Lesson 06 Demo 05

Creating and Working with Ansible Roles

Objective: To demonstrate how to create and work with Ansible roles for updating the **/etc/motd** file on a node machine

Tools required: Ansible

Prerequisites: You need to have Ansible installed in order to proceed with this demo. If you do not have it installed, refer to demo 01 of lesson 07.

Steps to be followed:

1. Install an Ansible and set up connectivity with the node machine
2. Create an Ansible role
3. Create an Ansible tasks
4. Create an Ansible template
5. Create an Ansible variable
6. Remove unwanted directory
7. Create an Ansible role playbook
8. Deploy an Ansible role playbook

Step 1: Install an Ansible and set up connectivity with the node machine

1.1 Use the below commands on the Ubuntu system to install Ansible:

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

1.2 Establish SSH key pair in Linux system to establish SSH connectivity with the localhost using the following commands:
ssh-keygen -t rsa
cat .ssh/id_rsa.pub >> .ssh/authorized_keys
ssh localhost -p 42006

```
labsuser@ip-172-31-32-128:~$ ssh-keygen -t rsa
cat .ssh/id_rsa.pub >> .ssh/authorized_keys
ssh localhost -p 42006
Generating public/private rsa key pair.
Enter file in which to save the key (/home/labsuser/.ssh/id_rsa):
/home/labsuser/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/labsuser/.ssh/id_rsa
Your public key has been saved in /home/labsuser/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:pn1Js0ATwum1MqcEYyDUP79EnhhMEKpHJWpeTQdMy+Y labsuser@ip-172-31-32-128
The key's randomart image is:
+---[RSA 3072]----+
|o.++*=oo.        |
| o.+Bo=...       |
|.o.o+O .o.       |
|+.. o==oo.       |
|...  EB=S o      |
| .   ..O o +     |
|      o o +      |
|       . .       |
|                 |
+----[SHA256]-----+
```

1.3 Add the host localhost to the Ansible host file **/etc/ansible/hosts** by using the following command:
sudo vi /etc/ansible/hosts

```
[webservers]

localhost:42006 ansible_ssh_user=labsuser ansible_ssh_pass=vocareum
```

1.4 Use the following commands to perform verification:
sudo su
nano /etc/sudoers

```
root@ip-172-31-40-50:/home/labsuser# sudo su
root@ip-172-31-40-50:/home/labsuser#
```

```
root@ip-172-31-40-50:/home/labsuser# nano /etc/sudoers
```

1.5 Use **ctrl+X** to save and exit the file

```
  GNU nano 6.2                                  /etc/sudoers
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults        env_reset
Defaults        mail_badpass
Defaults        secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/s>
Defaults        use_pty

# This preserves proxy settings from user environments of root
                    [ /etc/sudoers is meant to be read-only ]
^G Help       ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^C Location
^X Exit       ^R Read File  ^\ Replace    ^U Paste      ^J Justify    ^/ Go To Line
```

Step 2: Create an Ansible Role

2.1 Use the following command to create a project once Ansible is set up:
mkdir base

```
root@ip-172-31-40-50:/home/labsuser# mkdir base
root@ip-172-31-40-50:/home/labsuser#
```

2.2 Create an Ansible role using the following commands:
cd base
mkdir roles
cd roles
ansible-galaxy init demor

```
root@ip-172-31-40-50:/home/labsuser# cd base
root@ip-172-31-40-50:/home/labsuser/base# mkdir roles
root@ip-172-31-40-50:/home/labsuser/base# cd roles
root@ip-172-31-40-50:/home/labsuser/base/roles# ansible-galaxy init demor
- Role demor was created successfully
root@ip-172-31-40-50:/home/labsuser/base/roles#
```

2.3 Use the following commands to list the Ansible role directory structure:

cd demor

ls

```
root@ip-172-31-40-50:/home/labsuser/base/roles# cd demor
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# ls
README.md  defaults  files  handlers  meta  tasks  templates  tests  vars
root@ip-172-31-40-50:/home/labsuser/base/roles/demor#
```

Step 3: Create an Ansible tasks

3.1 Execute the following commands to create tasks in the **main.yml** file located in the tasks folder:

cd tasks

ls

vi main.yml

```
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# cd tasks
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/tasks# ls
main.yml
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/tasks# vi main.yml
```

