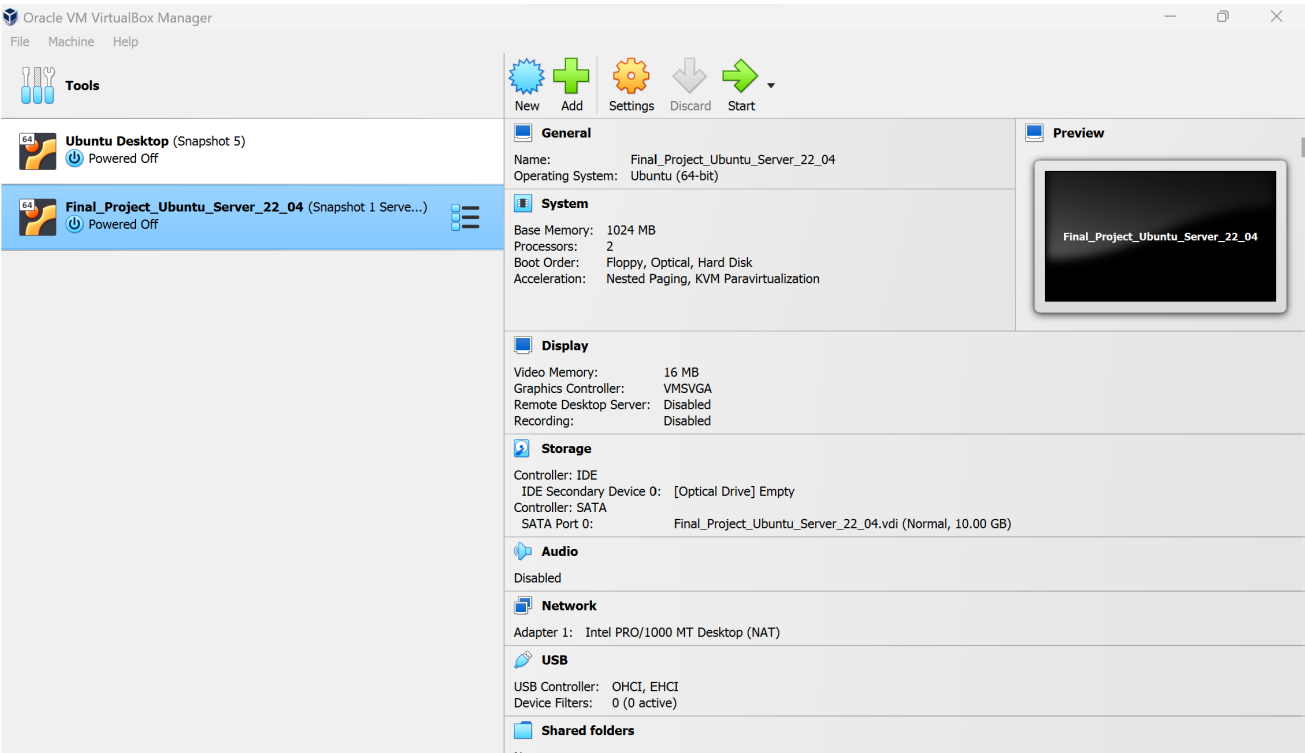


Deliverable 2

Step 1: Create a virtual machine for the server

In this first step, I created a virtual machine with the following specifications: 2 Processors, 1GB of RAM, 10GB of storage



Step 2: Install Ubuntu Server

In this step, I downloaded Ubuntu Server from Ubuntu's website and went through the installation process. See screenshot to see me logged in.

```
Ubuntu 22.04.2 LTS webserver tty1

webserver login: webmaster
Password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-71-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Fri Apr 28 07:40:26 AM UTC 2023

System load:  0.60400390625   Processes:            119
Usage of /:   52.7% of 8.02GB   Users logged in:      0
Memory usage: 20%             IPv4 address for enp0s3: 10.0.2.15
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Apr 28 05:54:34 UTC 2023 on tty1
webmaster@webserver:~$ _
```

Step 3: Install Apache

In this step, I downloaded and installed Apache using the default Ubuntu repositories.

```
Last login: Mon May  1 00:35:51 2023 from 192.168.1.98
webmaster@webserver:~$ sudo systemctl status apache2
[sudo] password for webmaster:
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor prese>
   Active: active (running) since Mon 2023-05-01 00:45:15 UTC; 1h 4min ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 1313 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SU>
 Main PID: 1317 (apache2)
    Tasks: 55 (limit: 1026)
   Memory: 6.4M
      CPU: 527ms
   CGroup: /system.slice/apache2.service
           └─1317 /usr/sbin/apache2 -k start
             └─1318 /usr/sbin/apache2 -k start
               └─1319 /usr/sbin/apache2 -k start

May 01 00:45:15 webserver systemd[1]: Starting The Apache HTTP Server...
May 01 00:45:15 webserver systemd[1]: Started The Apache HTTP Server.
lines 1-16/16 (END)
```

Step 4: Setup the firewall

In the step, I configured the firewall of my web server with the UFW tool

```
webmaster@webserver:~$ sudo ufw status
Status: active

To Action From
--
Apache ALLOW Anywhere
22/tcp ALLOW Anywhere
Apache (v6) ALLOW Anywhere (v6)
22/tcp (v6) ALLOW Anywhere (v6)
```

Step 5: Setup SSH to manage the server from the client virtual machine

In this step, I created a YAML file in the **netplan** folder for my web server, which gave it a static IP address. I also allowed SSH connections to my webserver by editing the firewall. I also installed OpenSSH Server on my machine.

```
webmaster@webserver:~$ cat /etc/netplan/01-netcfg.yaml
network:
  version: 2
  renderer: networkd
  ethernets:
    eth0:
      addresses:
        - 192.168.1.97/24
      nameservers:
        addresses: [1.1.1.1, 8.8.8.8, 8.8.4.4]
      routes:
        - to: default
          via: 192.168.1.1
```

```
webmaster@webserver:~$ sudo systemctl status ssh.service
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: en
   Active: active (running) since Mon 2023-05-01 00:28:35 UTC; 1h 32min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Process: 729 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
  Main PID: 780 (sshd)
    Tasks: 1 (limit: 1026)
   Memory: 7.6M
      CPU: 306ms
   CGroup: /system.slice/ssh.service
           └─780 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

May 01 00:28:35 webserver systemd[1]: Starting OpenBSD Secure Shell server...
May 01 00:28:35 webserver sshd[780]: Server listening on 0.0.0.0 port 22.
May 01 00:28:35 webserver sshd[780]: Server listening on :: port 22.
May 01 00:28:35 webserver systemd[1]: Started OpenBSD Secure Shell server.
May 01 00:35:49 webserver sshd[1020]: Accepted password for webmaster from 192.
May 01 00:35:49 webserver sshd[1020]: pam_unix(sshd:session): session opened fo
May 01 01:49:09 webserver sshd[1656]: Accepted password for webmaster from 192.
May 01 01:49:09 webserver sshd[1656]: pam_unix(sshd:session): session opened fo
lines 1-21/21 (END)
```

Step 6: Setup Virtual Hosts

In this step, I created a folder for my website, and added files to that folder. I also created a virtual host for my website.

