Module 5: Configuration Management with Ansible

Case Study Solution

Problem Statement

Rashford assoc. are having trouble provisioning their server environment because of the inconsistencies caused by the new update. They have Hired Marcus to solve their problems related to managing servers. Marcus, after researching, introduced Ansible to the system. Now, he needs to provision the production environment for the upcoming update of their software.

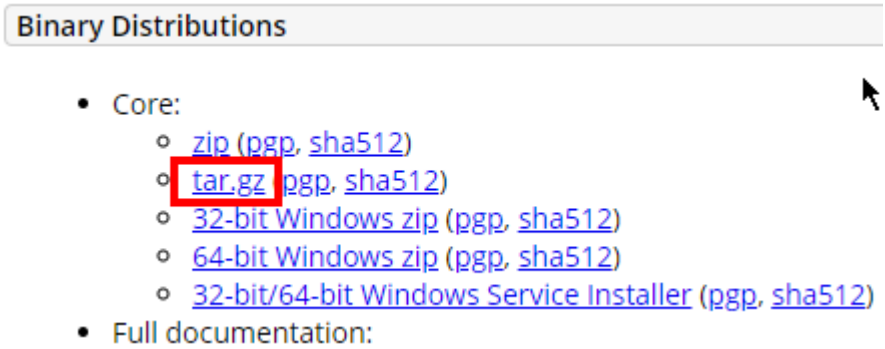
Action Items

- Create separate roles for setting up Apache Tomcat and Apache Maven
- Add the necessary logic to the roles to set up the tools
- Create a new playbook and call Tomcat as well as Maven roles inside it
- Execute the playbook on all the hosts

Commands to install Tomcat and Maven

Apache Tomcat:

1. sudo apt-get update
2. sudo apt-get install default-jdk
3. sudo groupadd tomcat
4. sudo useradd -s /bin/false -g tomcat -d /opt/tomcat tomcat
5. Copy the tar.gz link from the Following link and use it in the given command:
   https://tomcat.apache.org/download-80.cgi



   curl -O <tar file link>
6. sudo mkdir /opt/tomcat
7. sudo tar xzvf apache-tomcat-8*tar.gz -C /opt/tomcat --strip-components=1
8. sudo mkdir /opt/tomcat
9. cd /opt/tomcat
10. sudo chgrp -R tomcat /opt/tomcat
11. sudo chmod -R g+r conf
12. sudo chmod g+x conf
13. sudo chown -R tomcat webapps/ work/ temp/ logs/

