

**TO
THE
NEW™**



Ansible2

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

Ans.

Create two instances with the following tags.

<input type="checkbox"/>	role	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
<input type="checkbox"/>	master_chhavi	i-006b449c945195cd3	t2.micro	us-east-1c	running	2/2 checks ...	None	ec2-54-172-78-72.c
<input type="checkbox"/>	slave_chhavi	i-08b8a54629f51dfef	t2.micro	us-east-1c	running	2/2 checks ...	None	ec2-3-85-125-144.c
<input checked="" type="checkbox"/>	Master	i-0d9d70719f9c17e17	t2.micro	us-east-1c	running	2/2 checks ...	None	ec2-54-80-76-147.c

Create a control node (master instance) and attach ec2fullaccess role to it(You need to first create the role and then attach it).

<input checked="" type="checkbox"/>	Master	i-0d9d70719f9c17e17	t2.micro	us-east-1c	running	2/2 checks ...	None	ec2-54-80-76-147.c
<div><div><div>Subnet ID</div><div>subnet-06680a5b651f104dc (default)</div></div><div><div>Network interfaces</div><div>eth0</div></div><div><div>IAM role</div><div>EC2FULLACCESSFORANSIBLE</div></div><div><div>Key pair name</div><div>ansiblekeypair</div></div></div> <div><div>Platform details</div><div>-</div></div> <div><div>Usage operation</div><div>-</div></div> <div><div>Source/dest. check</div><div>True</div></div> <div><div>T2/T3 Unlimited</div><div>Disabled</div></div>								

Download ec2.py and ec2.ini files and keep them in the /etc/ansible directory of the master instance.

```
ubuntu@ip-172-31-183-181:~$ cd /etc/ansible/
ubuntu@ip-172-31-183-181:/etc/ansible$ ls
ansible.cfg  ec2.ini  ec2.py  file_to_copy.txt  hosts  roles
ubuntu@ip-172-31-183-181:/etc/ansible$
```

Set rds and elasticache to False in ec2.ini

```
# To exclude RDS instances from the inventory, uncomment and set to False.
#rds = False
rds = False
# To exclude ElastiCache instances from the inventory, uncomment and set to False.
#elasticache = False
elasticache = False
# Additionally, you can specify the list of zones to exclude looking up in
# 'route53_excluded_zones' as a comma-separated list.
# route53_excluded_zones = samplezone1.com, samplezone2.com
# By default, only EC2 instances in the 'running' state are returned. Set
```

Make ec2.py executable and run the script.You'll see the following as the output.

```
ubuntu@ip-172-31-183-181:/etc/ansible$ sudo chmod +x /etc/ansible/ec2.py
```

```
{
  "_meta": {
    "hostvars": {
      "18.207.202.43": {
        "ansible_ssh_host": "18.207.202.43",
        "ec2_in_monitoring_element": false,
        "ec2_ami_launch_index": "0",
        "ec2_architecture": "x86_64",
```

```

    "3.82.122.221"
  ],
  "tag_role_master_chhavi": [
    "54.172.78.72"
  ],
  "tag_role_slave": [
    "54.152.21.13"
  ],
  "tag_role_slave_chhavi": [
    "3.85.125.144"
  ],
  "tag_role_slave2": [

```

1.1 Ping master node and slave node separately.

Ans.

```
ubuntu@ip-1
```

```
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to allow bad characters in group names by default, this will change, but still be user configurable on deprecation. This feature will be removed in version 2.10. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details
The authenticity of host '54.172.78.72 (54.172.78.72)' can't be established.
ECDSA key fingerprint is SHA256:5fJYxldz/fgZstWqfB9WrTFsYuR/9s+o3J6djVsu5Mo.
Are you sure you want to continue connecting (yes/no)? yes
54.172.78.72 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
ubuntu@ip-172-31-183-181:/etc/ansible$
```

```

ubuntu@ip-172-31-183-181:/etc/ansible$ ansible -i ec2.py tag_role_slave_chhavi -m ping
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to
allow bad characters in group names by default, this will change, but still be
user configurable on deprecation. This feature will be removed in version 2.10.
Deprecation warnings can be disabled by setting deprecation_warnings=False in
ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use
-vvvvv to see details
3.85.125.144 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
ubuntu@ip-172-31-183-181:/etc/ansible$

