

Module 5 Configuration Management with Ansible

Steps to Accomplish the Task: Create separate roles for setting up Apache Tomcat and Apache Maven

1. Install and Set Up Ansible.

```
root@ansible-controller:/etc/ansible# ansible --version
ansible [core 2.12.10]
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /root/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.8.10 (default, Nov 7 2024, 13:10:47) [GCC 9.4.0]
  jinja version = 2.10.1
  libyaml = True
root@ansible-controller:/etc/ansible#
```

2. Set Up Ansible node with user devops.

```
$ whoami
devops
$
```

3. Check SSH connectivity with ansible controller and node.

```
root@ansible-controller:/etc/ansible# vi ansible.cfg
root@ansible-controller:/etc/ansible# ansible all -m ping
35.188.33.101 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
root@ansible-controller:/etc/ansible#
```

4. **Create Separate Roles:** Created separate roles for setting up Apache Tomcat and Apache Maven using Ansible's role structure. Each role will have its own directory structure containing tasks, handlers, files, etc.

```
root@ansible-controller:/etc/ansible# cd roles/
root@ansible-controller:/etc/ansible/roles# ls -ltr
total 8
drwxr-xr-x 4 root root 4096 Dec 22 06:40 tomcat
drwxr-xr-x 4 root root 4096 Dec 22 06:42 maven
root@ansible-controller:/etc/ansible/roles#
```

5. **Develop Role Logic:** Written the necessary tasks in the tasks/main.yml file for both roles to handle the setup of Apache Tomcat and Maven.

1. **Tomcat:**

```
drwxr-xr-x 4 root root 4096 Dec 22 06:40 tomcat
drwxr-xr-x 4 root root 4096 Dec 22 06:42 maven
root@ansible-controller:/etc/ansible/roles# cd tomcat/
root@ansible-controller:/etc/ansible/roles/tomcat# ls
tasks  templates
root@ansible-controller:/etc/ansible/roles/tomcat# cd t
-bash: cd: t: No such file or directory
root@ansible-controller:/etc/ansible/roles/tomcat# cd tasks/
root@ansible-controller:/etc/ansible/roles/tomcat/tasks# cat main.yml
---
- name: Install Java (required for Tomcat)
  apt:
    name: openjdk-11-jdk
    state: present
    update_cache: yes

- name: Download Apache Tomcat
  get_url:
    url: "https://downloads.apache.org/tomcat/tomcat-9/v9.0.72/bin/apache-tomcat-9.0.72.tar.gz"
    dest: /tmp/apache-tomcat.tar.gz

- name: Extract Apache Tomcat
  unarchive:
    src: /tmp/apache-tomcat.tar.gz
    dest: /opt/
    remote_src: yes

- name: Set permissions for Tomcat
  file:
    path: /opt/apache-tomcat-9.0.72
    owner: tomcat
    group: tomcat
```

```
root@ansible-controller:/etc/ansible/roles/tomcat# ls
tasks  templates
root@ansible-controller:/etc/ansible/roles/tomcat# cd templates/
root@ansible-controller:/etc/ansible/roles/tomcat/templates# ls
tomcat.service.j2
root@ansible-controller:/etc/ansible/roles/tomcat/templates# cat tomcat.service.j2
[Unit]
Description=Apache Tomcat Web Server
After=network.target

[Service]
Type=forking
User=tomcat
Group=tomcat
ExecStart=/opt/apache-tomcat-9.0.72/bin/startup.sh
ExecStop=/opt/apache-tomcat-9.0.72/bin/shutdown.sh
Restart=always

[Install]
WantedBy=multi-user.target
```

