

A PROJECT REPORT ON
DEPLOYMENT OF WAR FILE INTO THE TOMCAT
COURSE
DEVOPS WITH AWS

Submitted By
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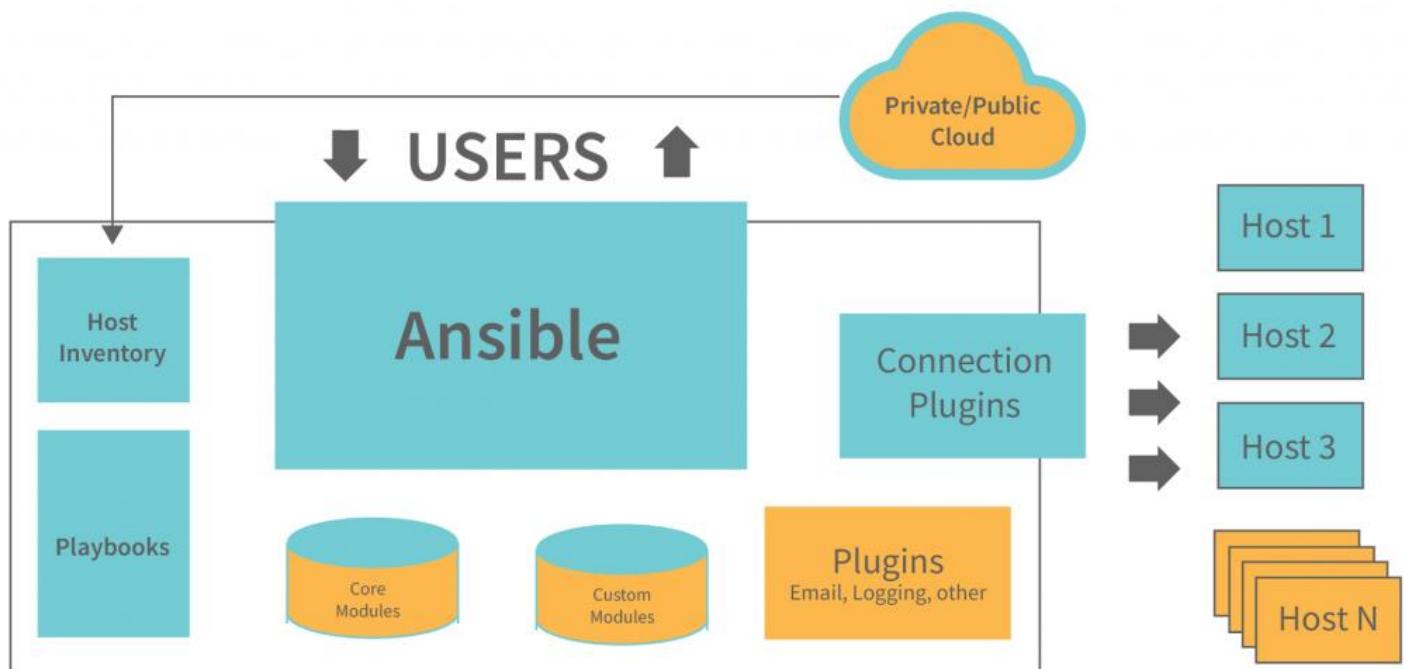
#201,2nd floor,Above Ageless Building,Beside Indian Bank Madhapur,Hyderabad-500081
Land Mark:Beside Karachi Bakery, lane, Hyderabad, Telangana 500081.

ANSIBLE:

Ansible is a software tool that provides simple but powerful automation for cross-platform computer support. It is primarily intended for IT professionals, who use it for application deployment, updates on workstations and servers, cloud provisioning, configuration management, intra-service orchestration, and nearly anything a systems administrator does on a weekly or daily basis. Ansible doesn't depend on agent software and has no additional security infrastructure, so it's easy to deploy.

Because Ansible is all about automation, it requires instructions to accomplish each job. With everything written down in simple script form, it's easy to do version control. The practical result of this is a major contribution to the "infrastructure as code" movement in IT: the idea that the maintenance of server and client infrastructure can and should be treated the same as software development, with repositories of self-documenting, proven, and executable solutions capable of running an organization regardless of staff changes.

While Ansible may be at the forefront of automation, systems administration, and DevOps, it's also useful to everyday users. Ansible allows you to configure not just one computer, but potentially a whole network of computers at once, and using it requires no programming skills. Instructions written for Ansible are human-readable. Whether you're entirely new to computers or an expert, Ansible files are easy to understand.



Configuration of Master and Node Instances:

Configuring a master and nodes in Ansible involves setting up the Ansible-master and configuring the Ansible-node to be managed by Ansible. Here's a step-by-step procedure for configuring the master and nodes:

1. Install Ansible on the Ansible-master:

Ensure that we have a machine designated as the Ansible-master. This is where we will run Ansible commands from.

2. Set Up SSH Key-Based Authentication: Ansible uses SSH to communicate with remote nodes. Ensure that you can SSH into the nodes without requiring a password by setting up SSH key-based authentication.
3. Test SSH Connection: Verify that Ansible can connect to the nodes using SSH.
4. Configure Ansible Inventory: The inventory file (host) defines the remote servers (nodes) that Ansible will manage. Create an inventory file, typically named host, and define the IP addresses.
5. Create Ansible Playbooks: Ansible playbooks are YAML files that define tasks to be executed on remote nodes.
6. Run Ansible Playbook: Execute the playbooks to configure the nodes.

- Create instances Ansible-master and Ansible-node.

The screenshot shows the AWS CloudShell interface with the following details:

- Launch an instance | EC2 | ap-south-1** is the active tab.
- What Is Ansible? | Opensource** is the second tab.
- Inbox (1,251) - ashok...**, **Essay on Distribut...**, **3**, **Gmail**, **YouTube**, and **Maps** are other tabs.
- Services** dropdown is open, showing **EC2**.
- Search** bar is present.
- [Alt+S]** keyboard shortcut is displayed.
- Mumbai** and **Ashok** are listed under user information.
- EC2 > Instances > Launch an instance** path is shown.
- Launch an instance** section:
 - Name and tags**: Name is set to **ansible**.
 - Application and OS Images (Amazon Machine Image)**: An AMI search bar is present.
 - Quick Start** button.
- Summary** section:
 - Number of instances**: Set to **2**.
 - Software Image (AMI)**: Amazon Linux 2 Kernel 5.10 AMI...read more
 - Virtual server type (instance type)**: t2.micro
 - Firewall (security group)**: New security group
 - Storage (volumes)**: 1 volume(s) - 8 GiB
- Free tier: In your first year** message with a close button.
- Launch instance** button.
- Review commands** link.
- CloudShell** and **Feedback** buttons.
- Type here to search** bar.
- System tray icons for battery, signal, and date/time (253 PM, 11/5/2023).
- Page footer: © 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences.

The screenshot shows the AWS Management Console with the EC2 service selected. The left sidebar lists various EC2-related options like Dashboard, Global View, Events, Instances, Images, and Elastic Block Store. The main content area displays the 'Instances' list with two items:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
ansible-master	i-0dd3cf711ec900450	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-3-110-31-12
ansible-node	i-02b42e85b65d2524c	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1a	ec2-13-232-249-

Below the list, a modal window titled 'Instances: i-02b42e85b65d2524c (ansible-node), i-0dd3cf711ec900450 (ansible-master)' is open, showing monitoring details for each instance.

- Pip -y (to install python)(dependency for ansible).

