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# HOW TO SET UP YOUR OWN TESTING LAB ENVIRONMENT




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## A HOW TO GUIDE

Written By:

**Dan Cannon**

This e-book will guide you through the basics of installing the software and the steps needed to get your virtual machines and lab environment up and running.



# INTRODUCTION

## Welcome to your journey into building a lab environment with VirtualBox!

Whether you're an aspiring penetration tester or just someone passionate about cybersecurity, having a safe and controlled environment to practice and experiment is crucial.

This e-book is designed to guide you through the very basics of installing the necessary software and getting virtual machines (VMs) up and running.

Creating a lab environment will not only help you sharpen your skills, but also ensure that your testing activities do not interfere with any real-world systems.

We'll start from scratch, so even if you're new to virtualisation, you'll find this guide accessible and straightforward.

With detailed instructions and accompanying screenshots, you'll be able to set up your own lab and dive into the world of penetration testing with confidence.



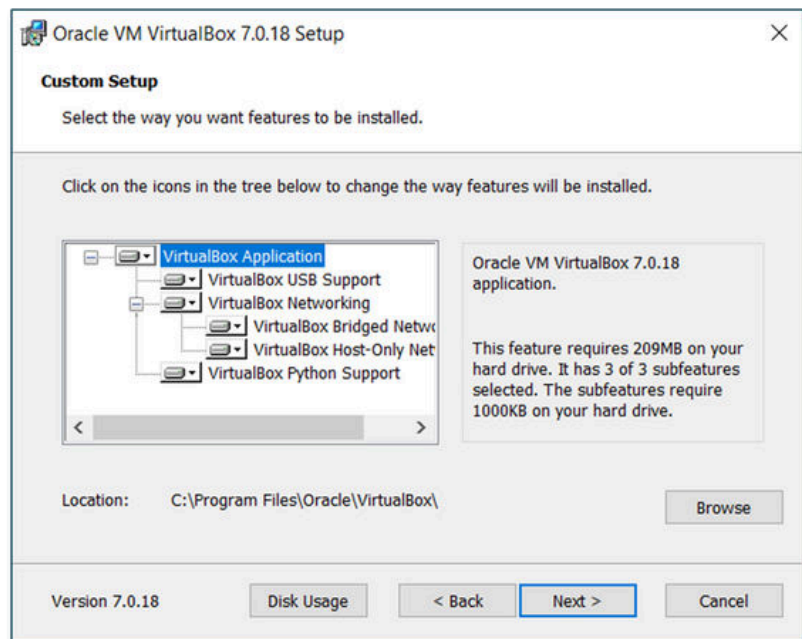
# SETTING UP YOUR OWN TESTING LAB

## Ready to get started?

Go to your downloads folder and double click the VirtualBox executable to install it.

