

Project:

I - Set up Ansible Controller (Ubuntu) and Four clients (2 Linux Amazon & 2 Ubuntu).

II - Verify the setup by using ad-hoc cmd `PING` module.

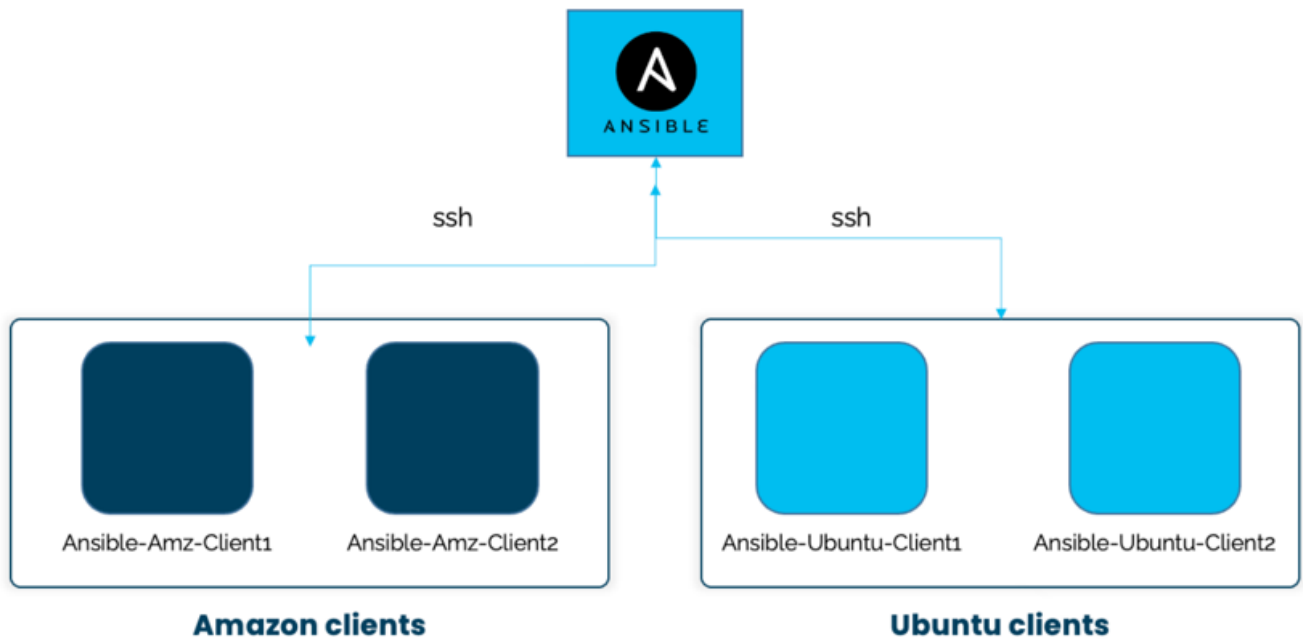
III -Write a playbook with 3 plays :

Play1 : deploy an Apache webserver with a message of your choice on the Ubuntu Clients.

Play2 : Install Git on all Ubuntu Client

Play3 : Write a task using `DEBUG` module to display my name on All hosts

Diagram



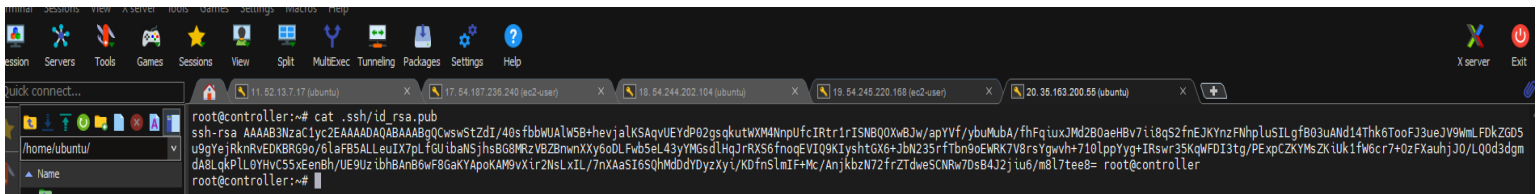
Prerequisites

- [AWS Account](#)
- **Ansible Controller:** [This EC2 instance\(Ubuntu 24.04\)](#)
- **Ansible Worker:** [Four EC2 instances \(2 Amazon Linux 2023 and 2 Ubuntu24.04\).](#)
- **2 keys pairs :** [Ansible_controller_kp](#) ; [Ansible_worker_kp](#)

I - Set up Ansible Controller (Ubuntu) and Four clients (2 Linux Amazon & 2 Ubuntu).

