

**A REPORT ON HOW TO INSTALL VIRTUAL BOX AND USE ITS FUNCTIONALITIES**

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## 1 INTRODUCTION.

This report covers the steps used to install and set up a personal lab using VirtualBox. The lab will consist of at least two virtual machines with varying networking profiles. The virtual machines will be running both Windows and Linux operating systems and this report will entail how both were installed and configured. In addition, this report will cover the installation of LAMP stack in the Linux operating system.

## 2 Installing VirtualBox



Figure 1: site visited to download VB packages for Windows OS

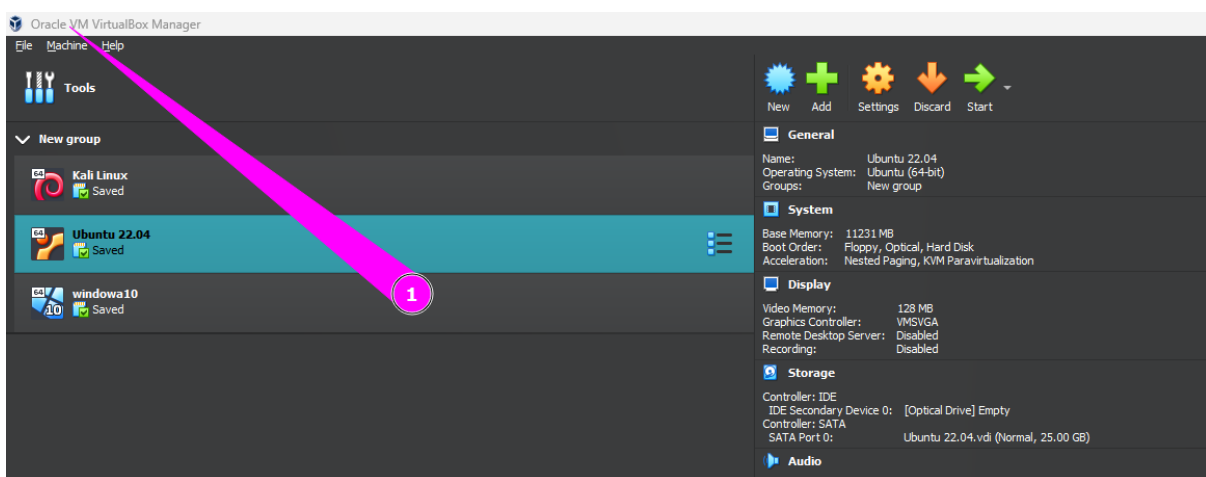


Figure 2: proof of installation and VB setup

### 3 Installation of Ubuntu

I downloaded Ubuntu 22.04 ISO file and used it to install Linux virtual machine in the VB.

