Cloud Computing

Lab 5: Applying Security on Cloud Application

Due Date: Tuesday, March 17, 2021 (11:59pm).

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Applying security on applications through deploying access controls onto virtual machines on VMware platform. Access control are deployed using local firewalls on virtual machines.

Equipment, Tools, Hardware, and Software Needed

1. Desktop PC, Laptop with internet connection.
2. VMware Workstation software - free downloadable
3. Ubuntu (live image) - free downloadable. You may download other Operating Systems image.
4. UFW service.

Theorem

The deployment of an Enterprise Application one of the important practice in cloud computing. Implementing a multitier application on cloud is a vital job.

In this Lab, we will prepare and deploy a firewall to our VMware platform to each virtual machine to limit the access to specific application ports and service

Procedure

***** Note: Use your previous Lab VMs**

Experiment 1 – Check DB server access from none authorized host (VM or Client).

From the **VM 3**, Try the following command:

Install MySQL client:

sudo apt install mysql-client **Test connecting to DB server** sudo

mysql -h ***VM_2_IP_Address_or_DB_Server*** -u ***example_user*** –p

(**Password**: password)

Report if you were able to connect to DB server or not? Yes , its enable to connect with DB

Mysql> ← means you were able to connect

Experiment 2 – Lock down the access of DB server using Firewall.

To do the deployment we have to do the procedure based on the services in sequence:

Database Server – VM 2

Do the following installation and implementation steps.

sudo apt install ufw
sudo ufw app list
sudo ufw status
sudo ufw default deny incoming
sudo ufw default allow outgoing
sudo ufw allow ssh
sudo ufw allow from ***VM_1_IP_Address_or_Web/PHP_server_Address*** to any port 3306
sudo ufw enable

Test 1: Client User – VM 3 (or your host machine or desktop)

Re-do Experiment 1 (if not installed), and report your observation

Test 2: Web/PHP server – VM 1

Re-do Experiment 1 (if not installed), and report your observation

<u>Lab Task</u>

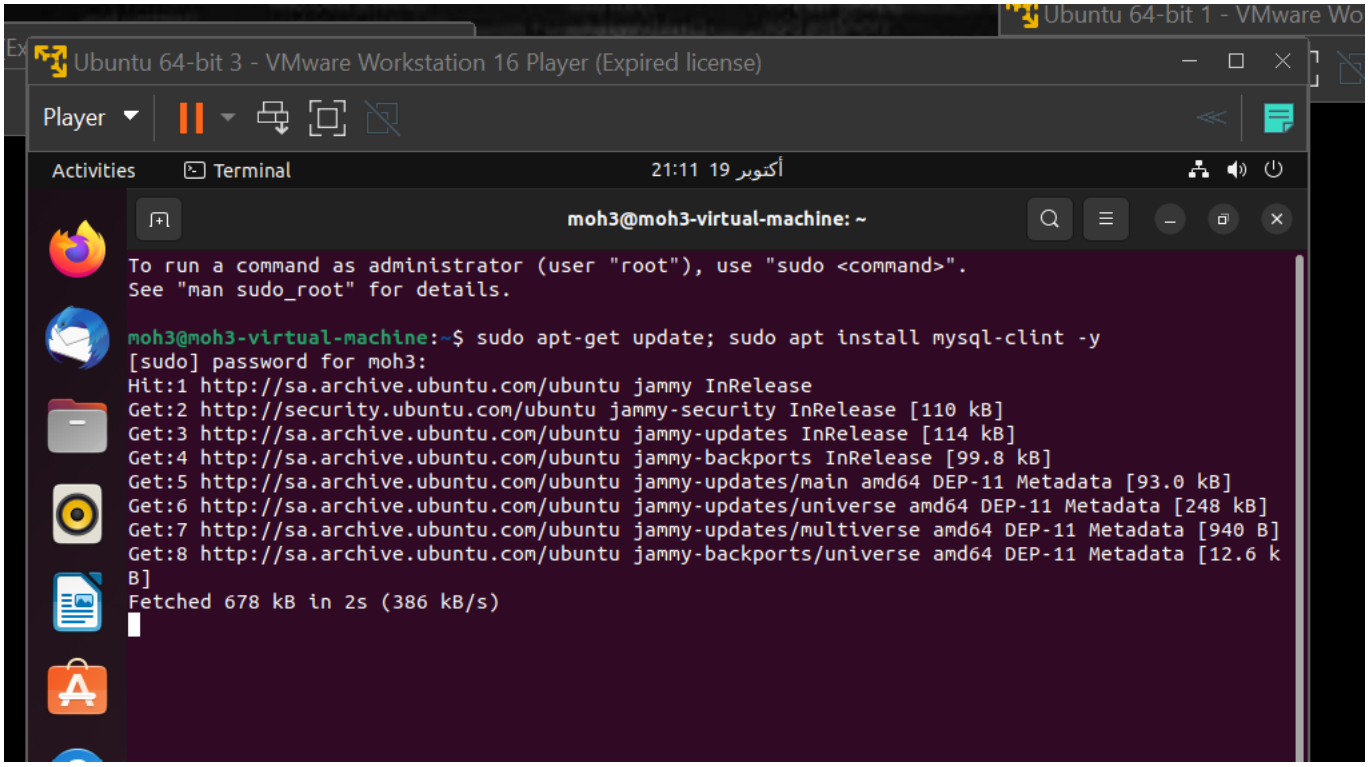
1. Report all outputs of all commands on the procedure above.

