ANSIBLE

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Grouping

- Grouping in Ansible helps organize multiple hosts under a group name in the inventory file for efficient management.

```
 GNU nano 5.8                                  host
[webserver]
172.31.22.34 ──→ grouping 2 slave machine ip address under webserver
172.31.27.252
[dataserver]
172.31.25.140 ──→ grouping 1 slave machine ip address under dataserver
```

1. **To ping only the web server's IP address:**

```
]$ ansible -i host webserver -m ping
```

output:

```
172.31.22.34 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.27.252 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
172.31.27.252 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
```

2. To ping only the dataserver's IP address:

```
[ec2-user@ip-172-31-31-251 ~]$ ansible -i host dataserver -m ping
```

output:

```
172.31.25.140 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.9"
    },
    "changed": false,
    "ping": "pong"
}
```

webserver playbook:

```
  GNU nano 5.8                        webserver.yml

- hosts: webserver
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd  # Space after "-"
      yum:
        name: httpd
        state: installed
```

3. To execute the playbook(webserver):

```
]$ ansible-playbook -i host webserver.yml
```

output:

```
PLAY [webserver] ***************************************************************

TASK [Gathering Facts] *********************************************************
[WARNING]: Platform linux on host 172.31.27.252 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.27.252]
[WARNING]: Platform linux on host 172.31.22.34 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.22.34]

TASK [Install httpd] ***********************************************************
changed: [172.31.22.34]
changed: [172.31.27.252]

PLAY RECAP *********************************************************************
172.31.22.34               : ok=2    changed=1    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
172.31.27.252              : ok=2    changed=1    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
```

dataserver playbook:

```
  GNU nano 5.8                                          dataserver.yml
- hosts: dataserver
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd  # Space after "-"
      yum:
        name: httpd
        state: installed
```

4. To execute the playbook(dataserver):

```
]$ ansible-playbook -i host dataserver.yml
```

output:

```
PLAY [dataserver] ***************************************************************

TASK [Gathering Facts] **********************************************************
[WARNING]: Platform linux on host 172.31.25.140 is using the discovered Python
interpreter at /usr/bin/python3.9, but future installation of another Python
interpreter could change the meaning of that path. See
https://docs.ansible.com/ansible-
core/2.15/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.25.140]

TASK [Install httpd] ************************************************************
changed: [172.31.25.140]

PLAY RECAP **********************************************************************
172.31.25.140              : ok=2    changed=1    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=0
```

Ansible vault

- Ansible Vault securely encrypts sensitive data such as passwords, keys, and configurations, ensuring safe automation by protecting secrets in playbooks and roles.
- If a playbook contains sensitive files, they can be encrypted for added security.

1. Create a playbook :

```
2-user@ip-172-31-31-251 ~]$ nano app.yml
```

```
 GNU nano 5.8                                          app.yml

- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd  # Space after "-"
      yum:
        name: httpd
        state: installed
```

2. Encrypt the playbook

```
[ec2-user@ip-172-31-31-251 ~]$ ansible-vault encrypt app.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

New Vault password:
Confirm New Vault password:
Encryption successful
```

3. View an Encrypted Playbook

```
[ec2-user@ip-172-31-31-251 ~]$ cat app.yml
```

output:

```
GNU nano 5.8                                app.yml
$ANSIBLE_VAULT;1.1;AES256
35613137363866636435353163323466393334363566396666626137356138303537656437396462
63353866373436393735353964353034363862353264623 50a6465663839396664386532356466 31
30303363623439616437653235393762656233613663303761353863353030373565613034373435
35663334383665633 90a6138613066393463646437333731316433613137646161353662376339 66
32613736636138313533323931376535343634346538383133331613930383364616338643839 6336
66366632613266633113362646339656463643866633164383438666643934336232306466353734 31
63393533313433346362663561646633623661373630313637353463623631303636655337626237
34353339626566432333439383334623266353465363966353837303035333063343338366431 3639
66393864373134663734373937626364396665646423535343164333961653135313064623165 61
37323335346261323261303635373966653266396433636338626531653964643939653663303764
34666266663163666231353437396365396438393762356339306330633532383037326237386163
62363833323865306130313731626465646230316261343364376165623066616339316430363134
3165
```

