1. Connect Ansible Server to One Host Machine

- Create 2 VM's one is ansible-ctrler and other is ansible-hostvm
- SSH into ansible-ctrler and Perform the following actions
- Login with the root user and create user ansible and provide sudo access in all servers

```
root@ansible-ctrler:~# adduser ansible
info: Adding user `ansible' ...
info: Selecting UID/GID from range 1000 to 59999 ...
info: Adding new group `ansible' (1003) ...
info: Adding new user `ansible' (1003) with group `ansible (1003)' ...
info: Creating home directory `/home/ansible' ...
info: Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for ansible
Enter the new value, or press ENTER for the default
        Full Name []:
        Room Number []:
        Work Phone []:
        Home Phone []:
        Other []:
Is the information correct? [Y/n] Y
info: Adding new user `ansible' to supplemental / extra groups `users' ...
info: Adding user `ansible' to group `users' ...
root@ansible-ctrler:~#
```

- vi /etc/ssh/sshd_config #Enable password based Authentication

```
#AuthorizedKeysCommandUser nobody

# For this to work you will also need host keys in /etc/ssh/ssh_known_host
#HostbasedAuthentication no
# Change to yes if you don't trust ~/.ssh/known_hosts for
# HostbasedAuthentication
#IgnoreUserKnownHosts no
# Don't read the user's ~/.rhosts and ~/.shosts files
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to no here!
PasswordAuthentication yes
#PermitEmptyPasswords no

# Change to yes to enable challenge-response passwords (beware issues with
# some PAM modules and threads)
KbdInteractiveAuthentication no
-- INSERT --                                                    78,1
```

- service sshd restart # restart the sshd services
- visudo # make the necessary entrys so that ansible user can go with sudo and password less access

```
# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL
ansible ALL=(ALL)       NOPASSWD: ALL
# Members of the admin group may gain root privileges
%admin ALL=(ALL) ALL
```

- service sshd restart # restart the sshd services
- Install ansible only on the controller

  sudo apt update
  sudo apt install software-properties-common
  sudo add-apt-repository --yes --update ppa:ansible/ansible
  sudo apt install ansible

- Check the ansible version

```
ansible@ansible-ctrler:~$ ansible --version
ansible [core 2.18.1]
  config file = None
  configured module search path = ['/home/ansible/.ansible/plugins/modules',
'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /home/ansible/.ansible/collections:/usr/share
/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.13.3 (main, Aug 14 2025, 11:53:40) [GCC 14.2.0] (/usr/bi
n/python3)
  jinja version = 3.1.5
  libyaml = True
```

- su - ansible # Switch to ansible user
- ssh-keygen # In ansible-ctrler , create a key pair

```
ansible@ansible-ctrler:~$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/ansible/.ssh/id_ed25519):
Created directory '/home/ansible/.ssh'.
Enter passphrase for "/home/ansible/.ssh/id_ed25519" (empty for no passphrase
):
Enter same passphrase again:
Passphrases do not match.  Try again.
Enter passphrase for "/home/ansible/.ssh/id_ed25519" (empty for no passphrase
):
Enter same passphrase again:
Your identification has been saved in /home/ansible/.ssh/id_ed25519
Your public key has been saved in /home/ansible/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:zidCXv8A52dZkW5A4mNNd1AlUplU/HLlZWGNVBYl4LY ansible@ansible-ctrler.us-
central1-a.c.chandu-project-474409.internal
The key's randomart image is:
+--[ED25519 256]--+
|          . ==O&#|
|         . * o=**|
|          + = oo+|
|         . o +..+|
|      . S . E +o |
|     o + =   +   |
|      o + = +    |
|       . o =     |
|            .    |
+----[SHA256]-----+
```

ssh into the host machine (ansible-hostvm) and perform the following steps

Step 1: Add a New User
Step 2: Enable Password Authentication and Grant Sudo Privileges

Step 3: Restart the SSH Service

Copy the public-key to the host machine from the ansible-ctrler

- ssh-copy-id <host-userid>@<PRIVAT_IP_ADDRESS_OF_HOST>

```
ansible@ansible-ctrler:~$ ssh-copy-id chandu@10.128.0.16
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/
.ssh/id_ed25519.pub"
The authenticity of host '10.128.0.16 (10.128.0.16)' can't be established.
ED25519 key fingerprint is SHA256:+TdwyQW6MmIGB3CvPmJla2B9m26gO+MYxA98GNLZpD4
.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filt
er out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are pro
mpted now it is to install the new keys
chandu@10.128.0.16's password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'chandu@10.128.0.16'"
and check to make sure that only the key(s) you wanted were added.
```

Connecting to hosts from ansible-ctrler without password

- ssh <host-userid>@<PRIVAT_IP_ADDRESS_OF_HOST>

```
ansible@ansible-ctrler:~$ ssh chandu@10.128.0.16
Welcome to Ubuntu 25.04 (GNU/Linux 6.14.0-1017-gcp x86_64)

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

 System information as of Wed Oct  8 10:51:27 UTC 2025

  System load:  0.0               Processes:             122
  Usage of /:   35.4% of 8.55GB   Users logged in:       2
  Memory usage: 10%               IPv4 address for ens4: 10.128.0.16
  Swap usage:   0%


0 updates can be applied immediately.


Last login: Wed Oct  8 10:43:33 2025 from 10.128.0.15
chandu@ansible-hostvm:~$
```

- Create one file in ansible-ctrler
  vi inv_file # add the userid and host private-ip in this inventory file

```
chandu@10.128.0.16
~
~
~
```