2. Answer the following question:
   - What is the use of Firewall on front of data base server?? ufw

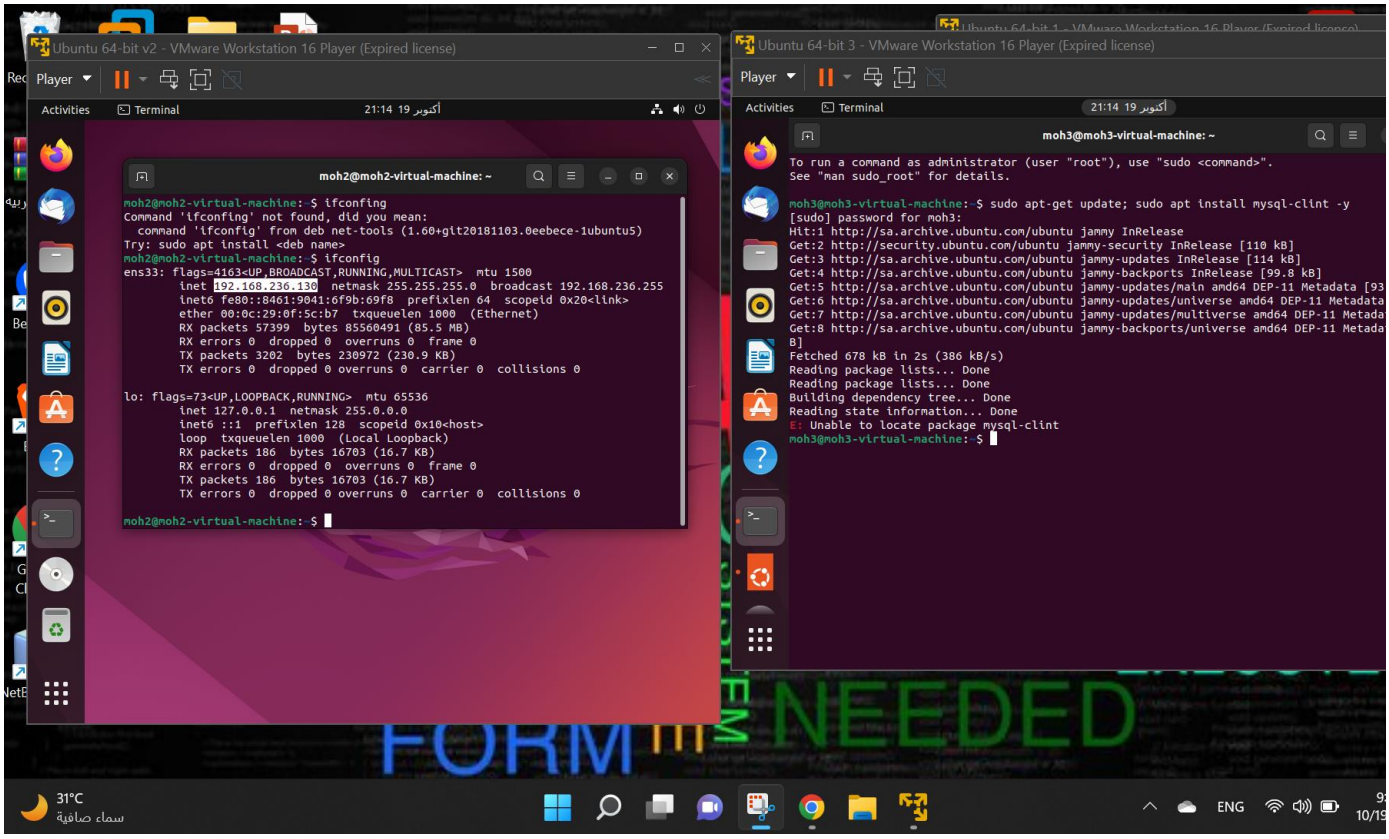
<u>Lab Report</u>

For the lab report, take a screenshots of your VMware Workstation