

EXPIRIMENT 11:

Aim: Automation using Ansible: Spin up a new Linux VM using Ansible playbook.

Solution :-

Ansible is an open-source IT engine that automates application deployment, cloud provisioning, intra service orchestration, and other IT tools.

It is an automation and orchestration tool popular for the following reasons:

- Simple to Install.
- Free and open source.
- Lightweight and consistent.
- OpenSSH security features make it very secure.

Ansible Concepts

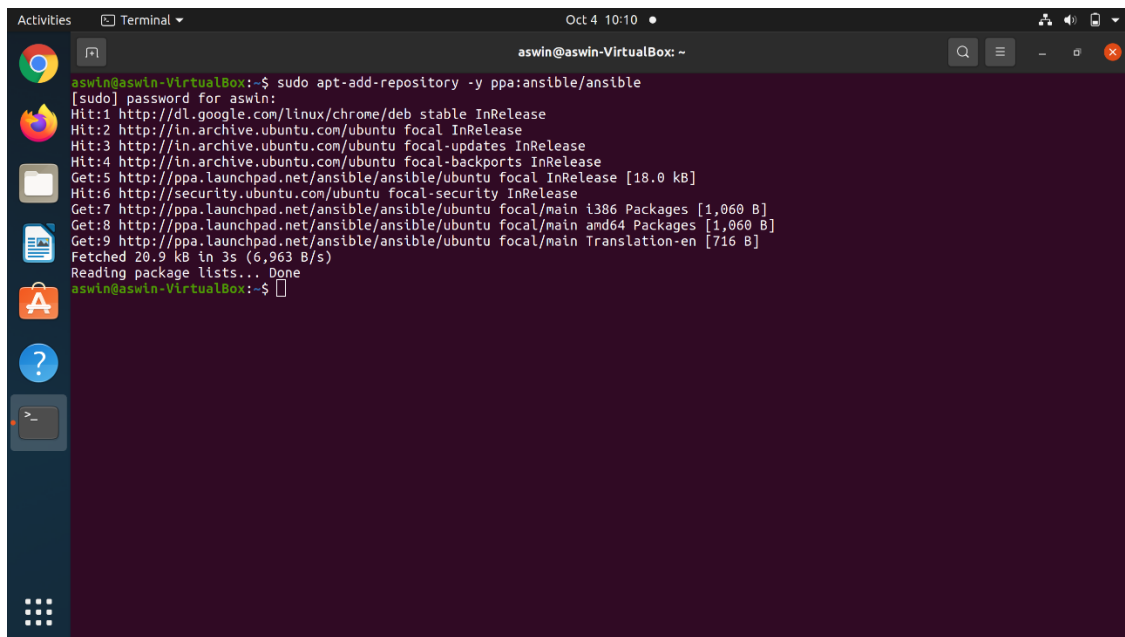
1. **Control node:**
Commands and Playbooks can run by invoking `/usr/bin/ansible` or `/usr/bin/ansible-playbook`, from any control node. You can use any computer that has Python installed on it as a control node. However, one can not use a computer with Windows OS as a control node. One can have multiple control nodes.
2. **Managed nodes:**
Also sometimes called “hosts”, Managed nodes are the network devices (and/or servers) you manage with Ansible.
3. **Inventory:**
Also sometimes called “hostfile”, Inventory is the list of Managed nodes use to organize them. It is also used for creating and nesting groups for easier scaling.
4. **Modules:**
These are the units of code executed by Ansible. Each module can be used for a specific purpose. One can invoke a single module with a task, or invoke several different modules in a playbook.
5. **Tasks:**
The units of action in Ansible. One can execute a single task once with an ad-hoc command.
6. **Playbooks3:**
These are the ordered list of tasks that are saved so you can run those tasks

in that order repeatedly. Playbooks are written in YAML and are easy to read, write, share and understand.

Installation

Step 1: Add the Ansible Repository.