1-Screenshots of the key pair generate (pub key) on the controller account

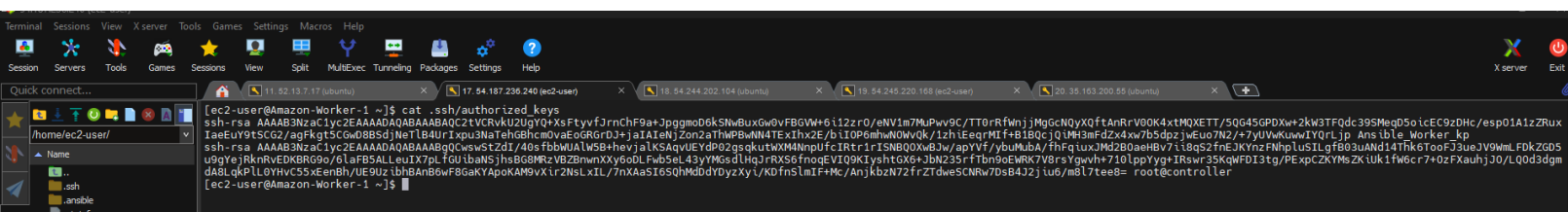
***This key will be shared with all the workers**



```
root@controller:~# ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCswstZdI/40sfbWUAlW5B+hevjaKSAqvUEYdP02gsqkutWXMNnpUfcIRtr1rISNBQ0XwBjw/apYVf/ybuMubA/fhFqIuxJMd2B0aeHBv7i18qS2fneJKYnzFNhpluSILgF803uAnd14Thk6ToofJ3ueJV9mMLFdkZGDS
u9gYeJRknRVEDKBRG9o/6laFBSALLuIX7pLfgUibaNSjhsBG8MRzVBZBwnXy6oDLFw5eL43yYMGsdLHqJRxs6fnoqEVI09KIyshtGX6+JbN235rftbn9oEWRK7V8rsYgwh+710lppYy+IRswr35KqWFDI3tg/PExpCZYMsZk1uk1fw6cr7+0zFXauhjJ0/LQ0d3dgm
dA8LqkPll0YHvC55xEnBh/UE9UzibhBAnB6wF8GaKYApokAMVxir2NsLxIL/7nXaAsI6S9HmddYdyzYxi/KDfnSLmIF+Mc/AnjkbzN72frZTdwSCNRw7DsB4J2jw6/m8l7tee8= root@controller
root@controller:~#
```

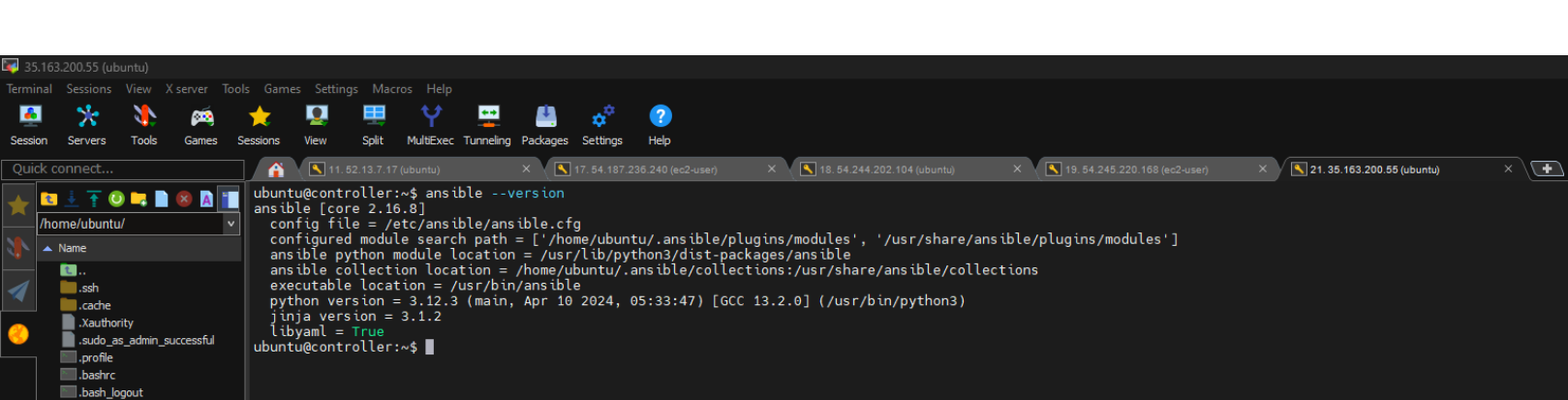
2-Screenshot of the worker's file .ssh/authorized_key showing the controller keypair