2. Maven:

```
root@ansible-controller:/etc/ansible# ls
ansible.cfg  hosts  playbook.yml  roles
root@ansible-controller:/etc/ansible# cd roles/
root@ansible-controller:/etc/ansible/roles# cd maven/
root@ansible-controller:/etc/ansible/roles/maven# ls
tasks  templates
root@ansible-controller:/etc/ansible/roles/maven# cd tasks/
root@ansible-controller:/etc/ansible/roles/maven/tasks# cat main.yml
---
- name: Install Java (required for Maven)
  apt:
    name: openjdk-11-jdk
    state: present
    update_cache: yes

- name: Download Apache Maven
  get_url:
    url: "https://downloads.apache.org/maven/maven-3/3.9.5/binaries/apache-maven-3.9.5-bin.tar.gz"
    dest: /tmp/apache-maven.tar.gz

- name: Extract Apache Maven
  unarchive:
    src: /tmp/apache-maven.tar.gz
    dest: /opt/
    remote_src: yes

- name: Set up Maven environment variables
  template:
    src: maven_env.sh.j2
    dest: /etc/profile.d/maven.sh
    mode: 0755
```

```
root@ansible-controller:/etc/ansible/roles/maven/tasks# cd ..
root@ansible-controller:/etc/ansible/roles/maven# ls
tasks  templates
root@ansible-controller:/etc/ansible/roles/maven# cd templates/
root@ansible-controller:/etc/ansible/roles/maven/templates# ls
maven_env.sh.j2
root@ansible-controller:/etc/ansible/roles/maven/templates# cat maven_env.sh.j2
export M2_HOME=/opt/apache-maven-3.9.5
export PATH=$M2_HOME/bin:$PATH

root@ansible-controller:/etc/ansible/roles/maven/templates#
```

6. Created a New Playbook: Created a playbook that includes both roles and applies them to all hosts.

```
root@ansible-controller:/etc/ansible# ls
ansible.cfg  hosts  playbook.yml  roles
root@ansible-controller:/etc/ansible# vi playbook.yml
root@ansible-controller:/etc/ansible# cat playbook.yml
---
- name: Provision Production Environment
  hosts: all
  become: yes
  roles:
    - tomcat
    - maven

root@ansible-controller:/etc/ansible#
```

7. Execute the Playbook: Used the ansible-playbook command to execute the playbook on all defined hosts.

```
root@acontroller:/etc/ansible# ansible-playbook playbook.yml --extra-vars "action=install"
[WARNING]: Found variable using reserved name: action
```

```
PLAY [Setup Production Environment] *****
```

```
TASK [Gathering Facts] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : create a file task in main.yml] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : config users] *****
included: /etc/ansible/roles/tomcat/tasks/configure-user.yml for 34.31.59.116
```

```
TASK [tomcat : add group "tomcat"] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : add user "tomcat"] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : install tomcat] *****
included: /etc/ansible/roles/tomcat/tasks/install-tomcat.yml for 34.31.59.116
```

```
TASK [tomcat : copy Tomcat tar file] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : Extract archive] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : create Symlink] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : Change ownership of Tomcat installation] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : create tomcat.service file] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : create tomcat service] *****
ok: [34.31.59.116]
```

```
TASK [tomcat : enable & start tomcat service] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : create app dir] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : deploy app] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : deploy app] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : configure app props] *****
changed: [34.31.59.116]
```

```
TASK [tomcat : uninstall tomcat] *****
skipping: [34.31.59.116]
```

```
RUNNING HANDLER [tomcat : restart tomcat] *****
changed: [34.31.59.116]
```

```
PLAY RECAP *****
34.31.59.116      : ok=17   changed=9   unreachable=0   failed=0   skipped=1   rescued=0
ignored=0
```

```
root@acontroller:/etc/ansible#
```


Here is there result on node server/remote hosts

```
root@node1:/opt/tomcat# systemctl status tomcat
Warning: The unit file, source configuration file or drop-ins of tomcat.service changed on disk. Run
● tomcat.service - Tomcat - instance
   Loaded: loaded (/etc/systemd/system/tomcat.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2024-12-22 13:23:14 UTC; 2min 50s ago
   Process: 4955 ExecStart=/opt/tomcat/bin/startup.sh (code=exited, status=0/SUCCESS)
  Main PID: 4965 (java)
    Tasks: 36 (limit: 4680)
   Memory: 140.3M
   CGroup: /system.slice/tomcat.service
           └─4965 /usr/bin/java -Djava.util.logging.config.file=/opt/tomcat//conf/logging.properties

Dec 22 13:23:14 node1 systemd[1]: Starting Tomcat - instance ...
Dec 22 13:23:14 node1 startup.sh[4955]: Tomcat started.
Dec 22 13:23:14 node1 systemd[1]: Started Tomcat - instance .
lines 1-14/14 (END)
```


Not secure 34.31.59.116:8080

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Apache Tomcat/8.5.53

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

Managing Tomcat
Documentation
Getting Help