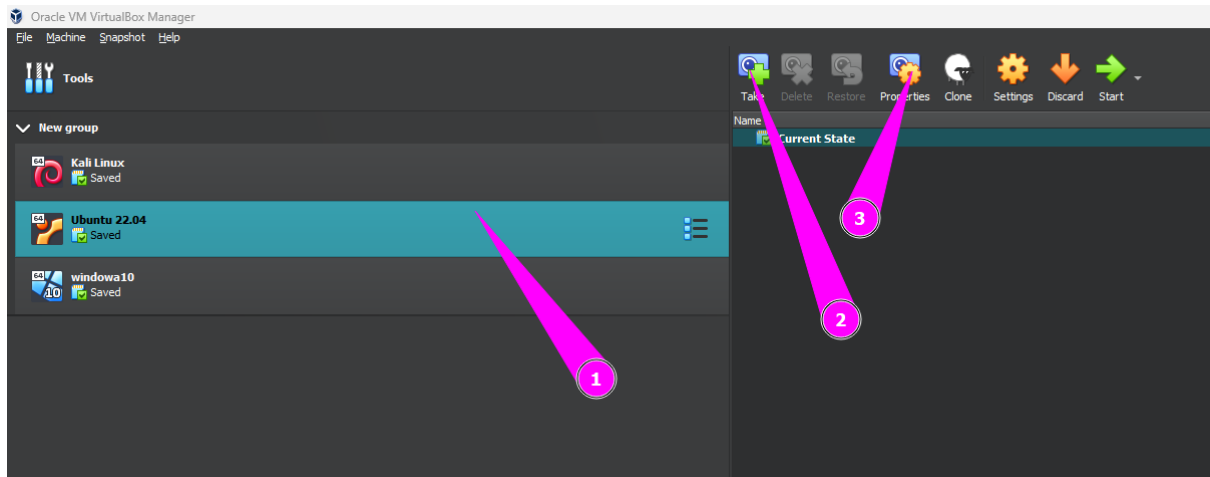


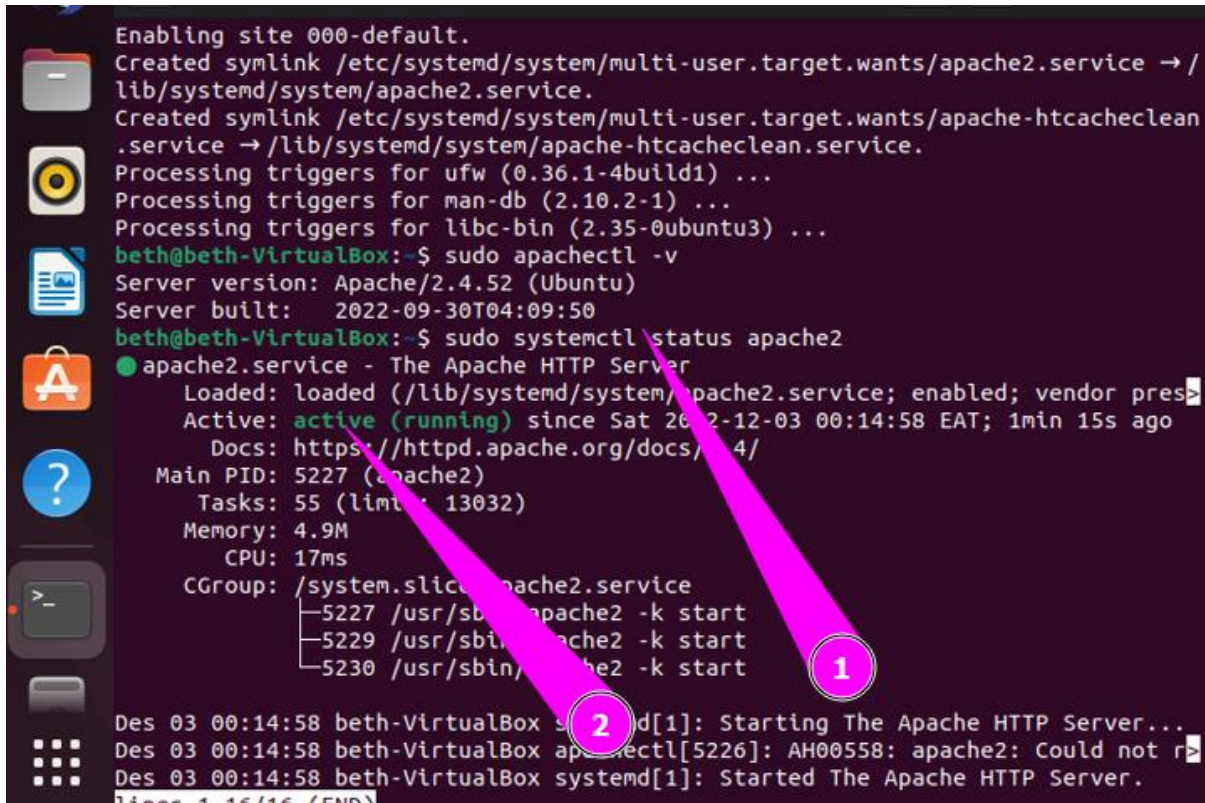
Figure 3: Ubuntu virtual machine

## 4 Installing LAMP

### 4.1 Installing Apache

I used the following commands to install Apache;