configuration and include Command Line logs for the Virtual Machines as requested in the Lab Task.

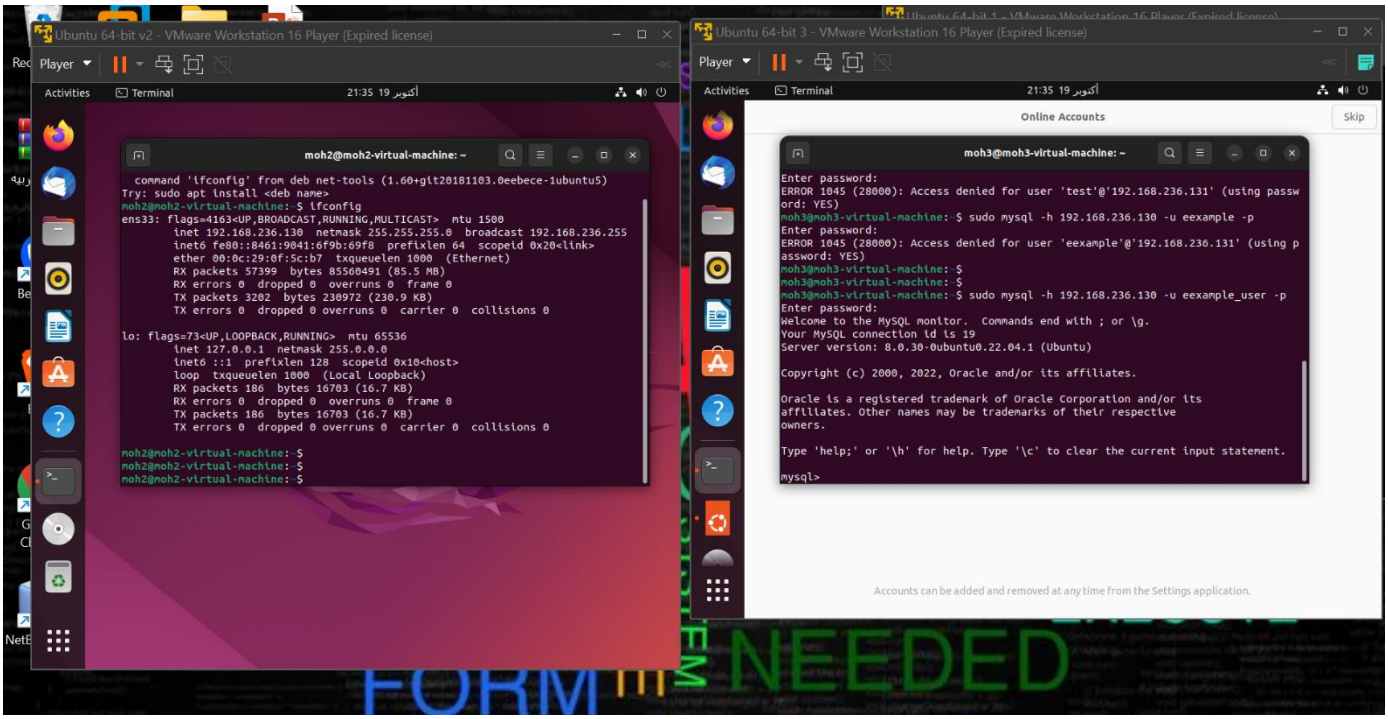
Check DB server access from none authorized host (VM or Client)
Install my sql clint



