1. Create ansible playbook to create ansible vault.

Create a file named as password and write the secrets in that file.

- **touch password**
- **vi password**

```
username:mujaheed
password:mujaheed@123
```

- **ansible-vault encrypt password.**

```
[root@ip-172-31-56-126 playbooks]# touch password
[root@ip-172-31-56-126 playbooks]# vi password
[root@ip-172-31-56-126 playbooks]# ansible-vault encrypt password
New Vault password:
Confirm New Vault password:
Encryption successful
[root@ip-172-31-56-126 playbooks]#
```

If you want view the encrypted data in the file.

- **ansible-vault view password**

```
[root@ip-172-31-56-126 playbooks]# cat password
$ANSIBLE_VAULT;1.1;AES256
30366361346164316261653731643266653135613433363961316435346133346131373936666363
37346332336238313633616138666237656263663530346 10a3231666166366262653136313561 64
31636137643532376432343562303132323662616630333734353866326332623966626361383465
37303364643034386 10a3666316665303232613138366330663330386438356436356365306666536
32306630373636303761613534643331623330346638323338623863323335303435366139646530
31353766363139633535613632626330316162643664306461 37
[root@ip-172-31-56-126 playbooks]# ansible-vault view password
Vault password:
username:mujaheed
password:mujaheed@123

[root@ip-172-31-56-126 playbooks]#
```

- create a playbook for variables
- vi variable.yml

```
---
- name: variable playbook
  hosts: all
  vars:
    name: Techie
  tasks:
    - name: Display value
      debug:
        var: name
```

- ansible-playbook variable.yml

```
[root@ip-172-31-56-126 ~]# vi variable.yml
[root@ip-172-31-56-126 ~]# ansible-playbook variable.yml
[WARNING]: Invalid characters were found in group names but not replaced, us
[WARNING]: Found variable using reserved name: name

PLAY [variable playbook] ***************************************************

TASK [Gathering Facts] *****************************************************
[WARNING]: Platform linux on host 172.31.107.149 is using the discovered Pyt
installation of another Python interpreter could change the meaning of that
core/2.15/reference_appendices/interpreter_discovery.html for more informati
ok: [172.31.107.149]
[WARNING]: Platform linux on host 172.31.64.109 is using the discovered Pyth
installation of another Python interpreter could change the meaning of that
core/2.15/reference_appendices/interpreter_discovery.html for more informati
ok: [172.31.64.109]

TASK [Display value] *******************************************************
ok: [172.31.64.109] => {
    "name": "Techie"
}
ok: [172.31.107.149] => {
    "name": "Techie"
}

PLAY RECAP *****************************************************************
172.31.107.149             : ok=2    changed=0    unreachable=0    failed=0
172.31.64.109              : ok=2    changed=0    unreachable=0    failed=0

[root@ip-172-31-56-126 ~]#
```

2. Write a ansible playbook to install apache in linux and ubuntu machine by using when condition.

Create a playbook with the name install apache.yml

- vi install-apache.yml

```
---
- name: Install Apache on Linux and Ubuntu using when condition
  hosts: all
  become: yes

  tasks:

    # ------------------- Ubuntu / Debian -------------------
    - name: Install Apache on Ubuntu/Debian
      apt:
        name: apache2
        state: present
        update_cache: yes
      when: ansible_os_family == "Debian"

    - name: Start and enable Apache on Ubuntu/Debian
      service:
        name: apache2
        state: started
```

```
      enabled: yes
    when: ansible_os_family == "Debian"

  # ------------------ RHEL / CentOS / Amazon Linux ----------
-----
  - name: Install Apache on RHEL/CentOS/Amazon Linux
    yum:
      name: httpd
      state: present
    when: ansible_os_family == "RedHat"

  - name: Start and enable Apache on
RHEL/CentOS/Amazon Linux
    service:
      name: httpd
      state: started
      enabled: yes
    when: ansible_os_family == "RedHat"
```

```yaml
---
- name: Install Apache on Linux and Ubuntu using when condition
  hosts: all
  become: yes

  tasks:

    # ------------------- Ubuntu / Debian -------------------
    - name: Install Apache on Ubuntu/Debian
      apt:
        name: apache2
        state: present
        update_cache: yes
      when: ansible_os_family == "Debian"

    - name: Start and enable Apache on Ubuntu/Debian
      service:
        name: apache2
        state: started
        enabled: yes
      when: ansible_os_family == "Debian"

    # ------------------- RHEL / CentOS / Amazon Linux -------------------
    - name: Install Apache on RHEL/CentOS/Amazon Linux
      yum:
        name: httpd
        state: present
      when: ansible_os_family == "RedHat"

    - name: Start and enable Apache on RHEL/CentOS/Amazon Linux
      service:
        name: httpd
        state: started
        enabled: yes
      when: ansible_os_family == "RedHat"
```