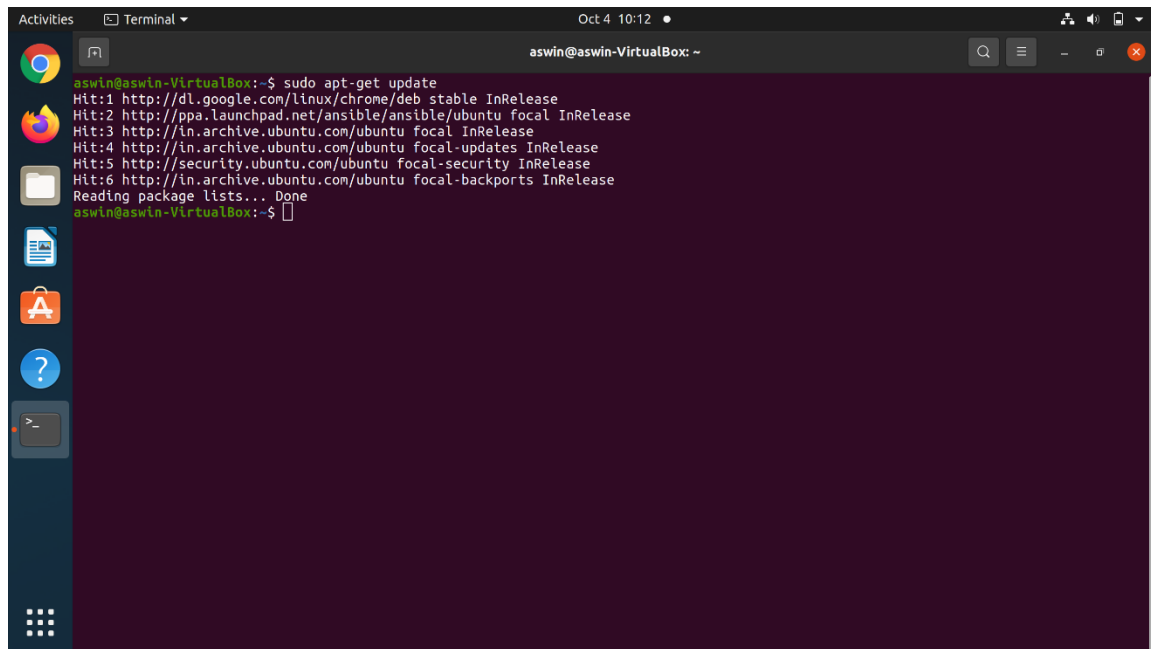
```
sudo apt-add-repository -y ppa:ansible/ansible
```



```
aswin@aswin-VirtualBox: ~  
$ sudo apt-add-repository -y ppa:ansible/ansible  
[sudo] password for aswin:  
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease  
Hit:2 http://in.archive.ubuntu.com/ubuntu focal InRelease  
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease  
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease  
Get:5 http://ppa.launchpad.net/ansible/ansible/ubuntu focal InRelease [18.0 kB]  
Hit:6 http://security.ubuntu.com/ubuntu focal-security InRelease  
Get:7 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main i386 Packages [1,060 B]  
Get:8 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 Packages [1,060 B]  
Get:9 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main Translation-en [716 B]  
Fetched 20.9 kB in 3s (6,963 B/s)  
Reading package lists... Done  
aswin@aswin-VirtualBox:~$
```

Step 2: Update the system repository listings.