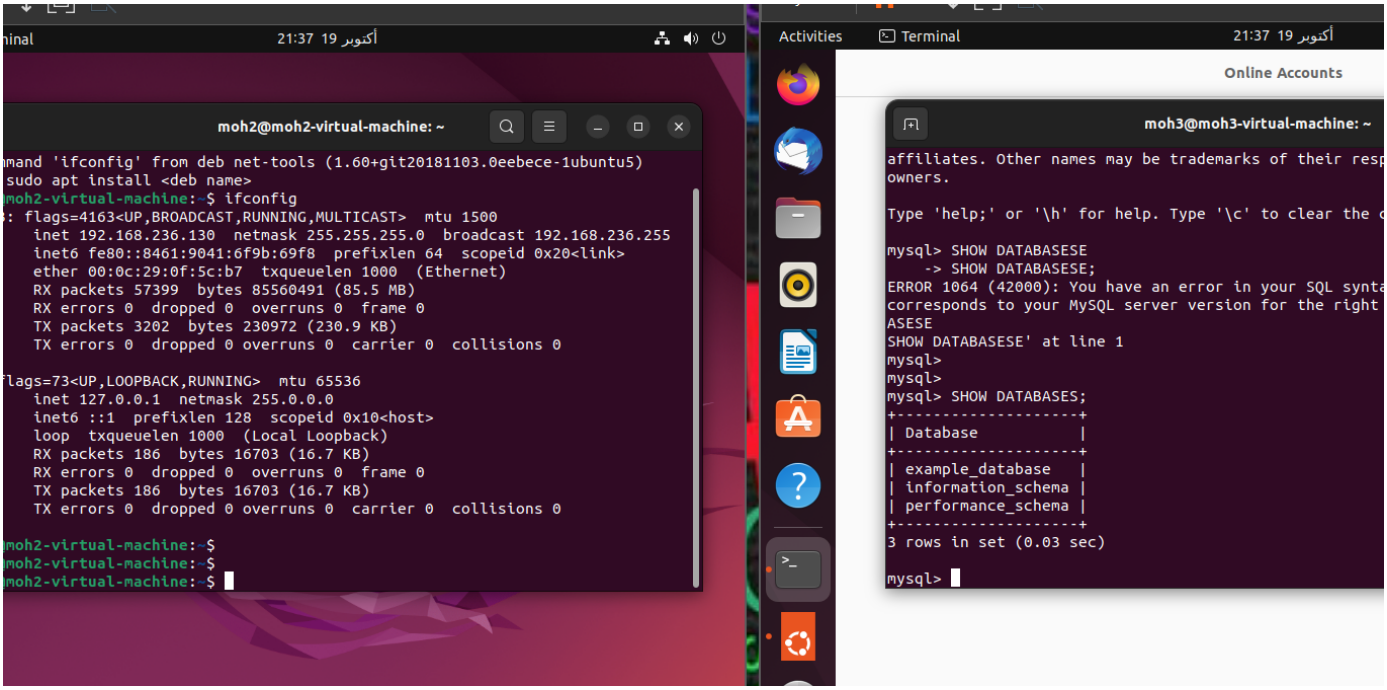
We should know the ip of vm2 to try connect to DB



We have contacted to DB



Check ..



