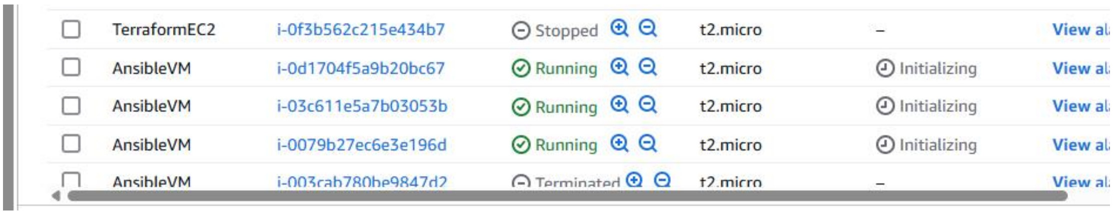
Ansible part II

Configuration management tool

Setup: Setting up to work with Ansible

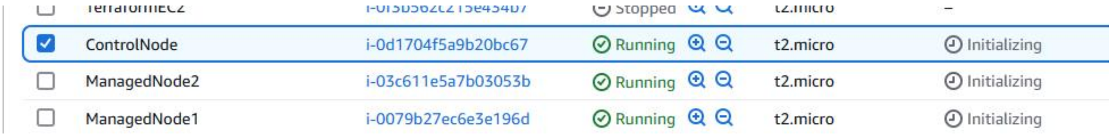
1. Create 3 Linux VMs in AWS
2. 2 VMs as Managed nodes
3. 1 VM as Control node

I have created 3 machines:

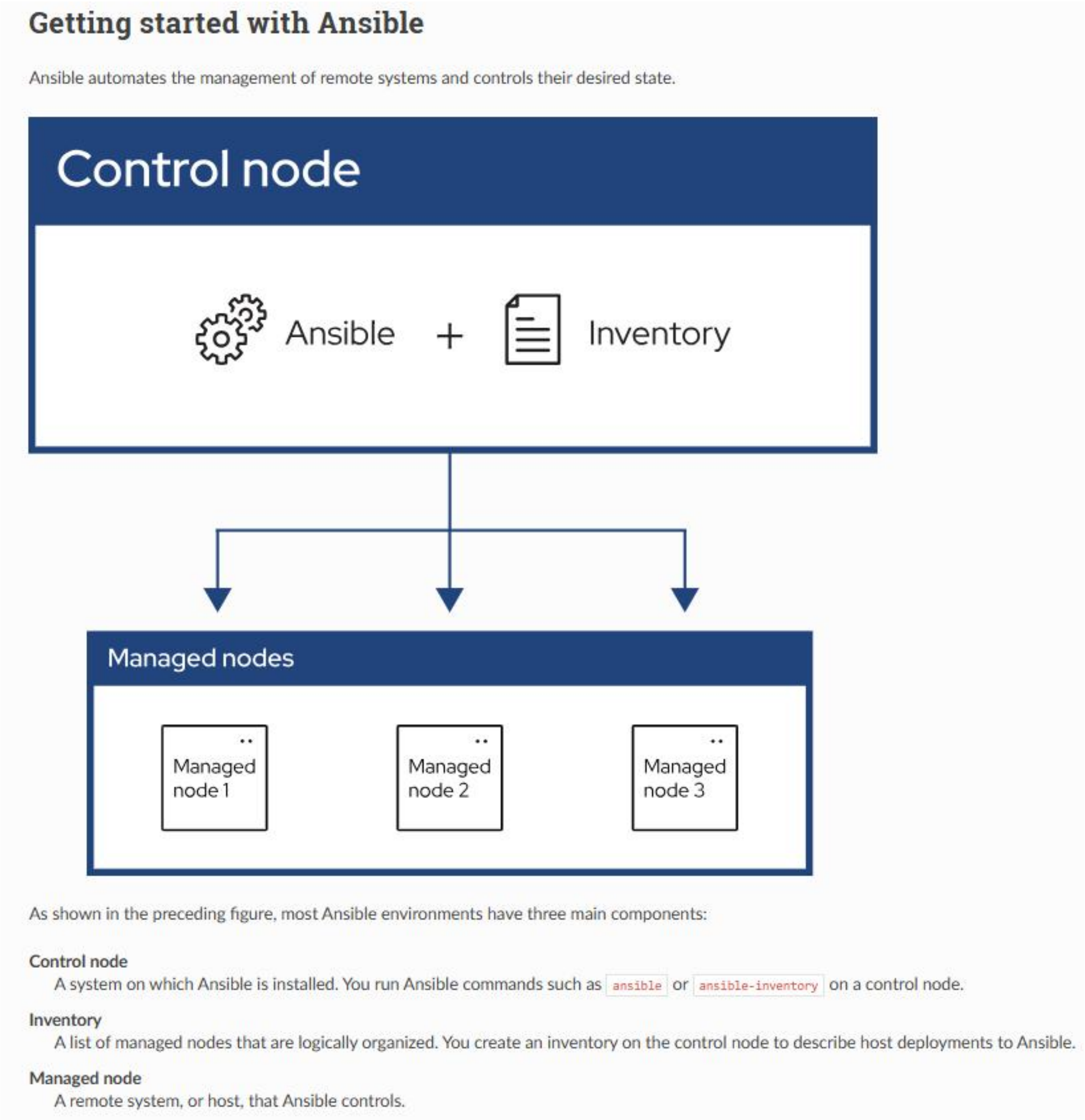


□	TerraformEC2	i-0f3b562c215e434b7	⊖ Stopped	t2.micro	–	View al
□	AnsibleVM	i-0d1704f5a9b20bc67	✓ Running	t2.micro	Initializing	View al
□	AnsibleVM	i-03c611e5a7b03053b	✓ Running	t2.micro	Initializing	View al
□	AnsibleVM	i-0079b27ec6e3e196d	✓ Running	t2.micro	Initializing	View al
□	AnsibleVM	i-003cab780be9847d2	⊖ Terminated	t2.micro	–	View al

Rename VMs



□	TerraformEC2	i-0f3b562c215e434b7	⊖ Stopped	t2.micro	–
☑	ControlNode	i-0d1704f5a9b20bc67	✓ Running	t2.micro	Initializing
□	ManagedNode2	i-03c611e5a7b03053b	✓ Running	t2.micro	Initializing
□	ManagedNode1	i-0079b27ec6e3e196d	✓ Running	t2.micro	Initializing



Getting started with Ansible

Ansible automates the management of remote systems and controls their desired state.

As shown in the preceding figure, most Ansible environments have three main components:

Control node
A system on which Ansible is installed. You run Ansible commands such as `ansible` or `ansible-inventory` on a control node.

Inventory
A list of managed nodes that are logically organized. You create an inventory on the control node to describe host deployments to Ansible.

Managed node
A remote system, or host, that Ansible controls.

Setup User and Configure user in Sudoers file and update
SSHD config file in all 3 VMs

a. Create User (All 3 VMs)

sudo useradd ansible

sudo passwd ansible

b. Configure user in sudoers file

  i. sudo visudo

c. ansible ALL = (ALL), NoPasswd: ALL

d. Update SSHD config file: sudo vi /etc/ssh/sshd_config

e. Install Ansible in ControlNode: Switch to Ansible user sudo su ansible

  i. cd ~

f. Install Python

  i. sudo yum install python3 -y

g. To check Python version

  i. python3 --version

h. Install pip (Python package manager)

  i. sudo yum -y install python3-pip

i. Install Ansible using Python PIP

  pip3 install ansible --user

j. Verify Ansible version

i. ansible --version

k. Create Ansible folder under /etc

i. sudo mkdir /etc/ansible

l. Generate SSH key in our Control Node & copy SSH key into Managed Nodes

m. Switch to Ansible user

a) sudo su ansible

n. Generate SSH key

a) ssh-keygen (just push enter-enter-enter) don’t write anything

o. Copy it to Managed Nodes as Ansible user

i. ssh-copy-id ansible@<ManagedNode-PrivateIP>

p. Update Host inventory in Ansible server

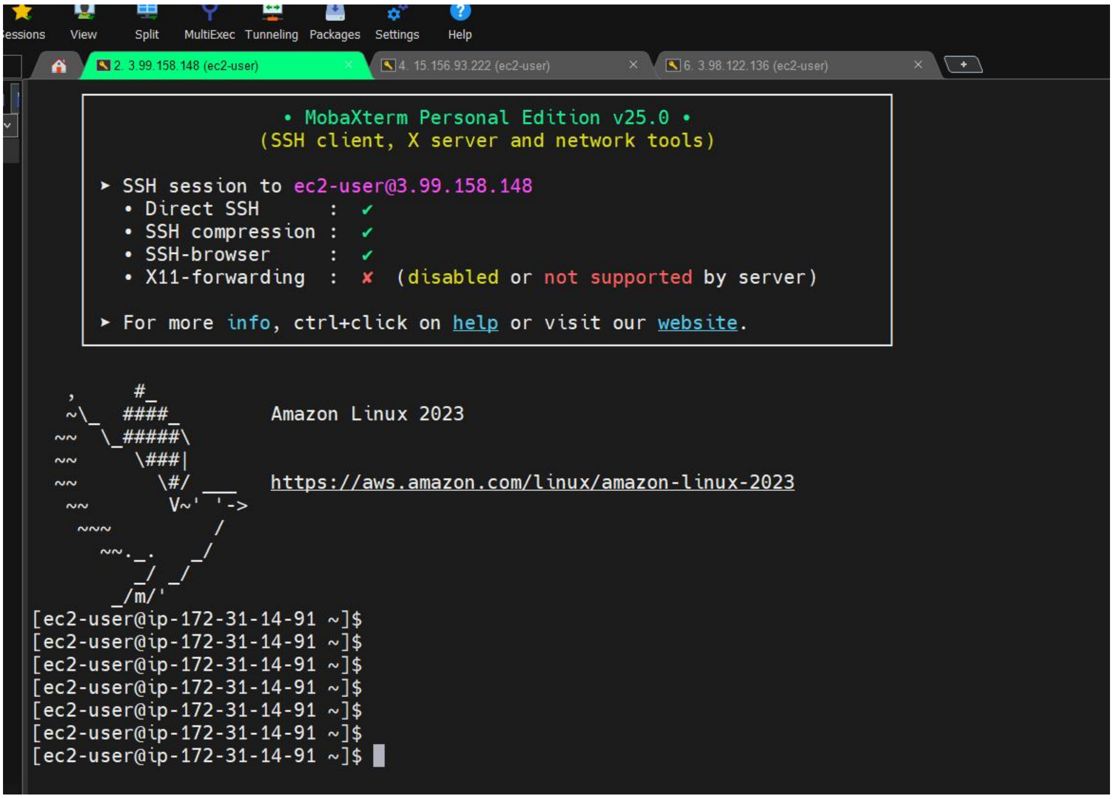
i. sudo vi /etc/ansible/hosts

q. Test connectivity

i. ansible webservers -m ping

Create user ansible in all 3 VMs: sudo useradd ansible

Green tab is the control node others are managed nodes


essions
View
Split
MultiExec
Tunneling
Packages
Settings
Help
2. 3.99.158.148 (ec2-user)
4. 15.156.93.222 (ec2-user)
6. 3.98.122.136 (ec2-user)