14. Add this code to /etc/systemd/system/tomcat.service

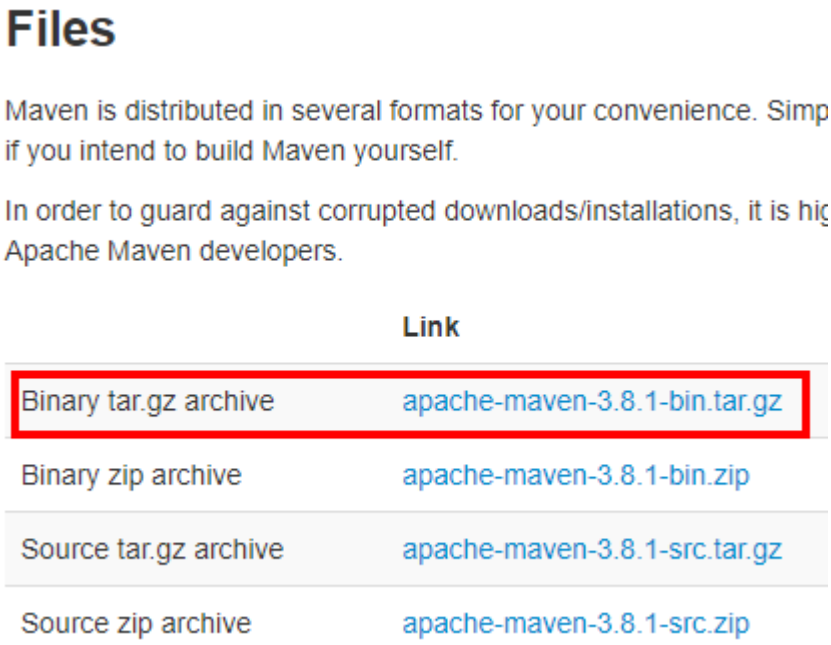
```
[Unit]
Description=Apache Tomcat Web Application Container
After=network.targetd

[Service]
Type=forking

Environment=JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-amd64/jre
Environment=CATALINA_PID=/opt/tomcat/temp/tomcat.pid
Environment=CATALINA_HOME=/opt/tomcat
Environment=CATALINA_BASE=/opt/tomcat
Environment='CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:+UseParallelGC'
Environment='JAVA_OPTS=-Djava.awt.headless=true -
Djava.security.egd=file:/dev/./urandom'

ExecStart=/opt/tomcat/bin/startup.sh
ExecStop=/opt/tomcat/bin/shutdown.sh

User=tomcat
Group=tomcat
UMask=0007
RestartSec=10
Restart=always

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

15. sudo systemctl daemon-reload
16. sudo systemctl start tomcat

Apache Maven:

1. sudo apt install -y python-software-properties
2. sudo add-apt-repository ppa:webupd8team/java
3. sudo apt update
4. sudo apt-get install default-jdk

5. Copy the tar.gz link from the Following link and use it in the given command: https://maven.apache.org/download.cgi



Files

Maven is distributed in several formats for your convenience. Simp
if you intend to build Maven yourself.

In order to guard against corrupted downloads/installations, it is hig
Apache Maven developers.

	Link
Binary tar.gz archive	apache-maven-3.8.1-bin.tar.gz
Binary zip archive	apache-maven-3.8.1-bin.zip
Source tar.gz archive	apache-maven-3.8.1-src.tar.gz
Source zip archive	apache-maven-3.8.1-src.zip

cd /home/edureka/Downloads/ && wget <tar file link>

6. cd /opt/ && sudo tar -xzvf /home/edureka/Downloads/apache-maven-3*tar.gz

sudo update-alternatives --install /usr/bin/mvn maven /opt/apache-maven-3*/bin/mvn 1001

Solution

1. Navigate to ansible roles directory

   Syntax: cd /etc/ansible/roles

```
edureka@edureka:~$ cd /etc/ansible/roles
edureka@edureka:/etc/ansible/roles$
```

2. Create an ansible role called tomcat

   Syntax: sudo ansible-galaxy init tomcat

```
edureka@edureka:/etc/ansible/roles$ sudo ansible-galaxy init tomcat
[sudo] password for edureka:
- tomcat was created successfully
edureka@edureka:/etc/ansible/roles$
```

3. Now edit the main.yml within the tomcat/tasks directory

   Syntax: sudo vi tomcat/tasks/main.yml

```
edureka@edureka:/etc/ansible/roles$ sudo vi tomcat/tasks/main.yml
edureka@edureka:/etc/ansible/roles$
```

4. Playbook code:

```
---
# tasks file for tomcat
- name: apt-update
  apt:
   update_cache: yes

- name: install curl
  apt:
   name: curl
   state: present

- name: install java jdk
  apt:
   pkg: default-jdk
   state: present

- name: add tomcat group
```

```
  group:
   name: tomcat
   state: present


- name: add user tomcat
  user:
   name: tomcat
   shell: /bin/false
   group: tomcat
   home: /opt/tomcat


- name: download tomcat repo
  command: chdir=/home/edureka/Downloads curl -O
http://redrockdigimark.com/apachemirror/tomcat/tomcat-8/v8.5.31/bin/apache-
tomcat-8.5.31.tar.gz


- name: create tomcat directory
  file:
   path: /opt/tomcat
   state: directory


- name: install tomcat
  become: true
  become_user: tomcat
  unarchive:
   src: /home/edureka/Downloads/apache-tomcat-8.5.31.tar.gz
   dest: /opt/tomcat
   extra_opts: [--strip-component=1]
   remote_src: true