- **ansible-playbook -i hosts.ini install-apache.yml**

```
[root@ip-172-31-56-126 playbooks]# vi install-apache.yml
[root@ip-172-31-56-126 playbooks]# ansible-playbook -i hosts.ini install-apache.yml
[WARNING]: Found both group and host with same name: master

PLAY [Install Apache on Linux and Ubuntu using when condition] ********************

TASK [Gathering Facts] ************************************************************
[WARNING]: Platform linux on host worker02 is using the discovered Python interpret
of another Python interpreter could change the meaning of that path. See https://d
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [worker02]
[WARNING]: Platform linux on host master is using the discovered Python interprete
another Python interpreter could change the meaning of that path. See https://docs
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [master]
[WARNING]: Platform linux on host worker01 is using the discovered Python interpret
of another Python interpreter could change the meaning of that path. See https://d
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [worker01]

TASK [Install Apache on Ubuntu/Debian] ********************************************
skipping: [master]
skipping: [worker01]
skipping: [worker02]

TASK [Start and enable Apache on Ubuntu/Debian] ***********************************
skipping: [master]
skipping: [worker01]
skipping: [worker02]

TASK [Install Apache on RHEL/CentOS/Amazon Linux] **********************************
changed: [master]
changed: [worker02]
changed: [worker01]

TASK [Start and enable Apache on RHEL/CentOS/Amazon Linux] *************************
changed: [worker02]
changed: [master]
```

```
skipping: [master]
skipping: [worker01]
skipping: [worker02]

TASK [Install Apache on RHEL/CentOS/Amazon Linux] ******************************************************************
changed: [master]
changed: [worker02]
changed: [worker01]

TASK [Start and enable Apache on RHEL/CentOS/Amazon Linux] *********************************************************
changed: [worker02]
changed: [master]
changed: [worker01]

PLAY RECAP *********************************************************************************************************
master                     : ok=3    changed=2    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
worker01                   : ok=3    changed=2    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
worker02                   : ok=3    changed=2    unreachable=0    failed=0    skipped=2    rescued=0    ignored=0
```

3.Create ansible playbook using roles to configure LAMP stack

Copy your pem key local to ec2-server.

- **scp -i "C:\Users\Ashish\Downloads\red.pem" "C:\Users\Ashish\Downloads\red.pem" ec2-user@3.89.202.81:/home/ec2-user/**
- **ssh -i "C:\Users\Ashish\Downloads\red.pem" ec2-user@3.89.202.81**
- **sudo mv /home/ec2-user/red.pem /root/**
- **sudo chmod 400 /root/red.pem**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Downloads
$ scp -i "C:\Users\Ashish\Downloads\red.pem" "C:\Users\Ashish\Downloads\red.pem" ec2-user@3.89.202.81:/home/ec2-user/

C:\Users\Ashish\Downloads\red.pem                                    100% 1678     5.4KB/s   00:00

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Downloads
$
```

Go to

- cd /etc/ansible
- vi main.yml

[all]

172.31.106.43 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

172.31.113.24 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

[worker-01]

172.31.106.43 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

[worker-02]

172.31.113.24 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

```
[all]
172.31.106.43 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem
172.31.113.24 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

[worker-01]
172.31.106.43 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem

[worker-02]
172.31.113.24 ansible_user=ec2-user ansible_ssh_private_key_file=/root/red.pem
```

- **ansible-galaxy init techie**

it will create a role with the name techie.