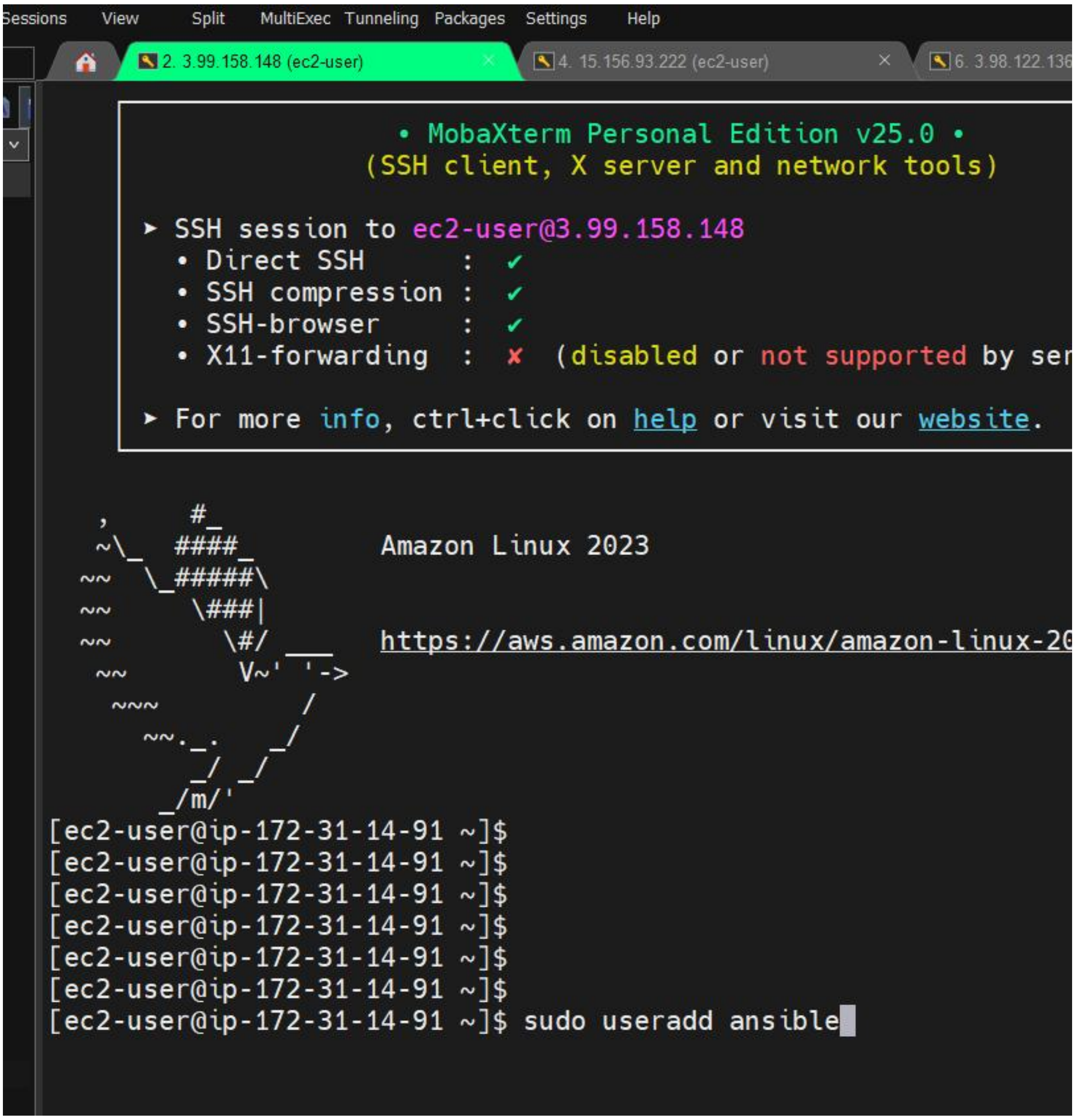
```
                 • MobaXterm Personal Edition v25.0 •
               (SSH client, X server and network tools)

      ➤ SSH session to ec2-user@3.99.158.148
        • Direct SSH       :  ✓
        • SSH compression  :  ✓
        • SSH-browser      :  ✓
        • X11-forwarding   :  ✘  (disabled or not supported by server)

      ➤ For more info, ctrl+click on help or visit our website.

   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
```

In the Control Node



Sessions View Split MultiExec Tunneling Packages Settings Help
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• MobaXterm Personal Edition v25.0 •
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➤ SSH session to ec2-user@3.99.158.148
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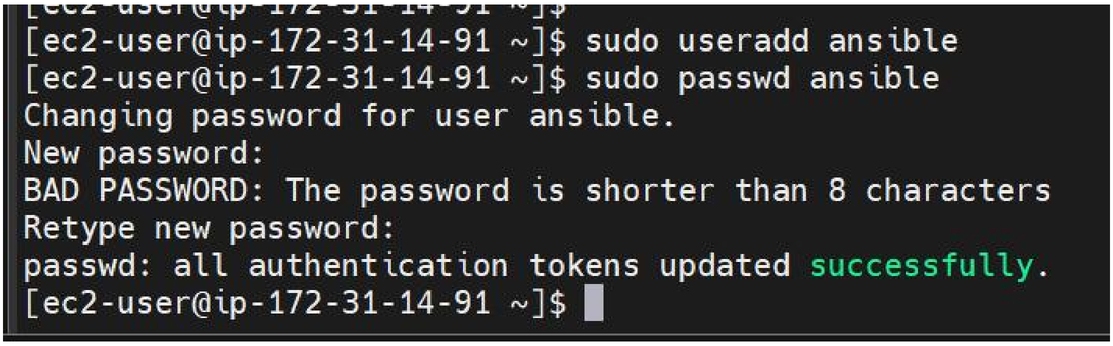
  • X11-forwarding  :  ✗  (disabled or not supported by ser

➤ For more info, ctrl+click on help or visit our website.

   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-20
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo useradd ansible
```

[ec2-user@ip-172-31-14-91 ~]$ sudo useradd ansible
[ec2-user@ip-172-31-14-91 ~]$ sudo passwd ansible



```
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo useradd ansible
[ec2-user@ip-172-31-14-91 ~]$ sudo passwd ansible
Changing password for user ansible.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-14-91 ~]$
```

Do the same thing in Managed User also

[ec2-user@ip-172-31-5-77 ~]$ sudo passwd ansible
Changing password for user ansible.
New password:
BAD PASSWORD: The password is shorter than 8 characters

Retype new password:
passwd: all authentication tokens updated successfully.

r. Create User (All 3 VMs)
sudo useradd ansible
sudo passwd ansible

s. Configure user in sudoers file

i. sudo visudo

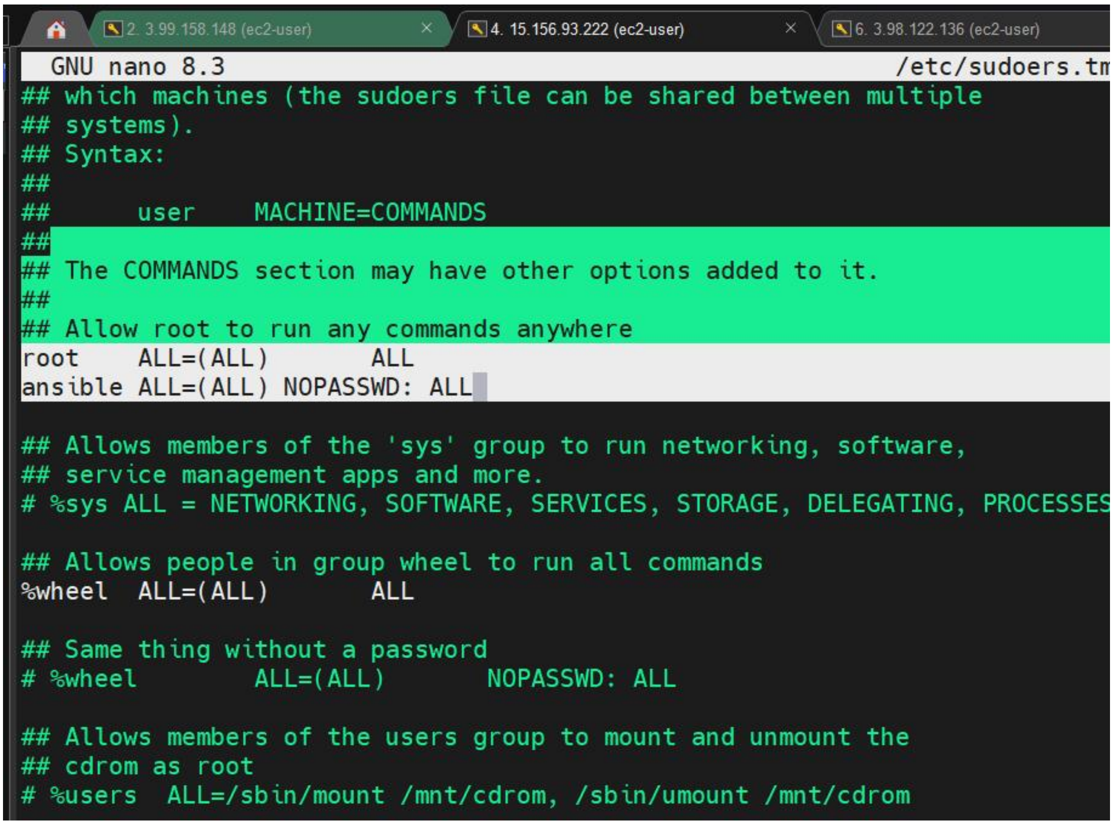
t. ansible ALL = (ALL), NoPasswd: ALL
u. Update SSHD config file: sudo vi /etc/ssh/sshd_config

Install Ansible in Control Node

Open sudoers file:
[ec2-user@ip-172-31-5-77 ~]$ sudo visudo

Scroll down and say

The COMMANDS section may have other options added to it.
##
Allow root to run any commands anywhere
root   ALL=(ALL)   ALL
ansible ALL=(ALL) NOPASSWD: ALL


2. 3.99.158.148 (ec2-user)
4. 15.156.93.222 (ec2-user)
6. 3.98.122.136 (ec2-user)