The screenshot shows the AWS CloudShell interface with the following command history:

```
[root@ip-172-31-46-33 ~]# yum install pip -y
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
Resolving Dependencies
--> Running transaction check
--> Package python2-pip.noarch 0:20.2.2-1.amzn2.0.4 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package           Arch      Version            Repository        Size
=====
Installing:
python2-pip       noarch   20.2.2-1.amzn2.0.4    amzn2-core      2.0 M

Transaction Summary
=====
Install 1 Package

Total download size: 2.0 M
Installed size: 9.5 M
Downloading packages:
python2-pip-20.2.2-1.amzn2.0.4.noarch.rpm
Running transaction check
Running transaction test
```

At the bottom, it shows the instance identifier and IP addresses:

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 3.110.31.126 PrivateIPs: 172.31.46.33

- Pip install ansible (to install ansible).

```
[root@ip-172-31-46-33 ~]# pip install ansible
DEPRECATION: Python 2.7 reached the end of its life on January 1st, 2020. Please upgrade your Python as Python 2.7 is no longer maintained. pip 21.0 will drop support for Python 2.7 in January 2021. More details about Python 2 support in pip can be found at https://pip.pypa.io/en/latest/development/release-process/#python-2-support
WARNING: Running pip install with root privileges is generally not a good idea. Try 'pip install --user' instead.
Collecting ansible
  Downloading ansible-4.10.0.tar.gz (36.8 MB)
    [██████████] 36.8 MB 381 kB/s
Collecting ansible-core==2.11.7
  Downloading ansible-core-2.11.12.tar.gz (7.1 MB)
    [██████████] 7.1 MB 30.4 MB/s
Requirement already satisfied: jinja2 in /usr/lib/python2.7/site-packages (from ansible-core==2.11.7->ansible) (2.7.2)
Requirement already satisfied: PyYAML in /usr/lib64/python2.7/site-packages (from ansible-core==2.11.7->ansible) (3.10)
Requirement already satisfied: cryptography in /usr/lib64/python2.7/site-packages (from ansible-core==2.11.7->ansible) (1.7.2)
Collecting packaging
  Downloading packaging-20.9-py2.py3-none-any.whl (40 kB)
    [██████████] 40 kB 8.0 MB/s
Collecting resolvelib<0.6.0,>=0.5.3
  Downloading resolvelib-0.5.4-py2.py3-none-any.whl (12 kB)
Requirement already satisfied: markupsafe in /usr/lib64/python2.7/site-packages (from jinja2->ansible-core==2.11.7->ansible) (0.11)
Requirement already satisfied: idna>=2.0 in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (2.4)
Requirement already satisfied: pyasn1>=0.1.8 in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (0.1.9)
Requirement already satisfied: six>=1.4.1 in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (1.11.0)
Requirement already satisfied: setuptools in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (41.2.0)
Requirement already satisfied: enum34 in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (1.0.4)
Requirement already satisfied: ipaddress in /usr/lib/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (1.0.16)
Requirement already satisfied: cffi>=1.4.1 in /usr/lib64/python2.7/site-packages (from cryptography->ansible-core==2.11.7->ansible) (1.6.0)

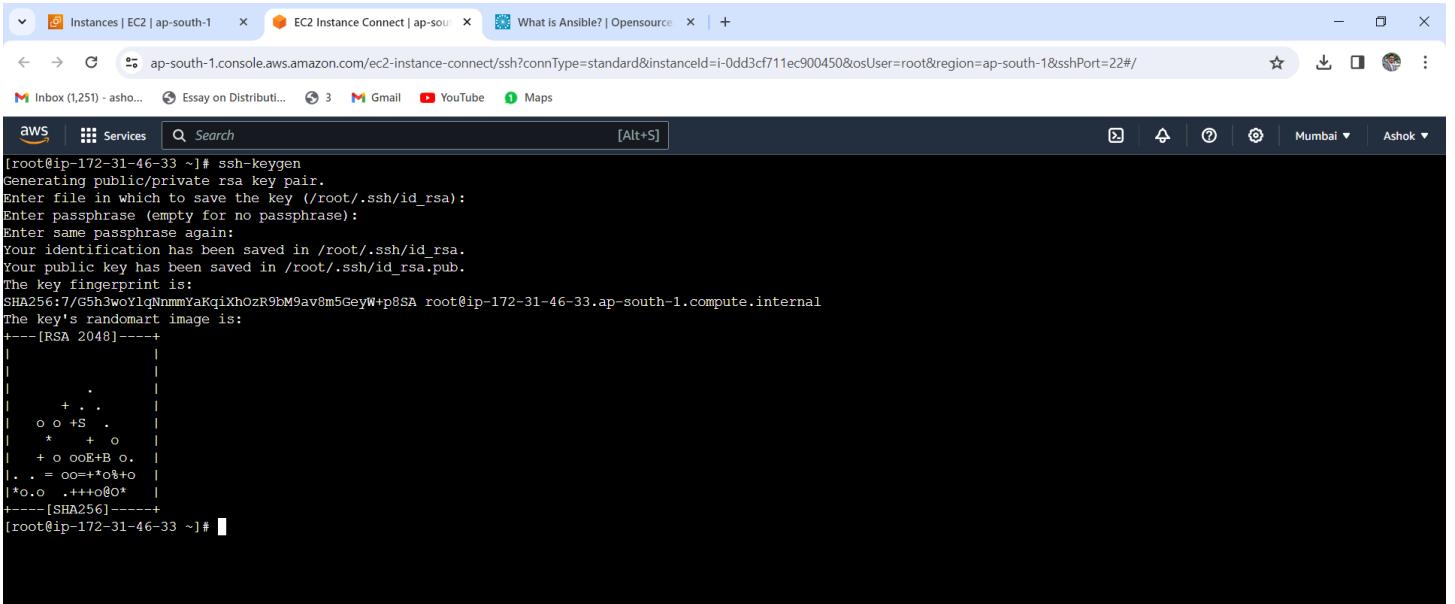
i-0dd3cf711ec900450 (ansible-master)
Public IPs: 3.110.31.126 Private IPs: 172.31.46.33
```

- Ansible –version (to check ansible version).

```
[root@ip-172-31-46-33 ~]# ansible --version
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03) [GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting deprecation_warnings=False in ansible.cfg.
ansible [core 2.11.12]
  config file = None
  configured module search path = [u'/root/.ansible/plugins/modules', u'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  ansible collection location = /root/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 2.7.18 (default, Oct 19 2023, 21:17:03) [GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]
  jinja version = 2.7.2
  libyaml = True

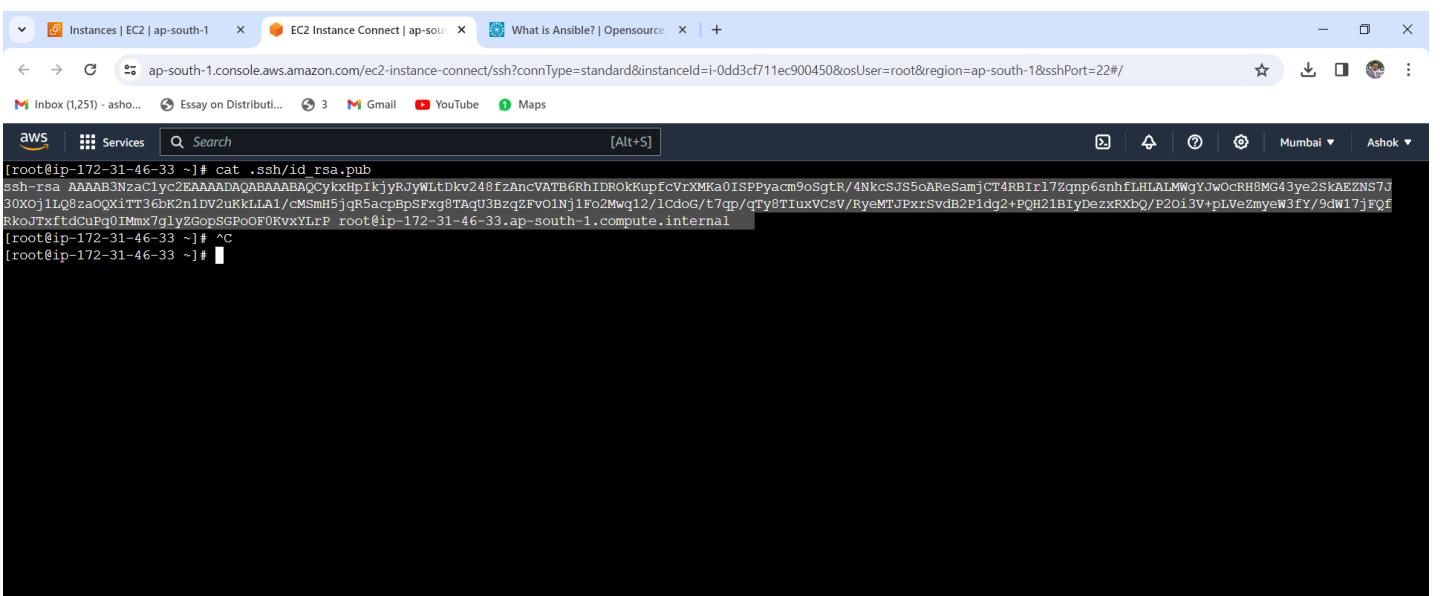
i-0dd3cf711ec900450 (ansible-master)
Public IPs: 3.110.31.126 Private IPs: 172.31.46.33
```