```
[root@ip-172-31-32-136 ~]# ansible-galaxy init techie
- Role techie was created successfully
[root@ip-172-31-32-136 ~]# ll
total 0
drwxr-xr-x. 10 root root 135 Dec  8 09:15 techie
[root@ip-172-31-32-136 ~]# cd techie/
[root@ip-172-31-32-136 techie]# ll
total 4
-rw-r--r--. 1 root root 1328 Dec  8 09:15 README.md
drwxr-xr-x. 2 root root   22 Dec  8 09:15 defaults
drwxr-xr-x. 2 root root    6 Dec  8 09:15 files
drwxr-xr-x. 2 root root   22 Dec  8 09:15 handlers
drwxr-xr-x. 2 root root   22 Dec  8 09:15 meta
drwxr-xr-x. 2 root root   22 Dec  8 09:15 tasks
drwxr-xr-x. 2 root root    6 Dec  8 09:15 templates
drwxr-xr-x. 2 root root   39 Dec  8 09:15 tests
drwxr-xr-x. 2 root root   22 Dec  8 09:15 vars
[root@ip-172-31-32-136 techie]#
```

Go to tasks directory inside that add your script in main.yml

```
[root@ip-172-31-32-136 techie]# cd tasks/
[root@ip-172-31-32-136 tasks]# ls
main.yml
[root@ip-172-31-32-136 tasks]# vi main.yml
```

 # Install Apache

- name: Install Apache web server

package:

name: httpd

state: present

- name: Start and enable Apache

service:

name: httpd

state: started

enabled: yes

 # Install MySQL

- name: Install MariaDB Server on Amazon Linux 2023

yum:

name: mariadb105-server

```
    state: present

- name: Start and enable MariaDB
  service:
    name: mariadb
    state: started
    enabled: yes
# Install PHP
- name: Install PHP and modules
  package:
    name:
      - php
      - php-mysqlnd
      - php-cli
    state: present

# Copy index.php from template
- name: Deploy PHP info page
  template:
    src: index.php.j2
    dest: /var/www/html/index.php
```

mode: '0644'

Restart Apache

- name: Restart Apache after PHP installation

service:

name: httpd

state: restarted

```
---
# Install Apache
- name: Install Apache web server
  package:
    name: httpd
    state: present

- name: Start and enable Apache
  service:
    name: httpd
    state: started
    enabled: yes

- name: Install MariaDB Server on Amazon Linux 2023
  yum:
    name: mariadb105-server
    state: present

- name: Start and enable MariaDB
  service:
    name: mariadb
    state: started
    enabled: yes


# Install PHP
- name: Install PHP and modules
  package:
    name:
      - php
      - php-mysqlnd
```

- cd ..
- cd templates
- vi index.php.j2

```
[root@ip-172-31-32-136 tasks]# cd ..
[root@ip-172-31-32-136 techie]# cd templates/
[root@ip-172-31-32-136 templates]# ls
[root@ip-172-31-32-136 templates]# vi index.php.j2
```

<?php

phpinfo();

?>

```
<?php
phpinfo();
?>
```

Comeout from the created role and create a file named as site.yml

- cd ..
- cd ..
- vi site.yml

```
[root@ip-172-31-32-136 templates]# cd ..
[root@ip-172-31-32-136 techie]# cd ..
[root@ip-172-31-32-136 ~]# vi site.yml
```

- hosts: all

become: yes

roles:

- techie

```
- hosts: all
  become: yes
  roles:
    - techie
```

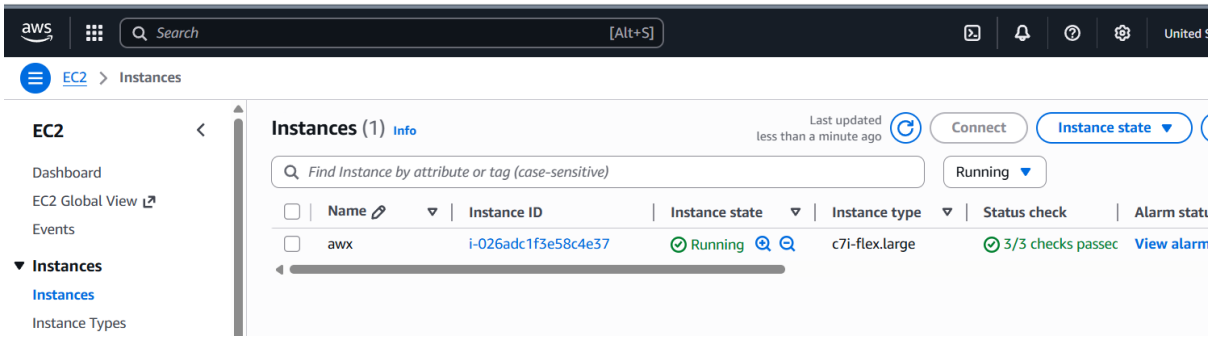
- **ansible-playbook -i /etc/ansible/hosts site.yml**