```
  GNU nano 8.3                                             /etc/sudoers.tm
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##      user    MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)       ALL
ansible ALL=(ALL) NOPASSWD: ALL

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES

## Allows people in group wheel to run all commands
%wheel  ALL=(ALL)       ALL

## Same thing without a password
# %wheel        ALL=(ALL)       NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
## cdrom as root
# %users  ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom
```

Ctrl + X --> push Y, enter

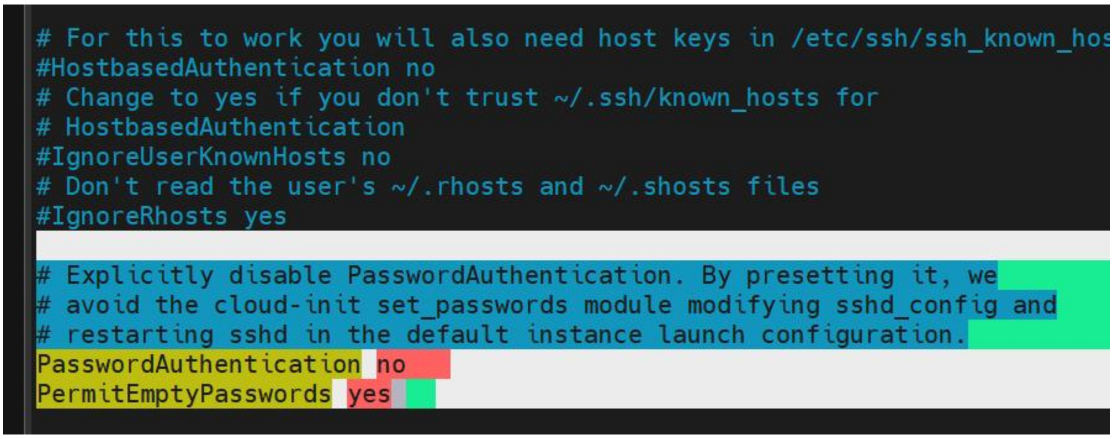
DO the same things in all 3 VMs
ansible ALL=(ALL) NOPASSWD: ALL

Next:

```
[ec2-user@ip-172-31-14-91 ~]$ sudo vi /etc/ssh/sshd_config
```

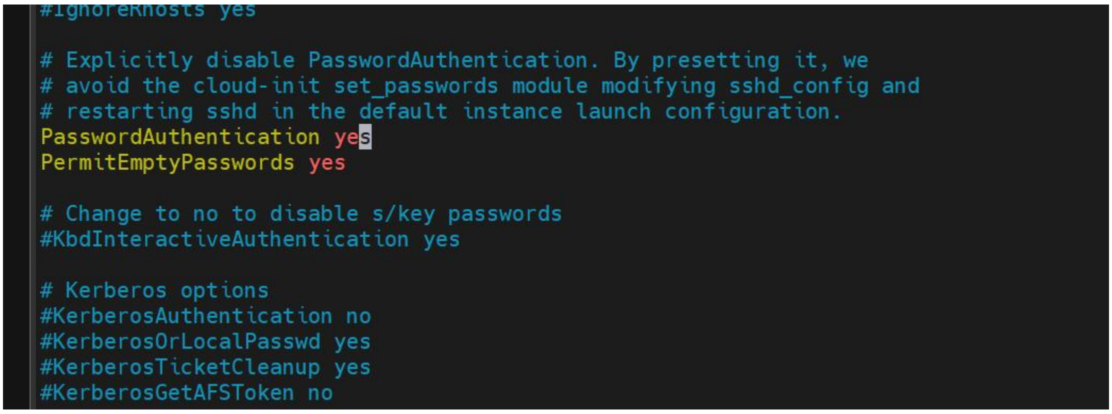
Change PermitEmptyPasswords to yes

```
# Explicitly disable PasswordAuthentication. By presetting it, we
# avoid the cloud-init set_passwords module modifying sshd_config and
# restarting sshd in the default instance launch configuration.
PasswordAuthentication yes
PermitEmptyPasswords yes
PubkeyAuthentication yes
```



```
# For this to work you will also need host keys in /etc/ssh/ssh_known_hos
#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

# Explicitly disable PasswordAuthentication. By presetting it, we
# avoid the cloud-init set_passwords module modifying sshd_config and
# restarting sshd in the default instance launch configuration.
PasswordAuthentication no
PermitEmptyPasswords yes
```



```
#IgnoreRhosts yes

# Explicitly disable PasswordAuthentication. By presetting it, we
# avoid the cloud-init set_passwords module modifying sshd_config and
# restarting sshd in the default instance launch configuration.
PasswordAuthentication yes
PermitEmptyPasswords yes

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

# Kerberos options
#KerberosAuthentication no
#KerberosOrLocalPasswd yes
#KerberosTicketCleanup yes
#KerberosGetAFSToken no
```

Same step please do in other machines as well

Restart sshd service in all 3 VMs

```
[ec2-user@ip-172-31-14-91 ~]$ sudo service sshd restart
Redirecting to /bin/systemctl restart sshd.service
```

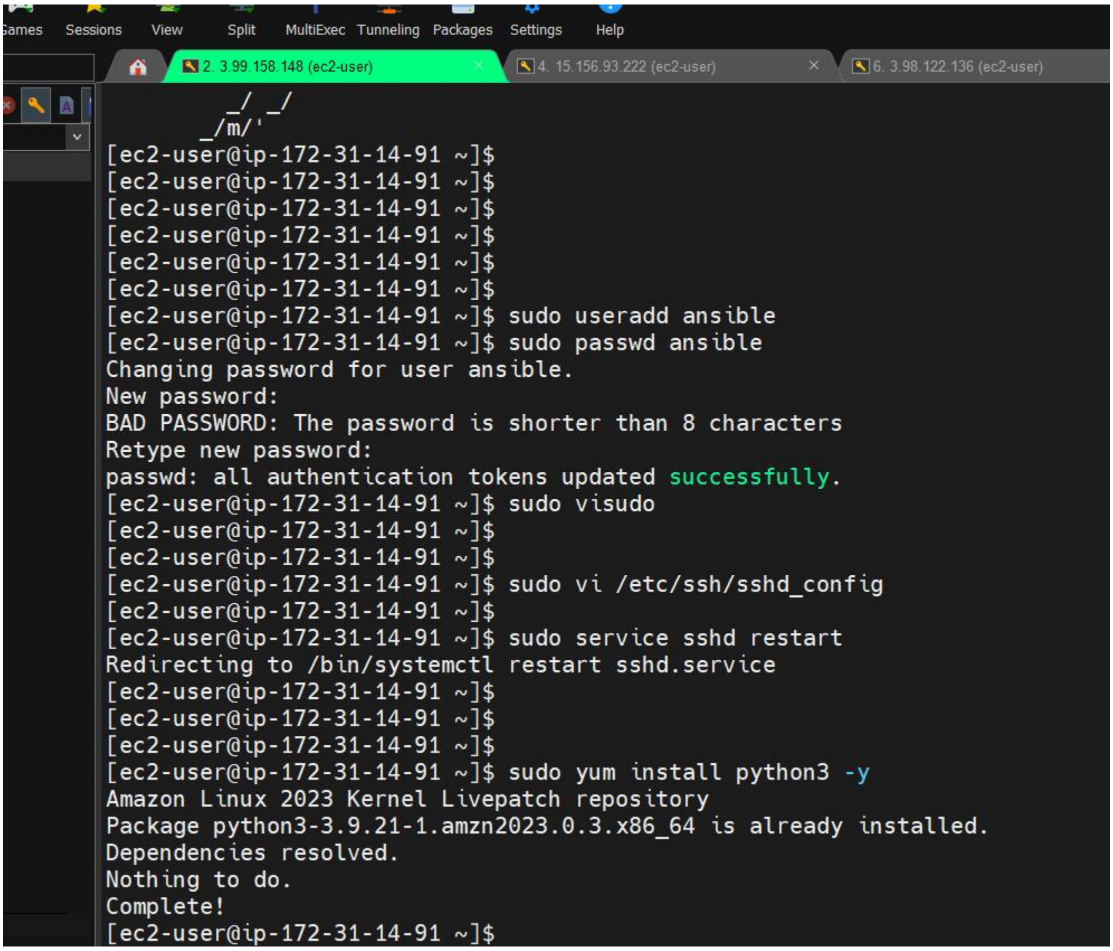
Install Ansible in Control Node

```
[ec2-user@ip-172-31-14-91 ~]$ sudo yum install python3 -y
```

```
[ec2-user@ip-172-31-14-91 ~]$ sudo yum install python3 -y
```

```
Amazon Linux 2023 Kernel Livepatch repository                     140 kB/s |  15 kB
00:00
Package python3-3.9.21-1.amzn2023.0.3.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