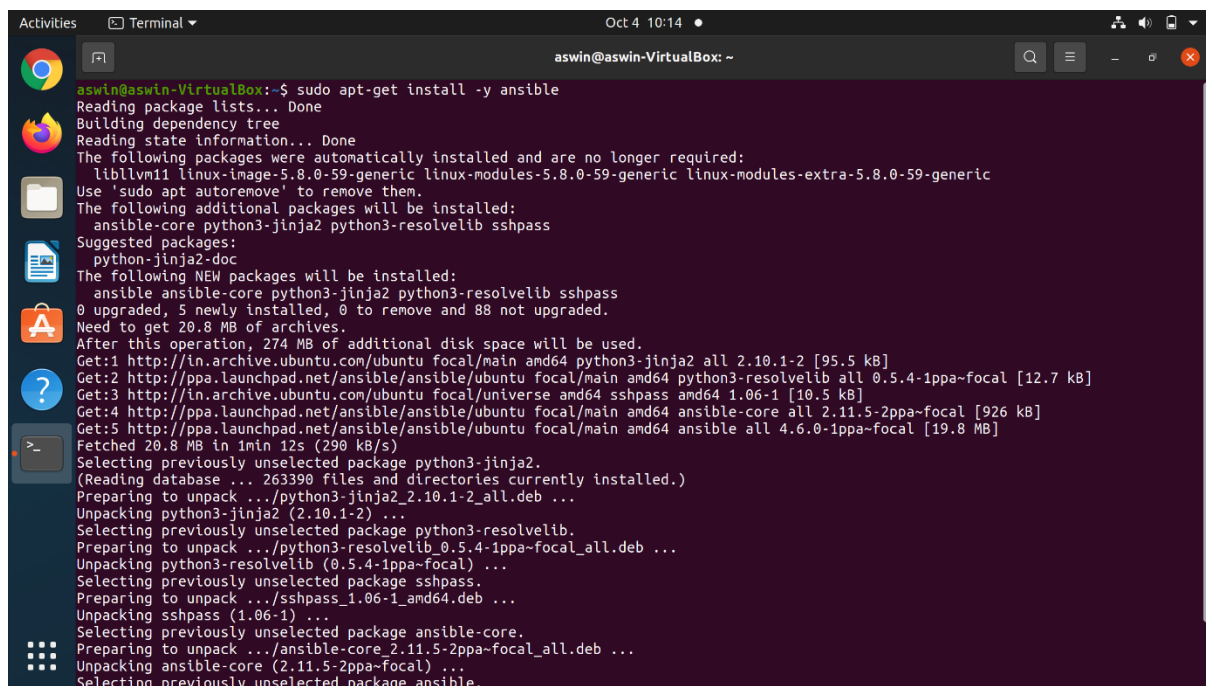
```
sudo apt-get update
```



```
aswin@aswin-VirtualBox:~$ sudo apt-get update
Hit:1 http://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://ppa.launchpad.net/ansible/ansible/ubuntu focal InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:5 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Reading package lists... Done
aswin@aswin-VirtualBox:~$
```

Step 3: Install the ansible packages.

`sudo apt-get install -y ansible`



```
aswin@aswin-VirtualBox:~$ sudo apt-get install -y ansible
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libllvm11 linux-image-5.8.0-59-generic linux-modules-5.8.0-59-generic linux-modules-extra-5.8.0-59-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ansible-core python3-jinja2 python3-resolvelib sshpass
Suggested packages:
  python-jinja2-doc
The following NEW packages will be installed:
  ansible ansible-core python3-jinja2 python3-resolvelib sshpass
0 upgraded, 5 newly installed, 0 to remove and 88 not upgraded.
Need to get 20.8 MB of archives.
After this operation, 274 MB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu focal/main amd64 python3-jinja2 all 2.10.1-2 [95.5 kB]
Get:2 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 python3-resolvelib all 0.5.4-1ppa-focal [12.7 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal/universe amd64 sshpass amd64 1.06-1 [10.5 kB]
Get:4 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 ansible-core all 2.11.5-2ppa-focal [926 kB]
Get:5 http://ppa.launchpad.net/ansible/ansible/ubuntu focal/main amd64 ansible all 4.6.0-1ppa-focal [19.8 MB]
Fetched 20.8 MB in 1min 12s (290 kB/s)
Selecting previously unselected package python3-jinja2.
(Reading database ... 263390 files and directories currently installed.)
Preparing to unpack .../python3-jinja2_2.10.1-2_all.deb ...
Unpacking python3-jinja2 (2.10.1-2) ...
Selecting previously unselected package python3-resolvelib.
Preparing to unpack .../python3-resolvelib_0.5.4-1ppa-focal_all.deb ...
Unpacking python3-resolvelib (0.5.4-1ppa-focal) ...
Selecting previously unselected package sshpass.
Preparing to unpack .../sshpass_1.06-1_amd64.deb ...
Unpacking sshpass (1.06-1) ...
Selecting previously unselected package ansible-core.
Preparing to unpack .../ansible-core_2.11.5-2ppa-focal_all.deb ...
Unpacking ansible-core (2.11.5-2ppa-focal) ...
Selecting previously unselected package ansible.
Preparing to unpack .../ansible_4.6.0-1ppa-focal_all.deb ...
Unpacking ansible (4.6.0-1ppa-focal) ...
```