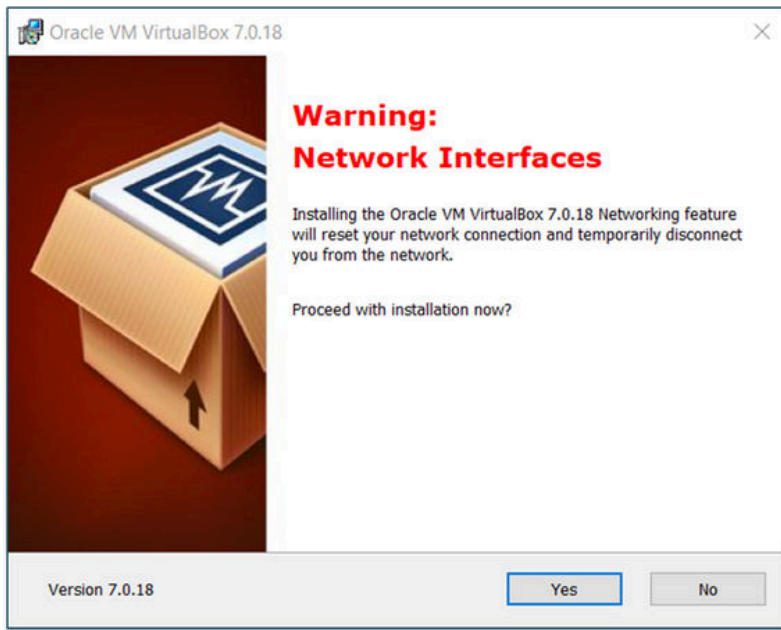


Click **Next** 

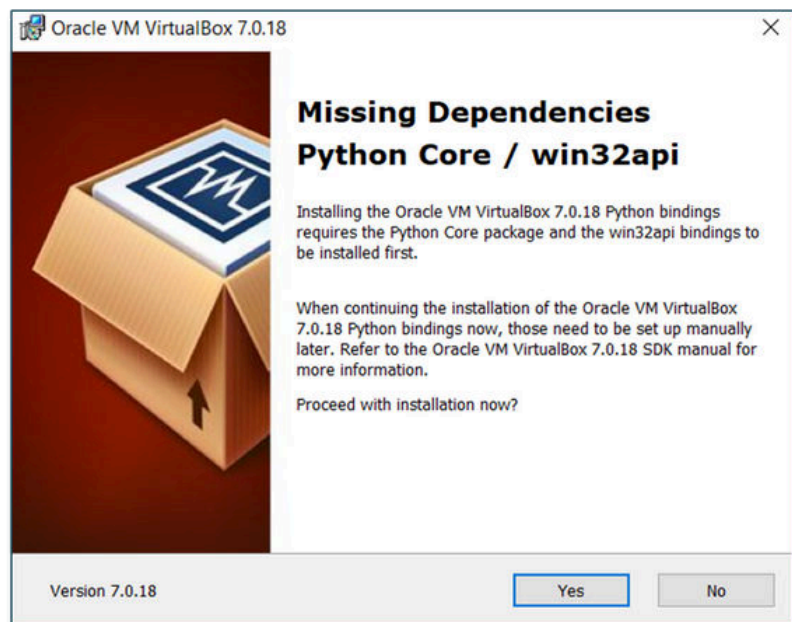


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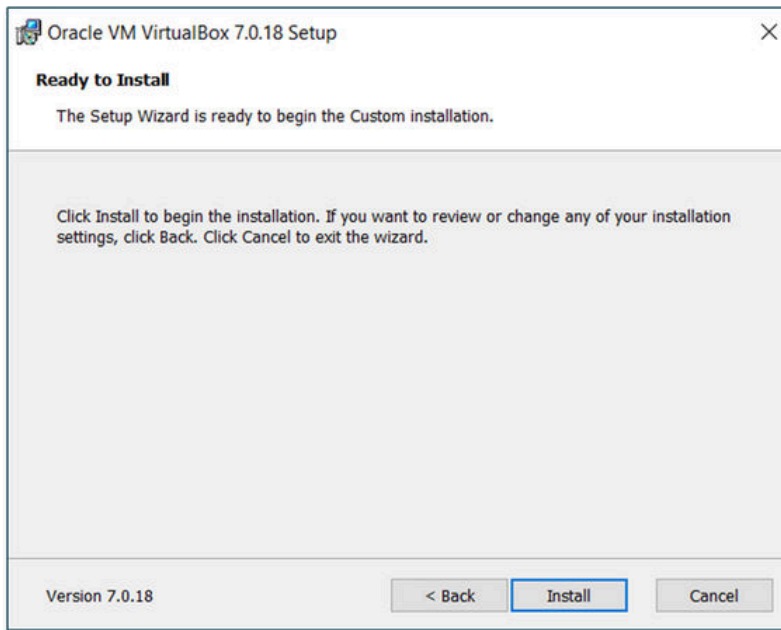