Installed Python for Ansible only in Control Node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```
         _/ _/
       _/m/'
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo useradd ansible
[ec2-user@ip-172-31-14-91 ~]$ sudo passwd ansible
Changing password for user ansible.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-14-91 ~]$ sudo visudo
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo vi /etc/ssh/sshd_config
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo service sshd restart
Redirecting to /bin/systemctl restart sshd.service
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo yum install python3 -y
Amazon Linux 2023 Kernel Livepatch repository
Package python3-3.9.21-1.amzn2023.0.3.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-14-91 ~]$
```

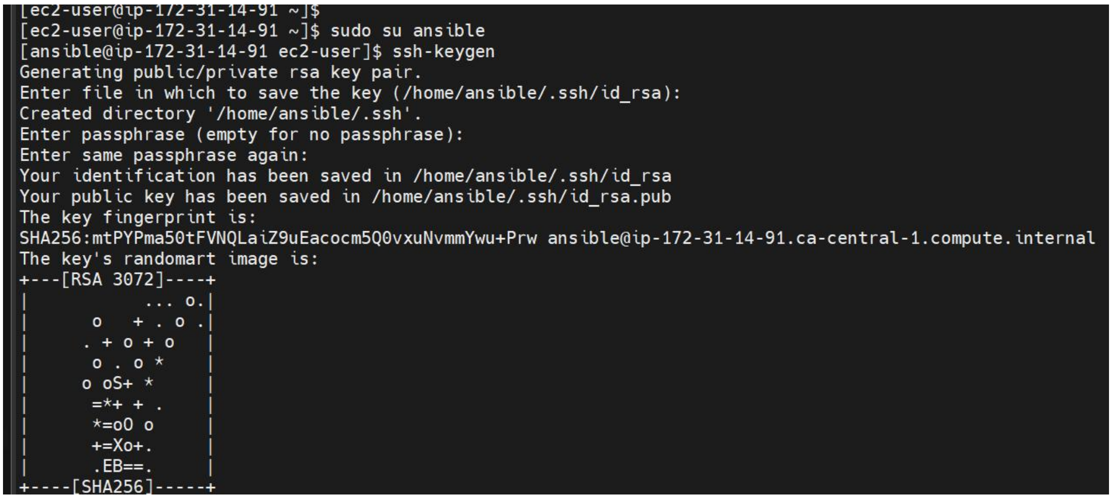
```
[ec2-user@ip-172-31-14-91 ~]$ sudo yum -y install python3-pip
```

```
[ec2-user@ip-172-31-14-91 ~]$ pip3 install ansible --user
```

```
[ec2-user@ip-172-31-14-91 ~]$ ansible --version
ansible [core 2.15.13]
  config file = None
  configured module search path = ['/home/ec2-user/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /home/ec2-user/.local/lib/python3.9/site-packages/ansible
  ansible collection location = /home/ec2-user/.ansible/collections:/usr/share/ansible/collections
  executable location = /home/ec2-user/.local/bin/ansible
  python version = 3.9.21 (main, Mar 19 2025, 00:00:00) [GCC 11.5.0 20240719 (Red Hat 11.5.0-5)] (/usr/bin/python3)
  jinja version = 3.1.6
  libyaml = True
```

[ec2-user@ip-172-31-14-91 ~]$ sudo mkdir /etc/ansible

[ec2-user@ip-172-31-14-91 ~]$ sudo su ansible
[ansible@ip-172-31-14-91 ec2-user]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ansible/.ssh/id_rsa):
Created directory '/home/ansible/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ansible/.ssh/id_rsa
Your public key has been saved in /home/ansible/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:mtPYPma50tFVNQLaiZ9uEacocm5Q0vxuNvmmYwu+Prw ansible@ip-172-31-14-91.ca-central-1.compute.internal



```
[ec2-user@ip-172-31-14-91 ~]$
[ec2-user@ip-172-31-14-91 ~]$ sudo su ansible
[ansible@ip-172-31-14-91 ec2-user]$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ansible/.ssh/id_rsa):
Created directory '/home/ansible/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ansible/.ssh/id_rsa
Your public key has been saved in /home/ansible/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:mtPYPma50tFVNQLaiZ9uEacocm5Q0vxuNvmmYwu+Prw ansible@ip-172-31-14-91.ca-central-1.compute.internal
The key's randomart image is:
+---[RSA 3072]----+
|           ... o.|
|      o   + . o .|
|     . + o + o   |
|      o . o *    |
|     o oS+ *     |
|      =*+ + .    |
|      *=oO o     |
|      +=Xo+.     |
|      .EB==.     |
+----[SHA256]-----+
```

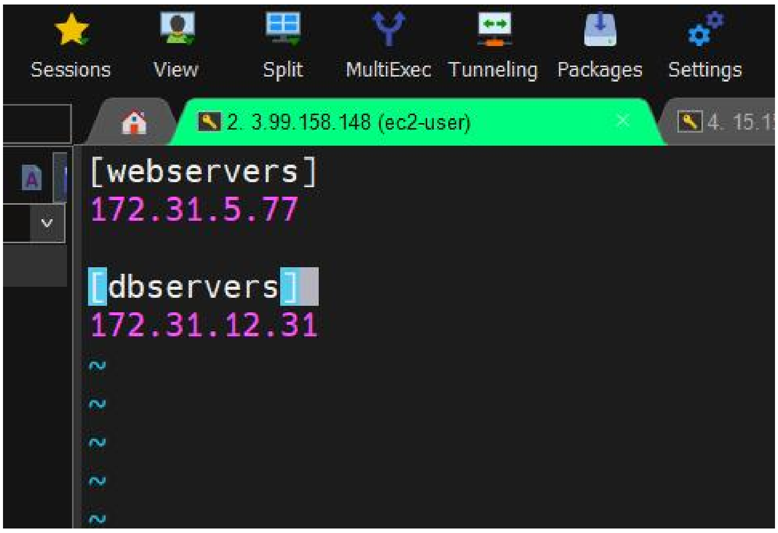
ssh-copy-id ansible@<ManagedNode-PrivateIP>

ManagedNode1 PrivateIP: 172.31.5.77
ManagedNode2 PrivateIP: 172.31.12.31

Run this in the Control Node
ssh-copy-id ansible@172.31.5.77
ssh-copy-id ansible@172.31.12.31

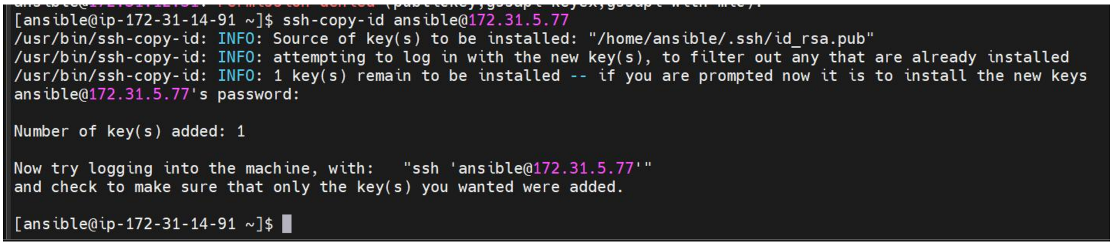
What's Host inventory? All Managed Nodes

Update Host inventory in Ansible server to add Managed Node Server details
sudo vi /etc/ansible/hosts
In Control Node
[ansible@ip-172-31-14-91 ec2-user]$ sudo vi /etc/ansible/hosts



```
[webservers]
172.31.5.77

[dbservers]
172.31.12.31
~
~
~
~
~
```

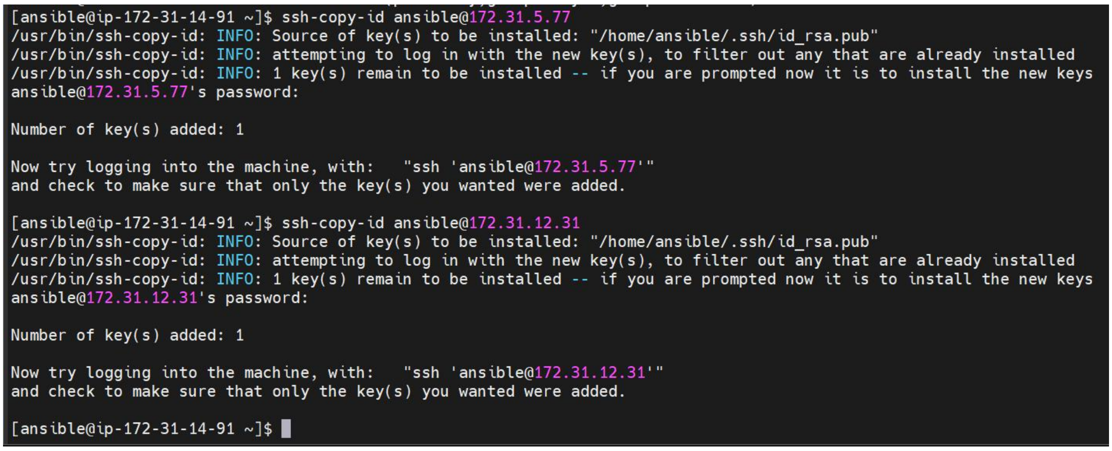


```
[ansible@ip-172-31-14-91 ~]$ ssh-copy-id ansible@172.31.5.77
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ansible@172.31.5.77's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'ansible@172.31.5.77'"
and check to make sure that only the key(s) you wanted were added.

[ansible@ip-172-31-14-91 ~]$ 
```



```
[ansible@ip-172-31-14-91 ~]$ ssh-copy-id ansible@172.31.5.77
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ansible@172.31.5.77's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'ansible@172.31.5.77'"
and check to make sure that only the key(s) you wanted were added.

[ansible@ip-172-31-14-91 ~]$ ssh-copy-id ansible@172.31.12.31
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/ansible/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install the new keys
ansible@172.31.12.31's password:

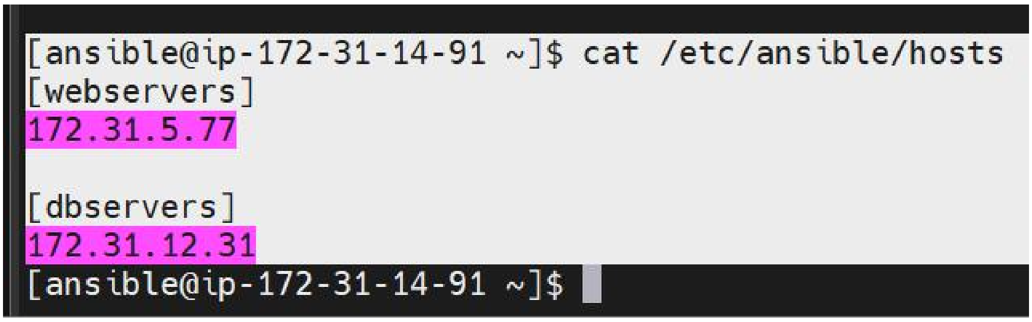
Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'ansible@172.31.12.31'"
and check to make sure that only the key(s) you wanted were added.

