

## DEVOPS

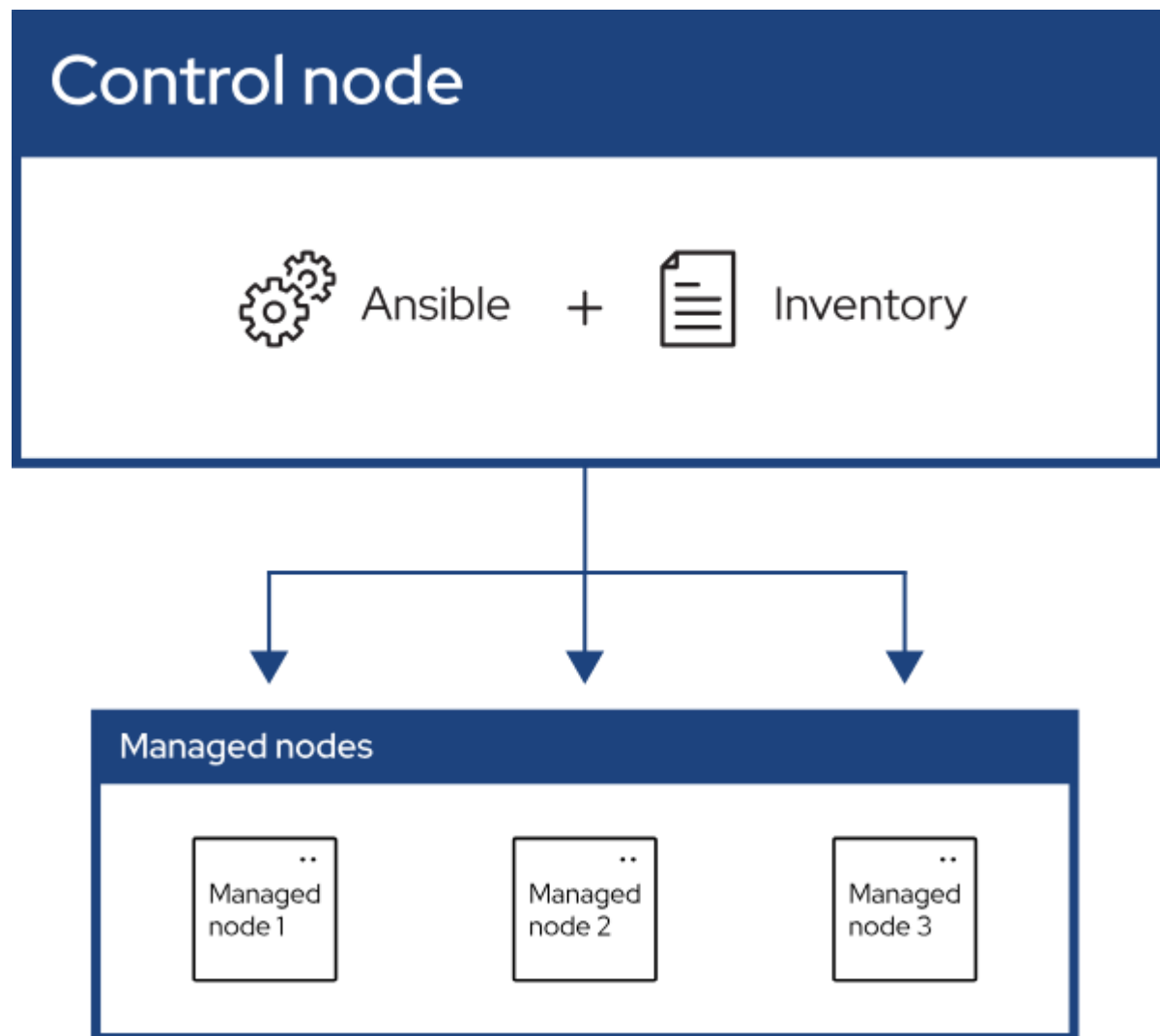
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### What is Ansible?