Now we will go to vm2 and do the task

sudo apt install ufw
sudo ufw app list
sudo ufw status
sudo ufw default deny incoming
sudo ufw default allow outgoing
sudo ufw allow ssh
sudo ufw allow from ***VM_1_IP_Address_or_Web/PHP_server_Address*** to any port 3306
sudo ufw enable

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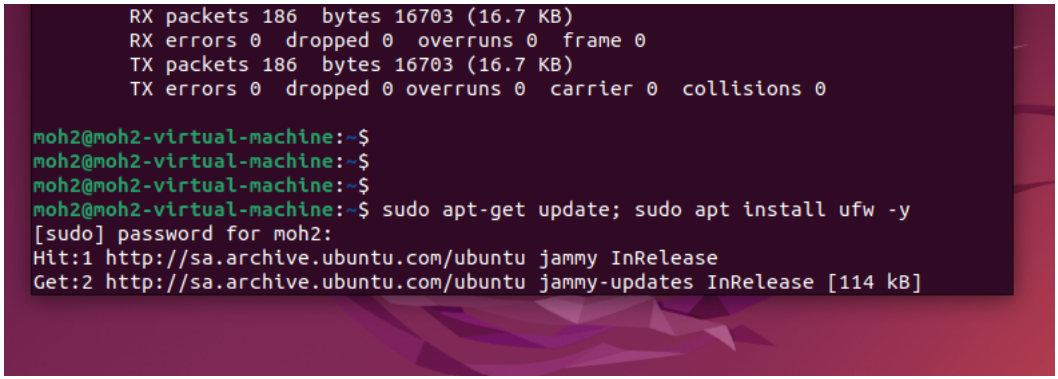


List

```
0 upgraded, 0 newly installed, 0 to remove and 128 not upgraded.
moh2@moh2-virtual-machine:~$
moh2@moh2-virtual-machine:~$ sudo ufw app list
Available applications:
  CUPS
moh2@moh2-virtual-machine:~$
```

status

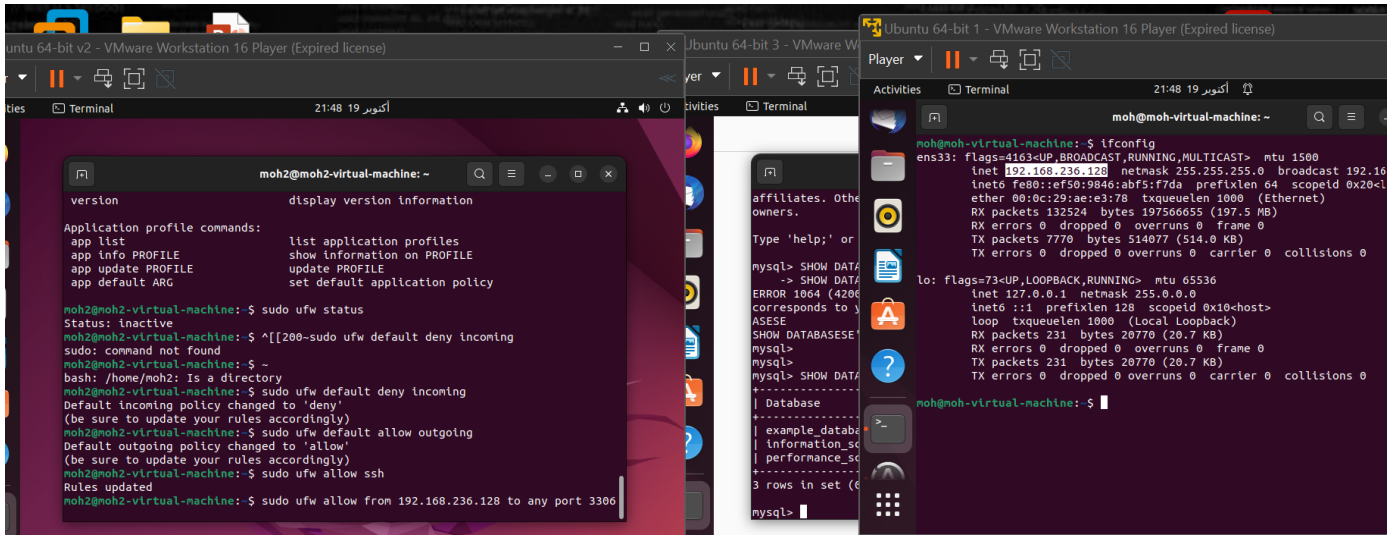
```
app info PROFILE                show information on PROFILE
app update PROFILE              update PROFILE
app default ARG                 set default application policy

moh2@moh2-virtual-machine:~$ sudo ufw status
Status: inactive
moh2@moh2-virtual-machine:~$
```