Click **YES** 



Click **YES** 



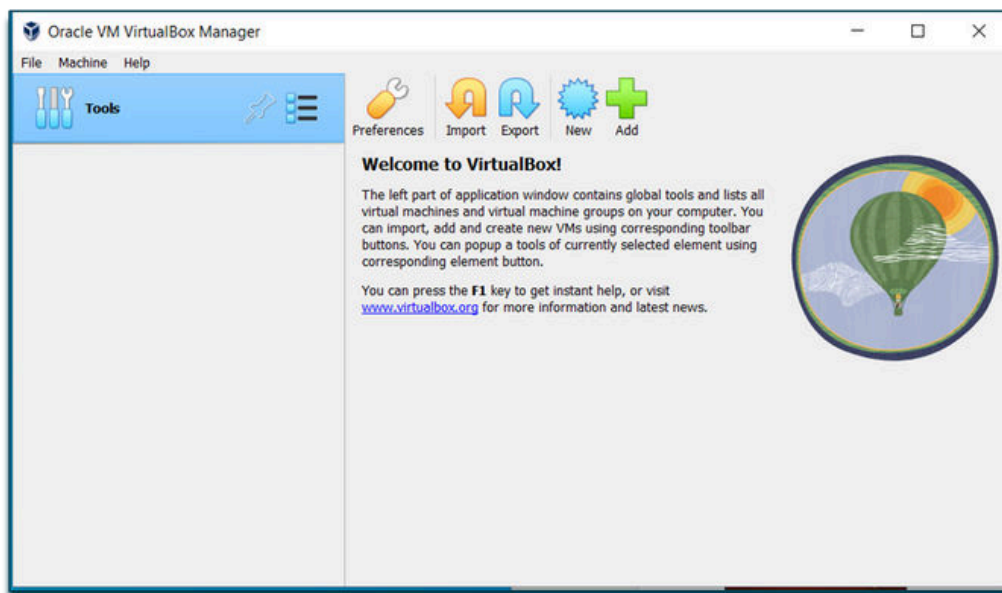


Click **Install** 



Click **Finish** 





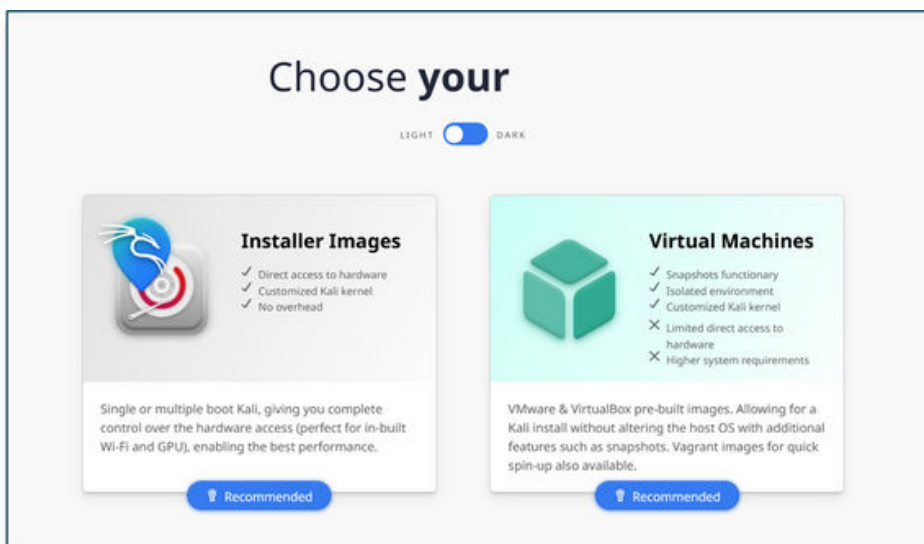
**Congratulations, you have now successfully installed VirtualBox.**

From here we can create both virtual machines to test from (typically Kali) and virtual machines to attack (anything we choose).

# HOW TO CREATE A TESTING MACHINE

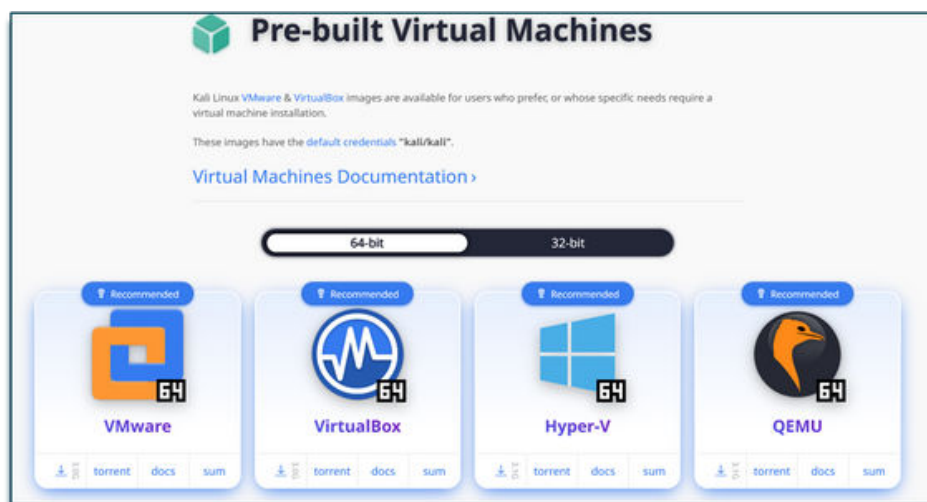
To create a testing machine, we will use Kali.