Ansible provides open-source automation that reduces complexity and runs everywhere. Using Ansible lets you automate virtually any task. Here are some common use cases for Ansible:

- Eliminate repetition and simplify workflows
- Manage and maintain system configuration
- Continuously deploy complex software

## Working



As shown in the preceding figure, most Ansible environments have three main components:

### Control node

A system on which Ansible is installed. You run Ansible commands such as `ansible` or `ansible-inventory` on a control node.



### Inventory

A list of managed nodes that are logically organized. You create an inventory on the control node to describe host deployments to Ansible.

## Managed node

A remote system, or host, that Ansible controls.

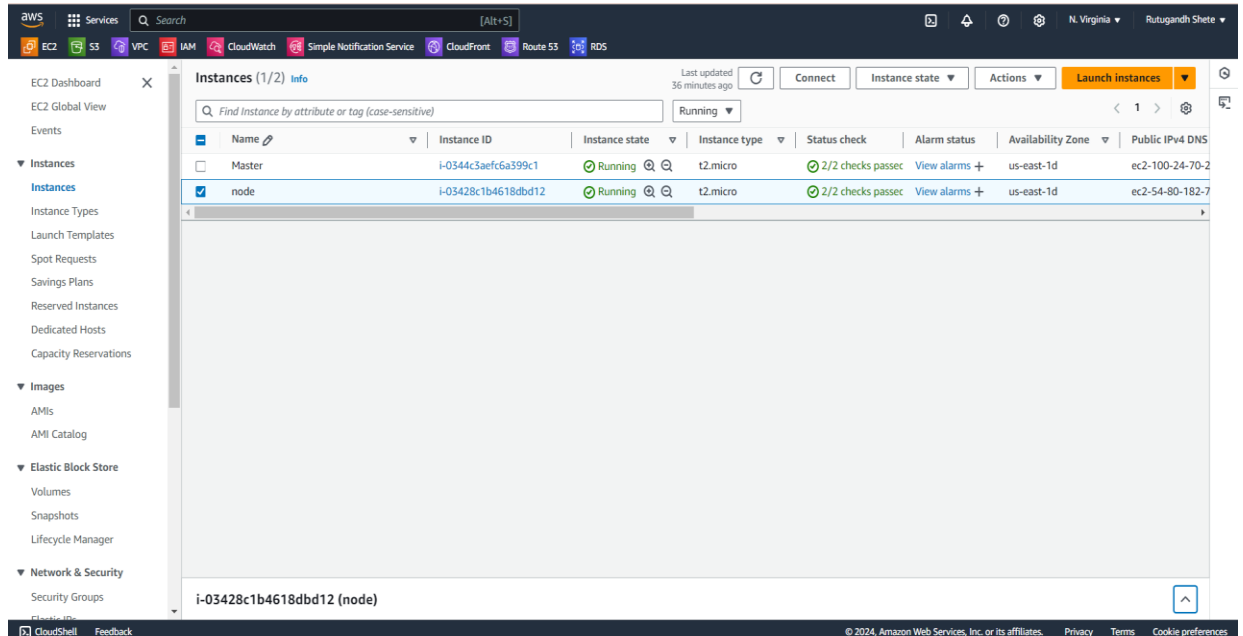
## Terraform vs Ansible:

	 <b>Terraform</b>	 <b>Ansible</b>
Type	Orchestration tool	Configuration management tool
Syntax	HCL	YAML
Language	Declarative	Procedural
Default approach	Mutable infrastructure	Immutable infrastructure
Lifecycle management	Does support	Doesn't support
Capabilities	Provisioning and configuring	Provisioning and configuring
Agentless	✓	✓
Masterless	✓	✓

