CYBERSECURITY

Cybersecurity focuses on the protection of computer systems from unauthorized access from unauthorized personnel.

WEEK 1:

Deploying of a networked Sandbox: In computer security and architecture A sandboxed network is a network environment that is isolated from the rest of the network and is often used for testing, running potentially malicious code, or conducting experiments without risking harm to the main network or systems. Machines needed for this task are *Ubuntu gateway 22.04, Ubuntu WordPress 14.04 and 22.04, kali linux and windows Iso file*. All these machines will be deployed in a virtual box (An popular open-source virtualization software developed by Oracle that allows you to create and run virtual machines (VMs) on your computer) in order to achieve the image below

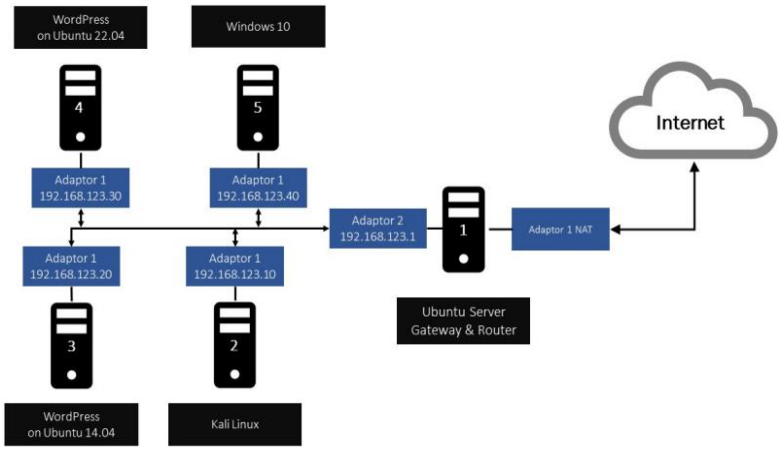
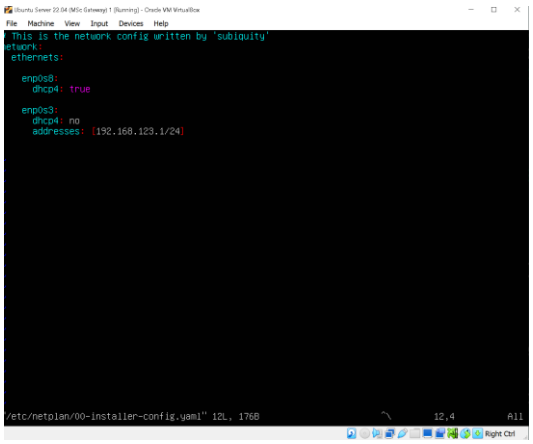


Figure 1: Sandboxed Network Diagram

Configuring Ubuntu Gateway:

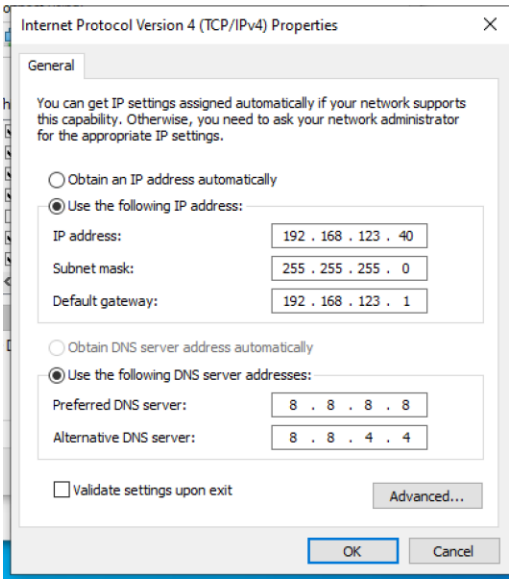
Ubuntu gateway is simply the Router within this network. To configure it, I started by installing all the machines and clicked on Ubuntu gateway, after logging in, I set the adapters and configured the Ubuntu 22.04 gateway settings using (sudo vi 00-installer-config. yaml) and change the IP details and interface name to my environment then apply with `$ sudo netplan apply.`