sudo ufw default deny incoming

sudo ufw default allow outgoing

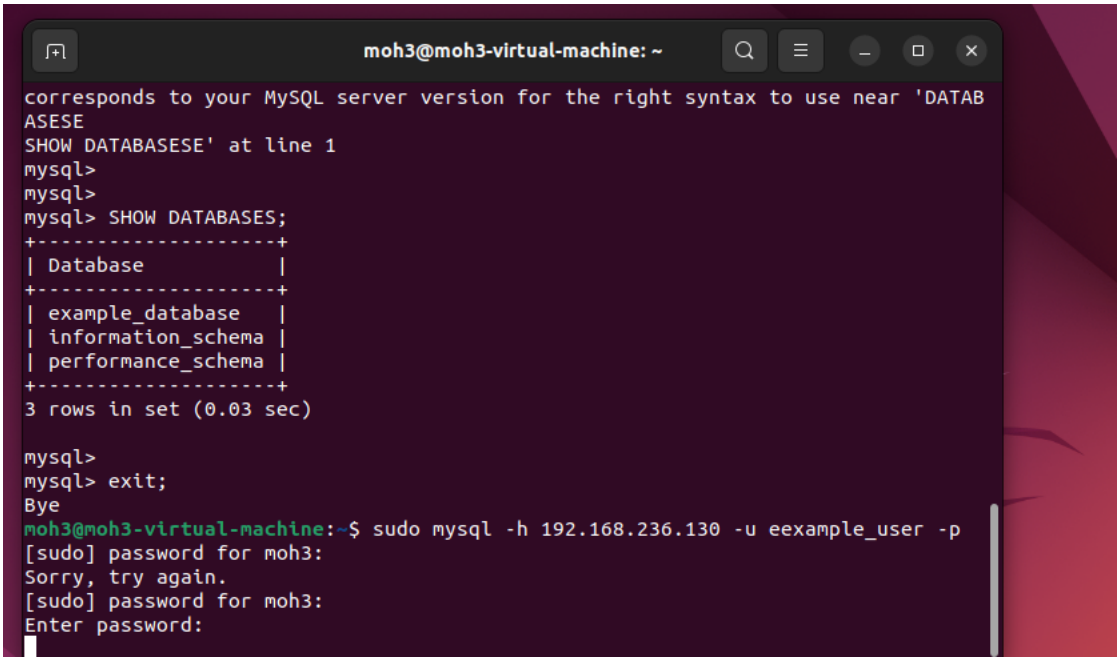
```
bash: /home/moh2: Is a directory
moh2@moh2-virtual-machine:~$ sudo ufw default deny incoming
Default incoming policy changed to 'deny'
(be sure to update your rules accordingly)
moh2@moh2-virtual-machine:~$ sudo ufw default allow outgoing
Default outgoing policy changed to 'allow'
(be sure to update your rules accordingly)
moh2@moh2-virtual-machine:~$
```

We need to let vm1 have an access to DB Not: its just for this ip in this port



And last thing is enable

Note : if we try to connect from vm3 , we will not have access



but if we try to connect from vm1 we will connect !