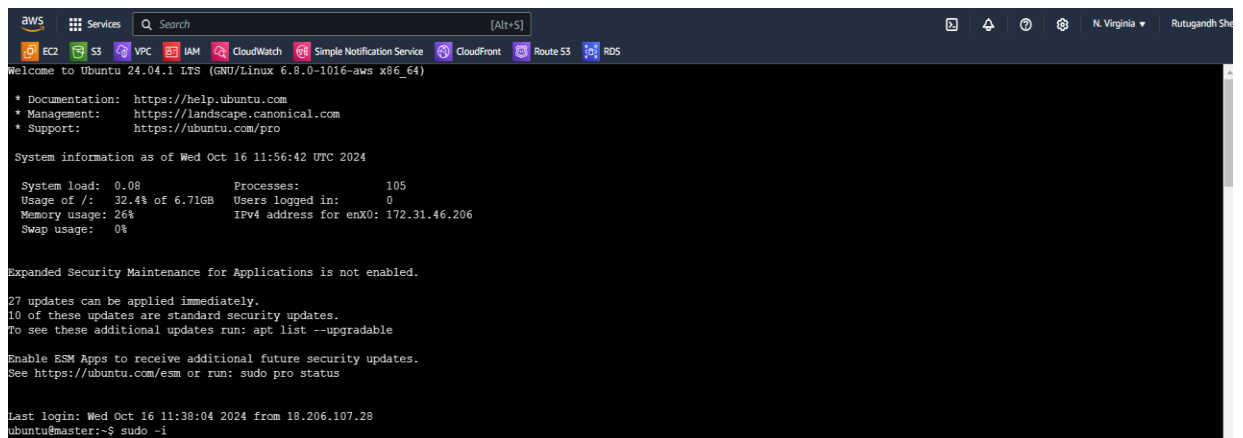
## Practical

### Steps:

- Launch EC2 instances master and node



- Connect master instance to terminal



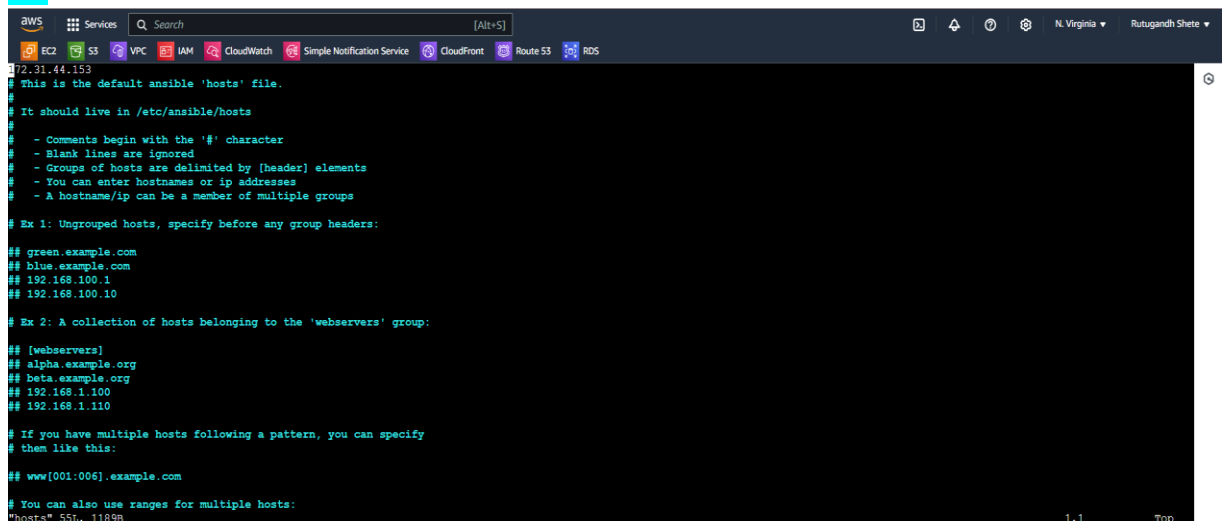
- Install package on master instance that helps to install and update Ansible “`sudo apt-add-repository ppa:ansible/ansible`” This command adds the Ansible Personal Package Archive (PPA) to your system’s repository list so that you can install and update Ansible easily.
- Install ansible
- Generate key using “ssh-keygen”

```
authorized_keys id_ed25519 id_ed25519.pub known_hosts known_hosts.old
```