Problem: I had issues configuring my Ubuntu gateway server, I had to use the vi instead of nano



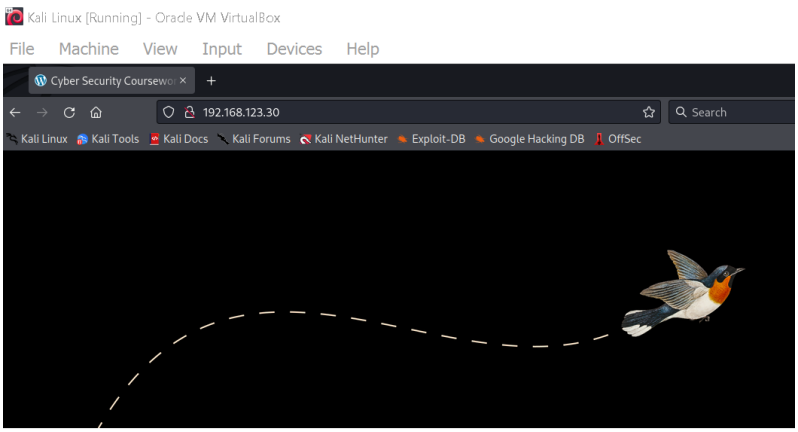
Windows

Next, install windows iso file and set the ram to 4096, the storage to 70gb and click finish. When it is running, edit the ethernet setting and configure the ip address to 192.168.123.40. I also set the network adapter to internal network, disabling all other other adapters.



DEPLOYMENT OF SANDBOXED NETWORK

After starting all my virtual machines, I set all adapters to internal network as they use single adapters except for Ubuntu gateway 22.04. I made sure Kali Linux can browse word press servers. As seen on fig 1 and 2.



Hello world!

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

October 27, 2022

fig.1

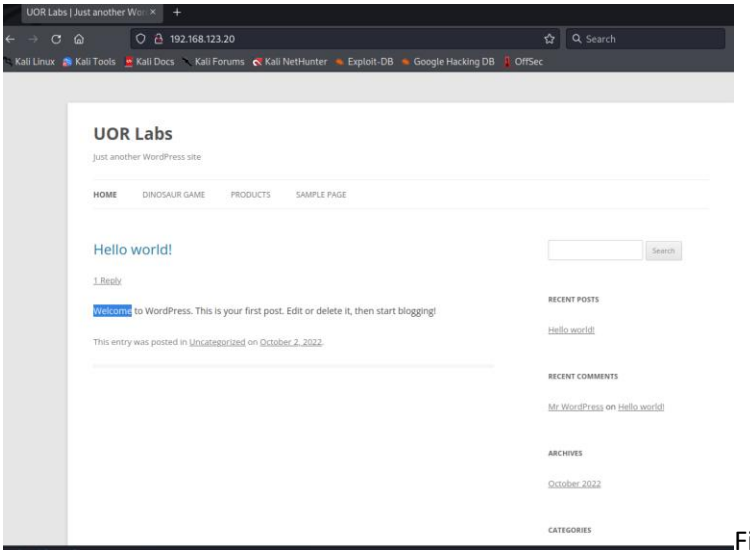


Fig.2

RENAMING THE HOSTNAMES.