- Ssh-keygen (to generate public ip key)



```
[root@ip-172-31-46-33 ~]# ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:7/G5h3woYlQnmmYaKqiXhOzR9bM9av8m5GeyW+p8SA root@ip-172-31-46-33.ap-south-1.compute.internal
The key's randomart image is:
+---[RSA 2048]---+
| . . . . |
| . . . . |
| . . . . |
| . . . . |
| . . . . |
| . . . . |
| . . . . |
| . . . . |
| . . . . |
+---[SHA256]---+
[root@ip-172-31-46-33 ~]#
```

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 3.110.31.126 PrivateIPs: 172.31.46.33



```
[root@ip-172-31-46-33 ~]# cat .ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQCykxhp1kjyRjyWltDkv248fzAncVATB6Rh1DROKUpfcVrXMKa0ISPPyacm9oSgtR/4NkcSJ5oAReSamjCT4RB1r172qnp6snhfLHLALMWgYJwOCH8MG43ye2SkAEZNS7J3
30X0j1lQ8za0QX1iT36bk2n1DV2uKkL1A/cmSMfh5jq5acpbpSFxq8TaQu3BzqZFv0LN]1f02Mwq12/lCdoo/t7qp/qTy8TlxVCsV/RyeMTJpxSvdB2P1dg2+PQH21BiYdExzRXbQ/P20i3V+pLVeZmyeW3fY/9dw17jfQf
RkojTxxtdCuPg0IMmx7qlyZGopSGPoOF0KvxYLrP root@ip-172-31-46-33.ap-south-1.compute.internal
[root@ip-172-31-46-33 ~]# ^C
[root@ip-172-31-46-33 ~]#
```

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 3.110.31.126 PrivateIPs: 172.31.46.33

- In ansible-node add public ip key

```
[root@ip-172-31-32-254 ~]# vi .ssh/authorized_keys
```

i-02b42e85b65d2524c (ansible-node)
PublicIPs: 13.232.249.212 PrivateIPs: 172.31.32.254

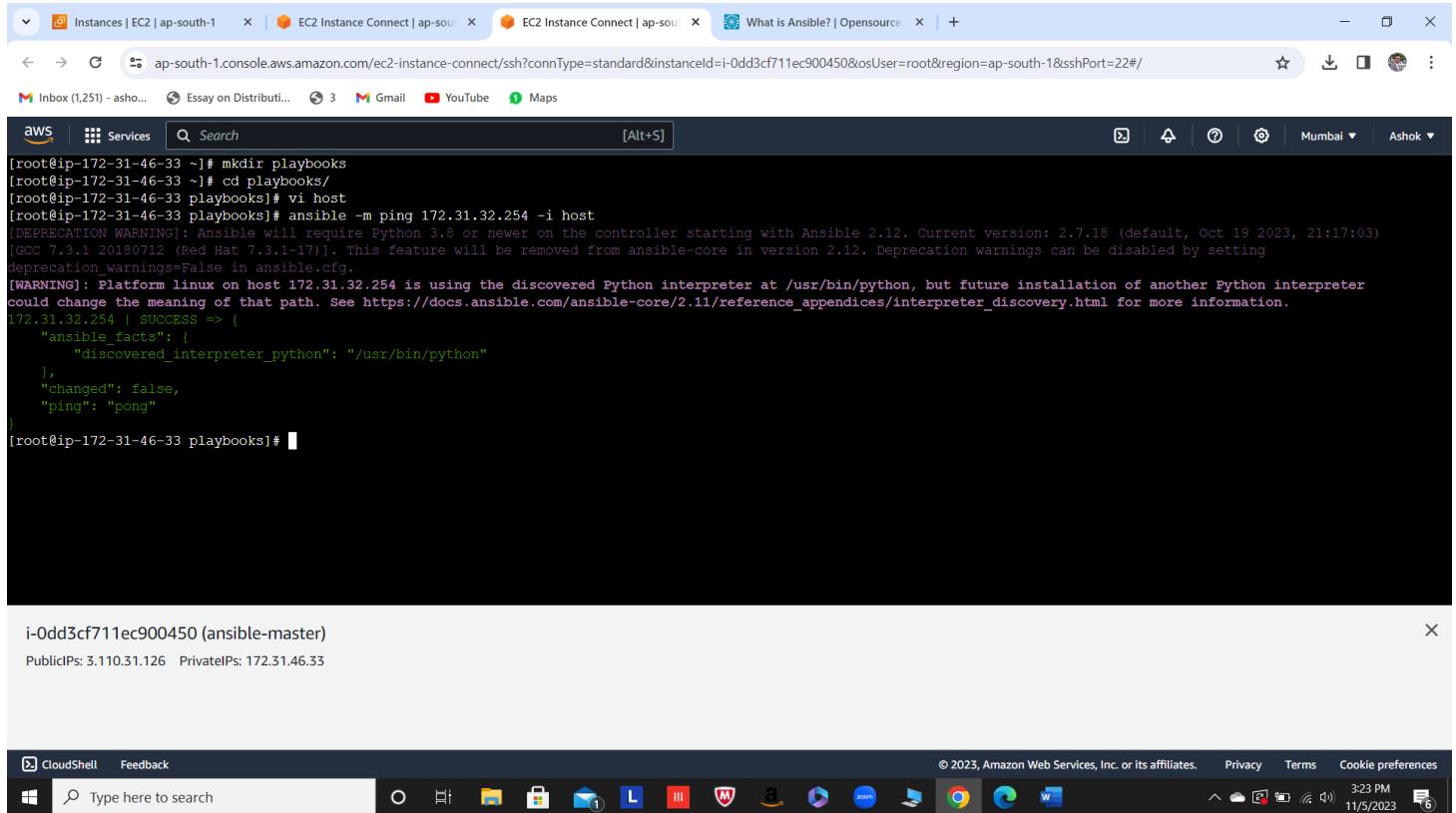
- Now check connection.

```
[root@ip-172-31-46-33 ~]# ssh root@172.31.32.254
The authenticity of host '172.31.32.254 (172.31.32.254)' can't be established.
ECDSA key fingerprint is SHA256:2PmU66PESGuGEvajRHiuCojewHl00gU45cdgh06ZzXs.
ECDSA key fingerprint is MD5:e9:d0:dd:47:3e:3c:d5:71:d5:ee:d7:6e:04:77:89:02.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '172.31.32.254' (ECDSA) to the list of known hosts.
Last login: Sun Nov  5 09:41:39 2023 from ec2-13-233-177-3.ap-south-1.compute.amazonaws.com
  #
```

```
[root@ip-172-31-32-254 ~]#
```

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 3.110.31.126 PrivateIPs: 172.31.46.33

- Create a playbooks directory.



