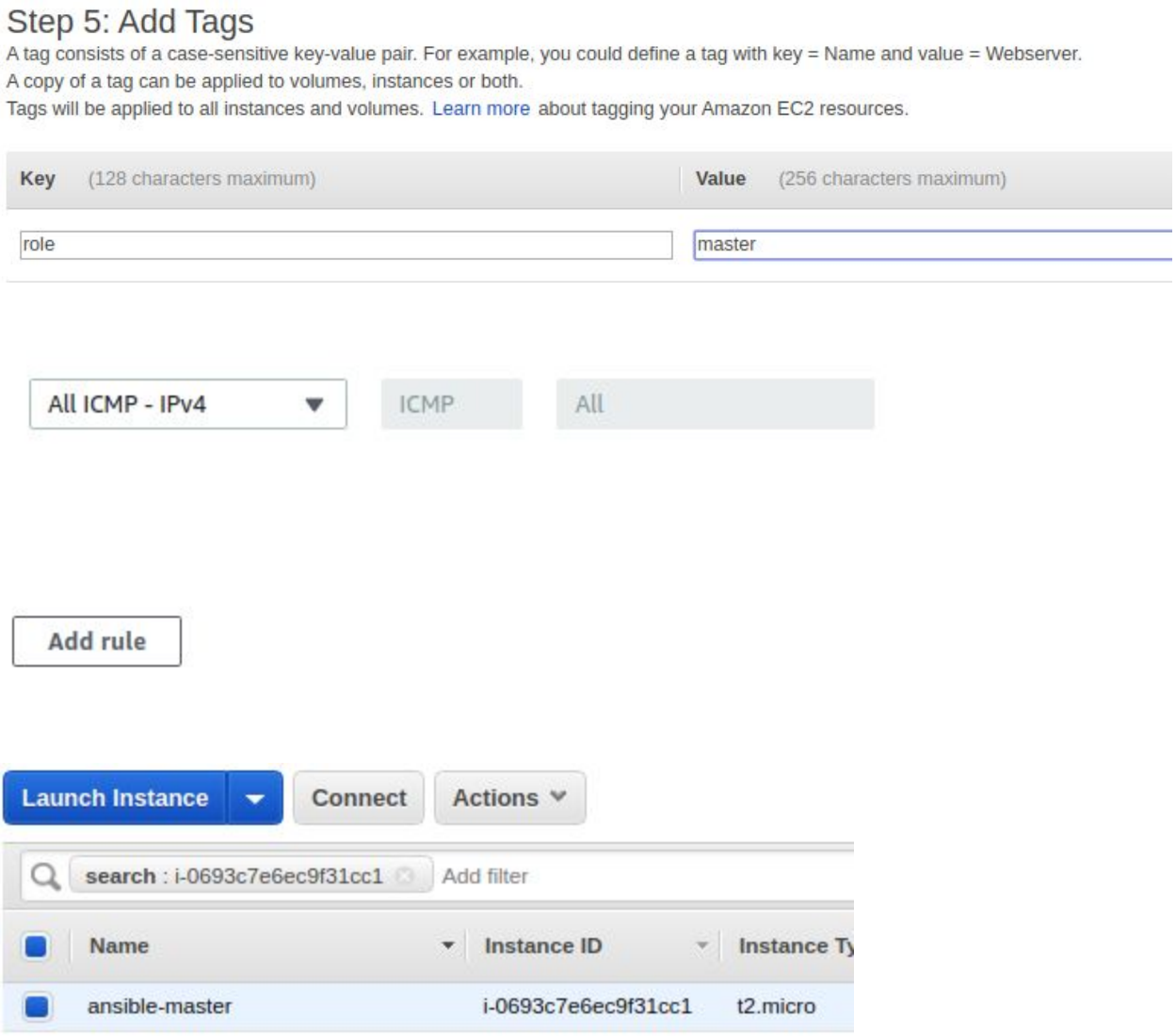
ASSESSMENT - 21

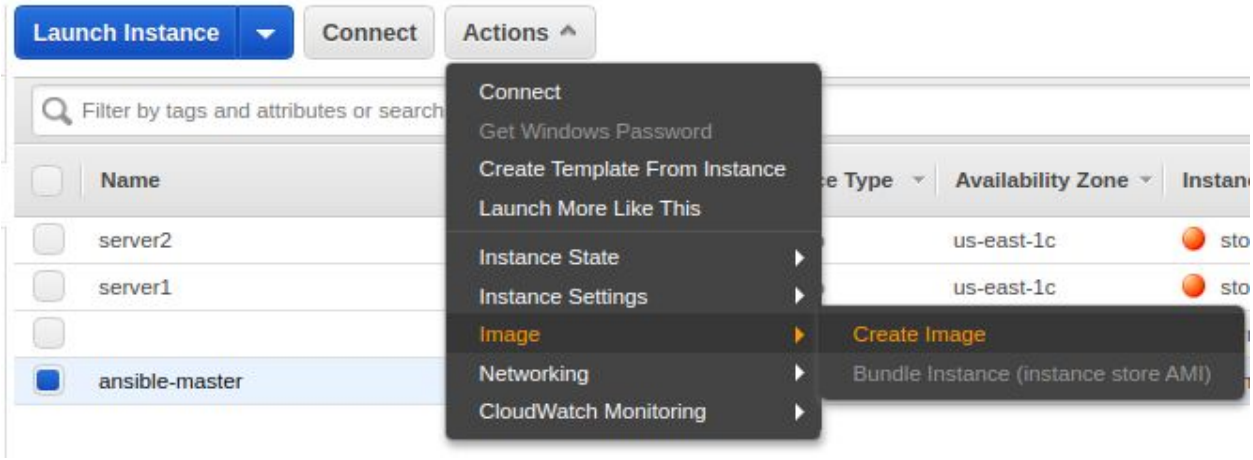
Ansible 2

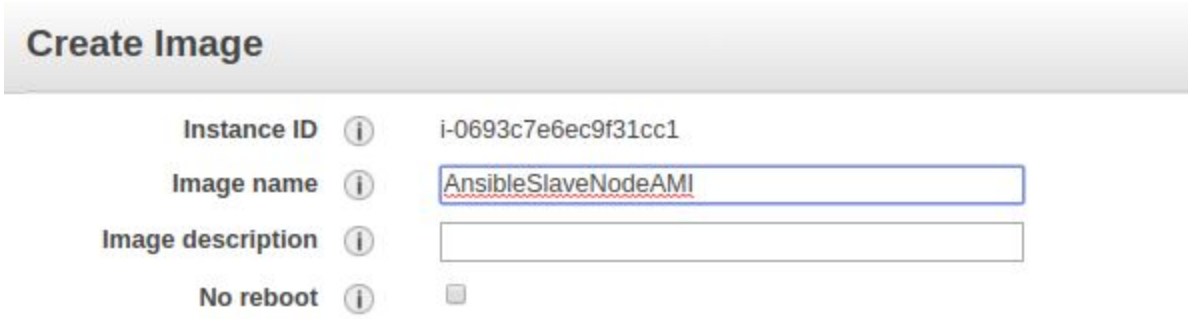
1. Create two nodes with tag:key role and tag:value master & slave respectively. Setup the dynamic inventory on ansible control nodes.