I renamed the hostnames of all machines to various names.

```
--- 192.168.123.40 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2012ms
rtt min/avg/max/mdev = 0.651/1.295/1.623/0.455 ms
student@Nwaka:~$ 192.168.123.20
192.168.123.20: command not found
student@Nwaka:~$ ping 192.168.123.20
PING 192.168.123.20 (192.168.123.20) 56(84) bytes of data.
64 bytes from 192.168.123.20: icmp_seq=1 ttl=64 time=0.637 ms
64 bytes from 192.168.123.20: icmp_seq=2 ttl=64 time=0.580 ms
64 bytes from 192.168.123.20: icmp_seq=3 ttl=64 time=0.529 ms
^C
--- 192.168.123.20 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2047ms
rtt min/avg/max/mdev = 0.529/0.582/0.637/0.044 ms
student@Nwaka:~$ ping 192.168.123.10
PING 192.168.123.10 (192.168.123.10) 56(84) bytes of data.
64 bytes from 192.168.123.10: icmp_seq=1 ttl=64 time=0.754 ms
64 bytes from 192.168.123.10: icmp_seq=2 ttl=64 time=0.691 ms
64 bytes from 192.168.123.10: icmp_seq=3 ttl=64 time=0.731 ms
^C
--- 192.168.123.10 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2055ms
rtt min/avg/max/mdev = 0.691/0.725/0.754/0.026 ms
student@Nwaka:~$ ping 192.168.123.30
PING 192.168.123.30 (192.168.123.30) 56(84) bytes of data.
64 bytes from 192.168.123.30: icmp_seq=1 ttl=64 time=0.019 ms
64 bytes from 192.168.123.30: icmp_seq=2 ttl=64 time=0.024 ms
64 bytes from 192.168.123.30: icmp_seq=3 ttl=64 time=0.023 ms
^C
--- 192.168.123.30 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2031ms
rtt min/avg/max/mdev = 0.019/0.022/0.024/0.002 ms
student@Nwaka:~$
```

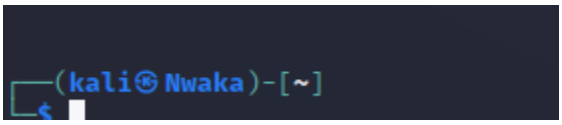
Ubuntu server 22.04(wordpress)

See details in Windows Security

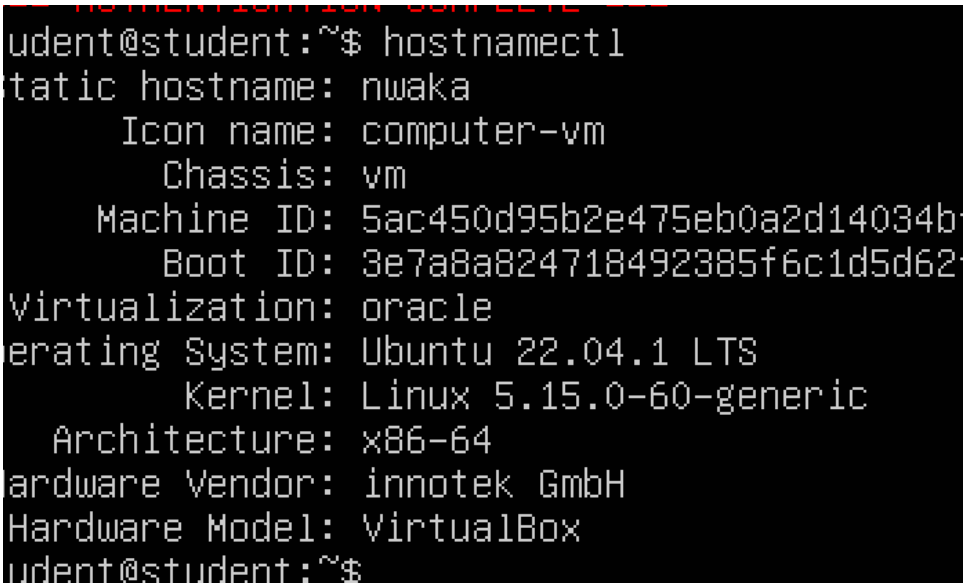
Device specifications

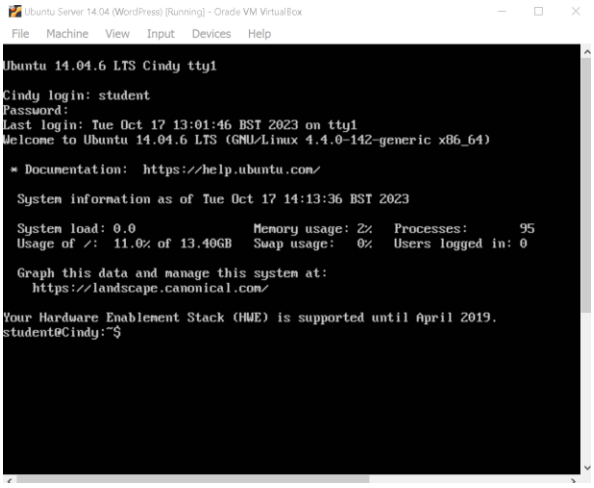
Device name	CINDY
Processor	Intel(R) Core(TM) i7-10700K CPU @ 3.80GHz 3.79 GHz
Installed RAM	4.00 GB