```

1.2 To check all running processes on the slave node.

Ans.

```

ubuntu@ip-172-31-183-181:/etc/ansible$ ansible -i ec2.py tag_role_slave_chhavi -m shell -a "ps -aux"
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to
allow bad characters in group names by default, this will change, but still be
user configurable on deprecation. This feature will be removed in version 2.10.
Deprecation warnings can be disabled by setting deprecation_warnings=False in
ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use
-vvvvv to see details
3.85.125.144 | CHANGED | rc=0 >>
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.2  0.9 159848 9332 ?        Ss   07:10   0:03 /sbin/init
root           2  0.0  0.0      0     0 ?        S    07:10   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        I    07:10   0:00 [kworker/0:0]
root           4  0.0  0.0      0     0 ?        I<   07:10   0:00 [kworker/0:0H]
root           6  0.0  0.0      0     0 ?        I<   07:10   0:00 [mm_percpu_wq]
root           7  0.0  0.0      0     0 ?        S    07:10   0:00 [ksoftirqd/0]
root           8  0.0  0.0      0     0 ?        I    07:10   0:00 [rcu_sched]
root           9  0.0  0.0      0     0 ?        I    07:10   0:00 [rcu_bh]
root          10  0.0  0.0      0     0 ?        S    07:10   0:00 [migration/0]
root          11  0.0  0.0      0     0 ?        S    07:10   0:00 [watchdog/0]
root          12  0.0  0.0      0     0 ?        S    07:10   0:00 [cpuhp/0]
root          13  0.0  0.0      0     0 ?        S    07:10   0:00 [kdevtmpfs]
root          14  0.0  0.0      0     0 ?        I<   07:10   0:00 [netns]

```

1.3 To copying files to both nodes concurrently.

Ans.

```

ubuntu@ip-172-31-183-181:/etc/ansible$ ls
ansible.cfg  ec2.ini  ec2.py  file_to_copy.txt  hosts  roles
ubuntu@ip-172-31-183-181:/etc/ansible$

```



```

ubuntu@ip-172-31-183-181:/etc/ansible$ ansible -i ec2.py tag_role_*_chhavi -m copy -a "src=/etc/ansible/file_to_copy.txt dest=/home/ubuntu/"
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to allow bad characters in group names by default, this will change, but still be user configurable on deprecation. This feature will be removed in version 2.10. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details
3.85.125.144 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": true,
  "checksum": "ea6cb5d95b80d4803e46c2c5390d7d5c3917e121",
  "dest": "/home/ubuntu/file_to_copy.txt",
  "gid": 1000,
  "group": "ubuntu",
  "md5sum": "9f76886a27cde770ef48e0959929cf77",
  "mode": "0664",
  "owner": "ubuntu",
  "size": 15,
  "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1585813465.74-180018018283178/source",
  "size": 15,
  "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1585813465.74-180018018283178/source",
  "state": "file",
  "uid": 1000
}
54.172.78.72 | CHANGED => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": true,
  "checksum": "ea6cb5d95b80d4803e46c2c5390d7d5c3917e121",
  "dest": "/home/ubuntu/file_to_copy.txt",
  "gid": 1000,
  "group": "ubuntu",
  "md5sum": "9f76886a27cde770ef48e0959929cf77",
  "mode": "0664",
  "owner": "ubuntu",
  "size": 15,
  "src": "/home/ubuntu/.ansible/tmp/ansible-tmp-1585813465.73-103250557434190/source",
  "state": "file",
  "uid": 1000
}

```

On master

```
ubuntu@ip-172-31-99-118:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-99-118:~$ ls
file_to_copy.txt
ubuntu@ip-172-31-99-118:~$ cat file_to_copy.txt
File Copied...
ubuntu@ip-172-31-99-118:~$
```

On slave

```
ubuntu@ip-172-31-48-254:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-48-254:~$ ls
file_to_copy.txt
ubuntu@ip-172-31-48-254:~$ cat file_to_copy.txt
File Copied...
ubuntu@ip-172-31-48-254:~$
```

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]

Ans.