You will have two options when it comes to downloading Kali – either to download a pre-built virtual machine, or the image installer (a .iso file)



The key difference is that downloading the ISO file will let you install Kali Linux from scratch, giving you more control over the setup, while the pre-built VM is a ready-to-use version that you can import directly into your virtualisation software, saving time and effort.

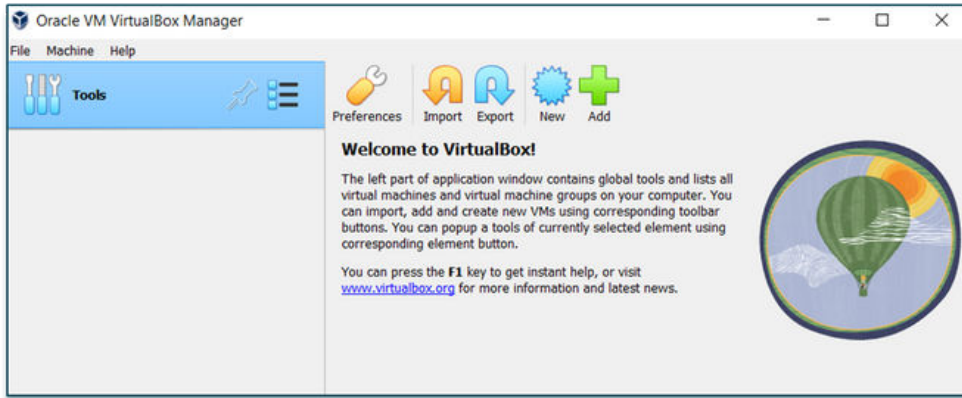
First, let's start with using a **prebuilt machine**.



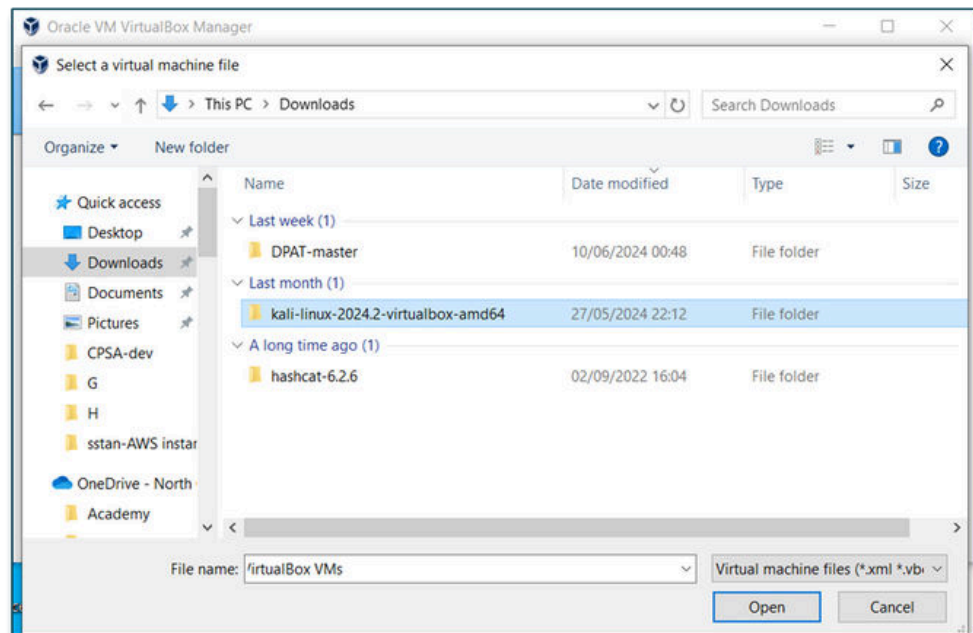
Click **Next**

Select the software you use (we are going to assume VirtualBox). This will give you a zipped file.

