

# **Ansible**

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- 1. Run Ansible Ad-hoc commands:
- 1.1 To execute a command in bash and see the result.

#### Ans.

```
chhavi@chhavi:/etc/onsible$ ansible all -m shell -a '/bin/bash -c "ec2=`uname -n`; touch /var/tmp/$ec2"'
54.235.229.102 | CHANGED | rc=0 >>

chhavi@chhavi:/etc/onsible$ ansible all -m shell -a '/bin/bash -c "ls /var/tmp"'
3.82.191.245 | CHANGED | rc=0 >>
cloud-init
systemd-private-f1b3a17bdb844b21ab311f99f2d69132-systemd-resolved.service-kh4nvN
systemd-private-f1b3a17bdb844b21ab311f99f2d69132-systemd-timesyncd.service-l530cf
54.235.229.102 | CHANGED | rc=0 >>
cloud-init
systemd-private-c4fedb85b8c84a1092d55264ee6a2ab1-systemd-resolved.service-ig0au4
systemd-private-c4fedb85b8c84a1092d55264ee6a2ab1-systemd-timesyncd.service-upHZyj
chhavi@chhavi:/etc/onsible$
```

#### Or simply

```
chhavi@chhavi:~$ ansible all -a "echo hello"
3.82.191.245 | CHANGED | rc=0 >>
hello
54.235.229.102 | CHANGED | rc=0 >>
hello
```

1.2 To check all running processes on nodes.

## Ans.

```
💲 ansible all -m shell -a '/bin/bash -c "ps -aux"
3.82.191.245 | CHANGED | rc=0 >>
JSER PID %CPU %MEM VSZ
                                                                           TIME COMMAND
                               VSZ RSS TTY
                                                           STAT START
              1 0.1 0.8 159772 9064 ?
2 0.0 0.0 0 0 ?
                                                                           0:02 /sbin/init
0:00 [kthreadd]
                                                                 10:19
                                                                 10:19
10:19
                                                                           0:00 [kworker/0:0]
0:00 [kworker/0:0H]
                                            0 ?
               3 0.0 0.0
              4 0.0 0.0
oot
                                                                10:19
10:19
10:19
10:19
                                                                           0:00 [mm_percpu_wq]
0:00 [ksoftirqd/0]
oot
              6 0.0 0.0
7 0.0 0.0
oot
                                                                                  [rcu_sched]
[rcu_bh]
oot
              8 0.0 0.0
                   0.0 0.0
                                                                           0:00
oot
                                                                 10:19
10:19
                                                                           0:00
                                                                                  [migration/0]
[watchdog/0]
oot
                                            0 ?
                                                                           0:00
                  0.0 0.0
oot
                                                                           0:00 [cpuhp/0]
0:00 [kdevtmpfs]
0:00 [netns]
                  0.0 0.0
0.0 0.0
oot
oot
                                                                 10:19
             PID %CPU %MEM
                                                                STAT START
                                                                                  TIME COMMAND
                1 0.1 0.9 159768
                                                                                 0:03 /sbin/init
0:00 [kthreadd]
                                            9096 ?
                                                                      10:20
                2 0.0 0.0
                                               0 ?
                                                                       10:20
                3 0.0 0.0
                                                0 ?
                                                                                 0:00 [kworker/0:0]
                                                                      10:20
10:20
                4 0.0
                          0.0
                6 0.0
                          0.0
                                                                                  0:00 [mm_percpu_wq]
                                                                                 0:00 [ksoftirqd/0]
0:00 [rcu_sched]
                                                                      10:20
10:20
                7 0.0 0.0
                                                0 ?
                                                0 ?
                8 0.0
                           0.0
                                                                      10:20
10:20
                9 0.0
                                                                                  0:00 [rcu_bh]
                                                                                 0:00 [migration/0]
0:00 [watchdog/0]
0:00 [cpuhp/0]
0:00 [kdevtmpfs]
0:00 [netns]
oot
                    0.0
                           0.0
               11 0.0
oot
                           0.0
                                                0 ?
oot
               12 0.0 0.0
                                                                       10:20
                                                                      10:20
10:20
10:20
                   0.0
                           0.0
                    0.0
                           0.0
                    0.0
                                                                                  0:00 [rcu_tasks_kthre]
                           0.0
```

