

8. Practical Exercise: Set Up a Jenkins CI Pipeline for a Maven Project, Use Ansible to Deploy Artifacts Generated by Jenkins.

1. Install ssh agent and ssh plugins
2. Generate rsa key pair to connect Jenkins (Windows) and Ansible (Ubuntu) in GitBash

MINGW64:/c/Users/balam/.ssh

```
balam@Balamythi1 MINGW64 ~
$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/c/Users/balam/.ssh/id_ed25519):
Enter passphrase for "/c/Users/balam/.ssh/id_ed25519" (empty for no passphrase):

Enter same passphrase again:
Your identification has been saved in /c/Users/balam/.ssh/id_ed25519
Your public key has been saved in /c/Users/balam/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:mYS+2hNe+M281SNJahUpbps7rJlhcV9ebZTr/Ln3HCY balam@Balamythi1
The key's randomart image is:
+--[ED25519 256]--+
|
| . . . .
| . . + o . .
| . . = o . .o
| ..S = o ..+
| o.. = * =oo
| ..+o+= =E+=
| oo..*+. .oo=
| . .+ . . oB
+-----[SHA256]-----+
```

In Git Bash

ssh-keygen

- Execute the command ip a to get the ip address of the ubuntu VM. (For eg: 192.168.1.11 or 10.100.100.139)
- Enable ssh in ubuntu
 - Open terminal
 - Execute following commands
 - su -
 - Enter password root@123
 - sudo ufw allow ssh
 - sudo ufw enable
 - sudo ufw status (Port 22 enabled)
- Execute in Git Bash
 - To copy the public key from windows to ubuntu machine
scp id_ed25519.pub ubuntu@192.168.1.11:/home/ubuntu/.ssh

```

balam@Balamythil MINGW64 ~/.ssh
$ scp id_ed25519.pub ubuntu@10.100.100.139:/home/ubuntu/.ssh
Enter passphrase for key '/c/Users/balam/.ssh/id_rsa':
id_ed25519.pub 100% 98 32.1KB/s 00:00

balam@Balamythil MINGW64 ~/.ssh
$ scp C:/Users/balam/.ssh/id_ed25519 ubuntu@192.168.1.11:/home/ubuntu/.ssh/id_ed25519
The authenticity of host '192.168.1.11 (192.168.1.11)' can't be established.
ED25519 key fingerprint is SHA256:AF1wJ4aJLVkRHczESMMFdyRIP/Bqmyiy5jG2fjRjmOA.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:1: 192.168.1.4
  ~/.ssh/known_hosts:4: 10.100.100.139
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.11' (ED25519) to the list of known hosts.
Enter passphrase for key '/c/Users/balam/.ssh/id_rsa':
id_ed25519 100% 411 73.3KB/s 00:00

```

- Same copy the private key file from Windows to ubuntu machine
`scp C:/Users/balam/.ssh/id_ed25519.pub ubuntu@192.168.1.11:/home/ubuntu/.ssh`

- Note: Wherever passphrase is asked press enter key.

3. In Jenkins,

- Open Jenkins -> Manage Jenkins -> Credentials
- Add Credentials -> Global -> Kind -> SSH with private key
 - Username -> ubuntu
 - Id – leave it empty, default will be created
 - Add direct key -> Click add
 - Copy the entire content of `id_ed25519(C:/Users/Name/.ssh/id_ed25519)` including begin and end message.
 - Paste it in key and click create.
 - Ubuntu credentials will be added

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted)

Kind
SSH Username with private key

Scope ?
Global (Jenkins, nodes, items, all child items, etc)

ID ?

Description ?

Username
ubuntu

☐ Treat username as secret ?

```

-----BEGIN OPENSSH PRIVATE KEY-----
b3B1bnNzaC1rZXktdjEAAAABAG5vbmUAAAABbm9uZQAAAAAAAAABAAAAMwAAAAAtzc2gtZW
QyNTUxOQAAACAbX0TZ1FVghTP5+RYH5NdDvd3ZpZp1c/mK3I13PD02HwAAAJhJHgsRSR4L
EQAAAAAtzc2gtZWQyNTUxOQAAACAbX0TZ1FVghTP5+RYH5NdDvd3ZpZp1c/mK3I13PD02Hw
AAAEcZvimxgxUeT7iGsKn9AMD13VT0GsY/w7t+TckX7c1wgRtfrNmUVWCFM/n5Fgfk10NV
3dm1mnVz+YrcjXc8PTYfAAAAEGJhbGFtQEJhbGFteXRoalWwBAGMEBQ==
-----END OPENSSH PRIVATE KEY-----

```

Private Key

☒ Enter directly

Key

Enter New Secret Below

```
AAAE Czv1mgxUeT71Gsn9AMD13VT0Gsy/w7t+TckX7c1ngRtFRlmlJWCFH/n5Fgfk10NV
3dm1mnVz+YrcjXcBPTYFAAAEGJhbGFTQEJhbGFTeXRoalwBapHEBQ==
-----END OPEHSSH PRIVATE KEY-----
```

Passphrase

Create

- Goto Dashboard -> Manage Jenkins -> System
- Enter the Remote SSH site details
- Hostname – ip address of ubuntu machine
- Port is 22
- Choose “ubuntu” Credentials and click save.

SSH remote hosts

SSH sites

SSH sites that projects will want to connect

Hostname ?

192.168.1.11

Port ?

22

Credentials

ubuntu

Save Apply

- In Jenkins,
 - Dashboard -> New Item -> Free Style Project
 - Choose Environment -> Select secret or text files
 - Add Build Step -> Execute shell script on remote host using ssh
 - Select -> ubuntu@ipaddress in SSH site
 - Enter command -> ansible-playbook -i hosts playbook.yml
 - Click save
- In Ubuntu
 - Execute
 - nano hosts

```
GNU nano 6.2 hosts
[ubuntu]
192.168.1.11 ansible_user=ubuntu ansible_ssh_private_key_file=/home/ubuntu/.ssh/id_ed25519
```

- **nano playbook.yml (Do not miss out the hiphens (-) and indent (two spaces))**

```
GNU nano 6.2                                playbook.yml
---
- name: Simple Playbook
  hosts: all
  become: false

  tasks:
    - name: Check Uptime of remote machine
      command: uptime
```

- **ansible-playbook -i hosts playbook.yml**

```
ubuntu@ubuntu22:~$ ansible-playbook -i hosts playbook.yml

PLAY [Simple Playbook] *****

TASK [Gathering Facts] *****
ok: [192.168.1.11]

TASK [Check Uptime of remote machine] *****
changed: [192.168.1.11]

PLAY RECAP *****
192.168.1.11      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

- **In Jenkins,**
 - **Select the project -> Click Build Now**
 - **Once Build is ready -> Select Console Output to view output**

```
Started by user mythilim
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\jen1
[SSH] script:
=====

ansible-playbook -i hosts playbook.yml

[SSH] executing...
bash: line 1: =****: command not found

PLAY [Simple Playbook] *****

TASK [Gathering Facts] *****
ok: [192.168.1.11]

TASK [Check Uptime of remote machine] *****
changed: [192.168.1.11]

PLAY RECAP *****
192.168.1.11      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

[SSH] completed
[SSH] exit-status: 0

Finished: SUCCESS
```