Set up the server configuration file using jinja2 and conditional.

```
ubuntu@ip-172-31-183-181:/etc/ansible/templates$ cat nginx.conf
# Default server configuration

server {
    {% if ec2_tag_role == "master_chhavi" %}
        listen 8000 default_server;
        listen [::]:8000 default_server;
    {% endif %}

    {% if ec2_tag_role == "slave_chhavi" %}
        listen 80 default_server;
        listen [::]:80 default_server;
    {% endif %}
    root /var/www/html;

    index index.html index.nginx-debian.html;
    server_name _;

    location / {
        try_files $uri $uri/ =404;
    }
}
ubuntu@ip-172-31-183-181:/etc/ansible/templates$
```

Next, create an ansible playbook to run nginx and copy the configuration file.

```
--
- hosts: tag_role_*_chhavi
  gather_facts: False
  become: true
  tasks:
    - name: Ensure nginx is at the latest version
      apt:
        name: nginx
        state: latest
    - name: Start nginx
      service:
        name: nginx
        state: started
    - name: Add nginx configuration template to the Nginx available sites
      template:
        src: templates/nginx.conf
        dest: "/etc/nginx/sites-available/nginx.conf"
    - name: Delete default file from sites enabled
      file:
        path: "/etc/nginx/sites-enabled/default"
        state: absent
    - name: Enable nginx config template
      file:
        src: "/etc/nginx/sites-available/nginx.conf"
```

1

```
- name: Add nginx configuration template to the Nginx available sites
  template:
    src: templates/nginx.conf
    dest: "/etc/nginx/sites-available/nginx.conf"
- name: Delete default file from sites enabled
  file:
    path: "/etc/nginx/sites-enabled/default"
    state: absent
- name: Enable nginx config template
  file:
    src: "/etc/nginx/sites-available/nginx.conf"
    dest: "/etc/nginx/sites-enabled/nginx.conf"
    state: link
- name: Restart nginx
  service:
    name: nginx
    state: restarted
```

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Bot

Next, run the nginx.yml playbook.


```

ubuntu@ip-172-31-183-181:/etc/ansible$ ansible-playbook -i ec2.py nginx.yml
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to allow bad characters in group
names by default, this will change, but still be user configurable on deprecation. This feature will be
removed in version 2.10. Deprecation warnings can be disabled by setting deprecation_warnings=False in
ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details

PLAY [tag_role_*_chhavi] *****

TASK [Ensure nginx is at the latest version] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Start nginx] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Add nginx configuration template to the Nginx available sites] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Delete default file from sites enabled] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Delete default file from sites enabled] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Enable nginx config template] *****
ok: [18.205.116.87]
ok: [54.175.23.197]

TASK [Restart nginx] *****
changed: [18.205.116.87]
changed: [54.175.23.197]

PLAY RECAP *****
18.205.116.87      : ok=6    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ig
nored=0
54.175.23.197     : ok=6    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ig
nored=0

```

Now curl nginx url on both the nodes.

On Master :


```
ubuntu@ip-172-31-183-181:/etc/ansible$ curl 18.205.116.87:8000
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
```

On slave

```
ubuntu@ip-172-31-183-181:/etc/ansible$ curl 54.175.23.197:80
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
    body {
        width: 35em;
        margin: 0 auto;
        font-family: Tahoma, Verdana, Arial, sans-serif;
    }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
```

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.

Ans.

Encrypt password using ansible vault.

```
ubuntu@ip-172-31-183-181:/etc/ansible$ ansible-vault encrypt_string --vault-id @prompt pass@123
New vault password (default):
Confirm new vault password (default):
!vault |
     $ANSIBLE_VAULT;1.1;AES256
     34363339623161363666343362316431616264333561363132633634633461663063353734663961
     6665383765333530386464663565313662396130396566320a366130313666303734633666303037
     38343334633433316539396435656437366632303239303139633631313237623730383939343730
     3635336361323432330a356463373764323237653332643366626532393935663830383163343761
     6635
```