1.3 To copying files to multiple nodes concurrently.

Ans.

```
chhavlechhavl:-$ cat file1.txt
hello world
chhavlechhavr:-$ ansible all -m copy -a "src=/home/chhavi/file1.txt dest=/var/tmp"
3.82.191.245 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": true,
    "checksum": "22596363b3de40b06f981fb85d82312e8c0ed511",
    "dest": "/var/tmp/ftle1.txt",
    "gid": 1000,
    "group": "ubuntu",
    "modesum": "65902ac237024bdd0c176cb93063dc4",
    "mode": "0664",
    "owner": "ubuntu",
    "size": 12,
    "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1584961443.08-3531592638526/source",
    "state": "file",
    "uid": 1000
}

$
4.235.229.102 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
        "changed": true,
        "checksum": "22596363b3de40b06f981fb85d82312e8c0ed511",
    "dest": "/var/tmp/ftle1.txt",
    "gid": 1000,
    "group": "ubuntu",
    "md5sum": "6f5902ac237024bdd0c176cb93063dc4",
    "mode": "0664",
    "mode": 0664",
    "mode":
```

```
chhavi@chhavi: $ ansible all -m shell -a '/bin/bash -c "ls /var/tmp"'
3.82.191.245 | CHANGED | rc=0 >>
cloud-init
file1.txt
systemd-private-f1b3a17bdb844b21ab311f99f2d69132-systemd-resolved.service-kh4nvN
systemd-private-f1b3a17bdb844b21ab311f99f2d69132-systemd-timesyncd.service-l530cf
54.235.229.102 | CHANGED | rc=0 >>
cloud-init
file1.txt
systemd-private-c4fedb85b8c84a1092d55264ee6a2ab1-systemd-resolved.service-ig0au4
systemd-private-c4fedb85b8c84a1092d55264ee6a2ab1-systemd-timesyncd.service-upHZyj
chhavi@chhavi: $
```

#### 1.4 To add and delete users.

## Ans.

```
chhavi@chhavi:-$ mkpasswd --method=sha-512
Password:
$6$NKtcVXWVrGzN4c12$Rcrop0wCHpjP0v5t7IEJQ3WcivJoFJAFeqssvIIKfTHtl9p5ezdSSybGxmmf0yVKjnhWXC8.y.u/iVDfquXUD.
chhavi@chhavi:-$
```

```
chhavi@chhavi:-$ ansible all -b -m user -a "name=chhavi password=$6$NKtcVXWVrGzN4c12$Rcrop0wCHpjP0v5t7IEJQ3WcivJoFJAFeqssvIIKfTH
tl9p5ezdSSybGxmmf0yVKjnhWXC8.y.u/iVDfquXUD."
     NING]: The input password appears not to have been hashed. The 'password' argument must be encrypted for this module to
 ork property.
.82.191.245 | CHANGED => {
    "ansible_facts": {
         "discovered_interpreter_python": "/usr/bin/python3"
    },
"changed": true,
     "create_home": true,
     "group": 1001,
"home": "/home/chhavi",
"name": "chhavi",
     'password": "NOT_LOGGING_PASSWORD",
    "shell": "/bin/sh",
"state": "present",
"system": false,
"uid": 1001
54.235.229.102 | CHANGED => {
     "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
    },
"changed": true,
"comment": "",
     'create_home": true,
     "group": 1001,
"home": "/home/chhavi",
chhavi@chhavi:=$ ansible all -m shell -a '/bin/bash -c "cat /etc/passwd | tail -1"'
54.235.229.102 | CHANGED | rc=0 >>
chhavi:x:1001:1001::/home/chhavi:/bin/sh
3.82.191.245 | CHANGED | rc=0 >>
chhavi:x:1001:1001::/home/chhavi:/bin/sh
chhavi@chhavi:-$
```

#### To delete users

```
chhavi@chhavi: $ ansible all -b -m user -a "name=chhavi state=absent"
3.82.191.245 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
},
    "changed": true,
    "force": false,
    "name": "chhavi",
    "remove": false,
    "state": "absent"
}
54.235.229.102 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
},
    "changed": true,
    "force": false,
    "name": "chhavi",
    "remove": false,
    "state": "absent"
}
chhavi@chhavi: $
```

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

Ans.