3.2 Enter the following code:

```
---
# tasks file for demor
- name: copy demor file
  template:
    src: templates/demor.j2
    dest: /etc/demor
    owner: root
    group: root
    mode: 0444
```

```
# ---
# tasks file for demor
- name: copy demor file
  template:
      src: templates/demor.j2
      dest: /etc/demor
      owner: root
      group: root
      mode: 0444
```

Step 4: Create an Ansible template

4.1 Create the template content to update **/etc/motd**:

cd ..
cd templates
vi demor.j2

```
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/tasks# cd ..
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# cd templates
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/templates# vi demor.j2
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/templates#
```

4.2 Enter the following details:

Welcome to {{ ansible_hostname }}

This file was created on {{ ansible_date_time.date }}
Go away if you have no business being here

Contact {{ system_manager }} if anything is wrong

```
Welcome to {{ ansible_hostname }}

This file was created on {{ ansible_date_time.date }}
Go away if you have no business being here

Contact {{ system_manager }} if anything is wrong
```

Step 5: Create an Ansible variable

5.1 Use the following commands to define custom variables in the defaults folder:

cd ..
cd defaults
ls
vi main.yml

```
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/templates# cd ..
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# cd defaults
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/defaults# ls
main.yml
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/defaults# vi main.yml
```

5.2 Enter the following details in the file:

 # defaults file for demor
system_manager: admin@golinuxcloud.com

```
---
# defaults file for demor
system_manager: admin@golinuxcloud.com
```

Step 6: Remove unwanted directory (Optional)

6.1 Execute the following commands to remove unnecessary directories:

cd ..
rm -rf handlers tests vars
ls

```
root@ip-172-31-40-50:/home/labsuser/base/roles/demor/defaults# cd ..
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# rm -rf handlers tests vars
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# ls
README.md  defaults  files  meta  tasks  templates
root@ip-172-31-40-50:/home/labsuser/base/roles/demor#
```

Step 7: Create an Ansible role playbook

7.1 Create an ansible role playbook file:

cd ..
cd ..
vi demor-role.yml

```
root@ip-172-31-40-50:/home/labsuser/base/roles/demor# cd ..
root@ip-172-31-40-50:/home/labsuser/base/roles# cd ..
root@ip-172-31-40-50:/home/labsuser/base# vi demor-role.yml
root@ip-172-31-40-50:/home/labsuser/base#
```

7.2 Enter the following code in the file:

```
---
- name: use demor role playbook
  hosts: webservers
  user: ansible
  become: true

  roles:

    - role: demor
      system_manager: admin@golinuxcloud.com
```

```
---
- name: use demor role playbook
  hosts: webservers
  user: ansible
  become: true

  roles:
    - role: demor
      system_manager: admin@golinuxcloud.com
```

Step 8: Deploy an Ansible role playbook

8.1 Execute the following command:
ansible-playbook demor-role.yml

```
labsuser@ip-172-31-32-128:~/base/roles$ cd demor
labsuser@ip-172-31-32-128:~/base/roles/demor$ cd tasks
labsuser@ip-172-31-32-128:~/base/roles/demor/tasks$ cd ..
labsuser@ip-172-31-32-128:~/base/roles/demor$ cd templates
labsuser@ip-172-31-32-128:~/base/roles/demor/templates$ cd ..
labsuser@ip-172-31-32-128:~/base/roles/demor$ cd defaults
labsuser@ip-172-31-32-128:~/base/roles/demor/defaults$ cd ..
labsuser@ip-172-31-32-128:~/base/roles/demor$ rm -rf handlers tests vars
labsuser@ip-172-31-32-128:~/base/roles/demor$ cd ..
labsuser@ip-172-31-32-128:~/base/roles$ cd ..
labsuser@ip-172-31-32-128:~/base$ sudo vi demor-role.yml
\labsuser@ip-172-31-32-128:~/base$ ansible-playbook demor-role.yml

PLAY [use demor role playbook] ************************************************************************************************************************************************************

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

TASK [demor : copy demor file] ************************************************************************************************************************************************************
changed: [localhost]

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

labsuser@ip-172-31-32-128:~/base$
```

Note: In case of an error asking to install sshpass, run **sudo apt install sshpass** and then run the **ansible-playbook demor-role.yml** command.

By following these steps, you have successfully created and used Ansible roles for updating the **/etc/motd** file on a node machine.