Mysql.yml

```
ubuntu@ip-172-31-183-181:/etc/ansible$ cat mysql.yml
---
- hosts: tag_role_*_chhavi
  gather_facts: False
  become: true
  vars:
    mysql_user_password: !vault |
      $ANSIBLE_VAULT;1.1;AES256
      34363339623161363666343362316431616264333561363132633634633461663063353734663961
      6665383765333530386464663565313662396130396566320a366130313666303734633666303037
      38343334633433316539396435656437366632303239303139633631313237623730383939343730
      3635336361323432330a356463373764323237653332643366626532393935663830383163343761
      6635
  tasks:
    - name: Ensure mysql is at the latest version
      apt:
        name: "{{ item }}"
        update_cache: yes
        state: present
      with_items:
        - python-mysqldb
        - mysql-server
    - name: Start mysql
      service:
        name: mysql
        state: started
    - name: Adding a mysql user
```

```

- name: Start mysql
  service:
    name: mysql
    state: started
- name: Adding a mysql user
  mysql_user:
    user: mysql_user
    password: "{{ mysql_user_password }}"
    priv: ' *.*:ALL'
    host: "%"
- name: restart mysql
  service:
    name: mysql
    state: restarted

```

Run playbook

```

ubuntu@ip-172-31-183-181:/etc/ansible$ ansible-playbook -i ec2.py mysql.yml --ask-vault-pass
Vault password:
[DEPRECATION WARNING]: The TRANSFORM_INVALID_GROUP_CHARS settings is set to allow bad characters in group
names by default, this will change, but still be user configurable on deprecation. This feature will be
removed in version 2.10. Deprecation warnings can be disabled by setting deprecation_warnings=False in
ansible.cfg.
[WARNING]: Invalid characters were found in group names but not replaced, use -vvvv to see details

PLAY [tag_role*_chhavi] *****

TASK [Ensure mysql is at the latest version] *****
[DEPRECATION WARNING]: Invoking "apt" only once while using a loop via squash_actions is deprecated.
Instead of using a loop to supply multiple items and specifying 'name: "{{ item }}"', please use 'name:
['python-mysqldb', 'mysql-server']' and remove the loop. This feature will be removed in version 2.11.
Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
[DEPRECATION WARNING]: Invoking "apt" only once while using a loop via squash_actions is deprecated.
Instead of using a loop to supply multiple items and specifying 'name: "{{ item }}"', please use 'name:
['python-mysqldb', 'mysql-server']' and remove the loop. This feature will be removed in version 2.11.
Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
ok: [54.175.23.197] => (item=[u'python-mysqldb', u'mysql-server'])
[WARNING]: Updating cache and auto-installing missing dependency: python-apt
[DEPRECATION WARNING]: Distribution Ubuntu 18.04 on host 54.175.23.197 should use /usr/bin/python3, but is
using /usr/bin/python for backward compatibility with prior Ansible releases. A future Ansible release
will default to using the discovered platform python for this host. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
This feature will be removed in version 2.12. Deprecation warnings can be disabled by setting

```



```

ok: [18.205.116.87] => (item=[u'python-mysqldb', u'mysql-server'])
[DEPRECATION WARNING]: Distribution Ubuntu 18.04 on host 18.205.116.87 should use /usr/bin/python3, but is
using /usr/bin/python for backward compatibility with prior Ansible releases. A future Ansible release
will default to using the discovered platform python for this host. See
https://docs.ansible.com/ansible/2.9/reference_appendices/interpreter_discovery.html for more information.
This feature will be removed in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

TASK [Start mysql] *****
ok: [54.175.23.197]
ok: [18.205.116.87]

TASK [Adding a mysql user] *****
[WARNING]: Module did not set no_log for update_password
changed: [18.205.116.87]
changed: [54.175.23.197]

TASK [restart mysql] *****
changed: [18.205.116.87]
changed: [54.175.23.197]

PLAY RECAP *****
18.205.116.87      : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ig
nored=0
54.175.23.197     : ok=4    changed=2    unreachable=0    failed=0    skipped=0    rescued=0    ig
nored=0

```

Now, to check ssh into any one of the two servers and login into mysql with the created user.

```

ubuntu@ip-172-31-99-118:~$ mysql -u mysql_user -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.29-0ubuntu0.18.04.1 (Ubuntu)

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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>

```