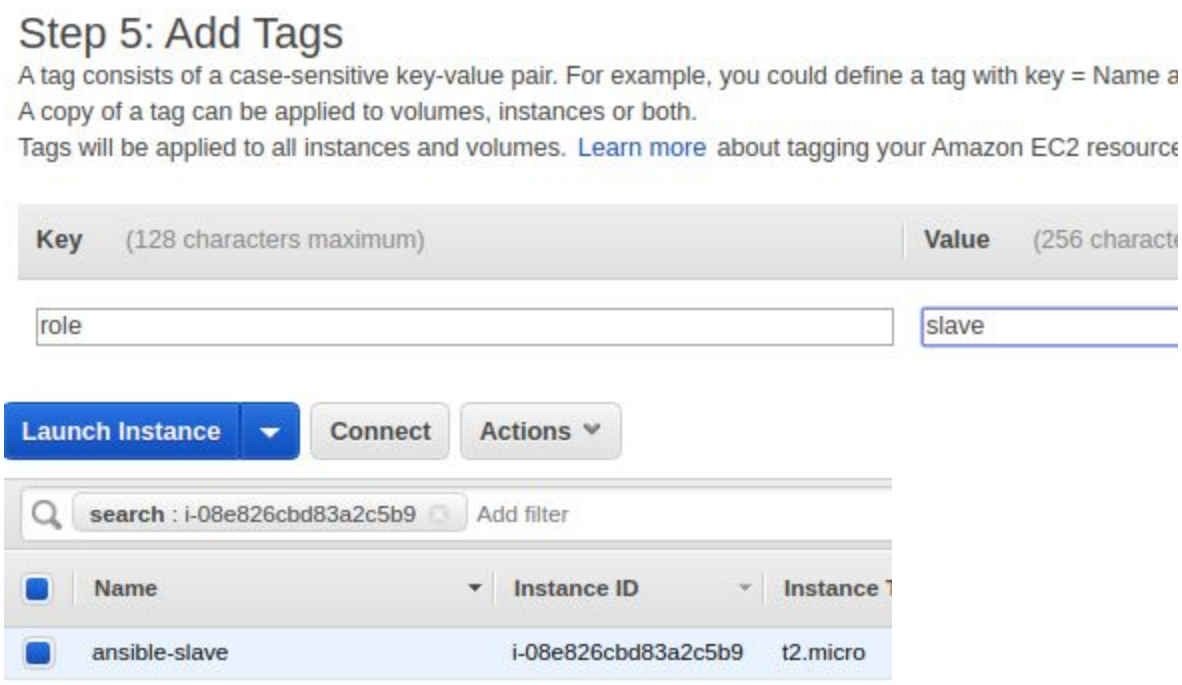
```
ubuntu@ip-172-31-89-71:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa.
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:svhCU7Fde7PMSpH2xOWEPWDKTTXEhgxhbFYUVJBfpUU ubuntu@ip-172-31-89-71
The key's randomart image is:
+---[RSA 2048]----+
|          .+BX&=.E|
|       .  o=== B+.|
|        + +o+.*.o |
|       o . = = o  |
|      .. S. B o   |
|     o. o  . =    |
|    ....  . .     |
|     ..    .      |
|      ..          |
+----[SHA256]-----+
```

```
ubuntu@ip-172-31-89-71:~/.ssh$ vim authorized_keys
ubuntu@ip-172-31-89-71:~/.ssh$
```