Windows



Kali linux hostname

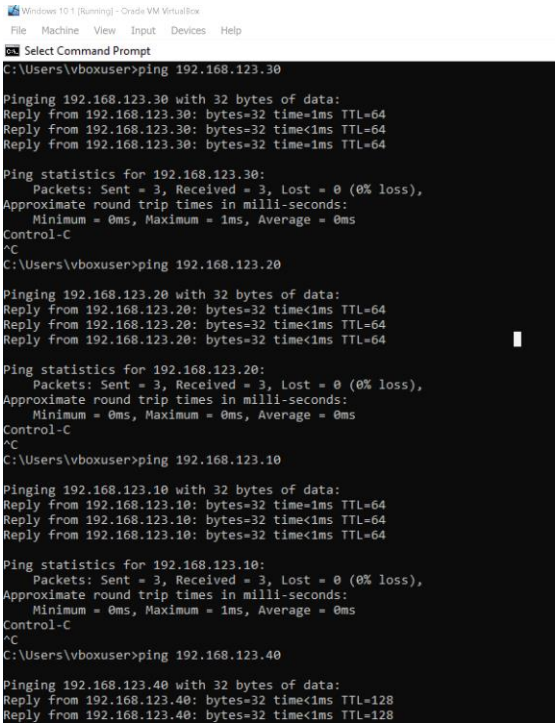




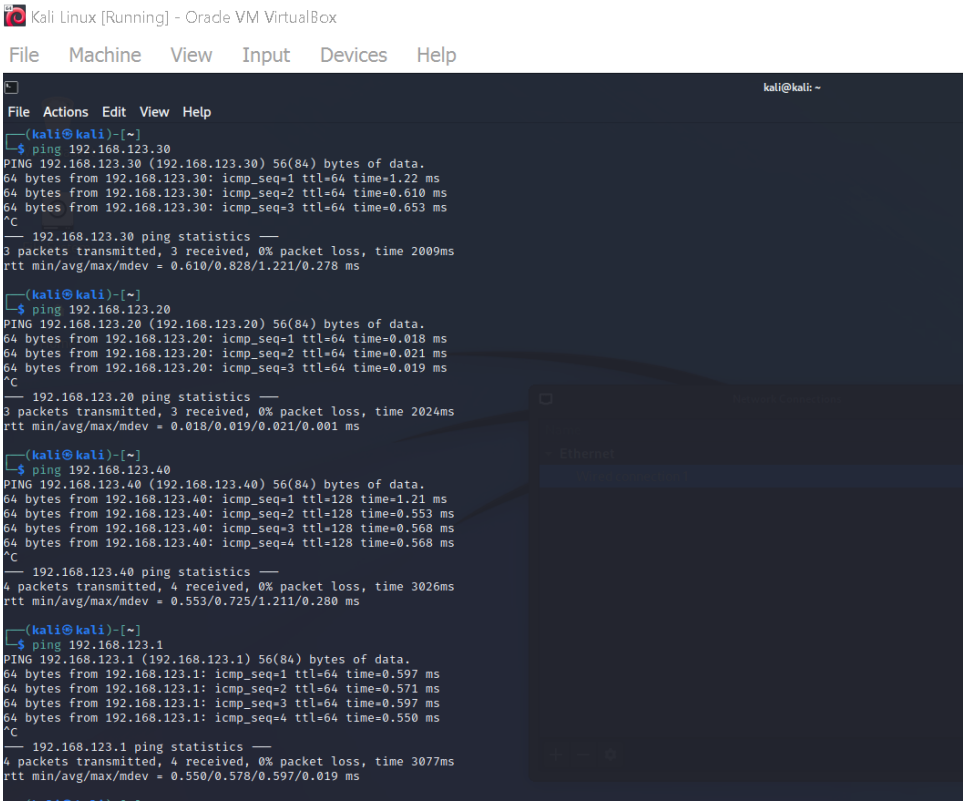
Ubuntu 14.01 Wordpress

PING TEST

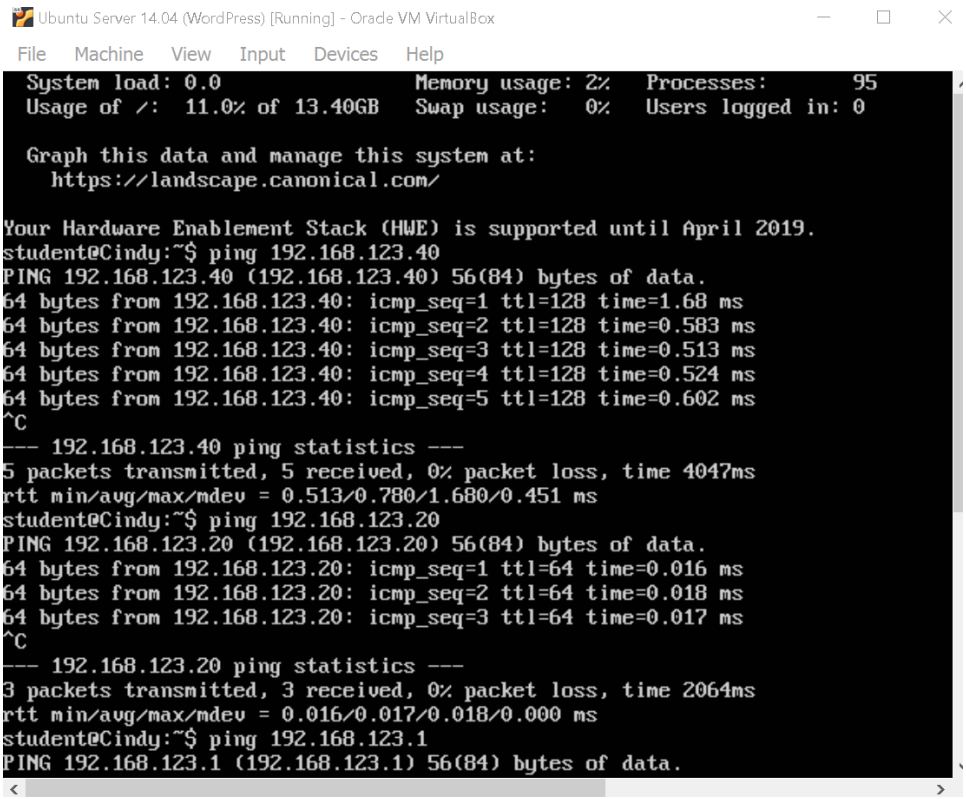
Ping test is a network utility used to test the reachability of a host (a device or computer) on an Internet Protocol (IP) network and measure the round-trip time it takes for data packets to travel to the destination and back to the sourc**e.**



Windows Ping Test.



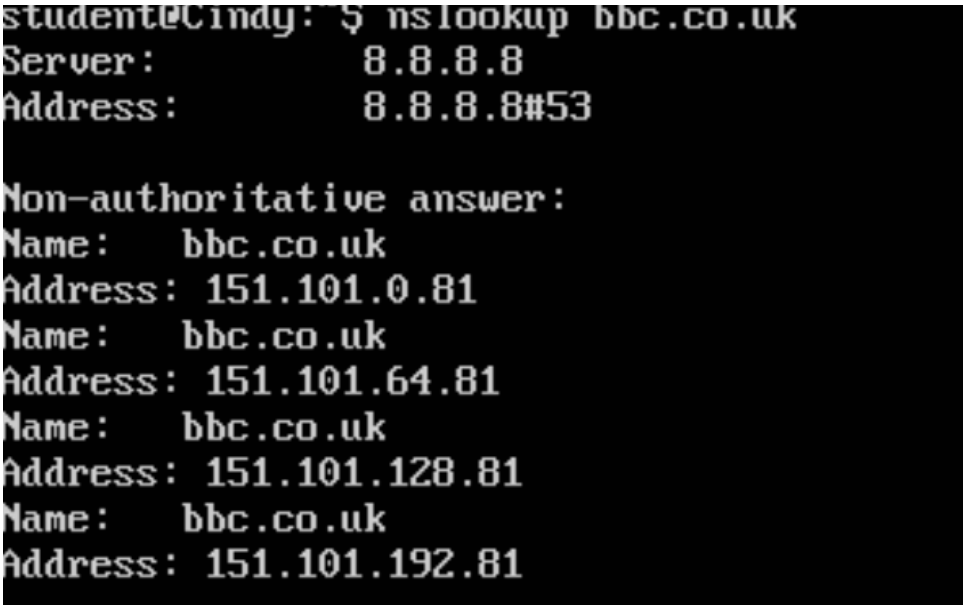
Kali Linux ping test.