***All the workers .ssh/authorized_key file should have the controller pub key**



```
[ec2-user@Amazon-Worker-1 ~]$ cat .ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGC2VCRvKUZU2Y0+xsFtyvfjrnchF9a+Jpggm0D6KSnbuXw0vF8GVmH6i122r0/eNV1m7Mpw9C/TT0rRfwnjMgGcN0yX0ftAnRv00K4xtMOXETT/5Q6456PDxw+2k3TFQdc395MeqD5oicEC9zDhc/esp01A1zZRux
IaeEUy9tSCG2/agFkgT5Cw0B85dJNo1B4UfIxpU3NatehgBhc0vA0oRgrDj+jaIAIekJZon2aThMPBwNN4TEiXh2E/b110P6mhwN0wvQk/1zhieqrMIF+B1B0cJQ1MH3mFdZx4xw7b5d0zjwEuo7N2/+7yUvKuwIYQrljpAnsible_Worker_kp
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCswstZdI/40sfbWUAlW5B+hevjaKSAqvUEYdP02gsqkutWXMNnpUfcIRtr1rISNBQ0XwBjw/apYVf/ybuMubA/fhFqIuxJMd2B0aeHBv7i18qS2fneJKYnzFNhpluSILgF803uAnd14Thk6ToofJ3ueJV9mMLFdkZGDS
u9gYeJRknRVEDKBRG9o/6laFBSALLuIX7pLfgUibaNSjhsBG8MRzVBZBwnXy6oDLFw5eL43yYMGsdLHqJRxs6fnoqEVI09KIyshtGX6+JbN235rftbn9oEWRK7V8rsYgwh+710lppYy+IRswr35KqWFDI3tg/PExpCZYMsZk1uk1fw6cr7+0zFXauhjJ0/LQ0d3dgm
dA8LqkPll0YHvC55xEnBh/UE9UzibhBAnB6wF8GaKYApokAMVxir2NsLxIL/7nXaAsI6S9HmddYdyzYxi/KDfnSLmIF+Mc/AnjkbzN72frZTdwSCNRw7DsB4J2jw6/m8l7tee8= root@controller
[ec2-user@Amazon-Worker-1 ~]$
```