- command to ping on all the host machines mentioned in the inv_file

```
ansible@ansible-ctrler:~$ ansible -i inv_file -m ping all
[WARNING]: Platform linux on host chandu@10.128.0.16 is using the discovered
Python interpreter at /usr/bin/python3.13, but future installation of another
Python interpreter could change the meaning of that path. See https://docs.an
sible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html f
or
more information.
chandu@10.128.0.16 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.13"
    },
    "changed": false,
    "ping": "pong"
}
```

2. Connect Ansible Server to Two Host Machines (Ubuntu and CentOS)

- Create one VM "ansible-centos-host" using centOS operating system
- Login with the root user and create user <user-id> and provide sudo access in all servers
- adduser <user-id> # add the user
- passwd <user-id> # set the passwd to the user
- vi /etc/ssh/sshd_config #Enable password based Authentication and UsePAM

```
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to no here!
PasswordAuthentication yes
#PermitEmptyPasswords no

# Change to no to disable s/key passwords
#KbdInteractiveAuthentication yes
```

```
# If you just want the PAM account and session checks to run without
# PAM authentication, then enable this but set PasswordAuthentication
# and KbdInteractiveAuthentication to 'no'.
# WARNING: 'UsePAM no' is not supported in this build and may cause several
# problems.
UsePAM yes

#AllowAgentForwarding yes
#AllowTcpForwarding yes
#GatewayPorts no
#X11Forwarding no
```

- systemctl restart sshd   #restart sshd services
- ssh into the ansible-ctrler vm and copy the public key to centOS vm

Copy the public-key to the host machine from the ansible-ctrler

- ssh-copy-id <host-userid>@<PRIVAT_IP_ADDRESS_OF_HOST>

```
ansible@ansible-ctrler:~$ ssh-copy-id pavan@10.128.0.18
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/
.ssh/id_ed25519.pub"
The authenticity of host '10.128.0.18 (10.128.0.18)' can't be established.
ED25519 key fingerprint is SHA256:3QyavYWp843uONtFPY6HOz4nuSAoNxVGP9Fg8e8xqtY
.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filt
er out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are pro
mpted now it is to install the new keys
(pavan@10.128.0.18) Password:

Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'pavan@10.128.0.18'"
and check to make sure that only the key(s) you wanted were added.
```

Connecting to hosts from ansible-ctrler without password

- ssh <host-userid>@<PRIVAT_IP_ADDRESS_OF_HOST>

```
ansible@ansible-ctrler:~$ ssh pavan@10.128.0.18
[pavan@ansible-centos-host ~]$
```

Add the another host details in the inv_file

- vi inv_file

```
chandu@10.128.0.16
pavan@10.128.0.18
~
~
~
```

- command to ping on all the host machines mentioned in the inv_file

```
ansible@ansible-ctrler:~$ ansible -i inv_file -m ping all
[WARNING]: Platform linux on host pavan@10.128.0.18 is using the discovered
Python interpreter at /usr/bin/python3.12, but future installation of another
Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more informatio
n.
pavan@10.128.0.18 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.12"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host chandu@10.128.0.16 is using the discovered
Python interpreter at /usr/bin/python3.13, but future installation of another
Python interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.18/reference_appendices/interpreter_discovery.html for more informatio
n.
chandu@10.128.0.16 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.13"
    },
    "changed": false,
    "ping": "pong"
}
```

3. Installing apache2 on ubuntu and httpd on centOS Servers

- Create a file named playbook.yaml and paste the content inside it

```
---
- name: To install apache2 on ubuntu and centOS
  become: true
  hosts: web
  tasks:
  - name: Install apache2 on ubuntu
    apt:
      name: apache2
      state: present
    when:  ansible_os_family == "Debian"

  - name: Start the Apache service on Ubuntu
    service:
        name: apache2
```

```
        state: started
        enabled: true
    when: ansible_os_family == "Debian"

  - name: Install httpd on centOS
    yum:
      name: httpd
      state: present
    when: ansible_os_family == "RedHat"

  - name: Start the Apache service on CentOS
    service:
      name: httpd
      state: started
      enabled: true
    when: ansible_os_family == "RedHat"
```

- Update the inv_file in ansible-ctrler vm
- Here i mentioned these 2 host details under 1 group “web”

```
[web]
chandu@10.128.0.16
pavan@10.128.0.18
~
```

- Run the Playbook.yaml file

  ansible-playbook -i inv_file playbook.yaml

```
ansible@ansible-ctrler:~$ ansible-playbook -i inv_file playbook.yaml

PLAY [To install apache2 on ubuntu and centOS] *********************************************************************************************************************

TASK [Gathering Facts] *********************************************************************************************************************************************
[WARNING]: Platform linux on host pavan@10.128.0.18 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another
Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for
more information.
ok: [pavan@10.128.0.18]
[WARNING]: Platform linux on host chandu@10.128.0.16 is using the discovered Python interpreter at /usr/bin/python3.13, but future installation of another
Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.18/reference_appendices/interpreter_discovery.html for
more information.
ok: [chandu@10.128.0.16]

TASK [Install apache2 on ubuntu] ***********************************************************************************************************************************
skipping: [pavan@10.128.0.18]
changed: [chandu@10.128.0.16]

TASK [Start the Apache service on Ubuntu] **************************************************************************************************************************
skipping: [pavan@10.128.0.18]
ok: [chandu@10.128.0.16]

TASK [Install httpd on centOS] *************************************************************************************************************************************
skipping: [chandu@10.128.0.16]
changed: [pavan@10.128.0.18]

TASK [Start the Apache service on CentOS] **************************************************************************************************************************
skipping: [chandu@10.128.0.16]
changed: [pavan@10.128.0.18]

PLAY RECAP *********************************************************************************************************************************************************
chandu@10.128.0.16         : ok=3    changed=1    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
pavan@10.128.0.18          : ok=3    changed=2    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
```

- And access these webpages using External-ip of the host vm’s and make sure 80 port is open.