Step 1: Write a playbook.yml

# Step 2: Run ansible playbook.

```
chhavi@chhavi:=$ ansible-playbook playbook.yml --become
k: [54.235.229.102]
k: [3.82.191.245]
changed: [3.82.191.245]
changed: [54.235.229.102]
TASK [ensure nginx is at the latest version] ***********************************
changed: [54.235.229.102]
changed: [3.82.191.245]
: ok=4 changed=2 unreachable=0 failed=0
: ok=4 changed=2 unreachable=0 failed=0
                                            skipped=0
                                                    rescued=0
                                                            ignored=0
                                             skipped=0
                                                    rescued=0
                                                            ignored=0
```

Step 3: Check if nginx is running on the nodes

## Step 4: curl localhost:80

#### Node 1

#### Node 2

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

Step 1: Initialize a role.(creating a role directory structure)

```
chhavi@chhavi:~/roles$ sudo ansible-galaxy init nginx role

    Role nginx role was created successfully

chhavi@chhavi:~/roles$ cd nginx_role/
chhavi@chhavi:~/roles/nginx_role$ ls
                    README.md
chhavi@chhavi:~/roles/nginx_role$ 11
total 48
drwxr-xr-x 10 root
                     root
                            4096 Mar 24 11:50 /
drwxr-xr-x 3 chhavi chhavi 4096 Mar 24 11:50 .../
                            4096 Mar 24 11:50 defaults/
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 Mas/
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 handlers/
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 meta/
drwxr-xr-x 2 root
                     root
                            1328 Mar 24 11:50 README.md
-rw-r--r-- 1 root
                     root
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 tasks/
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 templates/
drwxr-xr-x 2 root
                     root
                            4096 Mar 24 11:50 tests/
-LM-L--L--
            1 root
                     root
                            539 Mar 24 11:50 .travis.yml
drwxr-xr-x
            2 root
                     root
                            4096 Mar 24 11:50 vars/
chhavi@chhavi:
                                $
```

Step 2: Now in tasks folder goto main.yml and write the required tasks.

```
name: update apt
apt:
    update_cache: yes
name: ensure nginx is at the lastest version
apt:
   name: nginx
   state: latest
name: start nginx
service:
    name: nginx
    state: started
name: copy conf file to sites-available
сору:
    src: /etc/nginx/sites-available/xyz.com
    dest: /etc/nginx/sites-available/xyz.com
become: yes
name: delete the symlink ( default) in sites-enabled
file:
    path: "/etc/nginx/sites-enabled/default"
    state: absent
name: create symlink
file:
```

```
name: create symlink
    src: /etc/nginx/sites-available/xyz.com
    dest: /etc/nginx/sites-enabled/default
    state: link
become: yes
name: delete the default file
file:
    path: /etc/nginx/sites-available/default
    state: absent
name: copy the content of website
сору:
    src: /var/www/html/xyz.html
    dest: /var/www/html/
become: yes
name: reload nginx
service:
    name: nginx
    state: reloaded
become: yes
```

Step 3: Create a playbook and include the role in it.

```
chhavi@chhavi: ~/ansible 

---
- hosts: all
become: yes
roles:
- nginx_role
```

Step 4: Make sure the conf file and the html page exists.

# Step 5: Run the playbook.

```
chhavi@chhavi:~/ansible$ ansible-playbook nginx.yml
ok: [54.145.133.224]
ok: [3.87.205.76]
changed: [54.145.133.224]
changed: [3.87.205.76]
TASK [nginx_role : ensure nginx is at the lastest version] **********************
ok: [54.145.133.224]
ok: [3.87.205.76]
ok: [54.145.133.224]
ok: [3.87.205.76]
TASK [nginx_role : copy conf file to sites-available] ***************************
ok: [54.145.133.224]
ok: [3.87.205.76]
```

```
changed: [54.145.133.224]
changed: [3.87.205.76]
changed: [54.145.133.224]
changed: [3.87.205.76]
changed: [54.145.133.224]
changed: [3.87.205.76]
changed: [54.145.133.224]
changed: [3.87.205.76]
************
changed: [54.145.133.224]
changed: [3.87.205.76]
******************
             changed=6
3.87.205.76
                         failed=0
                   unreachable=0
                              skipped=0
                                   rescued=0
                                        ignored=0
          : ok=10 changed=6
4.145.133.224
                   unreachable=0
                         failed=0
                              skipped=0
                                   rescued=0
                                        ignored=0
```