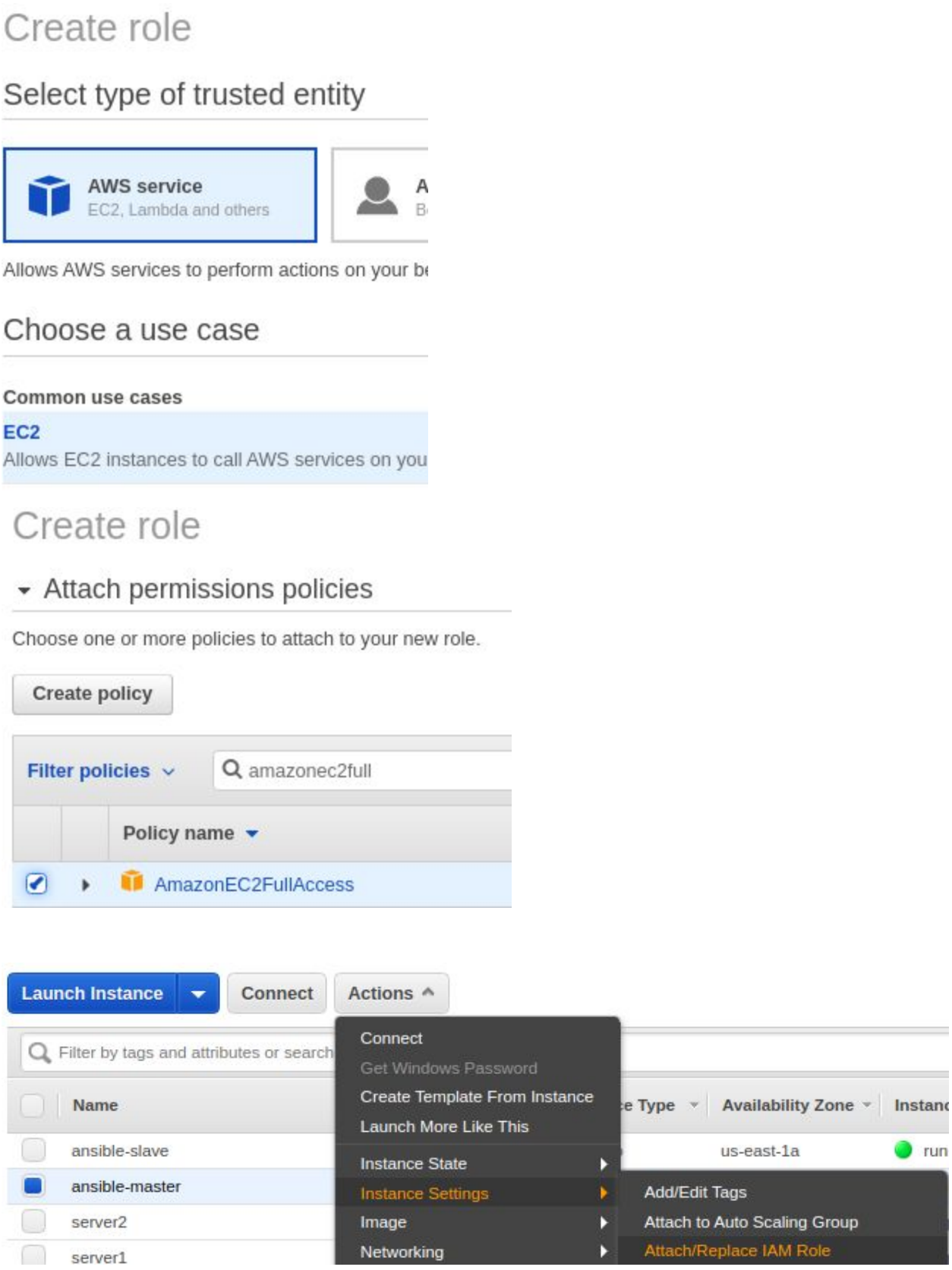


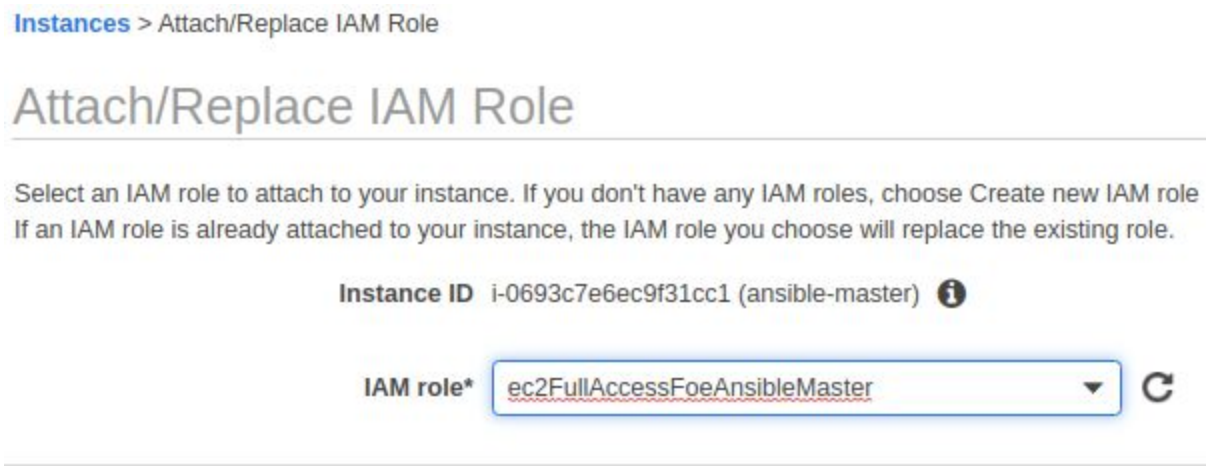


Now launch another instance from that ami.



Then create a role for ec2fullaccess and attach it to the ansible-master node.


Create role
Select type of trusted entity
AWS service
EC2, Lambda and others
Allows AWS services to perform actions on your be
Choose a use case
Common use cases
EC2
Allows EC2 instances to call AWS services on you
Create role
Attach permissions policies
Choose one or more policies to attach to your new role.
Create policy
Filter policies
amazonec2full
Policy name
AmazonEC2FullAccess
Launch Instance
Connect
Actions
Filter by tags and attributes or search
Name
Availability Zone
ansible-slave
us-east-1a
ansible-master
server2
server1
Connect
Get Windows Password
Create Template From Instance
Launch More Like This
Instance State
Instance Settings
Image
Networking
Add/Edit Tags
Attach to Auto Scaling Group
Attach/Replace IAM Role



Download the ec2.py and ec2.ini files and put them in /etc/ansible directory and give ec2.py the execute permissions.

```
ubuntu@ip-172-31-46-171:~$ cd /etc/ansible/
ubuntu@ip-172-31-46-171:/etc/ansible$ ls
ansible.cfg  ec2.ini  ec2.py  hosts
ubuntu@ip-172-31-46-171:/etc/ansible$ sudo chmod +x ec2.py
ubuntu@ip-172-31-46-171:/etc/ansible$
```

Set RDS and Elasticache to false in ec2.ini

```
# To exclude RDS instances from the inventory, unc
rds = False

# To exclude ElastiCache instances from the invent
e.
elasticache = False
```

Run the following modules using tag key-value:

1.1 Ping master node and slave node separately.

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ansible -i ec2.py tag_role_master -m ping
 [ERROR]:

3.93.154.60 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ansible -i ec2.py tag_role_slave -m ping
 [ERROR]:

35.175.245.68 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

1.2 To check all running processes on the slave node.

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ansible -i ec2.py tag_role_slave -m shell -a "ps -aux"
 [ERROR]:

35.175.245.68 | SUCCESS | rc=0 >>
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.8 225120  9028 ?        Ss   06:00   0:03 /lib/systemd/systemd --system --deserialize 38
root         2  0.0  0.0      0     0 ?        S    06:00   0:00 [kthreadd]
root         4  0.0  0.0      0     0 ?        I<   06:00   0:00 [kworker/0:0H]
root         6  0.0  0.0      0     0 ?        I<   06:00   0:00 [mm_percpu_wq]
root         7  0.0  0.0      0     0 ?        S    06:00   0:00 [ksoftirqd/0]
root         8  0.0  0.0      0     0 ?        I    06:00   0:00 [rcu_sched]
root         9  0.0  0.0      0     0 ?        I    06:00   0:00 [rcu_bh]
root        10  0.0  0.0      0     0 ?        S    06:00   0:00 [migration/0]
root        11  0.0  0.0      0     0 ?        S    06:00   0:00 [watchdog/0]
```

1.3 To copying files to both nodes concurrently.

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ansible -i ec2.py ec2 -m copy -a "src=/etc/hosts dest=/home/ubuntu"
 [ERROR]:

3.93.154.60 | SUCCESS => {
    "changed": true,
    "checksum": "a777be51c79c607edd61c8e12cd9b775ddc8a6c6",
    "dest": "/home/ubuntu/hosts",
    "gid": 1000,
    "group": "ubuntu",
    "md5sum": "1463508f28edb4d6d5ae349b20e00409",
    "mode": "0664",
    "owner": "ubuntu",
    "size": 221,
    "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1585739835.93-209251443115803/source",
    "state": "file",
    "uid": 1000
}
35.175.245.68 | SUCCESS => {
    "changed": true,
    "checksum": "a777be51c79c607edd61c8e12cd9b775ddc8a6c6",
    "dest": "/home/ubuntu/hosts",
    "gid": 1000,
    "group": "ubuntu",
    "md5sum": "1463508f28edb4d6d5ae349b20e00409",
    "mode": "0664",
    "owner": "ubuntu",
    "size": 221,
    "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1585739835.91-110778334275472/source",
    "state": "file",
    "uid": 1000
}
```

```
ubuntu@ip-172-31-89-71:~$ ls
hosts
ubuntu@ip-172-31-89-71:~$
```

```
ubuntu@ip-172-31-80-63:~$ ls
hosts
ubuntu@ip-172-31-80-63:~$
```

2. Setup nginx on both nodes with a single custom configuration template, on master nginx should run on 8000 while on slave nginx would listen on port 80. [Jinja2+conditional]

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ls
ansible.cfg  ec2.ini  ec2.py  hosts
ubuntu@ip-172-31-89-71:/etc/ansible$ sudo mkdir roles
ubuntu@ip-172-31-89-71:/etc/ansible$ cd roles/
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ ls
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ sudo ansible-galaxy init /etc/ansible
/roles/custom
- /etc/ansible/roles/custom was created successfully
```

```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ tree custom/
custom/
├── README.md
├── defaults
│   └── main.yml
├── files
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── tasks
│   └── main.yml
├── templates
│   └── nginx_temp.j2
├── tests
│   ├── inventory
│   └── test.yml
└── vars
    └── main.yml

8 directories, 9 files
```

```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ cat custom/templates/nginx_temp.j2
{% if ec2_tag_role == 'master' %}
server{
        listen 8000;
        server_name _;
        index index.nginx-debian.html index.html;
        root /var/www/html;
}
{% else %}
server{
        listen 80;
        server_name _;
        index index.nginx-debian.html index.html;
        root /var/www/html;
}
{% endif %}
```

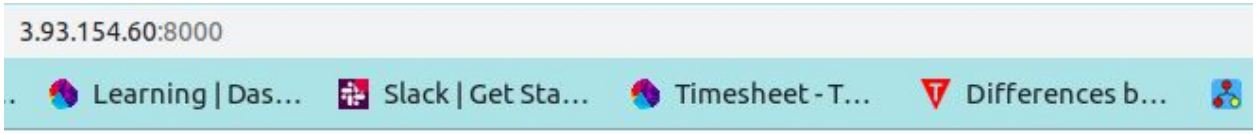
```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ cat custom/tasks/main.yml
# tasks file for /etc/ansible/roles/custom
- name: updating
  apt:
        update_cache: yes
- name: installing nginx
  apt:
        name: nginx
        state: latest
- name: using template
  template:
        src: nginx_temp.j2
        dest: /etc/nginx/sites-available/nginx

- name: removing unnecessary file in /etc/nginx/sites-enabled
  file:
    state: absent
    path: "/etc/nginx/sites-enabled/default"

- name: creating soft link in sites-enabled
  raw: test -L /etc/nginx/sites-enabled/nginx || ln -s /etc/nginx/sites-available/nginx /etc/nginx/sites-enabled/nginx

- name: restarting nginx
  command: service nginx reload
```

```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ ls
custom  playbook.yml
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ cat playbook.yml
- name: example playbook for roles
  hosts: ec2
  become: yes
  gather_facts: yes
  roles:
          - custom
```