The screenshot shows a browser window with multiple tabs open. The active tab is titled "Instances | EC2 | ap-south-1" and displays a terminal session on an AWS CloudShell instance. The terminal output shows the creation of a "playbooks" directory and a ping test to another host. The terminal prompt is "[root@ip-172-31-46-33 playbooks]#". The browser interface includes a search bar, a services menu, and various AWS service icons at the top. The bottom of the screen shows the Windows taskbar with pinned icons for File Explorer, Mail, Edge, and others.

```
[root@ip-172-31-46-33 ~]# mkdir playbooks
[root@ip-172-31-46-33 ~]# cd playbooks/
[root@ip-172-31-46-33 playbooks]# vi host
[root@ip-172-31-46-33 playbooks]# ansible -m ping 172.31.32.254 -i host
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
172.31.32.254 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python"
    },
    "changed": false,
    "ping": "pong"
}
[root@ip-172-31-46-33 playbooks]#
```

i-Odd3cf711ec900450 (ansible-master)
 Public IPs: 3.110.31.126 Private IPs: 172.31.46.33

1. Create a playbook to install git and maven.

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33



```
[root@ip-172-31-46-33 playbooks]# ls
deploy.yml gitclone.yml gitmaven.yml host maven-build.yml tomcat.yml
[root@ip-172-31-46-33 playbooks]# vi gitmaven.yml
[root@ip-172-31-46-33 playbooks]# ansible-playbook gitmaven.yml -i host
[DEPRECATION WARNING]: This playbook will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

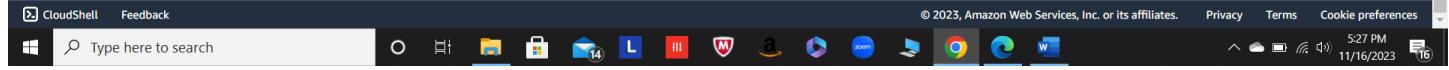
PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

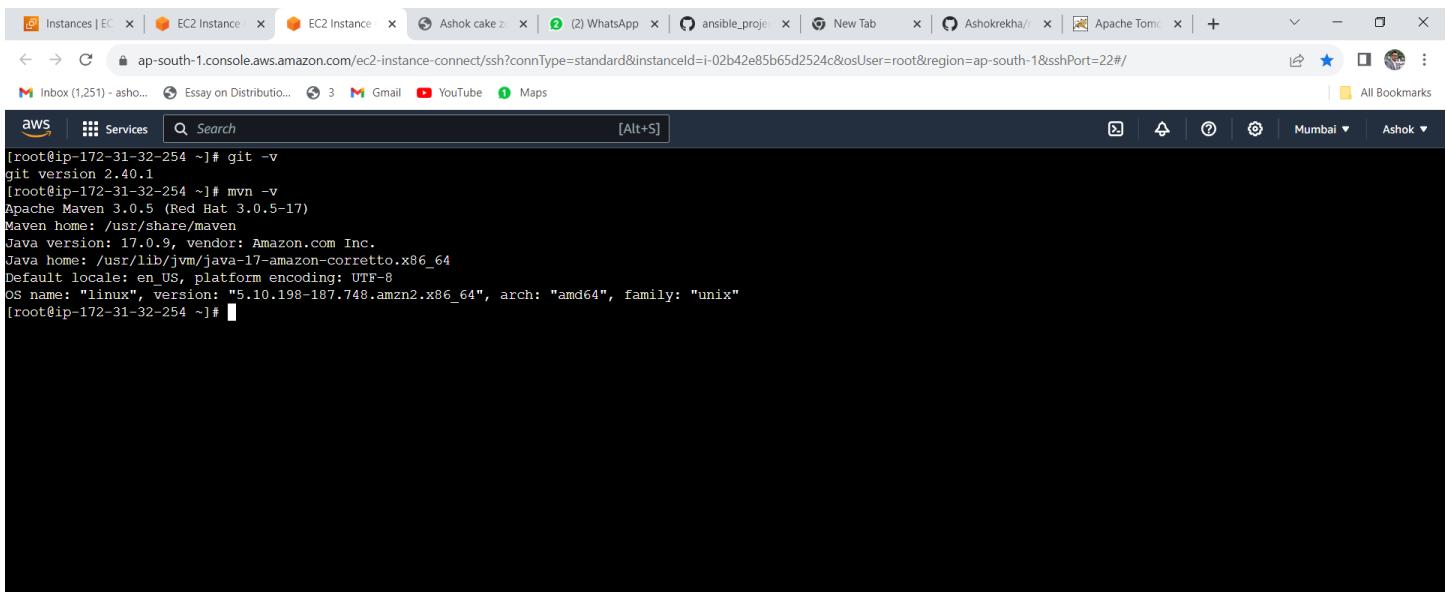
TASK [package installation] ****
ok: [172.31.32.254]

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

[root@ip-172-31-46-33 playbooks]#
```

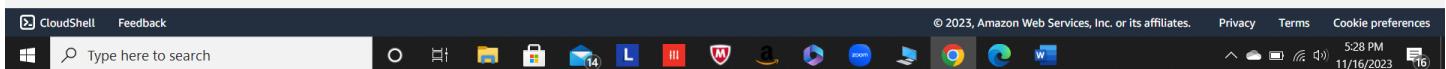
i-0dd3cf711ec900450 (ansible-master)
Public IPs: 65.1.114.142 Private IPs: 172.31.46.33





```
[root@ip-172-31-32-254 ~]# git -v
git version 2.40.1
[root@ip-172-31-32-254 ~]# mvn -v
Apache Maven 3.0.5 (Red Hat 3.0.5-17)
Maven home: /usr/share/maven
Java version: 17.0.9, vendor: Amazon.com Inc.
Java home: /usr/lib/jvm/java-17-amazon-corretto.x86_64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "5.10.198-187.748.amzn2.x86_64", arch: "amd64", family: "unix"
[root@ip-172-31-32-254 ~]#
```

i-02b42e85b65d2524c (ansible-node)
Public IPs: 35.154.122.136 Private IPs: 172.31.32.254



2. Create a playbook to install tomcat.

The screenshot shows a web browser window with multiple tabs open. The active tab displays an Ansible playbook for an EC2 instance. The playbook content is as follows:

```
hosts: all
user: root
become: yes
tasks:
  - name: install java
    yum:
      name: java
      state: present

  - name: directory creation
    file:
      path: /root/tomcat
      state: directory

  - name: download & unarchive tomcat9
    unarchive:
      src: https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.tar.gz
      dest: /root/tomcat
      remote_src: yes

  - name: Run Tomcat
    shell: nohup ./startup.sh
    args:
      chdir: /root/tomcat/apache-tomcat-9.0.83/bin
```

Below the playbook, the host information is listed:

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33

The screenshot shows a web browser window with multiple tabs open. The active tab displays an Ansible playbook for an EC2 instance. The playbook content is identical to the one in the previous screenshot:

```
hosts: all
user: root
become: yes
tasks:
  - name: install java
    yum:
      name: java
      state: present

  - name: directory creation
    file:
      path: /root/tomcat
      state: directory

  - name: download & unarchive tomcat9
    unarchive:
      src: https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.tar.gz
      dest: /root/tomcat
      remote_src: yes

  - name: Run Tomcat
    shell: nohup ./startup.sh
    args:
      chdir: /root/tomcat/apache-tomcat-9.0.83/bin
```