[ansible@ip-172-31-14-91 ~]$ 
```

```
[ansible@ip-172-31-14-91 ~]$ cat /etc/ansible/hosts
[webservers]
172.31.5.77

[dbservers]
172.31.12.31
```

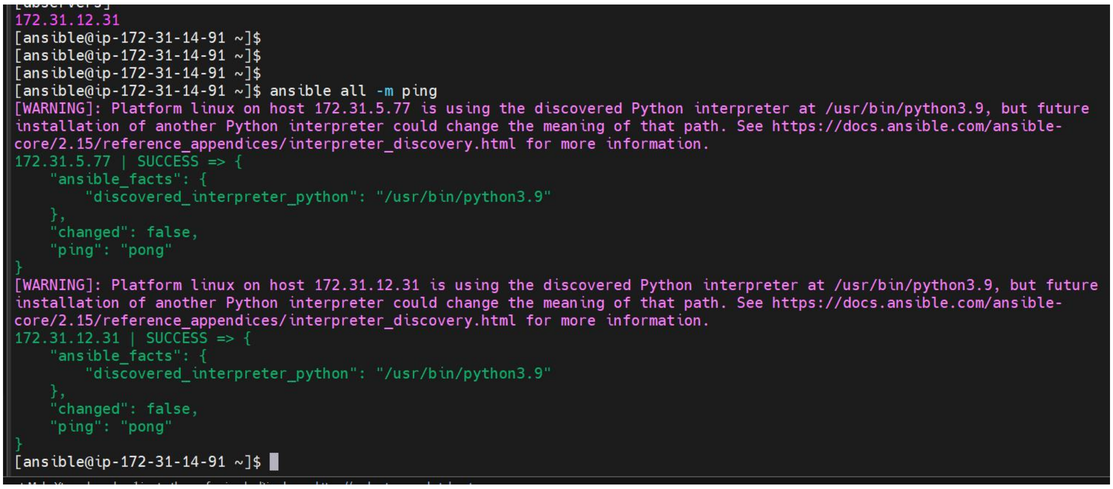


```
[ansible@ip-172-31-14-91 ~]$ cat /etc/ansible/hosts
[webservers]
172.31.5.77

[dbservers]
172.31.12.31
[ansible@ip-172-31-14-91 ~]$
```

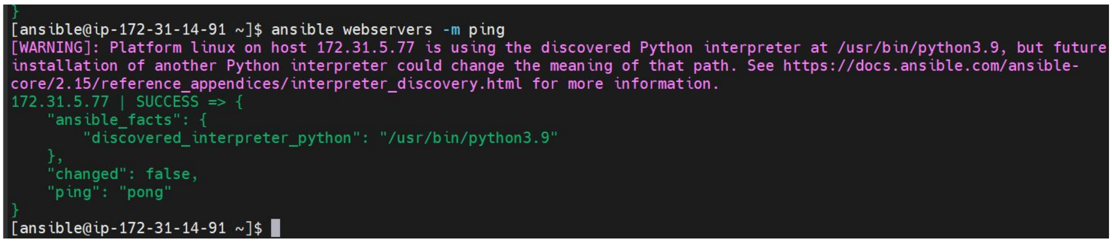
We should get SUCCESS

[ansible@ip-172-31-14-91 ~]$ ansible all -m ping



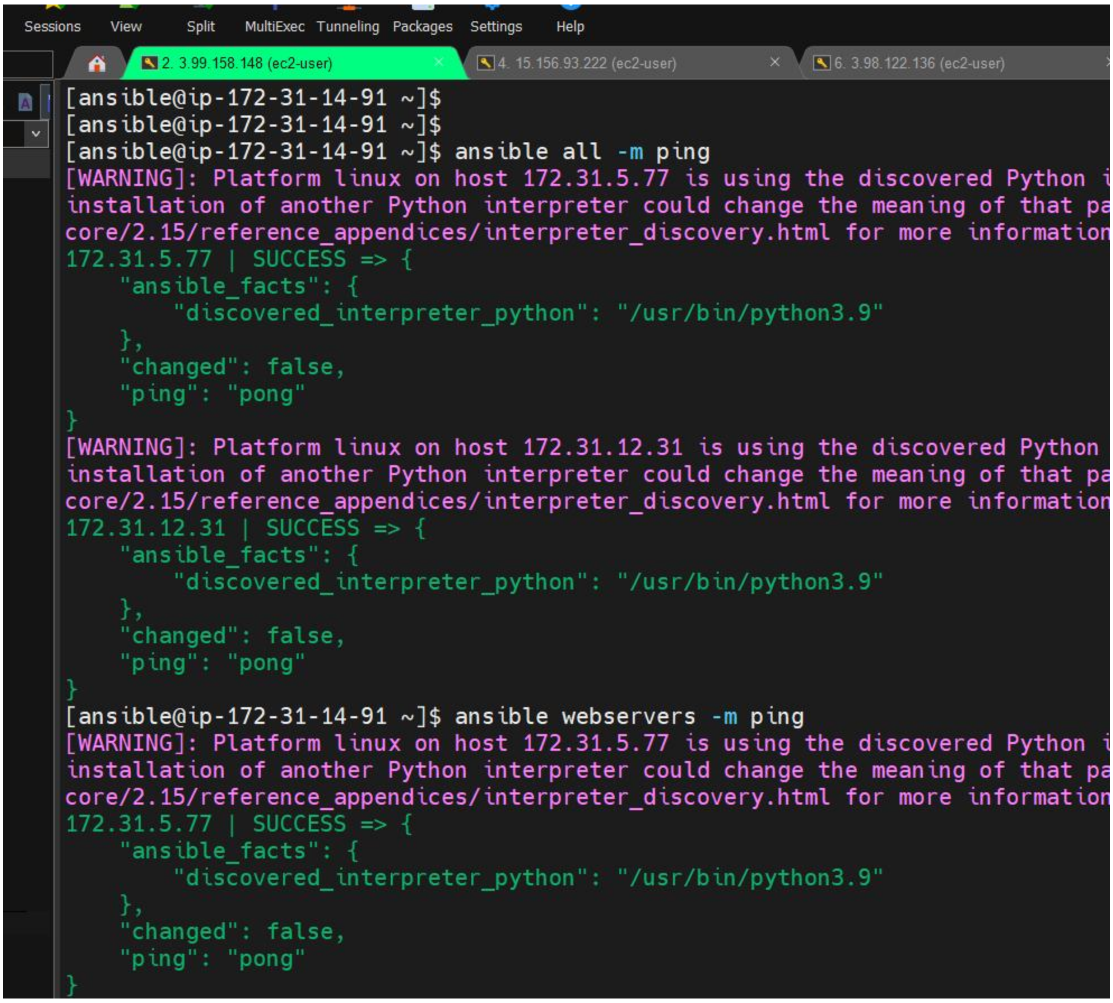
```
172.31.12.31
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$ ansible all -m ping
[WARNING]: Platform linux on host 172.31.5.77 is using the discovered Python interpreter at /usr/bin/python3.9, but future
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.5.77 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.12.31 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/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.12.31 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[ansible@ip-172-31-14-91 ~]$
```

[ansible@ip-172-31-14-91 ~]$ ansible webservers -m ping



```
}
[ansible@ip-172-31-14-91 ~]$ ansible webservers -m ping
[WARNING]: Platform linux on host 172.31.5.77 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/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.5.77 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[ansible@ip-172-31-14-91 ~]$
```

Everything from Control Node


Sessions
View
Split
MultiExec
Tunneling
Packages
Settings
Help
2. 3.99.158.148 (ec2-user)
4. 15.156.93.222 (ec2-user)
6. 3.98.122.136 (ec2-user)