To access this virtual machine, simply **Add** it to VirtualBox.



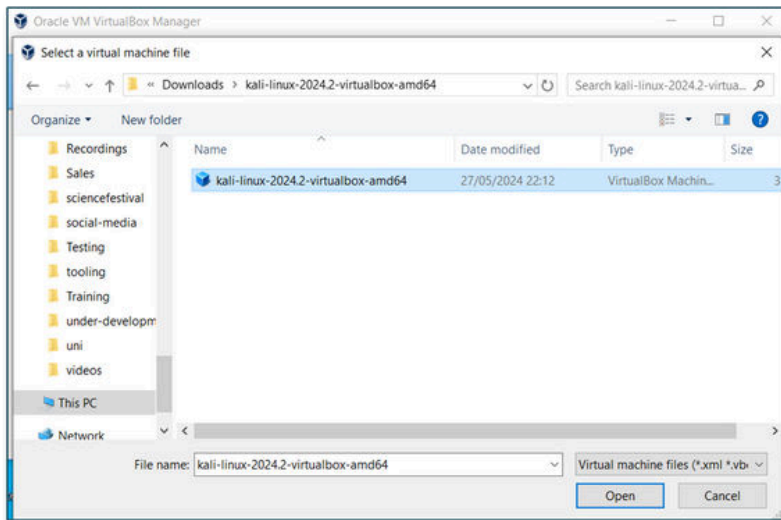
Click **Add** 



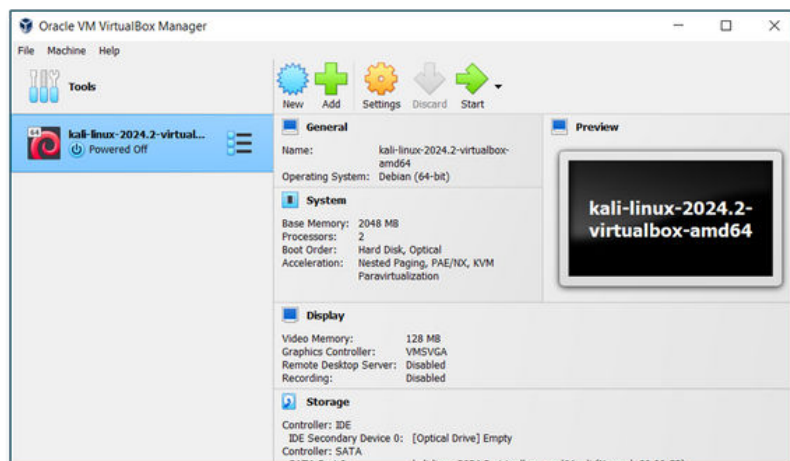
Select the **Kali Linux** folder 







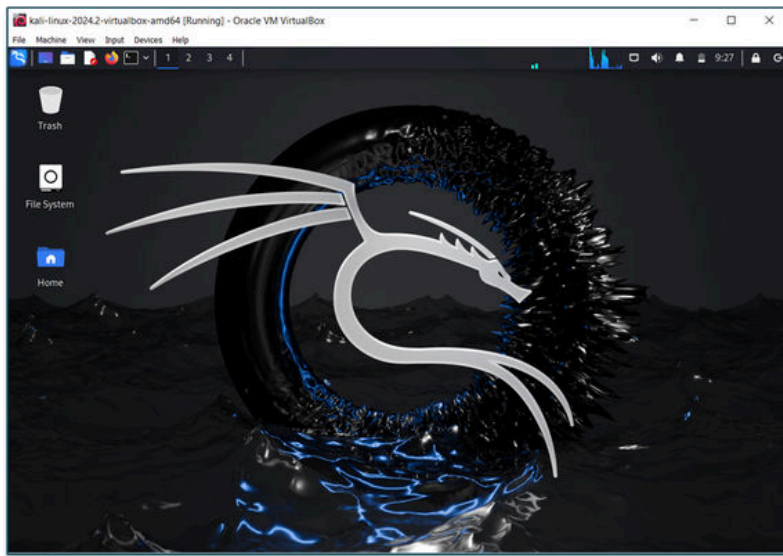
And choose the **Kali VirtualBox** file 



Your Kali machine now appears in your VirtualBox interface.