- `sudo apt update`
- `sudo apt install apache2`
- `sudo apachectl -v`
- `sudo systemctl status apache2`



```
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.1-4build1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3) ...
beth@beth-VirtualBox:~$ sudo apachectl -v
Server version: Apache/2.4.52 (Ubuntu)
Server built: 2022-09-30T04:09:50
beth@beth-VirtualBox:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2022-12-03 00:14:58 EAT; 1min 15s ago
     Docs: https://httpd.apache.org/docs/4.4/
    Main PID: 5227 (apache2)
      Tasks: 55 (limit: 13032)
     Memory: 4.9M
        CPU: 17ms
      CGroup: /system.slice/apache2.service
              └─5227 /usr/sbin/apache2 -k start
                 └─5229 /usr/sbin/apache2 -k start
                    └─5230 /usr/sbin/apache2 -k start

Des 03 00:14:58 beth-VirtualBox systemd[1]: Starting The Apache HTTP Server...
Des 03 00:14:58 beth-VirtualBox apachectl[5226]: AH00558: apache2: Could not r...
Des 03 00:14:58 beth-VirtualBox systemd[1]: Started The Apache HTTP Server.
lines 1-16/16 (END)
```

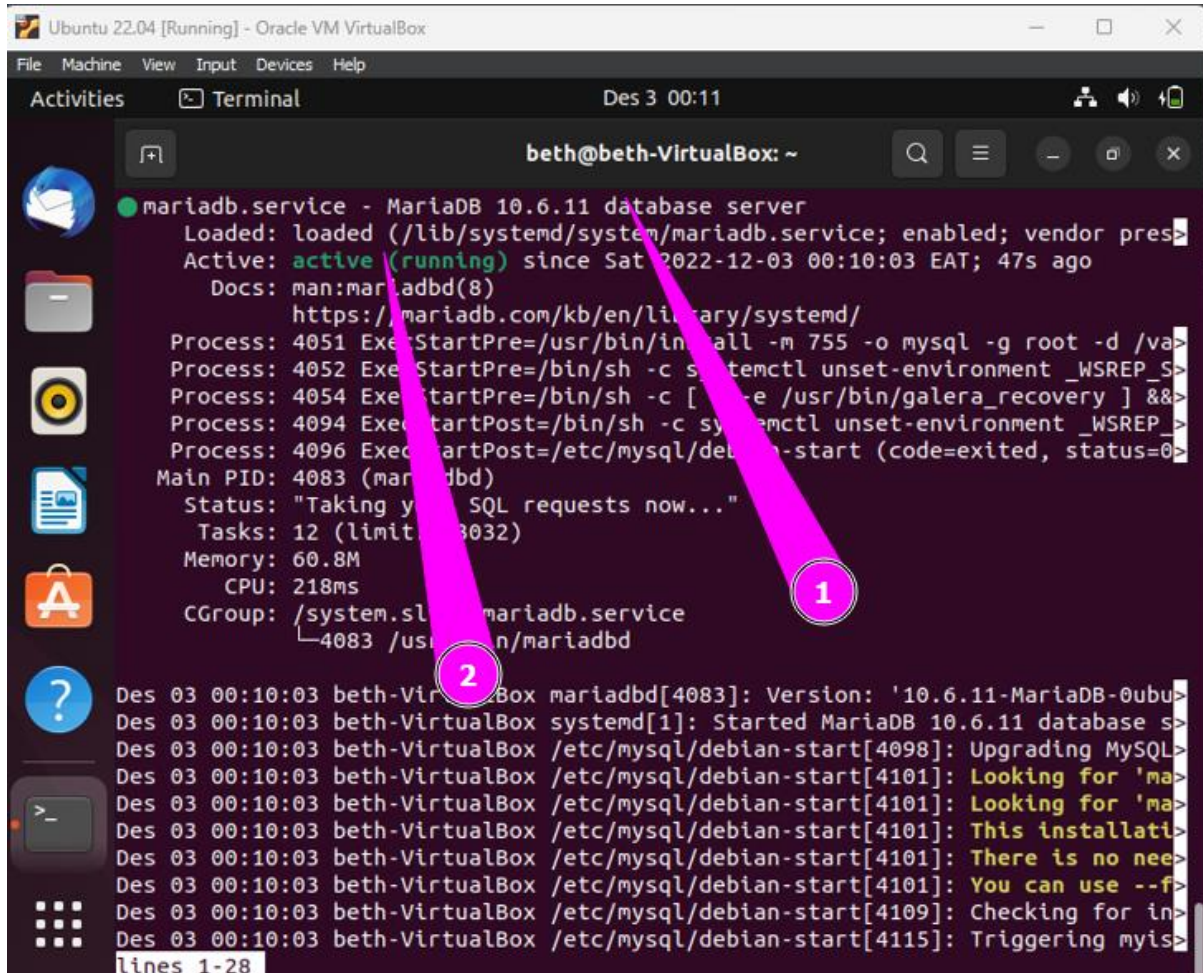
Figure 4: Apache active and running

## 4.2 Installing MYSQL

Commands used to install MYSQL

```
sudo systemctl enable mariadb.service
```

```
sudo mysql_secure_installation
```