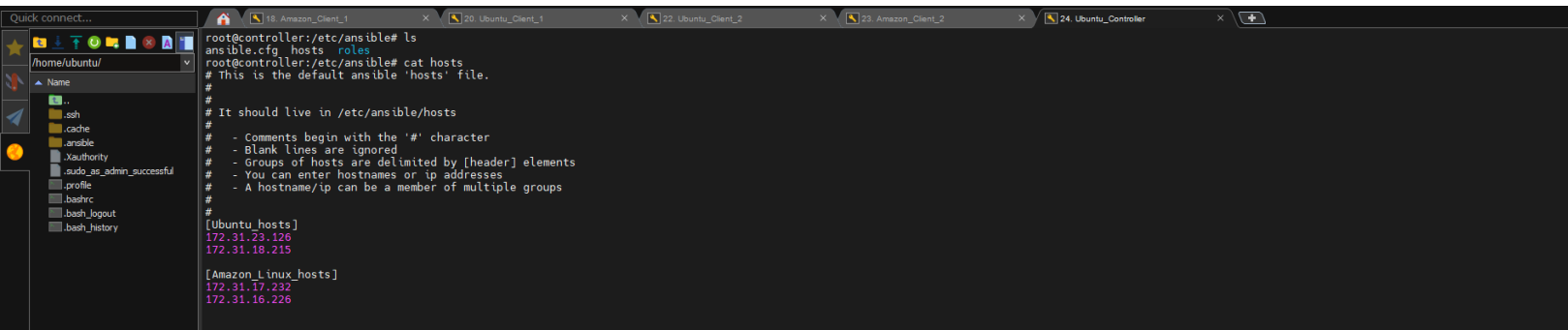
3-Screenshot showing Ansible installed on the controller



```
ubuntu@controller:~$ ansible --version
ansible [core 2.16.8]
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/home/ubuntu/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /home/ubuntu/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.12.3 (main, Apr 10 2024, 05:33:47) [GCC 13.2.0] (/usr/bin/python3)
  jinja version = 3.1.2
  libyaml = True
ubuntu@controller:~$
```

4- screenshot showing the inventory file on the controller.

***You can either create the inventory file in INI or YAML format. Here we use INI**



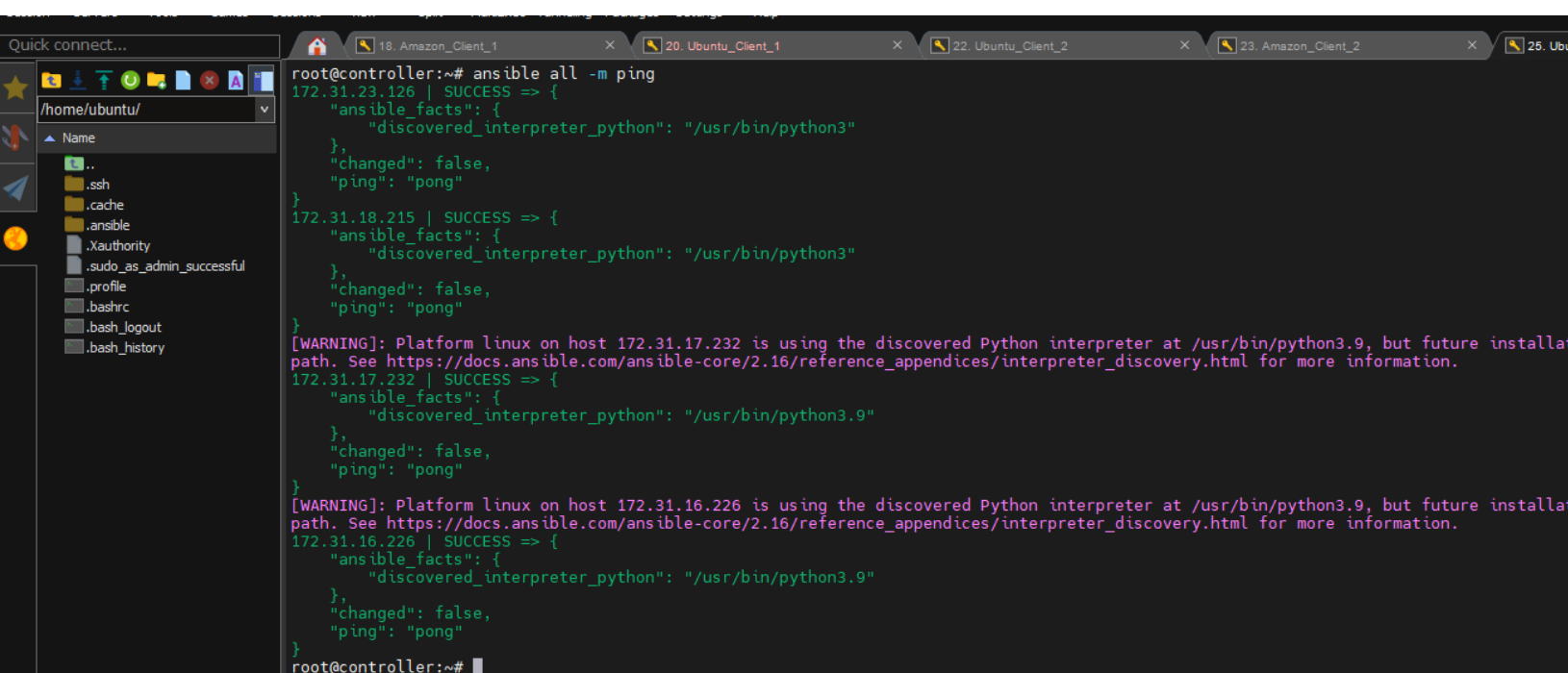
```
root@controller:/etc/ansible# ls
ansible.cfg  hosts  roles
root@controller:/etc/ansible# cat hosts
# This is the default ansible 'hosts' file.
#
# It should live in /etc/ansible/hosts
#
# - Comments begin with the '#' character
# - Blank lines are ignored
# - Groups of hosts are delimited by [header] elements
# - You can enter hostnames or ip addresses
# - A hostname/ip can be a member of multiple groups
#
#
[Ubuntu_hosts]
172.31.23.126
172.31.18.215

[Amazon_Linux_hosts]
172.31.17.232
172.31.16.226
```