Pressing start will boot up the machine. It will use the default credentials of **kali:kali**

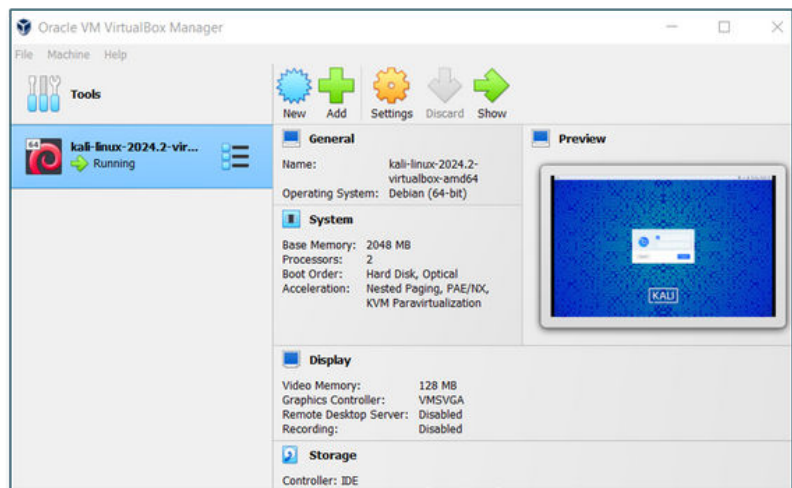
You will now be able to use your Kali virtual machine.



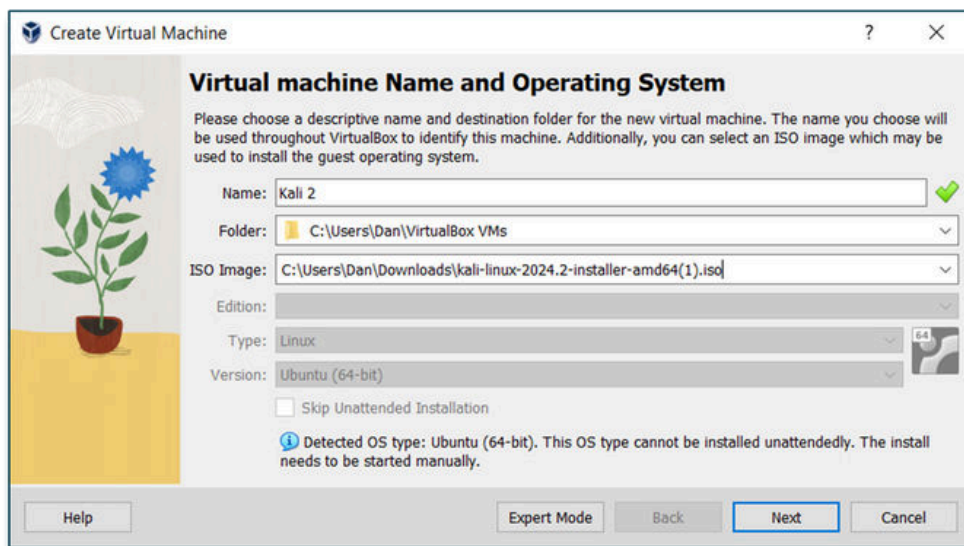
Alternatively, we can build a virtual machine with an ISO file.

This is the installation file for an operating system. This gives us more flexibility around how much power and storage a virtual machine has.