```
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$ ansible all -m ping
[WARNING]: Platform linux on host 172.31.5.77 is using the discovered Python i
installation of another Python interpreter could change the meaning of that pa
core/2.15/reference_appendices/interpreter_discovery.html for more information
172.31.5.77 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.12.31 is using the discovered Python
installation of another Python interpreter could change the meaning of that pa
core/2.15/reference_appendices/interpreter_discovery.html for more information
172.31.12.31 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[ansible@ip-172-31-14-91 ~]$ ansible webservers -m ping
[WARNING]: Platform linux on host 172.31.5.77 is using the discovered Python i
installation of another Python interpreter could change the meaning of that pa
core/2.15/reference_appendices/interpreter_discovery.html for more information
172.31.5.77 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
```

Ansible Ad-Hoc commands
Ansible [all/group-name/host-name/ip] -m <module> -a <args>
ansible all -m ping

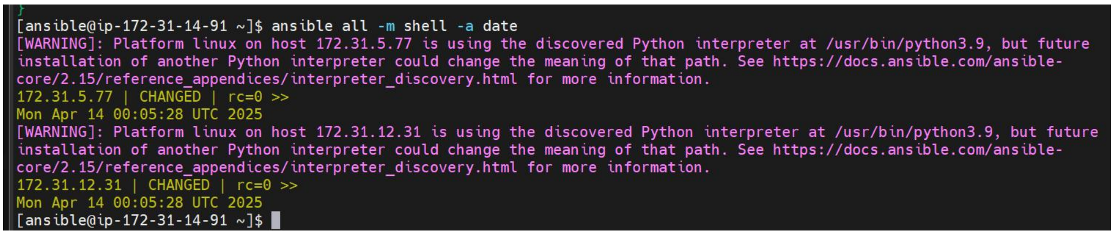
We have many modules in ansible to perform configuration management
ping, shell, yum, copy, service

ping module --> $ ansible all -m ping, ansible webservers -m ping

shell moule --> $ ansible all -m shell -a date, $ ansible all -m shell -a uptime

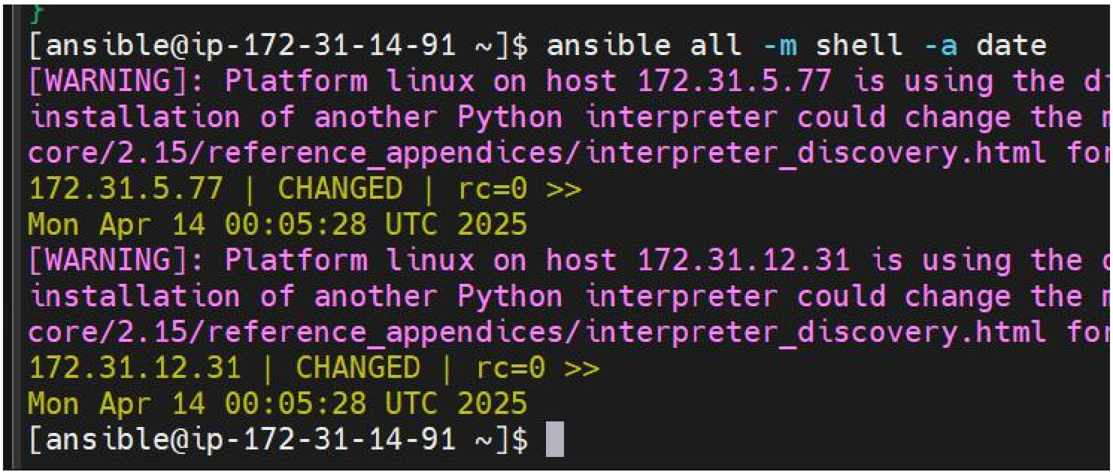
yum module --> $ ansible webservers -b -m yum -a “name=git”

Get date from both machines



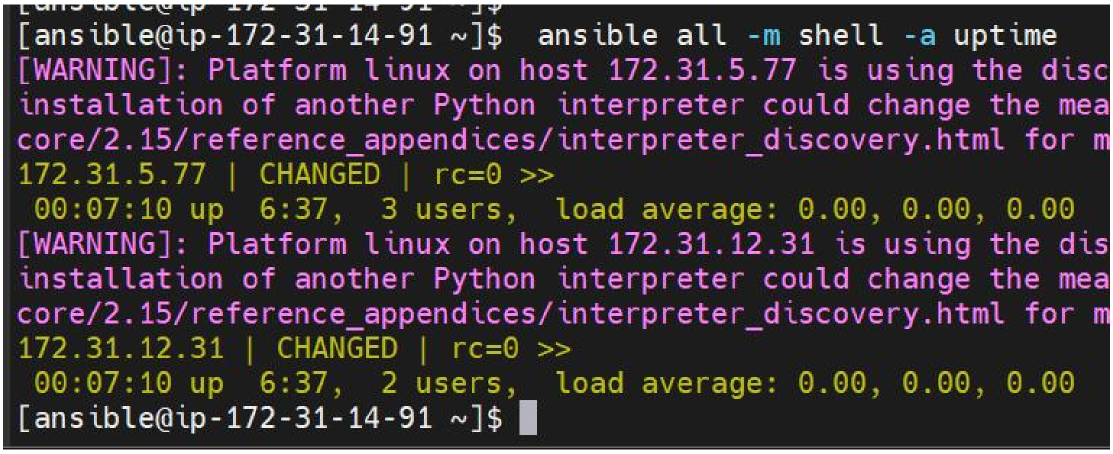
```
[ansible@ip-172-31-14-91 ~]$ ansible all -m shell -a date
[WARNING]: Platform linux on host 172.31.5.77 is using the discovered Python interpreter at /usr/bin/python3.9, but future
installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.5.77 | CHANGED | rc=0 >>
Mon Apr 14 00:05:28 UTC 2025
[WARNING]: Platform linux on host 172.31.12.31 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/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.12.31 | CHANGED | rc=0 >>
Mon Apr 14 00:05:28 UTC 2025
[ansible@ip-172-31-14-91 ~]$
```

Manage machines remotely



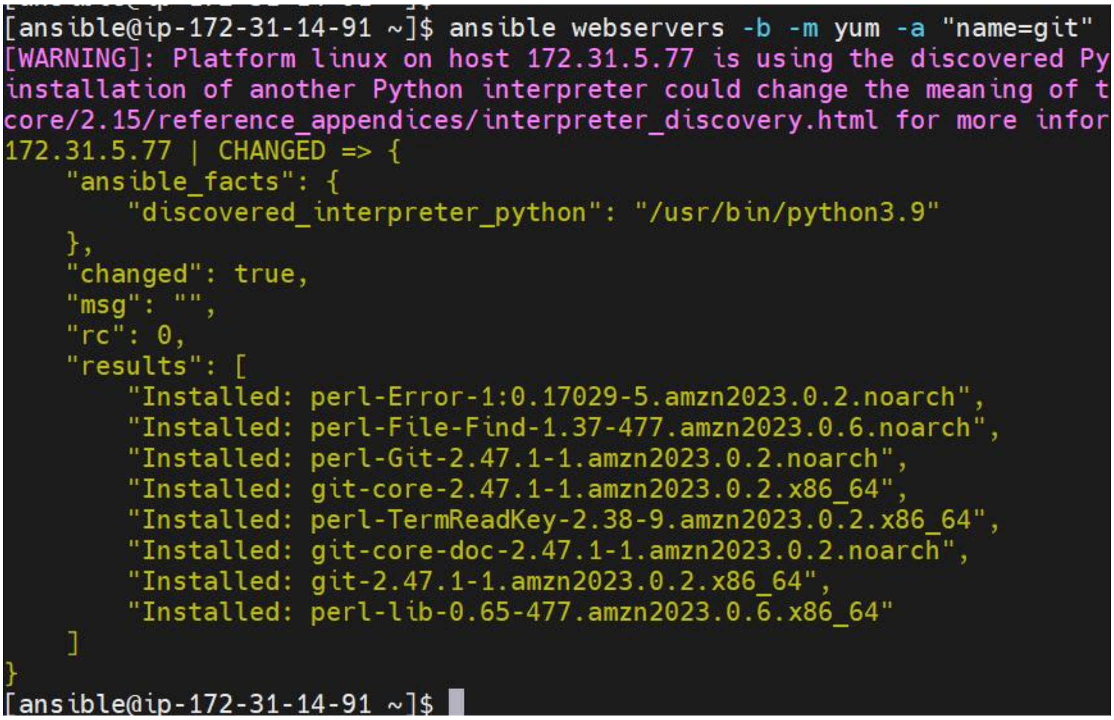
```
}
[ansible@ip-172-31-14-91 ~]$ ansible all -m shell -a date
[WARNING]: Platform linux on host 172.31.5.77 is using the d
installation of another Python interpreter could change the m
core/2.15/reference_appendices/interpreter_discovery.html for
172.31.5.77 | CHANGED | rc=0 >>
Mon Apr 14 00:05:28 UTC 2025
[WARNING]: Platform linux on host 172.31.12.31 is using the d
installation of another Python interpreter could change the m
core/2.15/reference_appendices/interpreter_discovery.html for
172.31.12.31 | CHANGED | rc=0 >>
Mon Apr 14 00:05:28 UTC 2025
[ansible@ip-172-31-14-91 ~]$
```

ansible all -m shell -a uptime



```
[ansible@ip-172-31-14-91 ~]$  ansible all -m shell -a uptime
[WARNING]: Platform linux on host 172.31.5.77 is using the disc
installation of another Python interpreter could change the mea
core/2.15/reference_appendices/interpreter_discovery.html for m
172.31.5.77 | CHANGED | rc=0 >>
 00:07:10 up  6:37,  3 users,  load average: 0.00, 0.00, 0.00
[WARNING]: Platform linux on host 172.31.12.31 is using the dis
installation of another Python interpreter could change the mea
core/2.15/reference_appendices/interpreter_discovery.html for m
172.31.12.31 | CHANGED | rc=0 >>
 00:07:10 up  6:37,  2 users,  load average: 0.00, 0.00, 0.00
[ansible@ip-172-31-14-91 ~]$
```

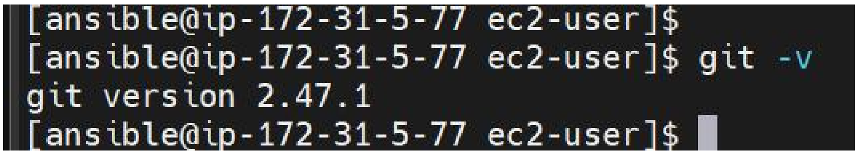
[ansible@ip-172-31-14-91 ~]$ ansible webservers -b -m yum -a "name=git"



```
[ansible@ip-172-31-14-91 ~]$ ansible webservers -b -m yum -a "name=git"
[WARNING]: Platform linux on host 172.31.5.77 is using the discovered Py
installation of another Python interpreter could change the meaning of t
core/2.15/reference_appendices/interpreter_discovery.html for more infor
172.31.5.77 | CHANGED => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": true,
    "msg": "",
    "rc": 0,
    "results": [
        "Installed: perl-Error-1:0.17029-5.amzn2023.0.2.noarch",
        "Installed: perl-File-Find-1.37-477.amzn2023.0.6.noarch",
        "Installed: perl-Git-2.47.1-1.amzn2023.0.2.noarch",
        "Installed: git-core-2.47.1-1.amzn2023.0.2.x86_64",
        "Installed: perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64",
        "Installed: git-core-doc-2.47.1-1.amzn2023.0.2.noarch",
        "Installed: git-2.47.1-1.amzn2023.0.2.x86_64",
        "Installed: perl-lib-0.65-477.amzn2023.0.6.x86_64"
    ]
}
[ansible@ip-172-31-14-91 ~]$
```

Installed git-core-2.47.1 in the Amazon machine

Now I go into Managed VM1
Git is already installed remotely from Control Node