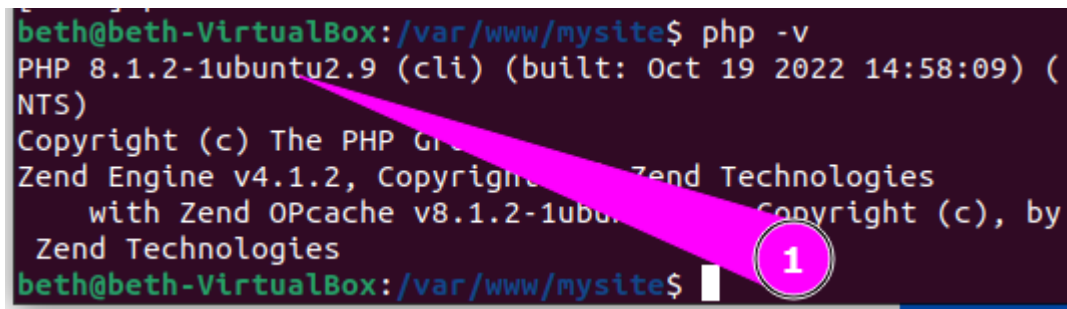
```
Ubuntu 22.04 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Activities Terminal Des 3 00:11
beth@beth-VirtualBox: ~
● mariadb.service - MariaDB 10.6.11 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; vendor preset: enabled)
   Active: active (running) since Sat 2022-12-03 00:10:03 EAT; 47s ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Process: 4051 ExecStartPre=/usr/bin/install -m 755 -o mysql -g root -d /var/lib/mysql
   Process: 4052 ExecStartPre=/bin/sh -c systemctl unset-environment _WSREP_S
   Process: 4054 ExecStartPre=/bin/sh -c [ -e /usr/bin/galera_recovery ] &&
   Process: 4094 ExecStartPost=/bin/sh -c systemctl unset-environment _WSREP
   Process: 4096 ExecStartPost=/etc/mysql/debian-start (code=exited, status=0)
  Main PID: 4083 (mariadbd)
    Status: "Taking your first SQL requests now..."
     Tasks: 12 (limit=3032)
    Memory: 60.8M
       CPU: 218ms
    CGroup: /system.slice/mariadb.service
           └─4083 /usr/sbin/mariadbd
Des 03 00:10:03 beth-VirtualBox mariadbd[4083]: Version: '10.6.11-MariaDB-0ubuntu
Des 03 00:10:03 beth-VirtualBox systemd[1]: Started MariaDB 10.6.11 database s
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4098]: Upgrading MySQL
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4101]: Looking for 'ma
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4101]: Looking for 'ma
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4101]: This installati
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4101]: There is no nee
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4101]: You can use --f
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4109]: Checking for in
Des 03 00:10:03 beth-VirtualBox /etc/mysql/debian-start[4115]: Triggering myis
lines 1-28
```

Figure 5: MariaDB data server installed

### 4.3 Installing PHP

Command used to install PHP

- `sudo apt install php php-mysql php-xml php-mbstring libapache2-mod-php`
- `php-v`

A terminal window with a dark background and light green text. The prompt is 'beth@beth-VirtualBox:/var/www/mysite\$'. The command 'php -v' has been executed, resulting in the following output: 'PHP 8.1.2-1ubuntu2.9 (cli) (built: Oct 19 2022 14:58:09) (NTS)', 'Copyright (c) The PHP Group', 'Zend Engine v4.1.2, Copyright (c) Zend Technologies', and 'with Zend OPcache v8.1.2-1ubuntu2.9, Copyright (c), by Zend Technologies'. The prompt is now 'beth@beth-VirtualBox:/var/www/mysite\$'. A red circle with the number '1' is positioned over the second line of the output, and a red arrow points from this circle to the 'php -v' command in the prompt line.

```
beth@beth-VirtualBox:/var/www/mysite$ php -v
PHP 8.1.2-1ubuntu2.9 (cli) (built: Oct 19 2022 14:58:09) (
NTS)
Copyright (c) The PHP Group
Zend Engine v4.1.2, Copyright (c) Zend Technologies
    with Zend OPcache v8.1.2-1ubuntu2.9, Copyright (c), by
    Zend Technologies
beth@beth-VirtualBox:/var/www/mysite$
```