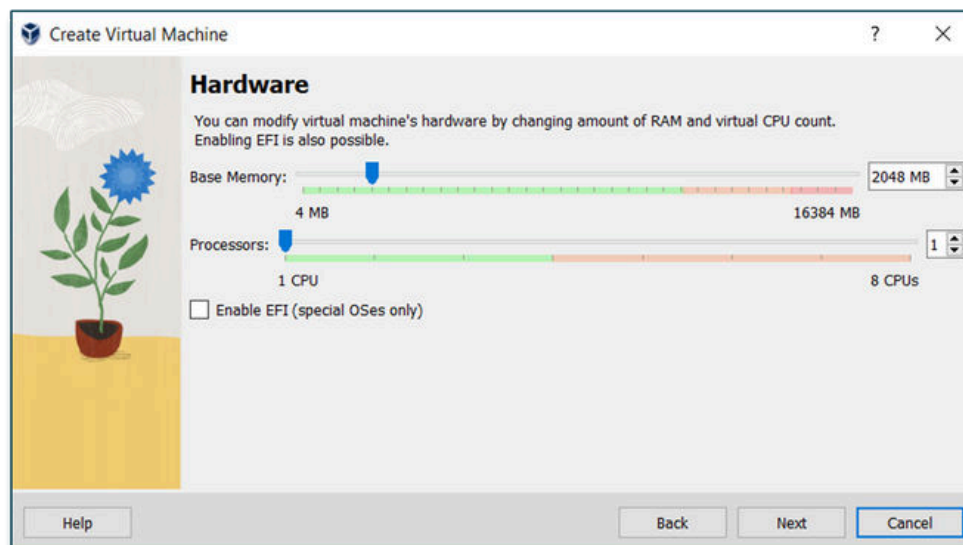
To do this simply select **New** from the virtual box interface.



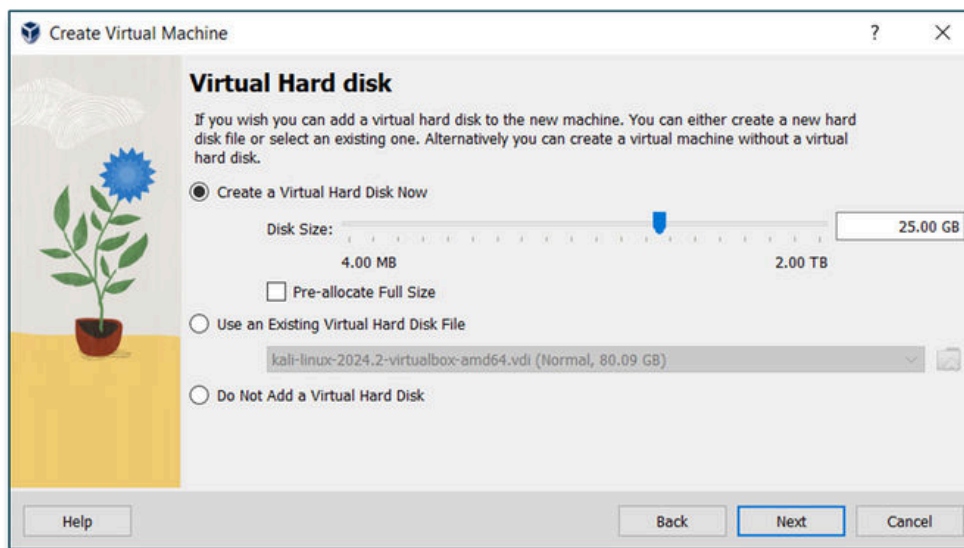
Choose a name for the machine and select the location of the ISO file you have downloaded, then hit **Next**.