Ubuntu server 14.04

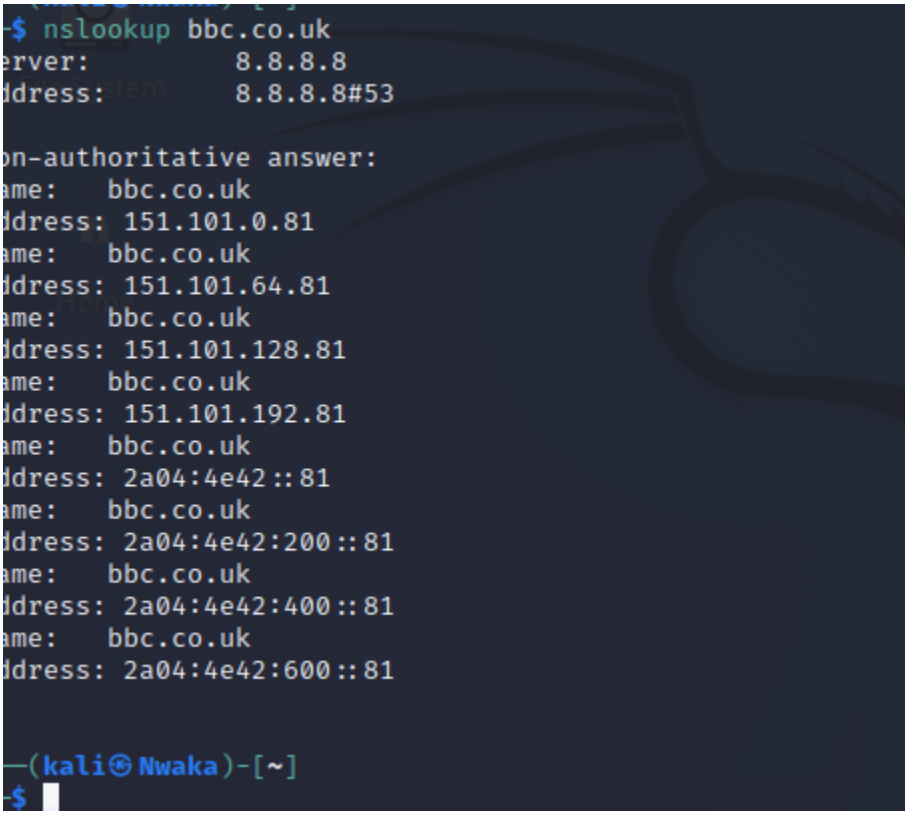
GATEWAY INTERNET ACCESS TEST.

To test the internet gateway access, I used “nslookup bbc.co.uk” and they were all responding.



```
student@Nwaka:~$ nslookup bbc.co.uk
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   bbc.co.uk
Address: 151.101.0.81
Name:   bbc.co.uk
Address: 151.101.64.81
Name:   bbc.co.uk
Address: 151.101.128.81
Name:   bbc.co.uk
Address: 151.101.192.81
Name:   bbc.co.uk
```



Back Up of Sandboxed Network:

Export your VMs as OVA files from VirtualBox and back the OVA files to OneDrive, Google Drive, Drop Box etc