```
[root@ip-172-31-32-136 playbooks]# ansible-playbook -i /etc/ansible/hosts site.yml
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see

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

TASK [Gathering Facts] *********************************************************
[WARNING]: Platform linux on host 172.31.106.43 is using the discovered Python interpreter
future installation of another Python interpreter could change the meaning of that path. S
https://docs.ansible.com/ansible-core/2.15/reference_appendices/interpreter_discovery.html
ok: [172.31.106.43]
[WARNING]: Platform linux on host 172.31.113.24 is using the discovered Python interpreter
future installation of another Python interpreter could change the meaning of that path. S
https://docs.ansible.com/ansible-core/2.15/reference_appendices/interpreter_discovery.html
ok: [172.31.113.24]

TASK [techie : Install Apache web server] **************************************
ok: [172.31.106.43]
ok: [172.31.113.24]

TASK [techie : Start and enable Apache] ****************************************
ok: [172.31.106.43]
ok: [172.31.113.24]

TASK [techie : Install MariaDB Server on Amazon Linux 2023] ********************
changed: [172.31.106.43]
```

```
ok: [172.31.106.43]
ok: [172.31.113.24]

TASK [techie : Install MariaDB Server on Amazon Linux 2023] **********
changed: [172.31.106.43]
changed: [172.31.113.24]

TASK [techie : Start and enable MariaDB] ***************************
changed: [172.31.106.43]
changed: [172.31.113.24]

TASK [techie : Install PHP and modules] ****************************
changed: [172.31.106.43]
changed: [172.31.113.24]

TASK [techie : Deploy PHP info page] *******************************
changed: [172.31.106.43]
changed: [172.31.113.24]

TASK [techie : Restart Apache after PHP installation] **************
changed: [172.31.106.43]
changed: [172.31.113.24]

PLAY RECAP *********************************************************************
172.31.106.43              : ok=8    changed=5    unreachable=0    fail
172.31.113.24              : ok=8    changed=5    unreachable=0    fail
```

4. Setup ansible AWX and explore the options.

Create an ec2 instance with an c7-flexlarge type and 20GB memory.



Login to that ec2.

- **sudo dnf -y update**

```
[root@ip-172-31-107-149 ~]# sudo dnf -y update
Amazon Linux 2023 Kernel Livepatch repository
Dependencies resolved.
Nothing to do.
Complete!
```

- **yum install docker -y**
- **systemctl start docker**

```
[root@ip-172-31-107-149 ~]# yum install docker -y
Last metadata expiration check: 0:00:17 ago on Mon Dec  8 13:51:38 2025.
Dependencies resolved.
================================================================================
 Package                         Architecture        Version
================================================================================
Installing:
 docker                          x86_64              25.0.13-1.amzn2023.0.2
Installing dependencies:
 container-selinux               noarch              4:2.242.0-1.amzn2023
 containerd                      x86_64              2.1.4-1.amzn2023.0.2
 iptables-libs                   x86_64              1.8.8-3.amzn2023.0.2
 iptables-nft                    x86_64              1.8.8-3.amzn2023.0.2
 libcgroup                       x86_64              3.0-1.amzn2023.0.1
 libnetfilter_conntrack          x86_64              1.0.8-2.amzn2023.0.2
 libnfnetlink                    x86_64              1.0.1-19.amzn2023.0.2
 libnftnl                        x86_64              1.2.2-2.amzn2023.0.2
 pigz                            x86_64              2.5-1.amzn2023.0.3
 runc                            x86_64              1.3.3-2.amzn2023.0.1

Transaction Summary
================================================================================
Install  11 Packages

Total download size: 74 M
```

- **yum install git -y**

```
[root@ip-172-31-107-149 ~]# yum install git -y
Last metadata expiration check: 0:03:39 ago on Mon Dec  8 13:51:38 2025.
Dependencies resolved.
================================================================================
 Package                    Architecture        Version
================================================================================
Installing:
 git                        x86_64              2.50.1-1.amzn2023.0.1
Installing dependencies:
 git-core                   x86_64              2.50.1-1.amzn2023.0.1
 git-core-doc               noarch              2.50.1-1.amzn2023.0.1
 perl-Error                 noarch              1:0.17029-5.amzn2023.0.2
 perl-File-Find             noarch              1.37-477.amzn2023.0.7
 perl-Git                   noarch              2.50.1-1.amzn2023.0.1
 perl-TermReadKey           x86_64              2.38-9.amzn2023.0.2
 perl-lib                   x86_64              0.65-477.amzn2023.0.7

