

Lab environment setup

ACCA7033

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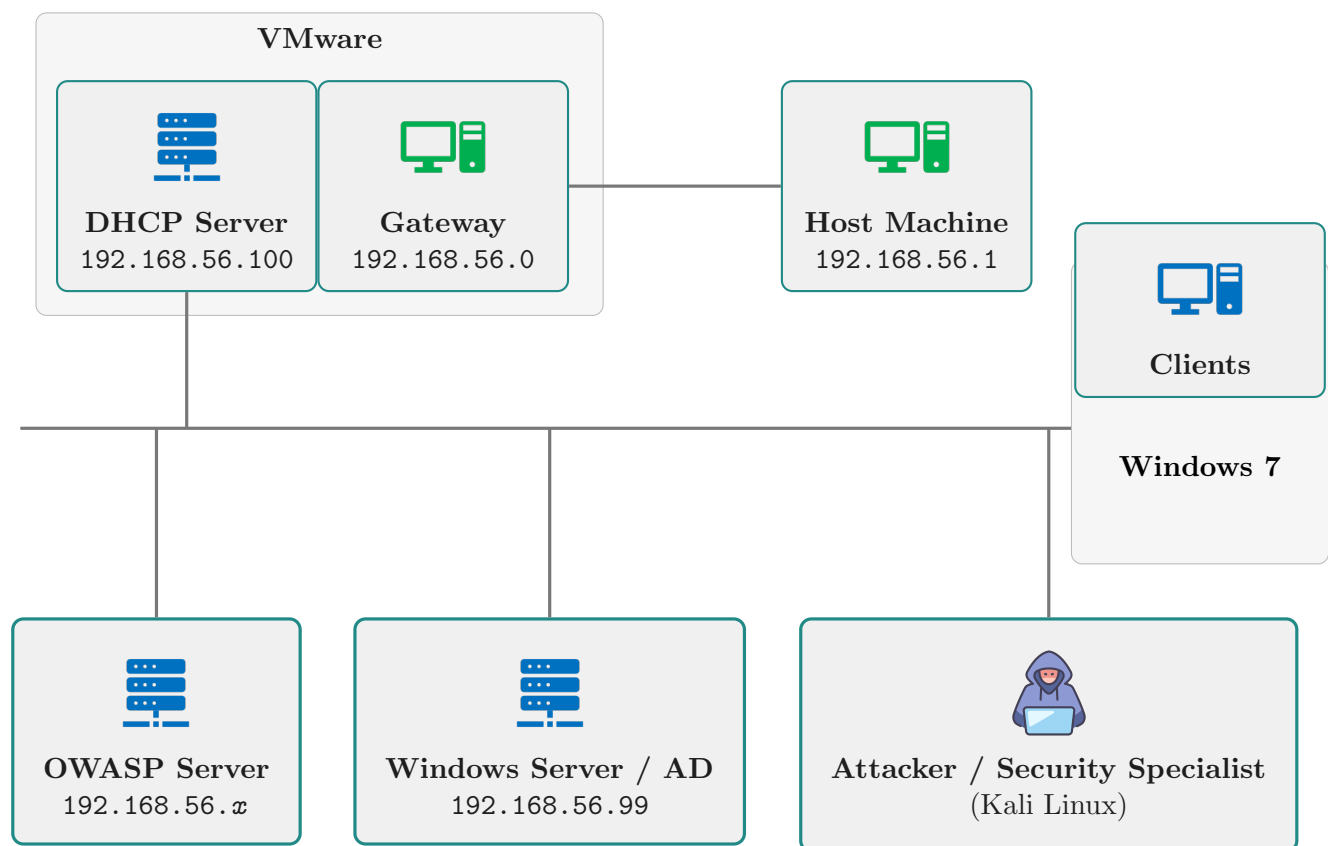


Figure 1: Scenario environment (Lab Network)

Please read this before you start

- This document is to help you download and set up the virtual machines used in this module.
- Before you download anything, create one folder for all your virtual machines, for example `C:\VirtualMachines`.
- Only download to this folder (move the download there if you put it somewhere else).
- Make sure the drive has enough free space. The virtual machines are very large.
- Only download one virtual machine at a time.
- Keep the downloaded **.7z** files. If you mess up your VM, you can remove it from VirtualBox (including deleting the files) and extract it again.
- Remember to shut down the VM before you log out. Otherwise you might not be able to use it next time.