# Step 6: Check if curl localhost:80 returns the desired nginx page.

```
$ ansible all -m command -a "curl localhost:80"
WARNING]: Consider using the get_url or uri module rather than running 'curl'. If you need to use command because get_url or uri is insufficient you can add 'warn: false' to this command task or set 'command_warnings=False' in ansible.cfg to get rid of this message.

54.145.133.224 | CHANGED | rc=0 >>
          <head>
                     <title>Test</title>
          </head>
          <body>
          </body>
                        % Received % Xferd Average Speed Time Time Time
Dload Upload Total Spent Left Speed
                                                                                                    Time Current
</html> % Total
100 150 100 150 0 0 9375
3.87.205.76 | CHANGED | rc=0 >>
          <head>
                     <title>Test</title>
          </head>
          <body>
          </body>
                          % Received % Xferd Average Speed Time Time Time Dload Upload Total Spent Left Speed
</html> % Total
                                                                                                    Time Current
       150 100 150
                                         0 13636
                                                           0 --:--:- 13636
```

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

Ans.

Step 1: Create a playbook as follows

```
- name: Copy multiple files from local to remote hosts: all tasks:

- name: copy files using a loop copy:

src: "/home/chhavi/{{item}}"
dest: /home/ubuntu/
loop:

- file.txt
- file1.txt
- file2.txt
```

# Step 2: Run playbook

```
chhavi@chhavi:-/ansible$ ansible-playbook copymultiple.yml
PLAY [Copy multiple files from local to remote] ********************************
ok: [54.145.133.224]
changed: [3.87.205.76] => (item=file.txt)
changed: [54.145.133.224] => (item=file.txt)
changed: [34.143.133.224] => (ttem=file1.txt)
changed: [54.145.133.224] => (item=file1.txt)
changed: [54.145.133.224] => (item=file2.txt)
changed: [3.87.205.76] => (item=file2.txt)
: ok=2 changed=1
3.87.205.76
                                   unreachable=0 failed=0 skipped=0 rescued=0
                                                                          ignored=0
54.145.133.224
                          changed=1
                                               failed=0
                                                        skipped=0 rescued=0
                                   unreachable=0
                                                                          ignored=0
```

# Step 3: Check if the files were copied on the remote successfully

```
chhavi@chhavi:=/ansible $ ansible all -m shell -a '/bin/bash -c "ls /home/ubuntu"'
3.87.205.76 | CHANGED | rc=0 >>
file.txt
file1.txt
file2.txt
54.145.133.224 | CHANGED | rc=0 >>
file.txt
file1.txt
file2.txt
```

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

## Ans.

Step 1: Create a role for checking variable precedence

```
chhavi@chhavi:~/anstble$ ansible-galaxy init var precedence

    Role var_precedence was created successfully

chhavi@chhavi:~/anstble$ ls
copymultiple.yml nginx_role nginx.yml var
chhavi@chhavi:~/ansible$ cd var_precedence/
chhavi@chhavi:~/ansible/var_precedence$ cd
                                      nginx.yml var_precedence
                                                $ cd ..
chhavi@chhavi:~/ansible$ tree var_precedence/
     └─ main.yml
       main.yml
     └─ main.yml
     README.md
     └─ main.yml
         inventory

    test.yml

       — main.yml
8 directories, 8 files
```

Step 2: In tasks folder write a main.yml to display port number.

```
---
- name: Check
debug:
    msg: "port is {{ ports }}"
```

Step 3: In vars folder write a main.yml to include the variable value of ports

Step 4: In defaults, again write a main.yml to include the variable value of ports

Step 5: Now write a playbook and include the above created role in it.

```
---
- name: To check var precedence
hosts: all
roles:
--
var_precedence
```

# Step 6: Run the playbook and see the result.

```
hio$ ansible-playbook varcheck.yml
PLAY [To check var precedence] ************************
"msg": "port is 8080'
: ok=2 changed=0 unreachable=0 failed=0
                                   skipped=0
                                        rescued=0
                                              ignored=0
3.87.205.76
                changed=0
                      unreachable=0
                             failed=0
                                   skipped=0
                                         rescued=0
                                              ignored=0
```

# Step 6: Override variable from command line.

```
chhavi@chhavi:~/ansible$ ansible-playbook varcheck.yml -e "ports=70" --check
rescued=0
                                           ignored=0
3.87.205.76
           : ok=2 changed=0
                    unreachable=0
                           failed=0
                                skipped=0
               changed=0
                    unreachable=0
                           failed=0
                                skipped=0
                                     rescued=0
                                           ignored=0
```