- name: tomcat directory permissions
  file:
   path: /opt/tomcat
   group: tomcat
   owner: tomcat
   mode: g=rX
   recurse: yes


- name: copy tomcat.service file to remote
  copy:
```

```
    src: /etc/ansible/roles/tomcat/files/tomcat.service
    dest: /etc/systemd/system/

- name: reload daemon
  systemd:
    daemon_reload: yes

- name: restart tomcat
  systemd:
    name: tomcat
    state: restarted
    enabled: yes
```

Note: Please note that the download link maybe different for you depending on when what version of the repository is live at the time.

5. Create a tomcat.service file inside tomcat/files/ directory and paste the code below in it

Syntax: sudo vi tomcat/files/tomcat.service

```
edureka@edureka:/etc/ansible/roles$ sudo vi tomcat/files/tomcat.service
[sudo] password for edureka:
edureka@edureka:/etc/ansible/roles$
```

```
[Unit]
Description=Apache Tomcat Web Application Container
After=network.targetd

[Service]
Type=forking

Environment=JAVA_HOME=/usr/lib/jvm/java-1.8.0-openjdk-amd64/jre
Environment=CATALINA_PID=/opt/tomcat/temp/tomcat.pid
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Environment='CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:+UseParallelGC'
Environment='JAVA_OPTS=-Djava.awt.headless=true -
Djava.security.egd=file:/dev/./urandom'

ExecStart=/opt/tomcat/bin/startup.sh
ExecStop=/opt/tomcat/bin/shutdown.sh
```

```
User=tomcat
Group=tomcat
UMask=0007
RestartSec=10
Restart=always

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

6. Create a maven role

   Syntax: sudo ansible-galaxy init maven

```
edureka@edureka:/etc/ansible/roles$ sudo ansible-galaxy init maven
- maven was created successfully
edureka@edureka:/etc/ansible/roles$
```

7. Edit the main.yml inside the maven/tasks/ directory

   Syntax: sudo vi maven/tasks/main.yml

```
edureka@edureka:/etc/ansible/roles$ sudo vi maven/tasks/main.yml
```

8. Playbook code:

```
---
# tasks file for maven
- name: add java8 repo
  command: add-apt-repository ppa:webupd8team/java


- name: apt update
  apt:
   update_cache: yes


- name: download maven repo
  command: chdir=/home/edureka/Downloads/ wget
http://apache.mirror.digitalpacific.com.au/maven/maven-3/3.3.9/binaries/apache-
maven-3.3.9-bin.tar.gz


- name: extract maven tar
  command: chdir=/opt/ sudo tar -xzvf /home/edureka/Downloads/apache-maven-
3.3.9-bin.tar.gz
```

```
- name: install maven
  command: sudo update-alternatives --install /usr/bin/mvn maven /opt/apache-maven-3.3.9/bin/mvn 1001
```

9. Change directory to /etc/ansible

10. Create a new playbook to use the roles in

    Syntax: sudo vi playbookName.yml

```
edureka@edureka:/etc/ansible$ sudo vi tom_mav.yml
---
- hosts: app1
  become: true
  vars:
   ansible_become_pass: edureka
  roles:
   - role: tomcat
   - role: maven
```

11. Execute the playbook

    Syntax: ansible-playbook playbookName.yml

```
edureka@edureka:/etc/ansible$ ansible-playbook tom_mav.yml

PLAY [app1] ********************************************************************
*******************************************************

TASK [Gathering Facts] *********************************************************
*******************************************************
ok: [app1]

TASK [tomcat : apt-update] *****************************************************
*******************************************************
changed: [app1]

TASK [tomcat : install curl] ***************************************************
*******************************************************
TASK [maven : install maven] ***************************************************
*******************************************************
changed: [app1]

PLAY RECAP *********************************************************************
*******************************************************
app1                       : ok=18   changed=11   unreachable=0    failed=0
```

in the end a screen like this should appear.