Below the playbook, the host information is listed:

i-0dd3cf711ec900450 (ansible-master)
PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33

```
[root@ip-172-31-46-33 playbooks]# vi tomcat.yml
[root@ip-172-31-46-33 playbooks]# ansible-playbook tomcat.yml -i host
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

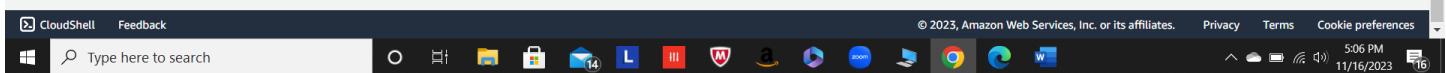
TASK [install java] ****
ok: [172.31.32.254]

TASK [directory creation] ****
ok: [172.31.32.254]

TASK [download & unarchive tomcat9] ****
ok: [172.31.32.254]

TASK [Run Tomcat] ****
changed: [172.31.32.254]

PLAY RECAP ****
i-0dd3cf711ec900450 (ansible-master)
Public IPs: 65.1.114.142 Private IPs: 172.31.46.33
```



```
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

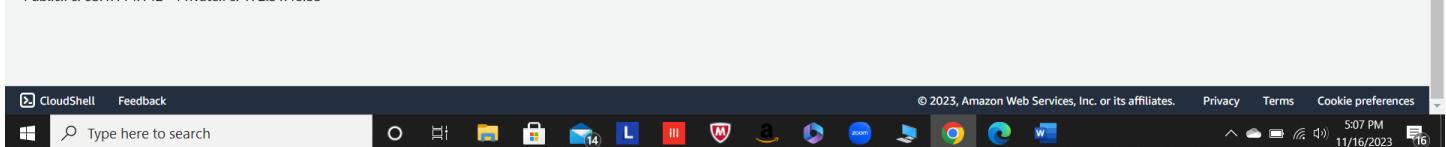
TASK [install java] ****
ok: [172.31.32.254]

TASK [directory creation] ****
ok: [172.31.32.254]

TASK [download & unarchive tomcat9] ****
ok: [172.31.32.254]

TASK [Run Tomcat] ****
changed: [172.31.32.254]

PLAY RECAP ****
172.31.32.254      : ok=5    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
[root@ip-172-31-46-33 playbooks]#
```



```

[root@ip-172-31-32-254 ~]# ls
live01 tomcat
[root@ip-172-31-32-254 ~]# cd tomcat
[root@ip-172-31-32-254 tomcat]# ls
apache-tomcat-9.0.83
[root@ip-172-31-32-254 tomcat]# cd apache-tomcat-9.0.83/
[root@ip-172-31-32-254 apache-tomcat-9.0.83]# systemctl status
● ip-172-31-32-254.ap-south-1.compute.internal
    State: running
      Jobs: 0 queued
     Failed: 0 units
    Since: Thu 2023-11-16 09:07:16 UTC; 2h 34min ago
   CGrou...
    └─1 /usr/lib/systemd/systemd --switched-root --system --deserialize 21
       ├─user.slice
       └─user-0.slice
          ├─session-33.scope
          │  └─26586 /usr/bin/java -Djava.util.logging.config.file=/root/tomcat/apache-tomcat-9.0.83/conf/logging.properties -Djava.util.logging.manager=org.apache.ju...
          ├─session-10.scope
          │  ├─2527 systemctl status
          │  ├─2528 systemctl status
          │  ├─25948 sshd: root@pts/0
          │  └─26348 -bash
       └─system.slice
          ├─rngd.service
          └─2656 /sbin/rngd -f --fill-watermark=0 --exclude=jitter

```

i-02b42e85b65d2524c (ansible-node)

Public IPs: 35.154.122.136 Private IPs: 172.31.32.254



Name	Security group rule...	IP version	Type	Protocol	Port range
-	sgr-0ace5cbf0f7b604fe	IPv4	SSH	TCP	22
-	sgr-0d28c065aed0752...	IPv4	Custom TCP	TCP	8080

Instances | EC | EC2 Instance | EC2 Instance | Apache Tomcat | (2) WhatsApp | ansible_project | New Tab | Ashokrekha/ | Apache Tomcat | +

Not secure | 35.154.122.136:8080

Inbox (1,251) - ash... Essay on Distributio... 3 Gmail YouTube Maps All Bookmarks

Apache Tomcat/9.0.83

If you're seeing this, you've successfully installed Tomcat. Congratulations!



Recommended Reading:
[Security Considerations How-To](#)
[Manager Application How-To](#)
[Clustering/Session Replication How-To](#)

Server Status
Manager App
Host Manager

Developer Quick Start

Tomcat Setup
First Web Application
Realms & AAA
JDBC DataSources
Examples
Servlet Specifications
Tomcat Versions

Managing Tomcat

For security, access to the [manager_webapp](#) is restricted. Users are defined in: `$CATALINA_HOME/conf/tomcat-users.xml`

In Tomcat 9.0 access to the manager application is split between different users. [Read more...](#)

[Release Notes](#)
[Changelog](#)
[Migration Guide](#)
[Security Notices](#)

Documentation

[Tomcat 9.0 Documentation](#)
[Tomcat 9.0 Configuration](#)
[Tomcat Wiki](#)

Find additional important configuration information in:
`$CATALINA_HOME/RUNNING.txt`

Developers may be interested in:
[Tomcat 9.0 Bug Database](#)
[Tomcat 9.0 JavaDocs](#)
[Tomcat 9.0 Git Repository at GitHub](#)

Getting Help

[FAQ and Mailing Lists](#)

The following mailing lists are available:

tomcat-announce
Important announcements, releases, security vulnerability notifications. (Low volume).

tomcat-users
User support and discussion

taglibs-user
User support and discussion for [Apache Taglibs](#)

tomcat-dev
Development mailing list, including commit messages



3. Create a playbook to clone or pull the code from git hub.

The screenshot shows a browser window with multiple tabs open. The active tab displays an Ansible playbook named 'gitclone.yml'. The code in the playbook is as follows:

```
hosts: all
user: root
become: yes
tasks:
- name: Clone a github repository
  git:
    repo: https://github.com/Ashokrekha/live01.git
    dest: /root/live01/
    clone: yes
    update: yes
```

Below the code, it says "gitclone.yml" 12L, 235B. At the bottom of the browser window, there is a message: "i-0dd3cf711ec900450 (ansible-master) PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33".

The screenshot shows a browser window with multiple tabs open. The active tab displays the output of an Ansible playbook run on an EC2 instance. The command run was "ansible-playbook gitclone.yml -i host". The output shows the playbook's tasks being executed:

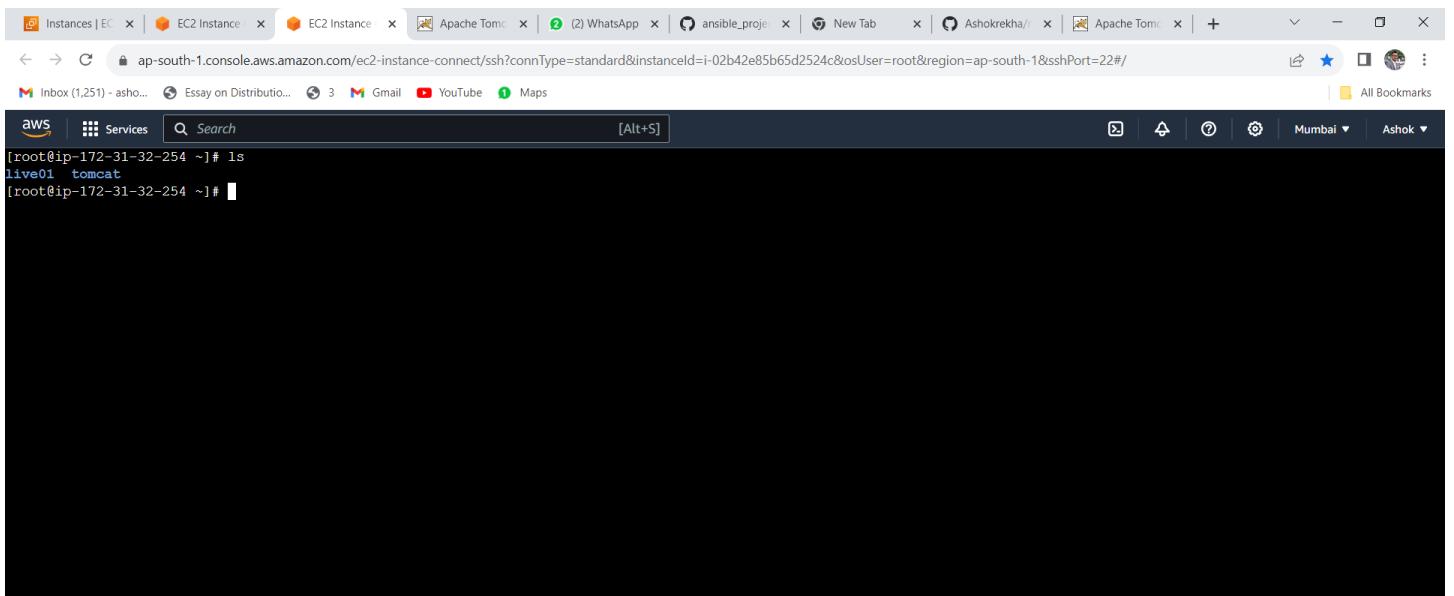
```
[root@ip-172-31-46-33 playbooks]# ls
deploy.yml  gitclone.yml  gitmaven.yml  host  maven-build.yml  tomcat.yml
[root@ip-172-31-46-33 playbooks]# vi gitclone.yml
[root@ip-172-31-46-33 playbooks]# vi gitclone.yml
[root@ip-172-31-46-33 playbooks]# ansible-playbook gitclone.yml -i host
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

TASK [Clone a github repository] ****
ok: [172.31.32.254]

PLAY RECAP ****
172.31.32.254      : ok=2    changed=0    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

At the bottom of the browser window, there is a message: "i-0dd3cf711ec900450 (ansible-master) PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33".

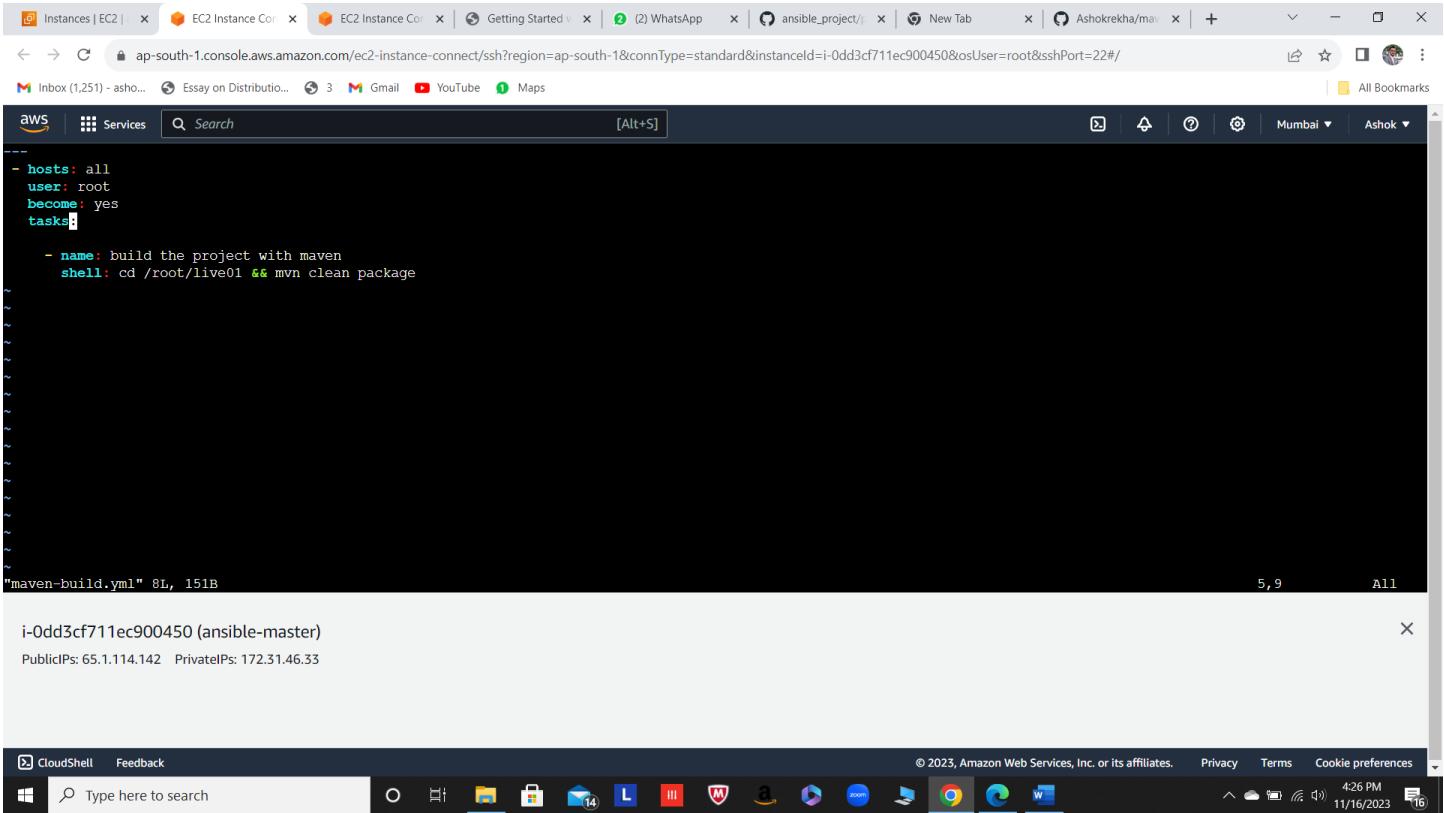