Transaction Summary
================================================================================
Install  8 Packages

Total download size: 7.9 M
Installed size: 41 M
Downloading Packages:
(1/8): git-2.50.1-1.amzn2023.0.1.x86_64.rpm
(2/8): git-core-doc-2.50.1-1.amzn2023.0.1.noarch.rpm
(3/8): perl-Error-0.17029-5.amzn2023.0.2.noarch.rpm
(4/8): git-core-2.50.1-1.amzn2023.0.1.x86_64.rpm
(5/8): perl-File-Find-1.37-477.amzn2023.0.7.noarch.rpm
```

- **Yum install ansible -y**

```
[root@ip-172-31-40-184 ~]# yum install ansible -y
Amazon Linux 2023 Kernel Livepatch repository
Dependencies resolved.
================================================================================
 Package                    Architecture        Version
================================================================================
Installing:
 ansible                    noarch              8.3.0-1.amzn2023.0.1
Installing dependencies:
 ansible-core               x86_64              2.15.3-1.amzn2023.0.11
 git-core                   x86_64              2.50.1-1.amzn2023.0.1
 sshpass                    x86_64              1.09-6.amzn2023.0.1

Transaction Summary
================================================================================
Install  4 Packages

Total download size: 40 M
Installed size: 552 M
Downloading Packages:
(1/4): ansible-core-2.15.3-1.amzn2023.0.11.x86_64.rpm
(2/4): git-core-2.50.1-1.amzn2023.0.1.x86_64.rpm
(3/4): sshpass-1.09-6.amzn2023.0.1.x86_64.rpm
(4/4): ansible-8.3.0-1.amzn2023.0.1.noarch.rpm
--------------------------------------------------------------------------------
Total
Running transaction check
```

i-05e64b39efb5f218d (ansible-awx)

PublicIPs: 54.161.101.36 PrivateIPs: 172.31.40.184

- **cd**

- **git clone -b 17.1.0 https://github.com/ansible/awx.git**
- **cd awx**

```
[root@ip-172-31-107-149 ~]# git clone -b 17.1.0 https://github.com/ansible/awx.git
Cloning into 'awx'...
remote: Enumerating objects: 328208, done.
remote: Counting objects: 100% (576/576), done.
remote: Compressing objects: 100% (261/261), done.
remote: Total 328208 (delta 452), reused 315 (delta 315), pack-reused 327632 (from 4)
Receiving objects: 100% (328208/328208), 352.50 MiB | 65.04 MiB/s, done.
Resolving deltas: 100% (252516/252516), done.
warning: refs/tags/17.1.0 ee32200ffd4a464fa3a44e4b31d509aa0f5ebaa0 is not a commit!
Note: switching to 'c1ab815c80cac96508d9779d92bc1280d0347627'.

You are in 'detached HEAD' state. You can look around, make experimental
changes and commit them, and you can discard any commits you make in this
state without impacting any branches by switching back to a branch.

If you want to create a new branch to retain commits you create, you may
do so (now or later) by using -c with the switch command. Example:

  git switch -c <new-branch-name>

Or undo this operation with:

  git switch -

Turn off this advice by setting config variable advice.detachedHead to false

[root@ip-172-31-107-149 ~]# cd awx
[root@ip-172-31-107-149 awx]# ls
API_STANDARDS.md  DATA_MIGRATION.md  ISSUES.md     Makefile    awx             config     manag
CHANGELOG.md      DCO_1_1.md         LICENSE.md    README.md   awx_collection  docs       pytes
CONTRIBUTING.md   INSTALL.md         MANIFEST.in   VERSION     awxkit          installer  requ
```

- **cd /awx/installer**
- **vi inventory**

```
[root@ip-172-31-107-149 installer]# vi inventory
[root@ip-172-31-107-149 installer]# ansible-playbook -i ~/awx/installer/inventory ~/awx/installer/install.ym
```

Add this script in inventory file.

admin_password=Admin@123

secret_key=Admin@123

pg_database=awx

pg_password=Admin@123

awx_alternate_dns_servers="8.8.8.8,8.8.4.4"

postgres_data_dir="/var/lib/awx/pgdocker"

docker_compose_dir="/var/lib/awx/awxcompose"

project_data_dir="/var/lib/awx/projects"

