active: active (running) since Mon 2020-03-30 06:42:36 UTC; 7h ago
     Docs: man:nginx(8)
  Main PID: 3062 (nginx)
    Tasks: 2 (limit: 1152)
   CGroup: /system.slice/nginx.service
           └─3062 nginx: master process /usr/sbin/nginx -g daemon on;
              └─3064 nginx: worker process

Mar 30 06:42:36 ip-172-31-210-43 systemd[1]: Starting A high performan
Mar 30 06:42:36 ip-172-31-210-43 systemd[1]: nginx.service: Failed to
Mar 30 06:42:36 ip-172-31-210-43 systemd[1]: Started A high performanc
lines 1-13/13 (END)
```



4. Using loops, copy multiple files from ansible machine to remote node.

AT CONTROL NODE:

Create a folder 'files_created' in ansible

```
ubuntu@ip-172-31-93-119:/etc/ansible/files_created$ sudo touch { file1 file2 file3 file4 file5 }
ubuntu@ip-172-31-93-119:/etc/ansible/files_created$ ls
a..g  file1  file2  file3  file4  file5  '{'  '}'
```

Now create a yml file


```

ubuntu@ip-172-31-93-119:/etc/ansible$ cat loops.yml
---
- hosts: all
  tasks:
    - name: copy files
      copy: src=/etc/ansible/files_created/{{ item }} dest=/home/ubuntu/
      with_items:
        - file1
        - file2
        - file3
        - file4
        - file5

```

```

ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook loops.yml --syntax-check
playbook: loops.yml
ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook loops.yml

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [ubuntu@54.161.161.123]

TASK [copy files] *****
changed: [ubuntu@54.161.161.123] => (item=file1)
changed: [ubuntu@54.161.161.123] => (item=file2)
changed: [ubuntu@54.161.161.123] => (item=file3)
changed: [ubuntu@54.161.161.123] => (item=file4)
changed: [ubuntu@54.161.161.123] => (item=file5)

PLAY RECAP *****
ubuntu@54.161.161.123      : ok=2    changed=1    unreachable=0    failed=0    skipped=0

```

AT CLIENT NODE:

```

ubuntu@ip-172-31-210-43:~$ ls
f1  f2  f3  f4  f5  file.txt  file1  file2  file3  file4  file5  '{'  '}'
ubuntu@ip-172-31-210-43:~$

```

5. Write a playbook to demonstrate the precedence of default and var file, override them from CLI.

Variables can be defined :

- a. Inside playbook using VARS
- b. File outside playbook using VARS_FILES
- c. Inventory file

- d. Through command line

Create a playbook with some variable defined

```
File Edit View Search Terminal Help
- - -
- hosts: all
  vars:
    greeting: HELLO Maithely!!
  tasks:
    - name: ansible variable
      debug:
        msg: "{{ greeting }}"
```

Now when you run the playbook you get

```
ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook precednece.yml

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [ubuntu@34.230.42.238]

TASK [ansible variable] *****
ok: [ubuntu@34.230.42.238] => {
  "msg": "HELLO Maithely!!"
}

PLAY RECAP *****
ubuntu@34.230.42.238      : ok=2    changed=0    unreachable=0    failed=0
```

But when you pass arguments in the command line it will override in the playbook

```
ubuntu@ip-172-31-93-119:/etc/ansible$ ansible-playbook precednece.yml --extra-vars "greeting=bye"

PLAY [all] *****

TASK [Gathering Facts] *****
ok: [ubuntu@34.230.42.238]

TASK [ansible variable] *****
ok: [ubuntu@34.230.42.238] => {
  "msg": "bye"
}

PLAY RECAP *****
ubuntu@34.230.42.238      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0
```