```
[root@ip-172-31-32-254 ~]# ls
live01  tomcat
[root@ip-172-31-32-254 ~]#
```

i-02b42e85b65d2524c (ansible-node)
Public IPs: 35.154.122.136 Private IPs: 172.31.32.254



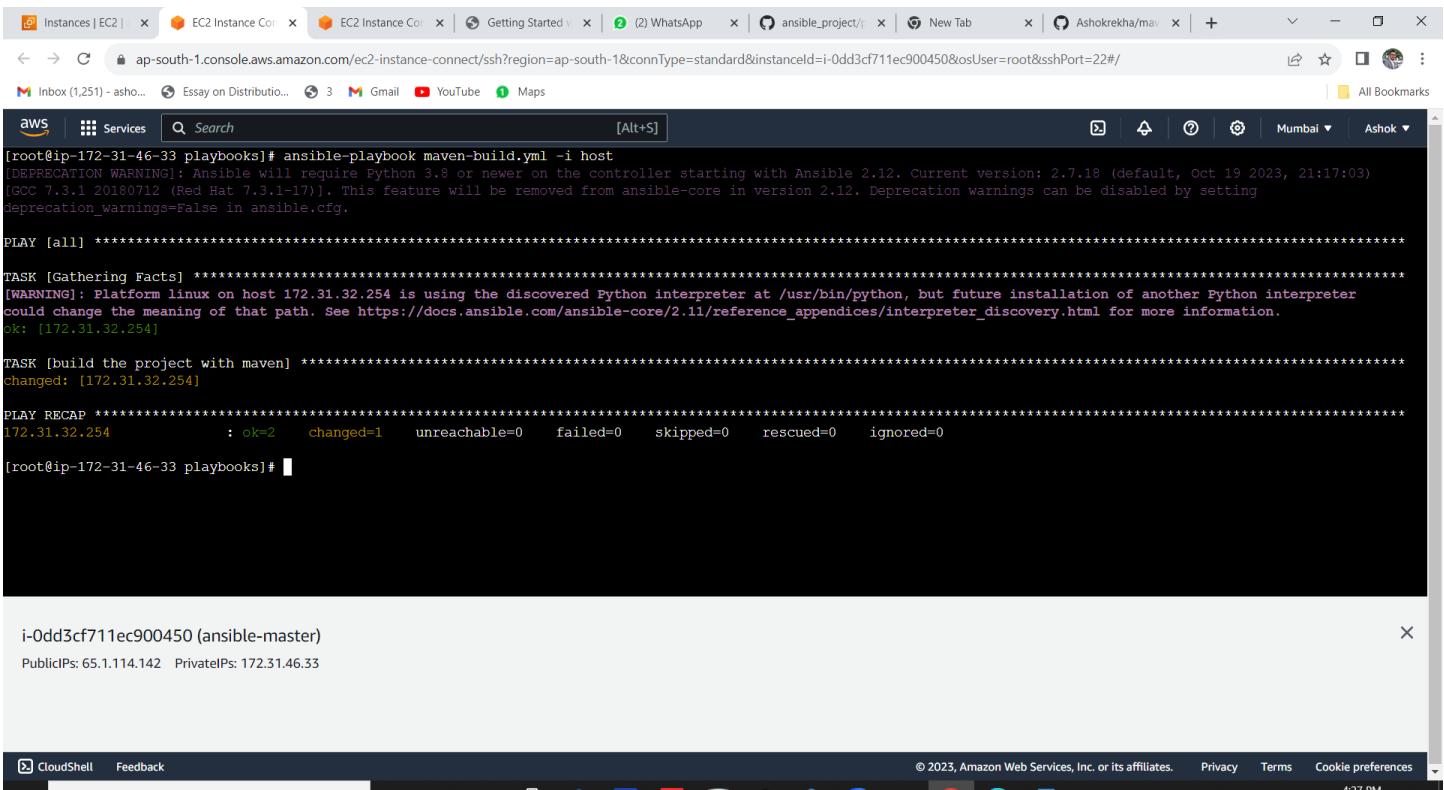
4. Create a playbook to build the code using maven.



The screenshot shows a web browser window with multiple tabs open. The active tab displays an Ansible playbook named 'maven-build.yml'. The code in the playbook is as follows:

```
hosts: all
user: root
become: yes
tasks:
  - name: build the project with maven
    shell: cd /root/live01 && mvn clean package
```

Below the code, it says "maven-build.yml" 8L, 151B. The status bar at the bottom indicates PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33.



The screenshot shows a web browser window with multiple tabs open. The active tab displays the output of running the Ansible playbook 'maven-build.yml' on a host. The output shows:

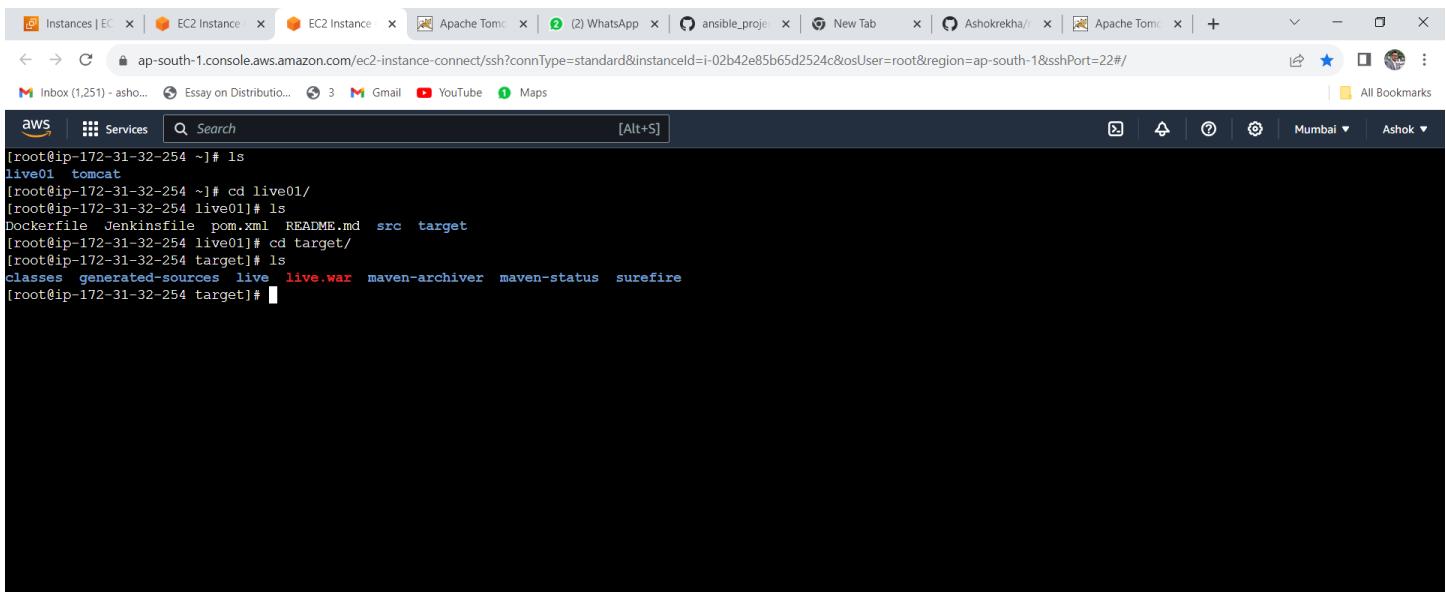
```
[root@ip-172-31-46-33 playbooks]# ansible-playbook maven-build.yml -i host
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

TASK [build the project with maven] ****
changed: [172.31.32.254]

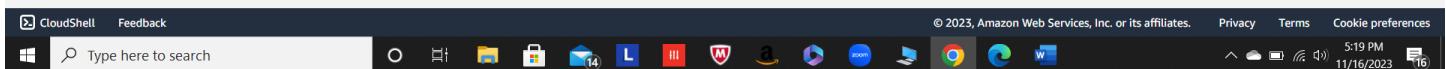
PLAY RECAP ****
172.31.32.254 : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
[root@ip-172-31-46-33 playbooks]#
```

Below the terminal output, it says "i-0dd3cf711ec900450 (ansible-master)" and "PublicIPs: 65.1.114.142 PrivateIPs: 172.31.46.33".



```
[root@ip-172-31-32-254 ~]# ls
live01  tomcat
[root@ip-172-31-32-254 ~]# cd live01/
[root@ip-172-31-32-254 live01]# ls
Dockerfile Jenkinsfile pom.xml README.md  src  target
[root@ip-172-31-32-254 live01]# cd target/
[root@ip-172-31-32-254 target]# ls
classes  generated-sources  live  live.war  maven-archiver  maven-status  surefire
[root@ip-172-31-32-254 target]#
```

i-02b42e85b65d2524c (ansible-node)
Public IPs: 35.154.122.136 Private IPs: 172.31.32.254



5. Create a playbook to deploy the war file into tomcat.



The screenshot shows a browser window with multiple tabs open, including EC2 Instance, Apache Tomcat, WhatsApp, ansible_project, New Tab, and Ashokrekha/. The address bar shows a URL related to an AWS Lambda function deployment. The main content area displays the deployment log for a file named "deploy.yml".