```
# Allow for different docker logging drivers
# By Default; the logger will be json-file, however you can override
# that by uncommenting the docker_logger below.
# Be aware that journald may rate limit your log messages if you choose it.
# See: https://docs.docker.com/config/containers/logging/configure/
# docker_logger=journald
#

# Add extra hosts to docker compose file. This might be necessary to
# sneak in servernames. For example for DMZ self-signed CA certificates.
# Equivialent to using the --add-host parameter with "docker run".
admin_password=Admin@123
secret_key=Admin@123
pg_database=awx
pg_password=Admin@123
awx_alternate_dns_servers="8.8.8.8,8.8.4.4"
postgres_data_dir="/var/lib/awx/pgdocker"
docker_compose_dir="/var/lib/awx/awxcompose"
project_data_dir="/var/lib/awx/projects"
#docker_compose_extra_hosts="otherserver.local:192.168.0.1,ldap-server.local:192.1

"inventory" 182L, 7284B
```

- **ansible-playbook -i ~/awx/installer/inventory ~/awx/installer/install.yml**

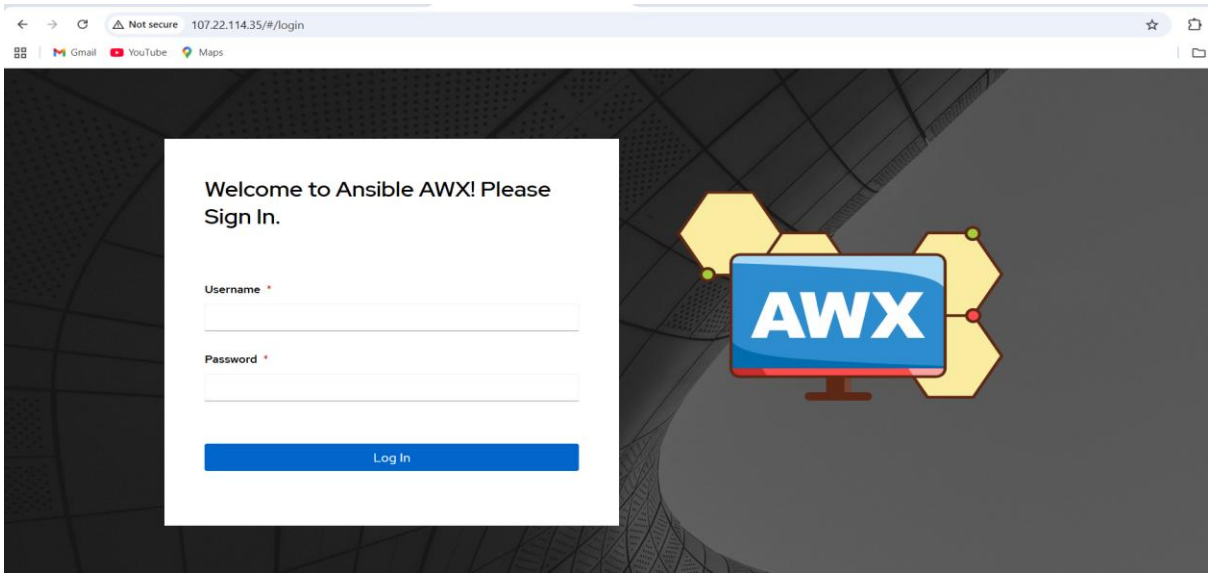
```
[root@ip-172-31-107-149 installer]# ansible-playbook -i inventory install.yml

PLAY [Build and deploy AWX] ****************************************************

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

TASK [check_vars : admin_password should be defined] ***************************
ok: [localhost] => {
    "changed": false,
    "msg": "All assertions passed"
}

TASK [check_vars : include_tasks] **********************************************
skipping: [localhost]

TASK [check_vars : include_tasks] **********************************************
included: /root/awx/installer/roles/check_vars/tasks/check_docker.yml for localhost

TASK [check_vars : postgres_data_dir should be defined] ************************
ok: [localhost] => {
    "changed": false,
    "msg": "All assertions passed"
}