```
[ansible@ip-172-31-5-77 ec2-user]$
[ansible@ip-172-31-5-77 ec2-user]$ git -v
git version 2.47.1
[ansible@ip-172-31-5-77 ec2-user]$
```

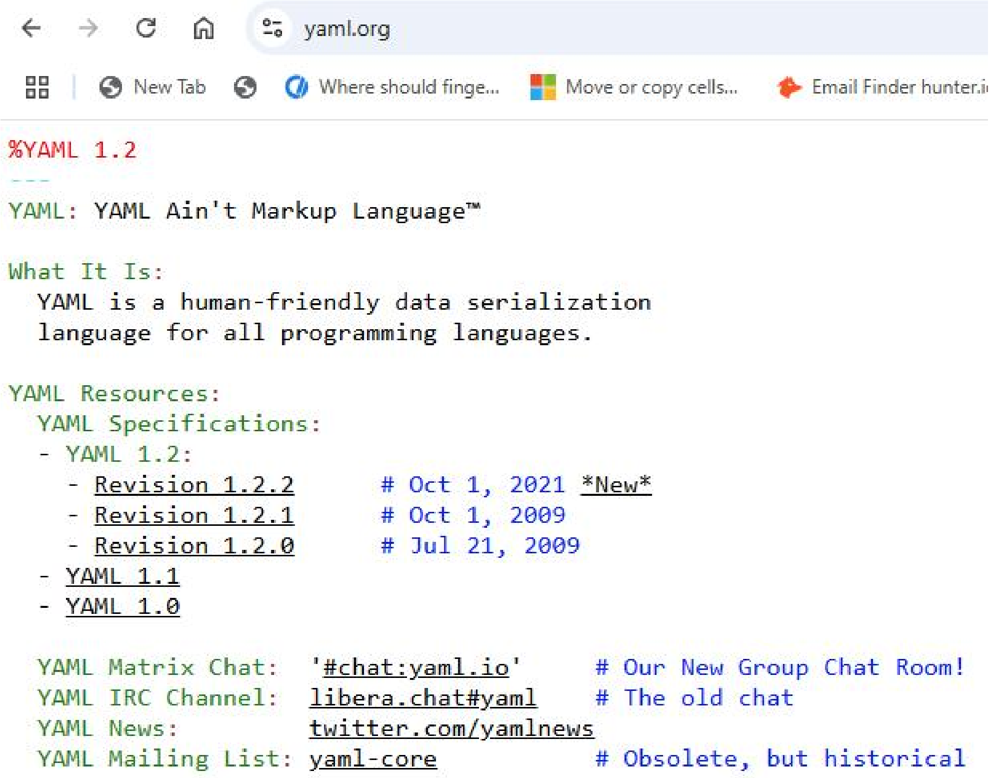
Ansible Playbooks
Playbook is a YAML file, which contains one or more tasks
Using Playbook we define what tasks to be performed and where to be performed

Example YML format

```
Student:
        Id: 5
        Name: Abc
        Gender: Male
        Hobbies:
                - Cricket
                - Chess
                - VideoGame
        Address:
                City: Cincinatti
                Country: USA
```

Note: Ident spaces are the most important in yml file

Website: https://yaml.org/ shows the syntax



```
%YAML 1.2
---
YAML: YAML Ain't Markup Language™

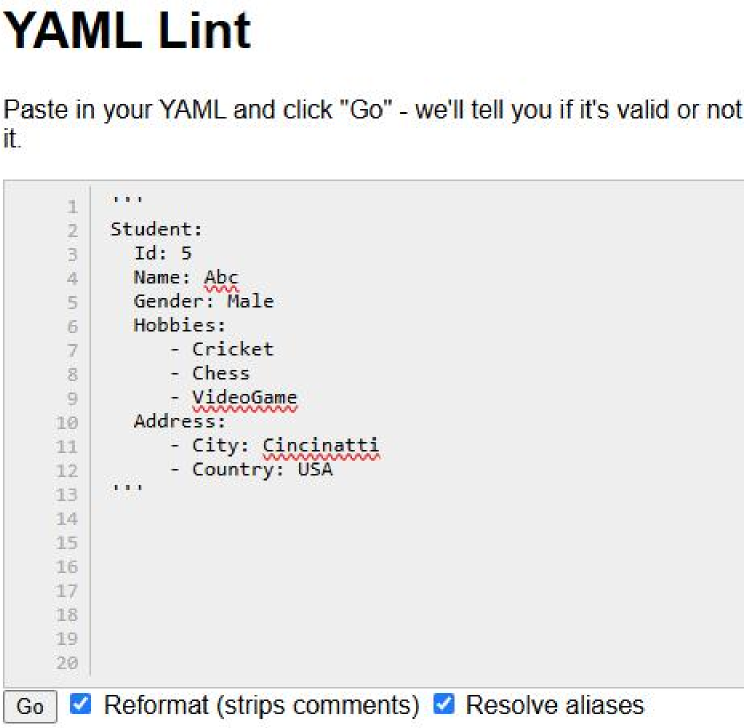
What It Is:
  YAML is a human-friendly data serialization
  language for all programming languages.

YAML Resources:
  YAML Specifications:
  - YAML 1.2:
    - Revision 1.2.2      # Oct 1, 2021 *New*
    - Revision 1.2.1      # Oct 1, 2009
    - Revision 1.2.0      # Jul 21, 2009
  - YAML 1.1
  - YAML 1.0

  YAML Matrix Chat:  '#chat:yaml.io'     # Our New Group Chat Room!
  YAML IRC Channel:  libera.chat#yaml    # The old chat
  YAML News:         twitter.com/yamlnews
  YAML Mailing List: yaml-core           # Obsolete, but historical
```

For yaml syntax validation: https://www.yamllint.com/

```
'''
Student:
 Id: 5
 Name: Abc
 Gender: Male
 Hobbies:
    - Cricket
    - Chess
    - VideoGame
 Address:
    - City: Cincinatti
    - Country: USA
'''
```

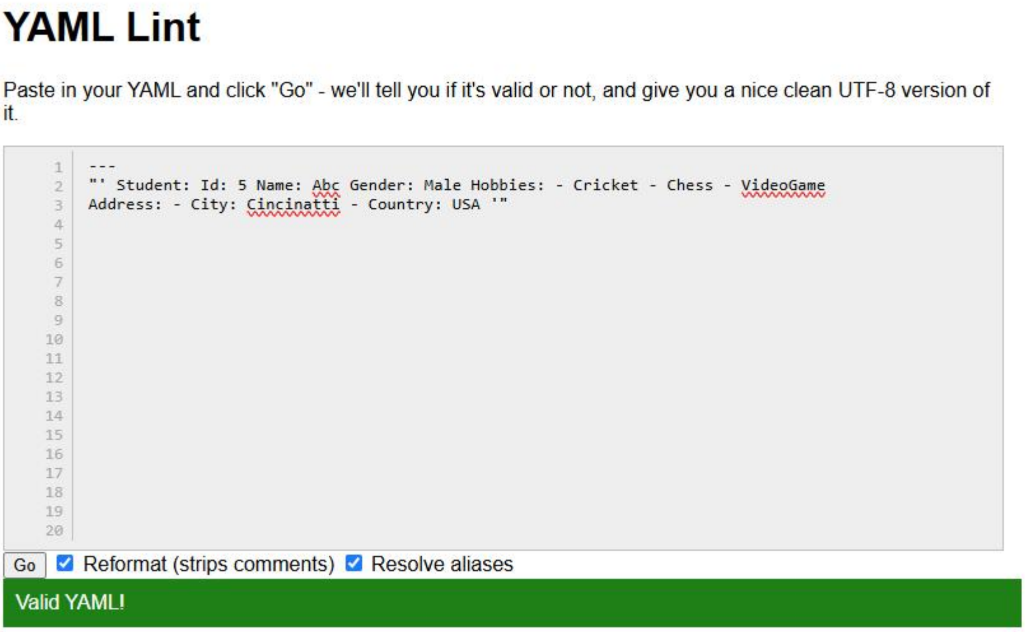


YAML Lint

Paste in your YAML and click "Go" - we'll tell you if it's valid or not it.

```
'''
Student:
  Id: 5
  Name: Abc
  Gender: Male
  Hobbies:
      - Cricket
      - Chess
      - VideoGame
  Address:
      - City: Cincinatti
      - Country: USA
'''
```

Go ☑ Reformat (strips comments) ☑ Resolve aliases



YAML Lint

Paste in your YAML and click "Go" - we'll tell you if it's valid or not, and give you a nice clean UTF-8 version of it.

```
---
"' Student: Id: 5 Name: Abc Gender: Male Hobbies: - Cricket - Chess - VideoGame
Address: - City: Cincinatti - Country: USA '"
```

☑ Reformat (strips comments) ☑ Resolve aliases

Valid YAML!

Hit Go

Yaml stats with --- and ends with …

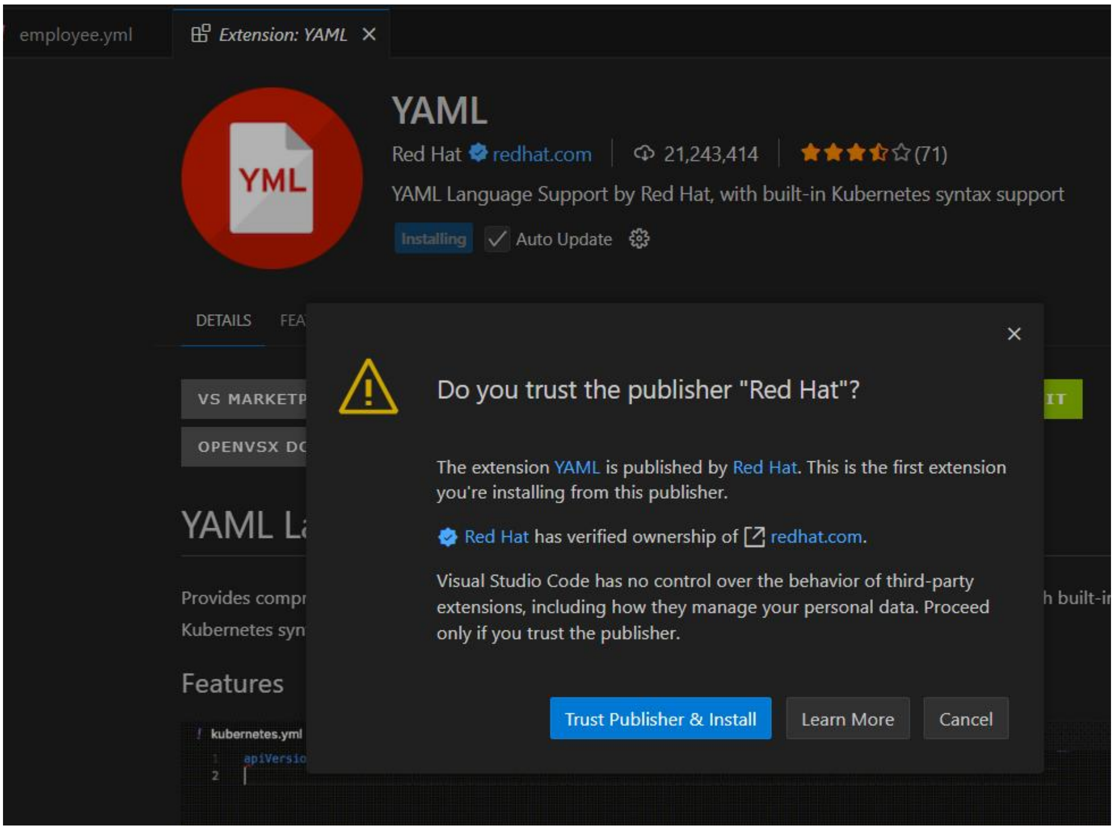
Writing Playbooks

3 major sections: Host section, Variable section, Task section
Host section: Represents Target machines to execute tasks. This configuration depends on Ansible inventory file
Variable section: used to declare variables in Playbook execution
Task section: defines what operations or tasks we want to perform using Ansible