```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ ansible-playbook -i /etc/ansible/ec2.py playbook.yml
 [ERROR]:


PLAY [example playbook for roles] ***********************************************

TASK [Gathering Facts] **********************************************************
ok: [3.93.154.60]
ok: [35.175.245.68]

TASK [custom : updating] ********************************************************
changed: [3.93.154.60]
changed: [35.175.245.68]

TASK [custom : installing nginx] ************************************************
ok: [3.93.154.60]
ok: [35.175.245.68]

TASK [custom : using template] **************************************************
ok: [35.175.245.68]
ok: [3.93.154.60]
```

```
TASK [custom : removing unnecessary file in /etc/nginx/sites-enabled] *******
ok: [35.175.245.68]
ok: [3.93.154.60]

TASK [custom : creating soft link in sites-enabled] *************************
changed: [35.175.245.68]
changed: [3.93.154.60]

TASK [custom : restarting nginx] ********************************************
 [WARNING]: Consider using the service module rather than running service.  I
add warn=False to this command task or set command_warnings=False in ansible.

changed: [35.175.245.68]
changed: [3.93.154.60]

PLAY RECAP ******************************************************************
3.93.154.60                : ok=7    changed=3    unreachable=0    failed=0
35.175.245.68              : ok=7    changed=3    unreachable=0    failed=0
```

```
ubuntu@ip-172-31-89-71:/etc/ansible/roles$ cd ../../nginx/sites-enabled/
ubuntu@ip-172-31-89-71:/etc/nginx/sites-enabled$ ls
nginx
ubuntu@ip-172-31-89-71:/etc/nginx/sites-enabled$ cat nginx
server{
        listen 8000;
        server_name _;
        index index.nginx-debian.html index.html;
        root /var/www/html;
}
ubuntu@ip-172-31-89-71:/etc/nginx/sites-enabled$
```



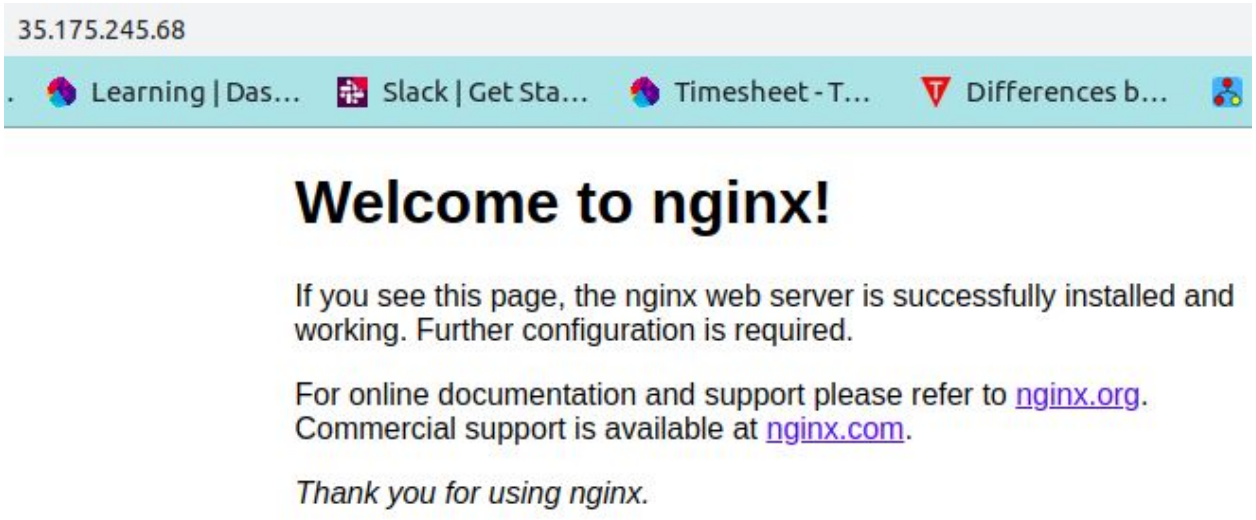
Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