4. Execute an Encrypted Playbook

```
[ec2-user@ip-172-31-31-251 ~]$ ansible-playbook app.yml --ask-vault-pass
```

output:

```
Vault password:
[WARNING]: Unable to parse /home/ec2-user/.ansible/hosts as an inventory source
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that
the implicit localhost does not match 'all'

PLAY [all] *********************************************************************
skipping: no hosts matched

PLAY RECAP *********************************************************************
```

5. To View the encrypted playbook.

```
[ec2-user@ip-172-31-31-251 ~]$ ansible-vault view app.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

Vault password:


- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd  # Space after "-"
      yum:
        name: httpd
        state: installed
```

6. To Change the old password.

```
[ec2-user@ip-172-31-31-251 ~]$ ansible-vault rekey app.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

Vault password:
New Vault password:
Confirm New Vault password:
Rekey successful
```

7. To decrypt the playbook.

```
[ec2-user@ip-172-31-31-251 ~]$ ansible-vault decrypt app.yml
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot creat
e it, aborting

Vault password:
Decryption successful
```

Managing password in separate file:

You can create a separate file to store all the passwords, making it easier to encrypt all playbooks.

1. **create a separate password file**

```
[ec2-user@ip-172-31-31-251 ~]$ nano pass.txt
```

output:

```
  GNU nano 5.8                                          pass.txt
appp
```

2. **To execute an encrypted playbook.**

```
]$ ansible-vault encrypt app.yml --vault-password-file=pass.txt
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot create it, aborting

Encryption successful
```

3. **To decrypt the playbook.**

```
]$ ansible-vault decrypt  app.yml --vault-password-file=pass.txt
```

output:

```
[WARNING]: log file at /var/log/ansible.log is not writeable and we cannot create it, aborting

Decryption successful
```

4. **To View the encrypted playbook.**

```
]$ ansible-vault view  app.yml --vault-password-file=pass.txt
```

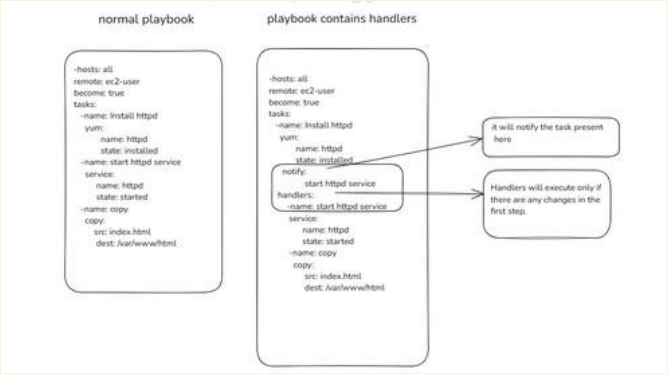
output:

```
- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd  # Space after "-"
      yum:
        name: httpd
        state: installed
```

Ansible handlers

- In Ansible, handlers are only executed when notified by a task. If the first step makes any changes to the target (slave) machine, it will trigger the handler. If no changes occur in the first step, the handler will not run, and the next step will not execute.
- Ansible handlers are specialized tasks that execute only when notified by other tasks.
- They help optimize automation by ensuring specific actions, like restarting services or reloading configurations, only run when required.



project 1

To execute a playbook with Ansible handlers

1. **Create a playbook :**

```
[ec2-user@ip-172-31-31-251 ~]$ nano ansible.yml
```

output:

2. **Create a index.html:**

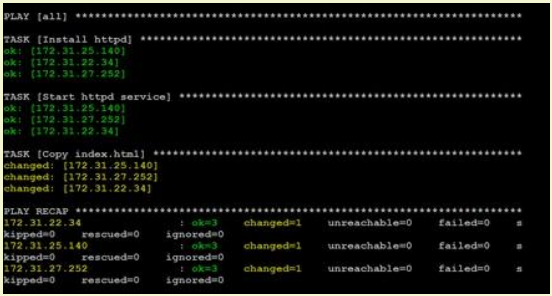
```
[ec2-user@ip-172-31-31-251 ~]$ nano index.html
```

output:

3. To execute an encrypted playbook.

```
]$ ansible-playbook -i host ansible.yml
```

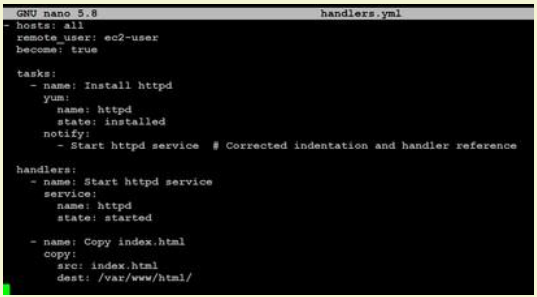
output:



4. Create the handlers playbook :

```
[ec2-user@ip-172-31-31-251 ~]$ nano handlers.yml
```

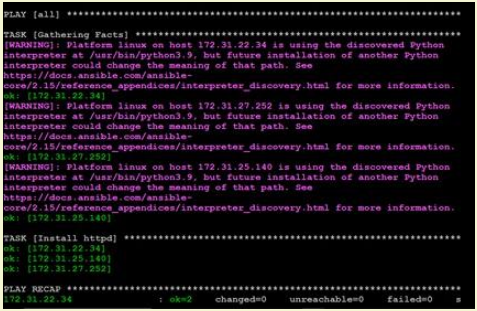
output:



5. To execute an encrypted playbook.

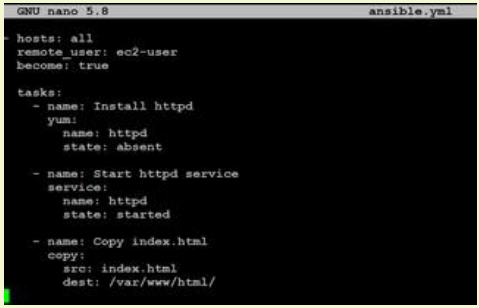
```
$ ansible-playbook -i host handlers.yml
```

output:



In an Ansible YAML file, if the httpd software is installed in the system while handlers file executed there is no changes occur in the first step, the handler will not execute in the next step.

6. To uninstall httpd



output:

7. To execute an encrypted playbook.

```
ansible-playbook -i host handlers.yml
```

output:

8. how to define more than one handler in playbook

```
GNU nano 5.8                                handlers.yml
- hosts: all
  remote_user: ec2-user
  become: true

  tasks:
    - name: Install httpd
      yum:
        name: httpd
        state: installed
      notify:
        - Start httpd service  # Corrected indentation and handler reference
        - Copy index.html
  handlers:
    - name: Start httpd service
      service:
        name: httpd
        state: started

    - name: Copy index.html
      copy:
        src: index.html
        dest: /var/www/html/
```

9. Now execute the playbook

```
ansible-playbook -i host handlers.yml
```

output:

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

TASK [Install httpd] ***********************************************************************************
changed: [172.31.22.34]
changed: [172.31.25.140]
changed: [172.31.27.252]

RUNNING HANDLER [Start httpd service] ******************************************************************
changed: [172.31.22.34]
changed: [172.31.25.140]
changed: [172.31.27.252]

RUNNING HANDLER [Copy index.html] **********************************************************************
ok: [172.31.22.34]
ok: [172.31.25.140]
ok: [172.31.27.252]

PLAY RECAP *********************************************************************************************
172.31.22.34               : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0
  ignored=0
172.31.25.140              : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0
  ignored=0
172.31.27.252              : ok=3    changed=2    unreachable=0    failed=0    skipped=0    rescued=0
  ignored=0
```