TASK [image_build : Set global version if not provided] ************************
skipping: [localhost]

TASK [image_build : Verify awx-logos directory exists for official install] ****
```

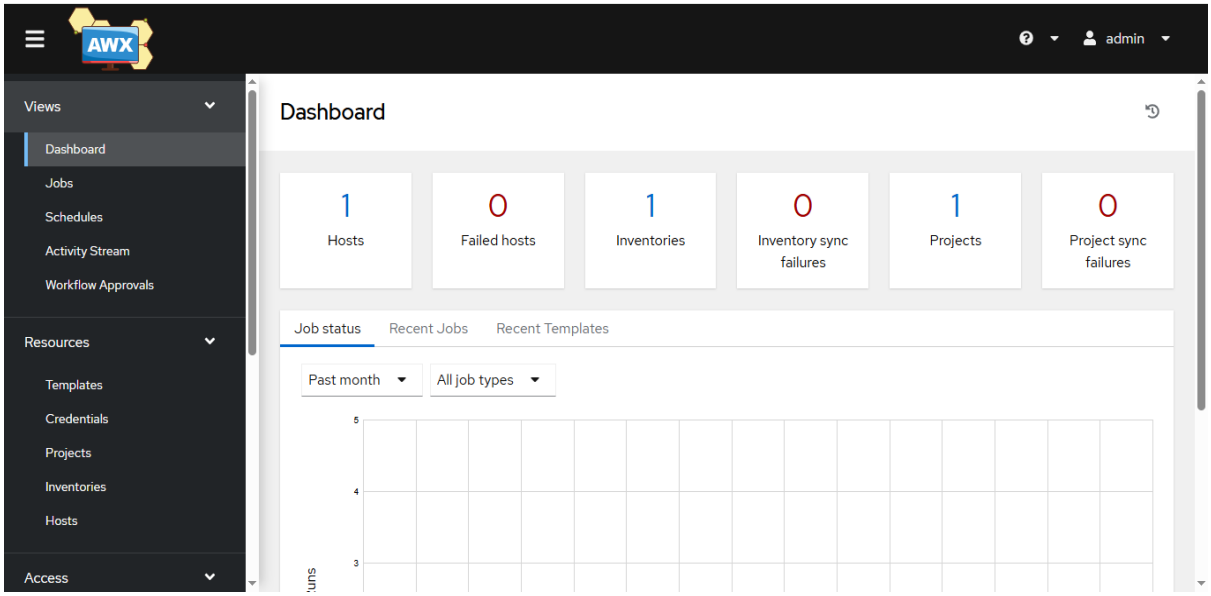
```
TASK [local_docker : Set docker base path] *****************************************
skipping: [localhost]

TASK [local_docker : Ensure directory exists] **************************************
skipping: [localhost]

TASK [local_docker : Copy awx image to docker execution] ***************************
skipping: [localhost]

TASK [local_docker : Load awx image] ***********************************************
skipping: [localhost]

TASK [local_docker : Set full image path for local install] ************************
skipping: [localhost]

TASK [local_docker : Set DockerHub Image Paths] ************************************
ok: [localhost]

TASK [local_docker : Create /var/lib/awx/awxcompose directory] *********************
ok: [localhost]

TASK [local_docker : Create Redis socket directory] ********************************
ok: [localhost]

TASK [local_docker : Create Docker Compose Configuration] **************************
ok: [localhost] => (item={'file': 'environment.sh', 'mode': '0600'})
changed: [localhost] => (item={'file': 'credentials.py', 'mode': '0600'})
ok: [localhost] => (item={'file': 'docker-compose.yml', 'mode': '0600'})
ok: [localhost] => (item={'file': 'nginx.conf', 'mode': '0600'})
ok: [localhost] => (item={'file': 'redis.conf', 'mode': '0664'})

TASK [local_docker : Render SECRET_KEY file] ***************************************
```

Search in browser with the public_ip and port:80

Username:admin

Password:Admin@123




AWX
admin
Views
Dashboard
Jobs
Schedules
Activity Stream
Workflow Approvals
Resources
Templates
Credentials
Projects
Inventories
Hosts
Access
Dashboard
1
Hosts
0
Failed hosts
1
Inventories
0
Inventory sync failures
1
Projects
0
Project sync failures
Job status
Recent Jobs
Recent Templates
Past month
All job types
5
4
3