1 Lab environment

- During your course, you will be using several virtual machines. They are provided as **.7z** files on the [virtual machines link](#), which is also available on Moodle.
- You do not need to download all virtual machines, some are not relevant for this module.
- For this module we will use four VMs at different times.
 - Security Analysis/Attacker machine: kali-linux-2026.2-virtualbox-amd64
 - Linux vulnerable machine: OWASP Broken Web Apps 1.2
 - Windows Server vulnerable machine: LAB-DC
 - Windows Client machine: IE11 - Win7
- Download the relevant **.7z** files into your virtual machines folder.
- To extract them, you will need 7-Zip. You can download it from <https://www.7-zip.org/>.
- Right-click each **.7z** file and choose **7-Zip** → **Extract Here**. Each VM will be extracted into its own folder containing **.vbox** and **.vdi** files.

- You will also need a virtual machines manager application. There are many you can use and you are free to use the one you are comfortable with. I usually use virtual box in my labs as they don't consume much resources. Other options such as VMWare, hyperv, qemu, etc..
- For this module we will be using Oracle Virtual box. You can download Oracle Virtual box from this [Virtual Box downloads link](#).
 - You need to make sure you are downloading the correct version - depending on your host Operating system
- In VirtualBox, use **Machine** → **Add** and select the **.vbox** file inside each VM folder.
- After adding the VMs to VirtualBox, you can now start them.
- You can start each machine separately by either clicking on the **Start** Button on the VirtualBox interface or **double click on the VM** you want to start.

1.1 Virtual machines setup

1. Kali Linux login
 - username: kali
 - password: kali
2. OWASP server login
 - username: root
 - password: owaspbwa
3. Windows AD server login
 - username: labadmin
 - password: Un1vers!ty
4. Windows 7 Client login
 - username: Win7U
 - password: W1ndows7User!

2.1 Internet Connected VM

Internet Connected Network

- In some times, you need your Kali linux VM to be connected to the Internet.
- You never need to connect the Win7 machine or the OWASP machine to the Internet

The steps below will be the same for any VMs that you want it to be connected to the Internet (to the network your host machine is connected to)

- Select the VM you need to change settings for and click on Settings. (Fig.2)
- Select Network (Fig3)
- Choose in the drop down menu of **Attached to** the option NAT. This is network Address Translation. This will give your virtual machine access to the network resources of your host machine. It will use the same IP address of your host machine to connect to the Internet. (Fig3)

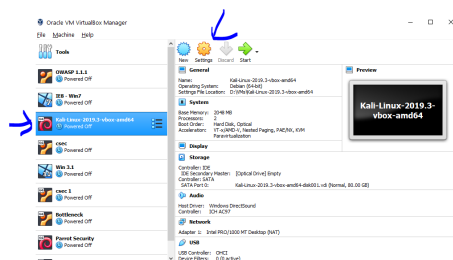


Figure 2: Choose Settings

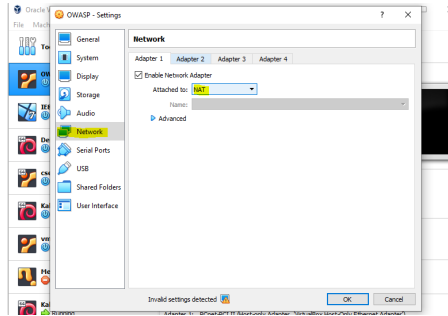


Figure 3: Select Network and choose NAT

2.2 Isolated Network

Internet Connected Network

- Most of the labs will need this network setup unless the lab specifies otherwise
- There are two methods to configure your lab network environment. We will look at both and how you can set up your network to use any of them.
- For both you will need to first create a Virtual network by following the steps below.
 - Click on File on the Virtual box program and select **Host Network Manager** Fig.4
 - Click on Create Fig.5
 1. If you want to setup your network IP addresses manually for each machine then make sure DHCP is not enabled as in Fig.5
 2. If you want to enable DHCP. tick the DHCP box as shown in Fig.6
- Now you need to make sure that your VM network settings uses the virtual Network you created.
 - Click on Settings as in (Fig.2)
 - click on Network as in (Fig.7) and choose **Host Only Adapter**. You should see the Network Name as **Virtual Box host-only adapter**.

