PROJECT SETUP MANUAL DEPLOYMENT

Prerequisite

1. OracleVMVirtualbox
2. Vagrant
3. Vagrantplugins
   Execute below command in your computer to install hostmanager plugin

```
$ vagrant plugin install vagrant-hostmanager
```

4. Gitbash or equivalent editor

VM SETUP

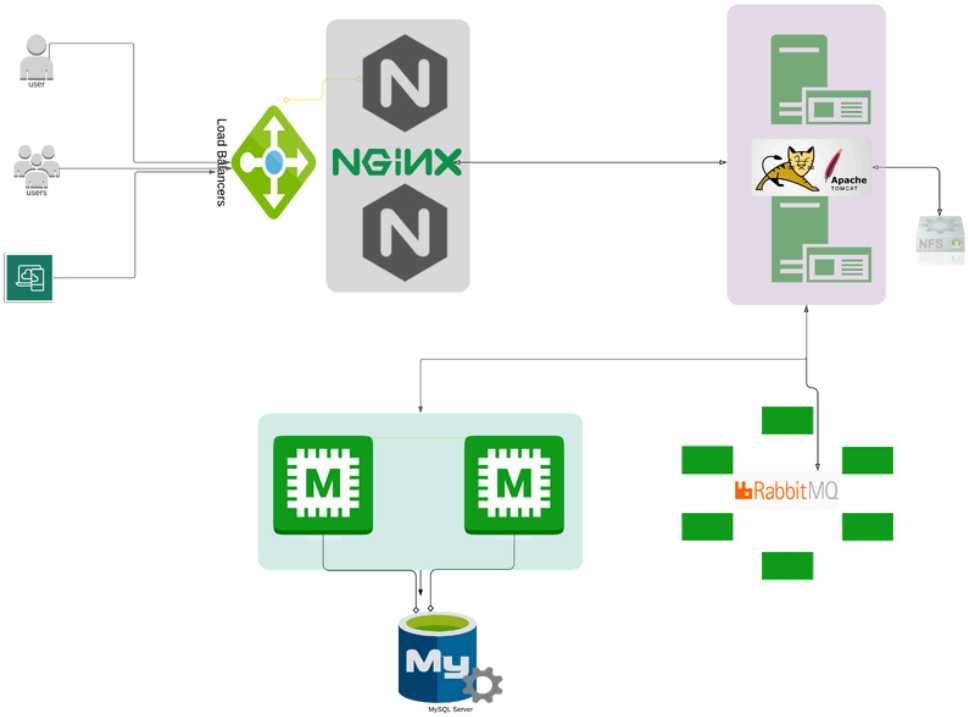
1 Clone source code.
2 Cd into the repository.
3 Switch tothemainbranch.
4 cd into vagrant/Manual_provisioning
.

Bring up vm's

```
$ vagrant up
```

NOTE: Bringing up all the vm's may take a long time based on various factors.
If vm setup stops in the middle run "vagrant up" command again.

INFO: All the vm's hostname and /etc/hosts file entries will be automatically updated.



PROVISIONING

Services

```
1.Nginx          =>WebService
2.Tomcat         =>ApplicationServer
3.RabbitMQ       =>Broker/QueuingAgent
4.Memcache       =>DBCaching
5.ElasticSearch => Indexing/Search service
6.MySQL          =>SQLDatabase
```

Setup should be done in below mentioned order

```
MySQL     (DatabaseSVC)
Memcache  (DB Caching SVC)
RabbitMQ  (Broker/Queue SVC)
Tomcat    (ApplicationSVC)
Nginx    (WebSVC)
```

1. MYSQL Setup

Login to the db vm

```
$ vagrant ssh db01
```

Verify Hosts entry, if entries missing update the it with IP and hostnames

```
# cat /etc/hosts
```

Update OS with latest patches

```
# yum update -y
```

Set Repository

```
# yum install epel-release -y
```

Install Maria DB Package

```
# yum install git mariadb-server -y
```

Starting & enabling mariadb-server

```
# systemctl start mariadb
# systemctl enable mariadb
```

