28-Oct-2024

Internship Day - 69 Report:

Multiple Virtual Machines Start using single vagrant File

1. **Create a project directory for multiple VMs**

- mkdir vagrant-multiple_m/c's
- cd vagrant-wordp multiple_m/c's

2. **Create and edit the Vagrantfile**

```
Vagrant.configure("2") do |config|
  config.hostmanager.enabled = true
  config.hostmanager.manage_host = true

### DB vm  ####
  config.vm.define "db01" do |db01|
    db01.vm.box = "eurolinux-vagrant/centos-stream-9"
    db01.vm.box_version = "9.0.43"
    db01.vm.hostname = "db01"
    db01.vm.network "private_network", ip: "192.168.56.15"
    db01.vm.provider "virtualbox" do |vb|
     vb.memory = "300"
   end


  end

### Memcache vm  ####
  config.vm.define "mc01" do |mc01|
    mc01.vm.box = "eurolinux-vagrant/centos-stream-9"
    mc01.vm.box_version = "9.0.43"
```

```
    mc01.vm.hostname = "mc01"
    mc01.vm.network "private_network", ip: "192.168.56.14"
    mc01.vm.provider "virtualbox" do |vb|
     vb.memory = "300"
   end

  end

### RabbitMQ vm  ####
  config.vm.define "rmq01" do |rmq01|
    rmq01.vm.box = "eurolinux-vagrant/centos-stream-9"
    rmq01.vm.box_version = "9.0.43"
    rmq01.vm.hostname = "rmq01"
    rmq01.vm.network "private_network", ip: "192.168.56.16"
    rmq01.vm.provider "virtualbox" do |vb|
     vb.memory = "300"
   end

  end

### tomcat vm ###
   config.vm.define "app01" do |app01|
    app01.vm.box = "eurolinux-vagrant/centos-stream-9"
    app01.vm.box_version = "9.0.43"
    app01.vm.hostname = "app01"
    app01.vm.network "private_network", ip: "192.168.56.12"
    app01.vm.provider "virtualbox" do |vb|
     vb.memory = "300"
   end
   end
```

```
### Nginx VM ###
  config.vm.define "web01" do |web01|
    web01.vm.box = "ubuntu/jammy64"
    web01.vm.hostname = "web01"
  web01.vm.network "private_network", ip: "192.168.56.11"
#  web01.vm.network "public_network"
  web01.vm.provider "virtualbox" do |vb|
     vb.gui = true
     vb.memory = "300"
   end

end

end
```

3. Explanation of the Vagrantfile

This Vagrantfile defines two virtual machines:

- **Web Server VM**:
    - Uses Ubuntu 22.04 (ubuntu/jammy64).
    - Has a private IP of 192.168.56.30.
    - Allocates 1 CPU and 1550 MB of memory.
    - Provisions Apache and curl via a shell script.
- **Database Server VM**:
    - Uses Ubuntu 22.04 (ubuntu/jammy64).
    - Has a private IP of 192.168.56.40.
    - Allocates 1 CPU and 1550 MB of memory.
    - Provisions MySQL via a shell script.

4. **Bring up the virtual machines:**

- vagrant up

```
vagrant up
```

- vagrant status

```
vagrant status
```

- vagrant up web

```
vagrant up web
```

- vagrant up db

```
vagrant up db
```

29-Oct-2024

Internship Day - 70 Report:

Create systemctl Service For Tomcat Web-Server

1. Create a Directory for the Tomcat Server

mkdir TOMCAT-server

cd TOMCAT-server

```
mkdir TOMCAT-server
cd TOMCAT-server
```

2. Initialize Vagrant

vagrant init ubuntu/jammy64

```
vagrant init ubuntu/jammy64
```

3. Bring up the Vagrant Virtual Machine

```
vagrant up
```

4. SSH into the VM

```
vagrant ssh
```

5. Install Apache

```
sudo -i
apt-get install apache2 -y
systemctl start apache2
systemctl enable apache2
```

6. Check Apache Status

```
systemctl status apache2
```

7. Download and Install Tomcat

Download Tomcat 10 from the official website:

```
wget <URL to Tomcat tar.gz>
```

Extract

```
tar -xzf <filename>.tar.gz
```

8. Install Java

Before running Tomcat, ensure that Java is installed. First, check the current Java version:

```
java -version
```

If Java is not installed, update the package list and install OpenJDK 17:

```
sudo apt update -y
sudo apt install openjdk-17-jdk -y
```

9. Navigate to the Tomcat bin Directory

After extracting Tomcat, change to the bin directory of Tomcat.

```
cd apache-tomcat-10.1.31/bin
```

10. Start Tomcat

Run the Tomcat startup script to start the server

```
./startup.sh
```

11. Verify Tomcat is Running:

Check if Tomcat is running using the ps command.

```
ps -ef | grep tomcat
```

12. Stop Tomcat (if needed):

You can stop Tomcat by killing the process ID (PID) found in the previous step.

```
kill <process_id>
```

30-Oct-2024

Internship Day - 71 Report:

13. Create a systemctl Service for Tomcat:

13.1 Create a Tomcat User Without Home Directory:

Create a Tomcat user:

```
useradd --home-dir /opt/tomcat --shell /bin/false tomcat
```

13.2 Copy Tomcat Files to the Home Directory:

Copy the necessary Tomcat files to /opt/tomcat:

```
cp -r apache-tomcat-10.1.31/* /opt/tomcat
```

13.3 Remove the Old Directory:

Optionally, remove the old Tomcat directory:

```
rm -rf apache-tomcat-10.1.31
```

13.4 Set Ownership for the Tomcat Directory:

Assign ownership of the Tomcat directory to the tomcat user:

```
chown -R tomcat:tomcat /opt/tomcat
```

13.5 Create Systemd Service File for Tomcat:

Create the systemd service file for Tomcat and reload systemd to apply the configuration changes:

```
systemctl daemon-reload
```

14.Final Steps for Tomcat Server Setup:

14.1 Update Alternatives and Configure Java:

Update the alternatives and configure Java using:

```
sudo update-alternatives --config java
```

14.2 Systemd Configuration for Tomcat:

Create the systemd service file for Tomcat:

```
vim /etc/systemd/system/tomcat.service
```

14.3 Reload Systemd Daemon and Start Tomcat Service:

Reload the systemd configuration:

```
systemctl daemon-reload
```

14.4 Start the Tomcat service:

```
systemctl start tomcat
```