- Copy the content of public key which is managed by us and paste into node instance authorize key

```
root@node:~/.ssh# cat authorized_keys
no-port-forwarding,no-agent-forwarding,no-X11-forwarding,command="echo 'Please login as the user \"ubuntu\" rather than the user \"root\".';echo;sleep 10;exit 142" ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCAwppfC4pEH+d50DBnail/DSlp4GtGYaSYehLvtBx8Ju6xK8LBFkgh230JCigmd8UEnVmdt+Q9lGzcDFswgoffD4wHsQlPpxl0lxzukaMgx0/ln/fzuaVNLD+Ng8KKYjbiYPDaJH/uiIKWj/B7NtVgfoGt.smxyxfhdxTg4DCVgmIFCRn3uTmITufh3HsXaVuqmgJPgKILSzoLi8AKIt3/0KecOhJC7rNnYf4H1RoDKFMcydFkxLWQoEBIXfkyUISiJvB4pTa0LWw4YyeA8SPYUzVIDzQRIUBGJbmejrZ2zEE022tFBdww3ztNmIdQs/Fx9VRAjMRjFmRp_new_key
ssh-ed25519 AAAAC3NzaC1l2DIIINTE5AABAIC7fMRp7CR+slhk8LWvP6QtKiv/B0fZaFcKhurf8GsuY root@master
```

- Change directory to /etc/ansible paste private IP of node instance. **The /etc/ansible/hosts file is the inventory file used by Ansible to define the servers (hosts) that Ansible will manage. It lists the IP addresses, domain names, or groups of hosts that you want to configure, deploy software to, or run commands on.**



```
172.31.44.153
# This is the default ansible 'hosts' file.
#
# It should live in /etc/ansible/hosts
#
# - Comments begin with the '#' character
# - Blank lines are ignored
# - Groups of hosts are delimited by [header] elements
# - You can enter hostnames or ip addresses
# - A hostname/ip can be a member of multiple groups
#
# Ex 1: Ungrouped hosts, specify before any group headers:
#
## green.example.com
## blue.example.com
## 192.168.100.1
## 192.168.100.10
#
# Ex 2: A collection of hosts belonging to the 'webservers' group:
#
## [webservers]
## alpha.example.org
## beta.example.org
## 192.168.1.100
## 192.168.1.110
#
# If you have multiple hosts following a pattern, you can specify
# them like this:
#
## www[001:006].example.com
#
# You can also use ranges for multiple hosts:
#
#hosts=SSL,1109B
```

- Ansible all -m ping this will ping all the hosts in inventory file

```
change the meaning of that path. see https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html
172.31.44.153 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3.12"
  },
  "changed": false,
  "ping": "pong"
}
root@master:~#
```

- vim playbook.yaml and paste yaml code in it - name: update and install and nginx

hosts: all

become: true

tasks:

- name: Upgrade all packages

apt:

name: '\*'

state: latest

- name: Install the latest version of nginx

apt:

name: nginx

state: latest

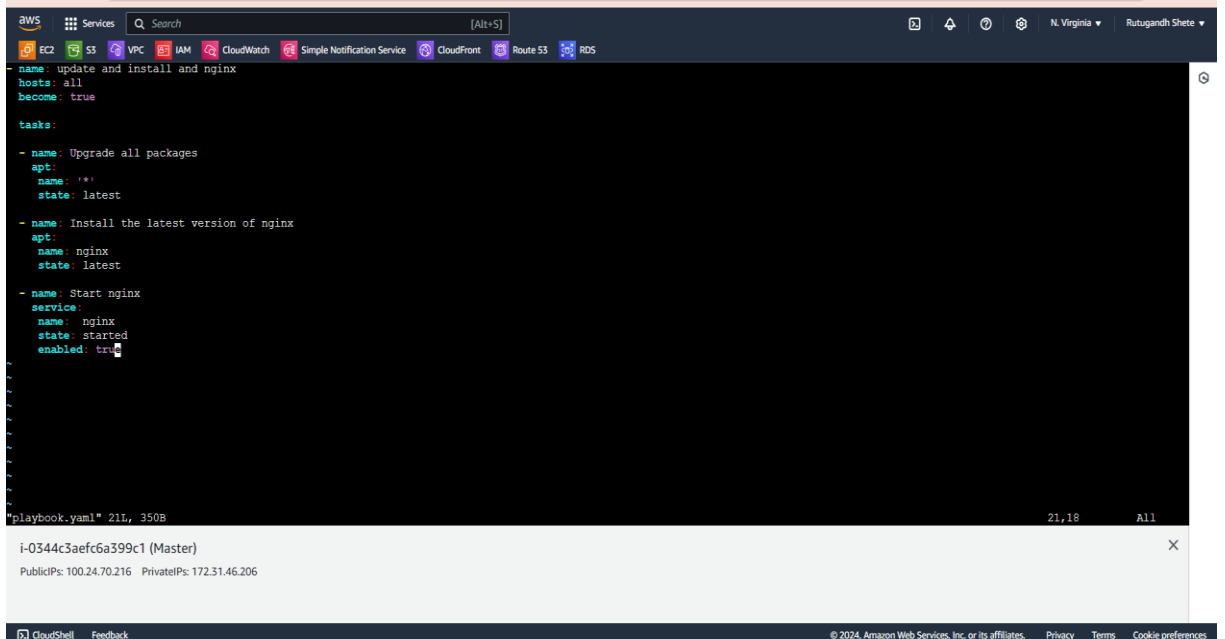
- name: Start nginx

service:

name: nginx

state: started

enabled: true



```
aws
Services
Q Search [Alt+S]
EC2 S3 VPC IAM CloudWatch Simple Notification Service CloudFront Route 53 RDS

- name: update and install and nginx
  hosts: all
  become: true

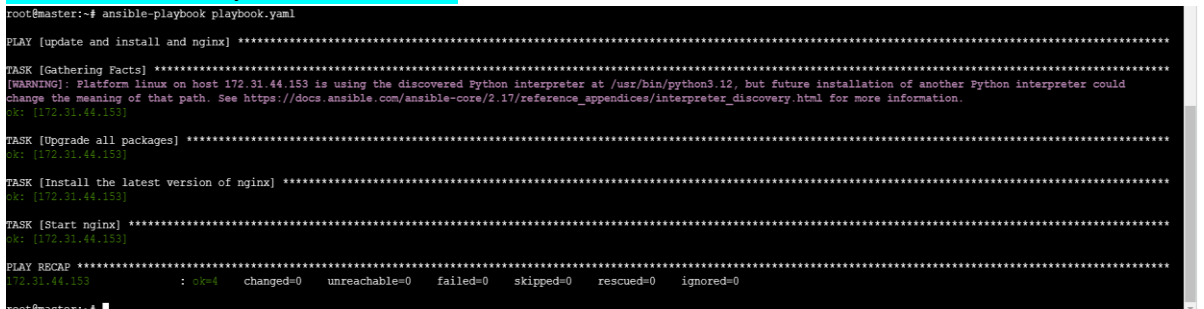
  tasks:
    - name: Upgrade all packages
      apt:
        name: '*'
        state: latest

    - name: Install the latest version of nginx
      apt:
        name: nginx
        state: latest

    - name: Start nginx
      service:
        name: nginx
        state: started
        enabled: true

"playbook.yml" 21L, 350B
21,18 All
i-0344c3aefc6a399c1 (Master)
PublicIPs: 100.24.70.216 PrivateIPs: 172.31.46.206
CloudShell Feedback
© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
```

- “ansible-playbook playbook.yml”. This runs an Ansible playbook called nginx.yml, which is typically used to configure a service, like setting up an Nginx web server on your instances.



```
root@master:~# ansible-playbook playbook.yml

PLAY [update and install and nginx] *****

TASK [Gathering Facts] *****
[WARNING]: Platform linux on host 172.31.44.153 is using the discovered Python interpreter at /usr/bin/python3.12, but future installation of another Python interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.44.153]

TASK [Upgrade all packages] *****
ok: [172.31.44.153]

TASK [Install the latest version of nginx] *****
ok: [172.31.44.153]

TASK [Start nginx] *****
ok: [172.31.44.153]

PLAY RECAP *****
172.31.44.153 : ok=4 changed=0 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

root@master:~#
```

## 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](https://nginx.org).  
Commercial support is available at [nginx.com](https://nginx.com).

*Thank you for using nginx.*