RUN mysql secure installation script.

```
# mysql_secure_installation
```

NOTE : Set db root password, I will be using admin123 as password

```
Set root password? [Y/n] Y
New password:
Re-enter new password:
Password updated successfully!
Reloading privilege tables..
 ... Success!


By default, a MariaDB installation has an anonymous user, allowing anyone
to log into MariaDB without having to have a user account created for
them. Thisisintendedonlyfortesting,andtomaketheinstallation
go a bit smoother. You should remove them before moving into a
production environment.

Remove anonymous users? [Y/n] Y
 ... Success!

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the
network.
Disallow root login remotely? [Y/n] n
 ... skipping.

By default, MariaDB comes with a database named 'test' that anyone
can access. This is also intended only for testing, and should be
removed before moving into a production environment.

Remove test database and access to it? [Y/n] Y
 - Dropping test database...
 ... Success!
 - Removing privileges on test database...
 ... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] Y
 ... Success!
```

Set DB name and users.

```
# mysql -u root -padmin123
```

```
mysql> create database accounts;
mysql> grant all privileges on accounts.* TO 'admin'@'%' identified by 'admin123';
mysql> FLUSH PRIVILEGES;
mysql> exit;
```

Download Source code & Initialize Database.

```
# git clone -b main https://github.com/ram-ctrl/Multi_Tier_Application_Deployment_locally.git
# cd Multi_Tier_Application_Deployment_locally
# mysql -u root -padmin123 accounts <src/main/resources/db_backup.sql
# mysql -u root -padmin123 accounts
```

```
mysql> show tables;
mysql> exit;
```

Restart mariadb-server

```
# systemctl restart mariadb
```

Starting the firewall and allowing the mariadb to access from port no. 3306

```
# systemctl start firewalld
# systemctl enable firewalld
# firewall-cmd --get-active-zones
# firewall-cmd --zone=public --add-port=3306/tcp --permanent
# firewall-cmd --reload
# systemctl restart mariadb
```

2.MEMCACHE SETUP

Login to the Memcache vm

```
$ vagrant ssh mc01
```

Verify Hosts entry, if entries missing update the it with IP and hostnames

```
# cat /etc/hosts
```

Update OS with latest patches

```
# yum update -y
```

Install, start & enable memcache on port 11211

```
# sudo dnf install epel-release -y
# sudo dnf install memcached -y
# sudo systemctl start memcached
# sudo systemctl enable memcached
# sudo systemctl status memcached
#sed -i 's/127.0.0.1/0.0.0.0/g' /etc/sysconfig/memcached
# sudo systemctl restart memcached
```

Starting the firewall and allowing the port 11211 to access memcache

```
# firewall-cmd --add-port=11211/tcp
# firewall-cmd --runtime-to-permanent
# firewall-cmd --add-port=11111/udp
# firewall-cmd --runtime-to-permanent
# sudo memcached -p 11211 -U 11111 -u memcached -d
```

3.RABBITMQ SETUP

Login to the RabbitMQ vm

```
$ vagrant ssh rmq01
```

Verify Hosts entry, if entries missing update the it with IP and hostnames

```
# cat /etc/hosts
```

Update OS with latest patches

```
# yum update -y
```

Set EPEL Repository

```
# yum install epel-release -y
```

Install Dependencies

```
# sudo yum install wget -y
# cd /tmp/
# dnf -y install centos-release-rabbitmq-38
# dnf --enablerepo=centos-rabbitmq-38 -y install rabbitmq-server
# systemctl enable --now rabbitmq-server
```

Setup access to user test and make it admin

```
# sudo sh -c 'echo "[{rabbit, [{loopback_users, []}]}]." > /etc/rabbitmq/rabbitmq.config'
# sudo rabbitmqctl add_user test test
# sudo rabbitmqctl set_user_tags test administrator
# sudo systemctl restart rabbitmq-server
```

Starting the firewall and allowing the port 5672 to access rabbitmq

```
# firewall-cmd --add-port=5672/tcp
# firewall-cmd --runtime-to-permanent

# sudo systemctl start rabbitmq-server
# sudo systemctl enable rabbitmq-server
# sudo systemctl status rabbitmq-server
```