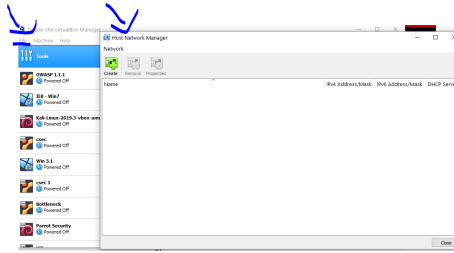


Figure 4: Enter into Host Network manager Setup window

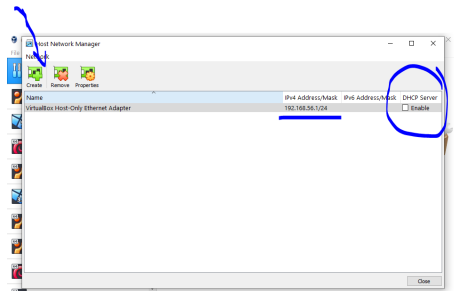


Figure 5: Create Network

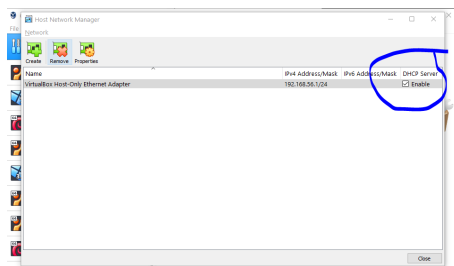


Figure 6: Enable DHCP

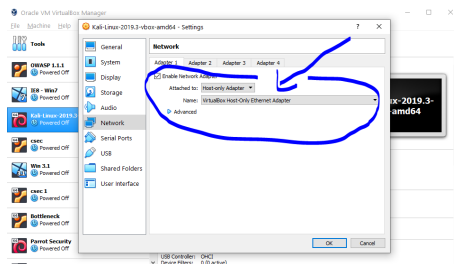


Figure 7: Host Only Adapter Settings

- To check your ip address, in any of those virtual machine devices you open a terminal and type:
 - **ifconfig**
- In Windows you can open a command line Interface by clicking on start and typing cmd.
 - **ipconfig**

3 Test connectivity

- You can test connectivity on the terminal by using **ping** command to ping the vulnerable machine from kali or the other way around
 - To ping the vulnerable machine from kali **ping 192.1268.56.100**
- when we selected host only network we created a private network between our VMs that is completely isolated from the external world.
- **Remember for any two devices to communicate. they need to be on the same network.**
- We need to make sure both VMs are on the same network with the host machine only.
- On the vulnerable terminal type:
 - **ping 192.168.56.102**
- On Kali Linux machine terminal type:
 - **ping 192.168.56.103**
- You also test connectivity between kali linux and the vulnerable machine by opening a browser on the kali linux machine and entering in the address bar the ip address of the vulnerable machine.
- Sometimes Linux fails to obtain an IP address from the DHCP server. A simple invoke of a dhclient request will allow it to dynamically obtain one. You type **sudo dhclient**

4 Problems that you can possibly face

We faced some problems in the class. I want to avoid having those problems every week as it will take away from our lab time.

1. on vmware, make sure your virtual network is connected as in (virtually connected)
2. on Vbox, you need to create a virtual box network interface first

3. If you cannot see any virtual interface on your computer and you are using vmware type **sudo systemctl restart vmware**.
4. On kali linux, changes you made in your network interface were not taking effects until the network manager service was restarted by using **sudo service network-manager restart**
5. In some machines, you need to change the USB setting for the VM to USB 1.1 as shown in fig.8 below. This applies for any machines that throw the USB error.
6. If you are using an apple Mac laptop with M1 chip, there are known compatibility and running issues. You can read about them here <https://www.virtualbox.org/manual/ch14.html#KnownProblems>.

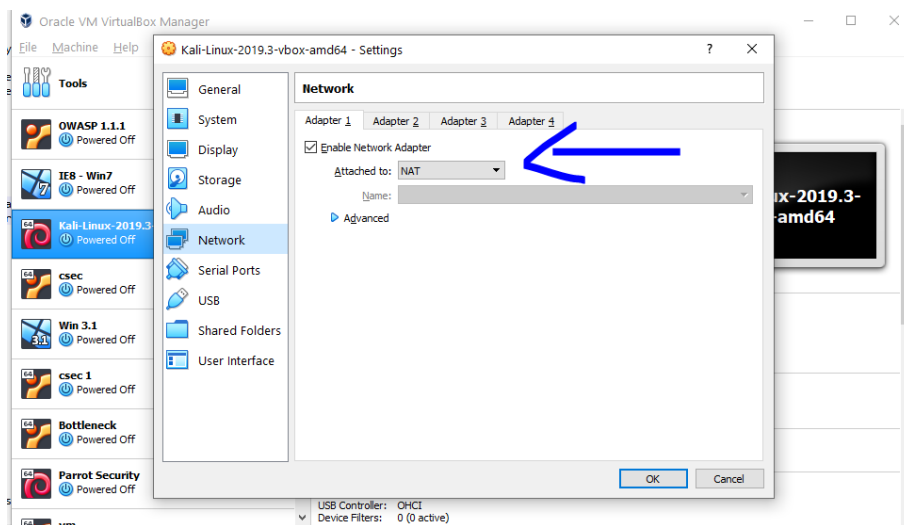


Figure 8: USB error