Figure 6: Installation of PHP successful

## 5 Creating a Virtual Host for your Website

While trying to create a virtual host for my website, I encountered an unresolved issue while accessing my server's domain name or IP address despite having good network.

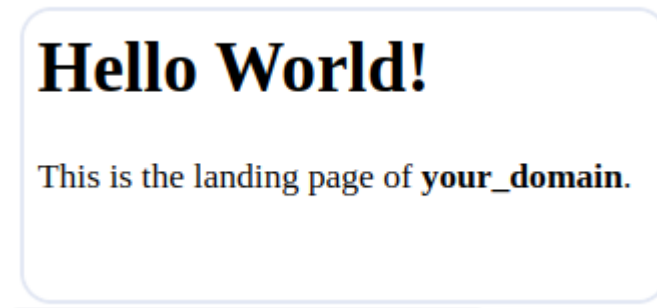


Figure 7:Expected Outcome



### The connection has timed out

The server at 197.232.61.217 is taking too long to respond.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the web.

Figure 8: My output



## 6 Testing Database Connection from PHP

I connected to MYSQL and created a database and a table with data.

```
Type 'help;' or '\h' for help. Type '\c' to clear the
ent input statement.

MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| kamilimu_database |
+-----+
2 rows in set (0.000 sec)

MariaDB [(none)]> CREATE TABLE kamilimu_database.todo_
(
  -> item_id INT AUTO_INCREMENT,
  -> content VARCHAR(255),
  -> PRIMARY KEY(item_id)
  -> );
Query OK, 0 rows affected (0.010 sec)

MariaDB [(none)]> INSERT INTO kamilimu_database.todo_
(content) VALUES ("My first important item");
Query OK, 1 row affected (0.002 sec)
```