```
$ ansible-playbook <playbook-yml-filename>
```

Open VSCode

Install



Do you trust the publisher "Red Hat"?

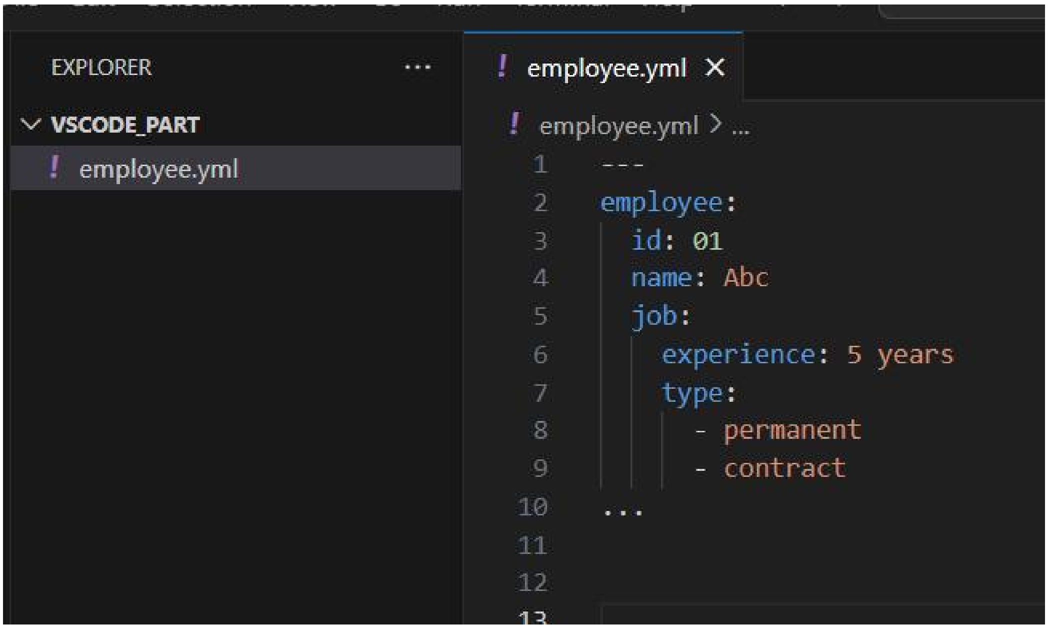
The extension YAML is published by Red Hat. This is the first extension you're installing from this publisher.

Red Hat has verified ownership of redhat.com.

Visual Studio Code has no control over the behavior of third-party extensions, including how they manage your personal data. Proceed only if you trust the publisher.

```
---
employee:
  id: 01
  name: Abc
  job:
    experience: 5 years
    type:
      - permanent
      - contract
...
```

Create employee.yml



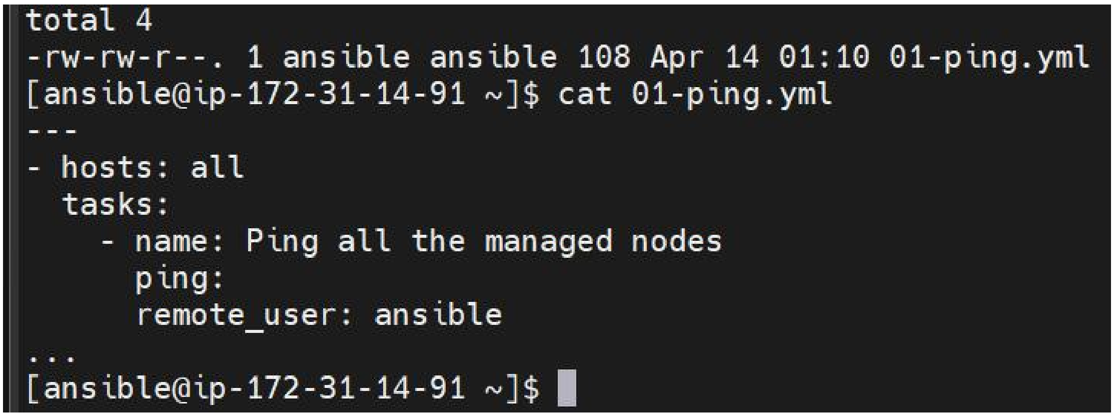
```yaml
---
employee:
  id: 01
  name: Abc
  job:
    experience: 5 years
    type:
      - permanent
      - contract
...
```

```yaml
---
employee:
  id: 01
  name: Abc
  job:
    experience: 5 years
    type:
      - permanent
      - contract
student:
  id: 5
  name: Xyz
  skills:
    - edit videos
    - graphic design
...
```

```yaml
---
- hosts: all
  tasks:
    - name: Ping all the managed nodes
      ping:
      remote_user: ansible
...
```

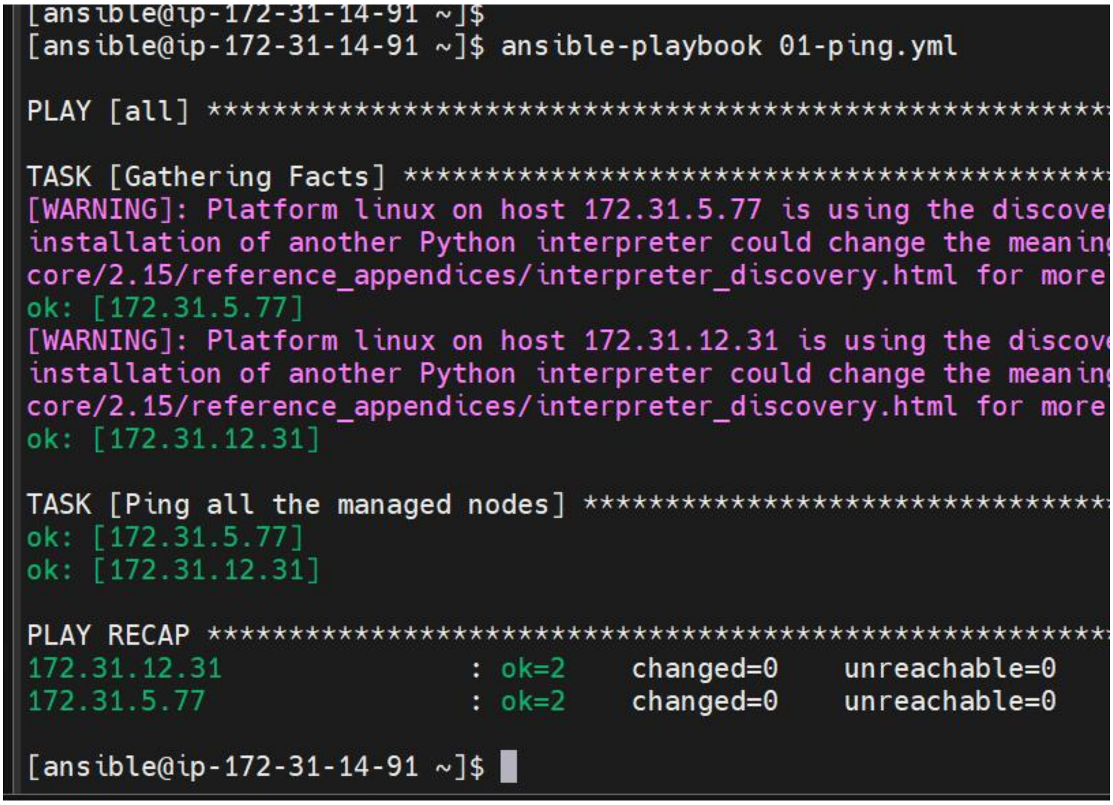
Go to Control Node VM

```
[ansible@ip-172-31-14-91 ~]$ vi 01-ping.yml
```



```
total 4
-rw-rw-r--. 1 ansible ansible 108 Apr 14 01:10 01-ping.yml
[ansible@ip-172-31-14-91 ~]$ cat 01-ping.yml
---
- hosts: all
  tasks:
    - name: Ping all the managed nodes
      ping:
      remote_user: ansible
...
[ansible@ip-172-31-14-91 ~]$
```

[ansible@ip-172-31-14-91 ~]$ ansible-playbook 01-ping.yml



```
[ansible@ip-172-31-14-91 ~]$
[ansible@ip-172-31-14-91 ~]$ ansible-playbook 01-ping.yml

PLAY [all] *******************************************************

TASK [Gathering Facts] *******************************************
[WARNING]: Platform linux on host 172.31.5.77 is using the discove
installation of another Python interpreter could change the meanin
core/2.15/reference_appendices/interpreter_discovery.html for more
ok: [172.31.5.77]
[WARNING]: Platform linux on host 172.31.12.31 is using the discov
installation of another Python interpreter could change the meanin
core/2.15/reference_appendices/interpreter_discovery.html for more
ok: [172.31.12.31]

TASK [Ping all the managed nodes] ********************************
ok: [172.31.5.77]
ok: [172.31.12.31]

PLAY RECAP *******************************************************
172.31.12.31               : ok=2    changed=0    unreachable=0
172.31.5.77                : ok=2    changed=0    unreachable=0

[ansible@ip-172-31-14-91 ~]$
```

[ansible@ip-172-31-14-91 ~]$ ansible-playbook 01-ping.yml --syntax-check

playbook: 01-ping.yml