```
ubuntu@ip-172-31-80-63:~$ cd /etc/nginx/sites-enabled/
ubuntu@ip-172-31-80-63:/etc/nginx/sites-enabled$ ls
nginx
ubuntu@ip-172-31-80-63:/etc/nginx/sites-enabled$ cat nginx
server{
        listen 80;
        server_name _;
        index index.nginx-debian.html index.html;
        root /var/www/html;
}
ubuntu@ip-172-31-80-63:/etc/nginx/sites-enabled$
```



3. Setup mysql on a remote server, create a user with password. Passwords should be encrypted using Ansible vault. Verify the setup by log in to mysql.

```
ubuntu@ip-172-31-89-71:/etc/ansible$ sudo ansible-vault encrypt_string garima
New Vault password:
Confirm New Vault password:
!vault |
          $ANSIBLE_VAULT;1.1;AES256
          376662646664366331353165653561636662373966306661323137303466316437303931333362393764643136643064343361336234383763633261323538300a626264643438636331343935393565663934303131313138613563633265353564346234353064336434623163653035343033643562353031613936616465360a336663393632316431633761326535663636343661323562653630343561323236
Encryption successful
```

```
ubuntu@ip-172-31-89-71:/etc/ansible$ cat hosts
# This is the default ansible 'hosts' file.
# It should live in /etc/ansible/hosts
# Ex 1: Ungrouped hosts, specify before any group headers.
ubuntu@35.175.245.68
ubuntu@3.93.154.60
```

```
ubuntu@ip-172-31-89-71:/etc/ansible$ cat mysql-play.yml
- hosts: all
  gather_facts: no
  become: yes
  vars:
    db_password: !vault |
          $ANSIBLE_VAULT;1.1;AES256
          376662646664366331353165653561636662373966306661323137303466316437303931333362393
          376464313664306434336133623438376363326132353830 0a6262646434386363313439353935656
          663934303131313138613563633265353564346234353064336434623163653035343033643562353
          303161393661646536 0a3366633936323164316337613265356636363436613235626536303435613
          3236
  tasks:

  - name: Installing mysql
    apt:
      name: mysql-server
      state: present
      update-cache: yes

  - name: Installing dependencies for database
    apt:
      name: python2.7-mysqldb
      state: present
      update-cache: yes

  - name: waiting for 10 sec......
    pause:
      seconds: 10

  - name: creating database user
    mysql_user:
      name: wordpress
      password: '{{ db_password }}'
      priv: '*.*:ALL'
      state: present
```

```
ubuntu@ip-172-31-89-71:/etc/ansible$ ansible-playbook mysql-play.yml --ask-vault-pass
Vault password:

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

TASK [Installing mysql] ********************************************************
changed: [ubuntu@3.93.154.60]
changed: [ubuntu@35.175.245.68]

TASK [Installing dependencies for database] ************************************
changed: [ubuntu@3.93.154.60]
changed: [ubuntu@35.175.245.68]

TASK [waiting for 10 sec......] ************************************************
Pausing for 10 seconds
(ctrl+C then 'C' = continue early, ctrl+C then 'A' = abort)
ok: [ubuntu@35.175.245.68]

TASK [creating database user] **************************************************
changed: [ubuntu@3.93.154.60]
changed: [ubuntu@35.175.245.68]

PLAY RECAP *********************************************************************
ubuntu@3.93.154.60         : ok=3    changed=3    unreachable=0    failed=0
ubuntu@35.175.245.68       : ok=4    changed=3    unreachable=0    failed=0

ubuntu@ip-172-31-89-71:/etc/ansible$
```

```
ubuntu@ip-172-31-89-71:~$ sudo mysql -u wordpress -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.29-0ubuntu0.18.04.1 (Ubuntu)

Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```