```
---  
hosts: all  
user: root  
become: yes  
tasks:  
- name: copy the WAR file to tomcat webapps directory  
copy:  
  src: /root/live01/target/live.war  
  dest: /root/tomcat/apache-tomcat-9.0.83/webapps/  
  remote_src: yes
```



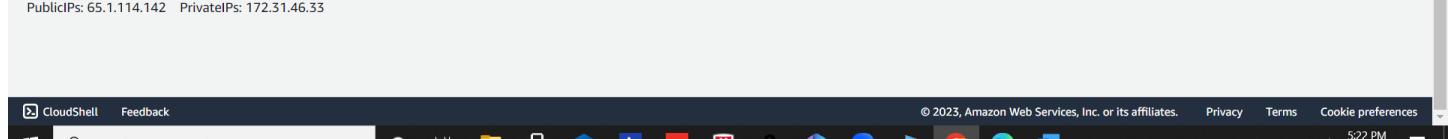
```
[root@ip-172-31-46-33 playbooks]# ls
deploy.yml gitclone.yml gitmaven.yml host maven-build.yml tomcat.yml
[root@ip-172-31-46-33 playbooks]# vi deploy.yml
[root@ip-172-31-46-33 playbooks]# ansible-playbook deploy.yml -i host
[DEPRECATION WARNING]: Ansible will require Python 3.8 or newer on the controller starting with Ansible 2.12. Current version: 2.7.18 (default, Oct 19 2023, 21:17:03)
[GCC 7.3.1 20180712 (Red Hat 7.3.1-17)]. This feature will be removed from ansible-core in version 2.12. Deprecation warnings can be disabled by setting
deprecation_warnings=False in ansible.cfg.

PLAY [all] ****
TASK [Gathering Facts] ****
[WARNING]: Platform linux on host 172.31.32.254 is using the discovered Python interpreter at /usr/bin/python, but future installation of another Python interpreter
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.11/reference_appendices/interpreter_discovery.html for more information.
ok: [172.31.32.254]

TASK [copy the WAR file to tomcat webapps directory] ****
ok: [172.31.32.254]

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

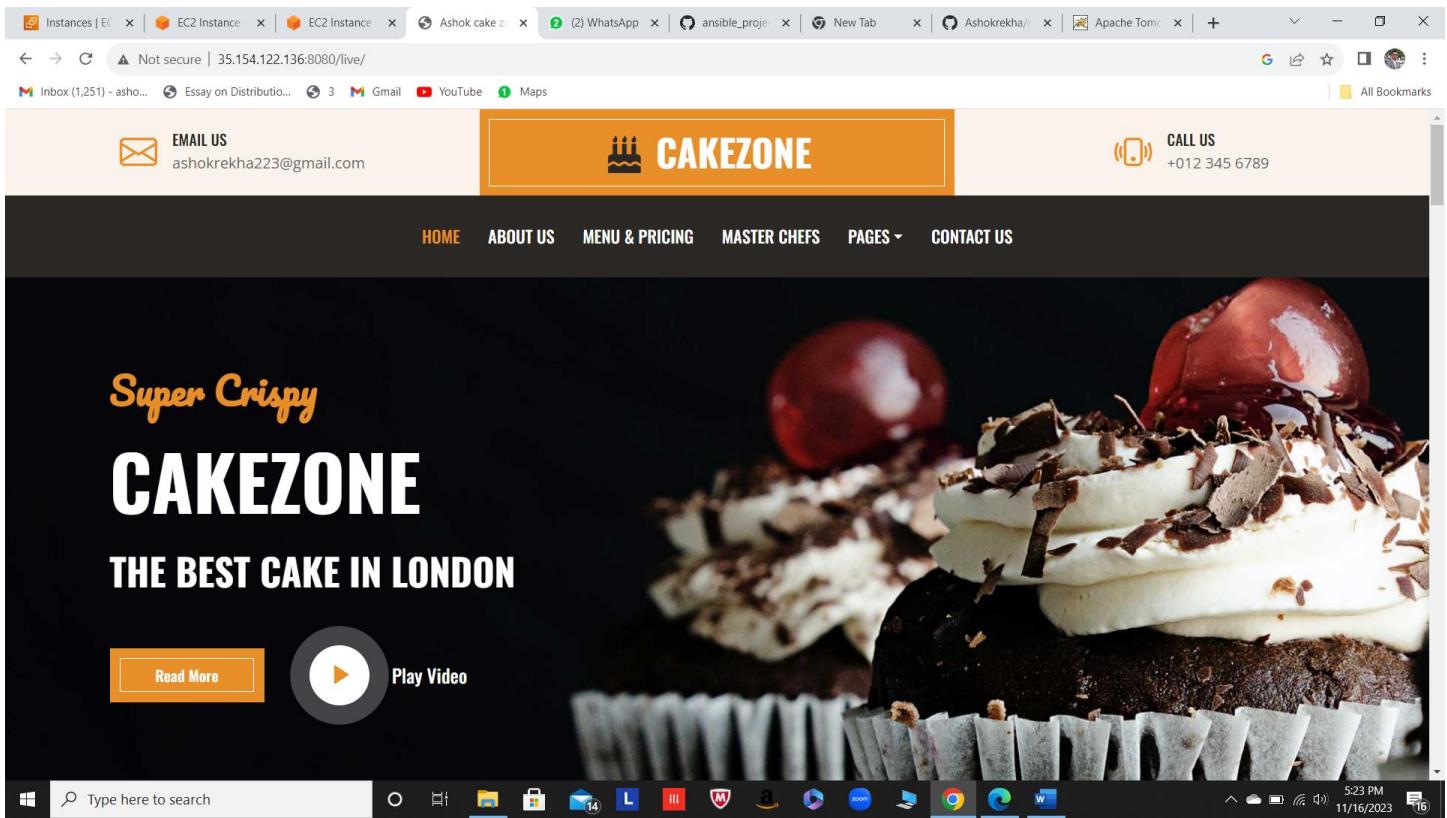
[root@ip-172-31-46-33 playbooks]#
```



```
[root@ip-172-31-32-254 ~]# ls
live01 tomcat
[root@ip-172-31-32-254 ~]# cd tomcat
[root@ip-172-31-32-254 tomcat]# ls
apache-tomcat-9.0.83
[root@ip-172-31-32-254 tomcat]# cd apache-tomcat-9.0.83/
[root@ip-172-31-32-254 apache-tomcat-9.0.83]# ls
bin BUILDING.txt conf CONTRIBUTING.md lib LICENSE logs NOTICE README.md RELEASE-NOTES RUNNING.txt temp webapps work
[root@ip-172-31-32-254 apache-tomcat-9.0.83]# cd webapps/
[root@ip-172-31-32-254 webapps]# ls
docs examples host-manager live live.war manager ROOT
[root@ip-172-31-32-254 webapps]#
```

i-02b42e85b65d2524c (ansible-node)

Public IPs: 35.154.122.136 Private IPs: 172.31.32.254



Ansible Use Cases:

- **Provisioning:** Provisioning is creating new infrastructure. Ansible allows for application management, deployment, orchestration, and configuration management.
- **Continuous Delivery:** Ansible provides a simpler way to automatically deploy applications. All required services for a deployment can be configured from a single system. Continuous Integration (CI) tool can be used to run Ansible playbook which can be used to test and automatically deploy the application to production if tests are passed.
- **Application Deployment:** Ansible provides a simpler way to deploy applications across the infrastructure. Deployment of multi-tier applications can be simplified and the infrastructure can be easily changed over time.
- **Ansible for Cloud Computing:** Ansible makes it easy to provision instances across all cloud providers. Ansible contains multiple modules and allows to manage of large cloud infrastructure across the public-private and hybrid cloud.
- **Ansible for Security and Compliance:** You can define security policies in Ansible which will automate security policy across all machines in the network. Security roles once configured in an Ansible node will be embedded across all machines in the network automatically.

Conclusion:

Ansible is an open-source tool for provisioning, application deployment, configuration management. It enables Infrastructure as code (IaC). Ansible runs on Unix systems but it can be used to configure Windows as well as Linux. Ansible scripts are called Playbooks which consist of various modules. Ansible is an excellent tool to save time, money, and effort to automate tasks across multiple servers. Learning how to use Ansible to automate IT tasks is valuable to your Career and Organization.