4.TOMCAT SETUP

Login to the tomcat vm

```
$ vagrant ssh app01
```

Verify Hosts entry, if entries missing update the it with IP and hostnames

```
# cat /etc/hosts
```

Update OS with latest patches

```
# yum update -y
```

Set Repository

```
# yum install epel-release -y
```

Install Dependencies

```
# dnf -y install java-11-openjdk java-11-openjdk-devel
```

```
# dnf install git maven wget -y
```

Change dir to /tmp

```
# cd /tmp/
```

Download & Tomcat Package

```
# wget https://archive.apache.org/dist/tomcat/tomcat-9/v9.0.75/bin/apache-tomcat-9.0.75.tar.gz
```

```
# tar xzvf apache-tomcat-9.0.75.tar.gz
```

Add tomcat user

```
# useradd --home-dir /usr/local/tomcat --shell /sbin/nologin tomcat
```

Copy data to tomcat home dir

```
# cp -r /tmp/apache-tomcat-9.0.75/*  /usr/local/tomcat/
```

Make tomcat user owner of tomcat home dir

```
# chown -R tomcat.tomcat /usr/local/tomcat
```

Setup systemctl command for tomcat

Create tomcat service file

```
# vi /etc/systemd/system/tomcat.service
```

Update the file with below content

```
[Unit]
Description=Tomcat
After=network.target

[Service]                          User=tomcat
WorkingDirectory=/usr/local/tomcat
Environment=JRE_HOME=/usr/lib/jvm/jre
Environment=JAVA_HOME=/usr/lib/jvm/jre
Environment=CATALINA_HOME=/usr/local/tomcat
Environment=CATALINE_BASE=/usr/local/tomcat
ExecStart=/usr/local/tomcat/bin/catalina.sh
run  ExecStop=/usr/local/tomcat/bin/shutdown.sh
SyslogIdentifier=tomcat-%i
```

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

Reload systemd files

```
# systemctl daemon-reload
```

Start & Enable service

```
# systemctl start tomcat
# systemctl enable tomcat
```

Enabling the firewall and allowing port 8080 to access the tomcat

```
# systemctl start firewalld
# systemctl enable firewalld
# firewall-cmd --get-active-zones
# firewall-cmd --zone=public --add-port=8080/tcp --permanent
# firewall-cmd --reload
```

CODE BUILD & DEPLOY (app01)

Download Source code

```
# git clone https://github.com/ram-ctrl/Multi_Tier_Application_Deployment_locally.git
```

Update configuration

```
# cd Multi_Tier_Application_Deployment_locally-project
# vim src/main/resources/application.properties
# Update file with backend server details
```

Build code

Run below command inside the repository (Multi_Tier_Application_Deployment_Locally)

```
# mvn install
```

Deploy artifact

```
# systemctl stop tomcat
```

```
# rm -rf /usr/local/tomcat/webapps/ROOT* # cp
target/Multi_Tier_Application_Deployment_locally-v2.war
/usr/local/tomcat/webapps/ROOT.war # systemctl start tomcat #
chown tomcat.tomcat /usr/local/tomcat/webapps -R # systemctl
restart tomcat
```

5.NGINX SETUP

Login to the Nginx vm

```
$ vagrant ssh web01
$ sudo -i
```

Verify Hosts entry, if entries missing update the it with IP and hostnames

```
# cat /etc/hosts
```

Update OS with latest patches

```
# apt update
# apt upgrade
```

Install nginx

```
# apt install nginx -y
```

Create Nginx conf file

```
# vi /etc/nginx/sites-available/vproapp
```

Update with below content

```
upstream vproapp {
 server app01:8080;
}
server {
  listen 80;
location / {
  proxy_pass http://vproapp;
```

```
}
}
```

Remove default nginx conf

```
# rm -rf /etc/nginx/sites-enabled/default
```

Create link to activate website

```
# ln -s /etc/nginx/sites-available/vproapp /etc/nginx/sites-enabled/vproapp
```

Restart Nginx

```
# systemctl restart nginx
```