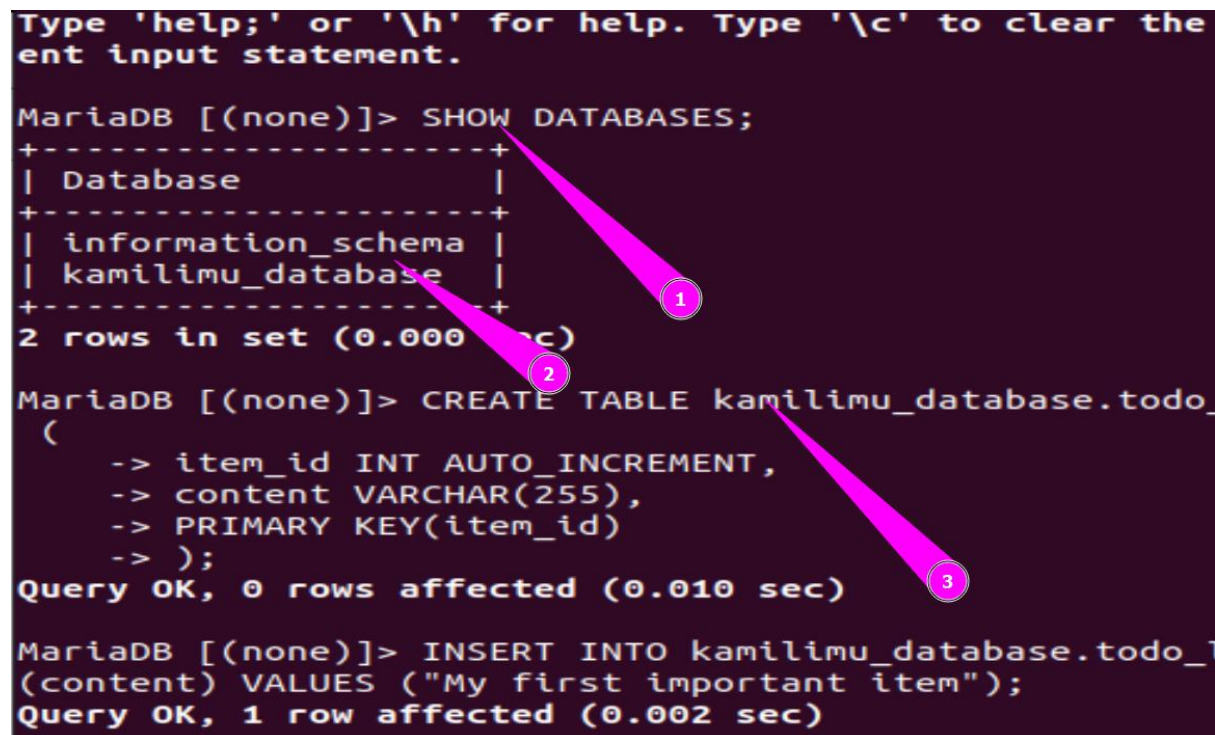


Figure 9:Created Database

```
MariaDB [(none)]> SELECT * FROM kamilimu_database.todo_list;
+-----+-----+
| item_id | content |
+-----+-----+
| 1 | My first important item |
+-----+-----+
1 row in set (0.000 sec)
```

Figure 10:Table with data created

## 7 Windows Installation.

Using an ISO file, I installed and configured Windows to the VB

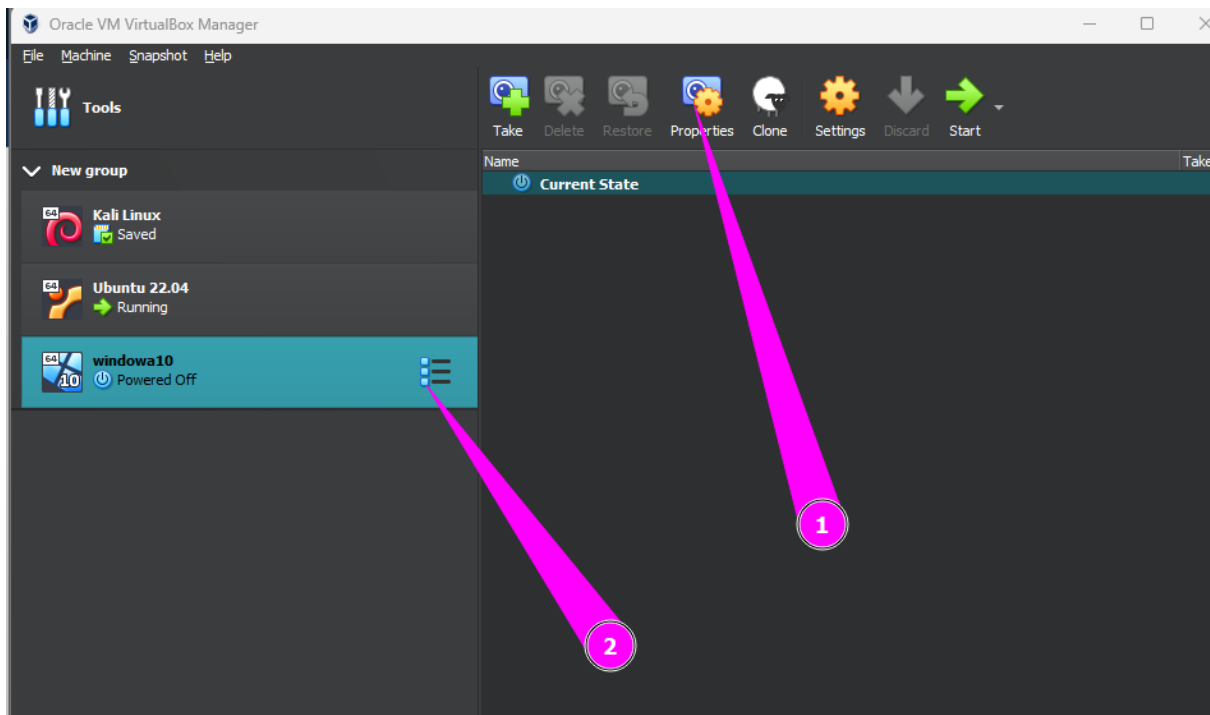


Figure 11: Windows 10 Virtual Machine