***The inventory file is named `hosts` and located under the ansible configuration directory : `etc/ansible`**

II - Verify the setup by using ad-hoc cmd PING.

Screenshot of the ping showing all the clients successfully ping by Controller



```
root@controller:~# ansible all -m ping
172.31.23.126 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
172.31.18.215 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.17.232 is using the discovered Python interpreter at /usr/bin/python3.9, but future installat
path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
172.31.17.232 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.16.226 is using the discovered Python interpreter at /usr/bin/python3.9, but future installat
path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
172.31.16.226 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.9"
  },
  "changed": false,
  "ping": "pong"
}
root@controller:~#
```

III -Screenshot of both the controller & clients the playbook with the 3 plays :

- **Controller running the playbook**

```
ubuntu@controller:~$ sudo -i
root@controller:~# cd web/
root@controller:~/web# ls
Ansible_Apache_playbook.yml  index.html  variables.yml
root@controller:~/web# vi Ansible_Apache_playbook.yml
root@controller:~/web# rm Ansible_Apache_playbook.yml
root@controller:~/web# vi Ansible_Apache_playbook.yml
root@controller:~/web# ansible-playbook Ansible_Apache_playbook.yml

PLAY [Deploy Apache to Ubuntu Webserver] *****

TASK [Gathering Facts] *****
ok: [172.31.23.126]
ok: [172.31.18.215]

TASK [Update the apt package list] *****
changed: [172.31.23.126]
changed: [172.31.18.215]

TASK [Update all packages to their latest version] *****
changed: [172.31.23.126]
changed: [172.31.18.215]

TASK [Install Apache HTTP Server] *****
changed: [172.31.23.126]
changed: [172.31.18.215]

TASK [Start Apache service if not started] *****
ok: [172.31.23.126]
ok: [172.31.18.215]

TASK [Enable Apache to start on boot] *****
ok: [172.31.23.126]
ok: [172.31.18.215]

TASK [Copy index file to the clients] *****
changed: [172.31.23.126]
changed: [172.31.18.215]

PLAY [Install Git on all Ubuntu webserver] *****

TASK [Gathering Facts] *****
ok: [172.31.23.126]
ok: [172.31.18.215]

TASK [Update the apt package list] *****
changed: [172.31.23.126]
changed: [172.31.18.215]

TASK [Install Git] *****
ok: [172.31.18.215]
ok: [172.31.23.126]

PLAY [Display my name on all hosts] *****

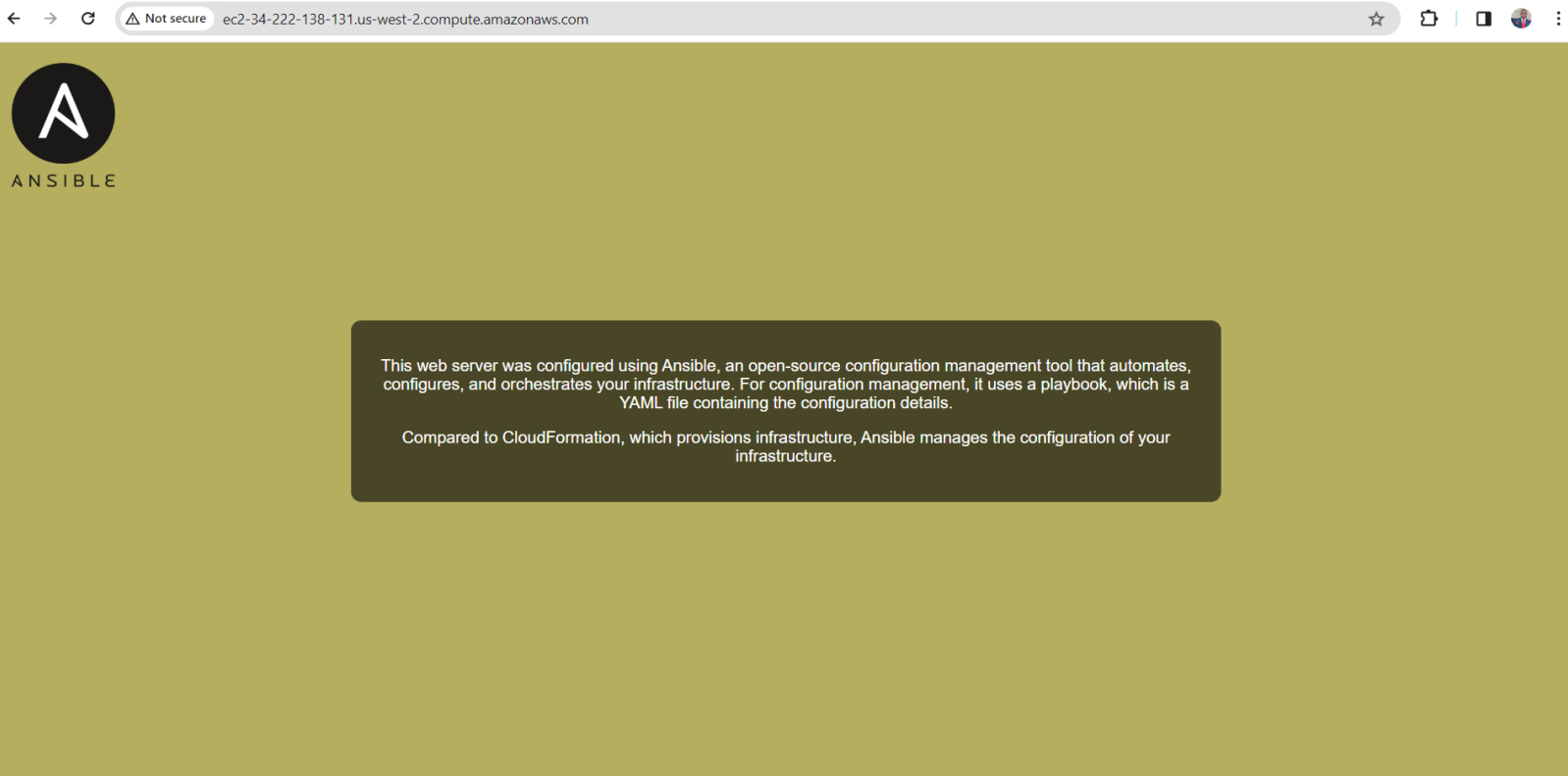
TASK [Gathering Facts] *****
ok: [172.31.23.126]
ok: [172.31.18.215]

[WARNING]: Platform linux on host 172.31.16.226 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
[WARNING]: Platform linux on host 172.31.17.232 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.17.232]

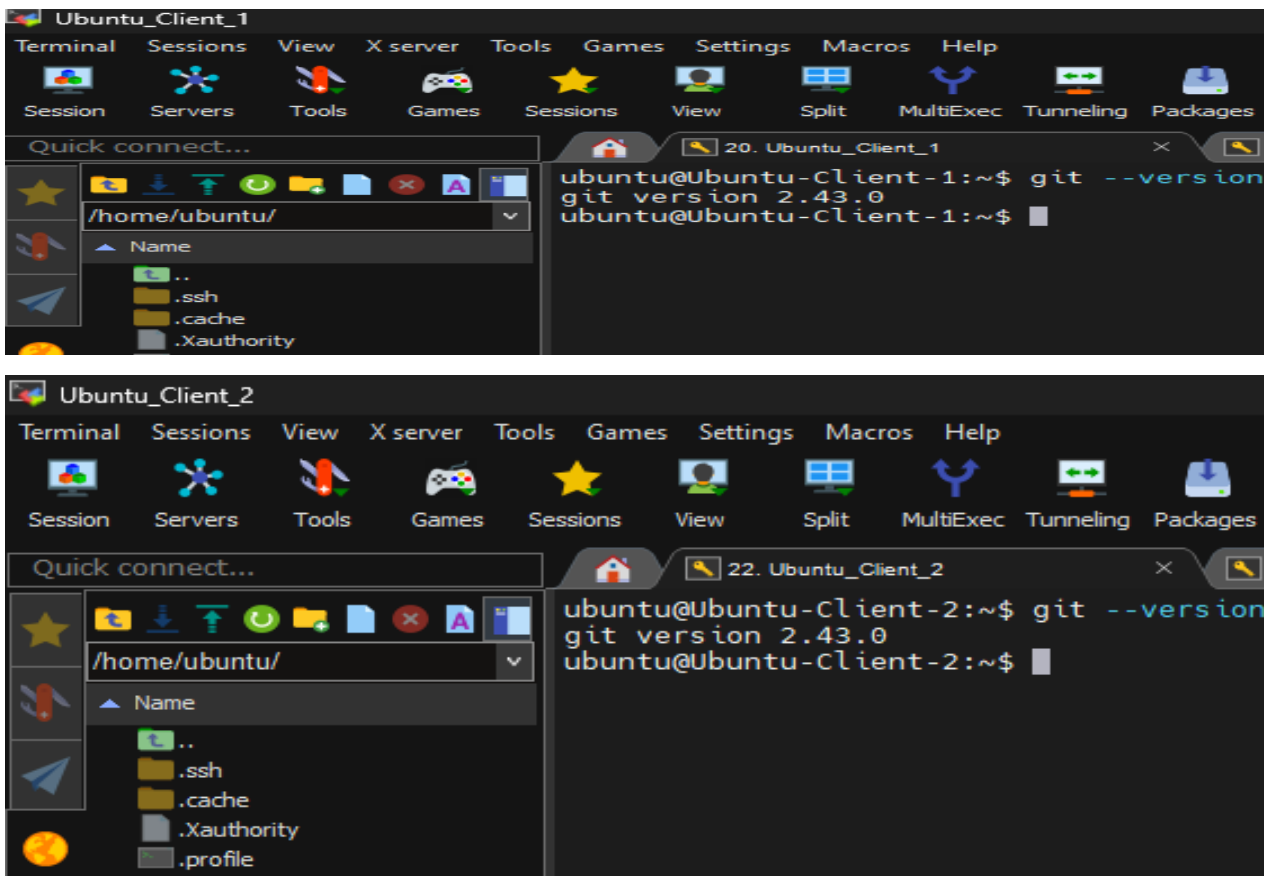
TASK [Print user name on each server] *****
ok: [172.31.23.126] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.18.215] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.17.232] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.16.226] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}

PLAY RECAP *****
172.31.16.226      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.17.232      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.18.215      : ok=12   changed=5    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.23.126     : ok=12   changed=5    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

- **Screenshot of the output of Play1 on all the Ubuntu-Clients**



Screenshot of the outcome of Play2 on all the ubuntu Server



Screenshot of the outcome of Play3

```
PLAY [Display my name on all hosts] *****
TASK [Gathering Facts] *****
ok: [172.31.23.126]
ok: [172.31.18.215]
[WARNING]: Platform linux on host 172.31.16.226 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.16.226]
[WARNING]: Platform linux on host 172.31.17.232 is using the discovered Python interpreter at /usr/bin/python3.9, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.16/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.17.232]
TASK [Print user name on each server] *****
ok: [172.31.23.126] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.18.215] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.17.232] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
ok: [172.31.16.226] => {
  "msg": [
    "Christian Logotse",
    "Nothing is impossible!",
    "Trust the process!"
  ]
}
```