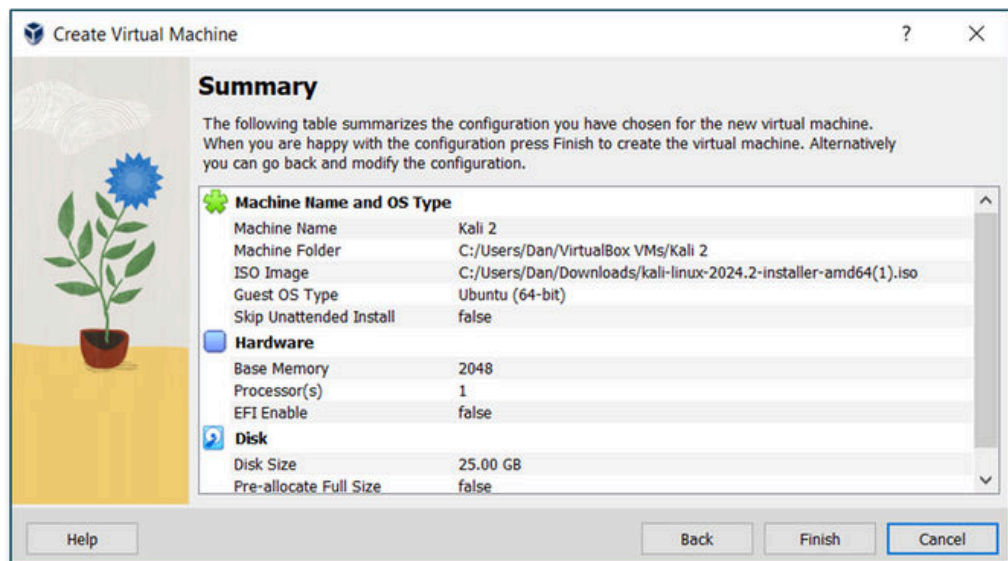
Choose how much RAM you want to use (you will need to think about how much RAM is available on your computer and how many Virtual Machines you intend to run at the same time).



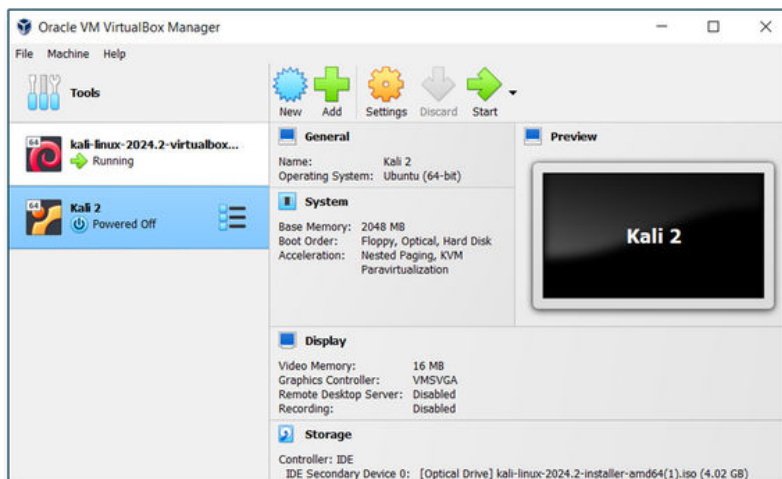
Then choose how big you want the virtual hard drive to be.



Once you are happy with your settings, you will see the following menu:



Hit **Finish** and your VM will be available from the VirtualBox interface.



Once you have created your virtual machine, a simple way to test whether you have network and internet connectivity is to use the terminal (command prompt) to ping something on your network or an internet accessible IP address.

```
(kali@kali)-[~]
└─$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=118 time=98.0 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=118 time=170 ms
^C
 8.8.8.8 ping statistics:
 2 packets transmitted, 2 received, 0% packet loss, time 1022ms
 rtt min/avg/max/mdev = 97.998/134.056/170.115/36.058 ms

(kali@kali)-[~]
└─$
```

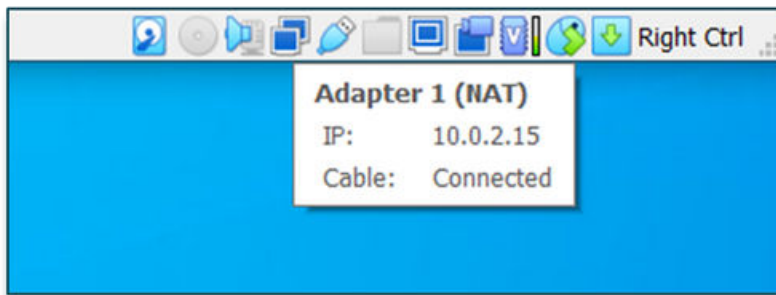
*(Don't forget, in Linux ping does not stop after 4 packets, to stop you will need to press CTRL+C)*

When using virtual machines, you can select to use NAT (Network Address Translation) or bridged mode.

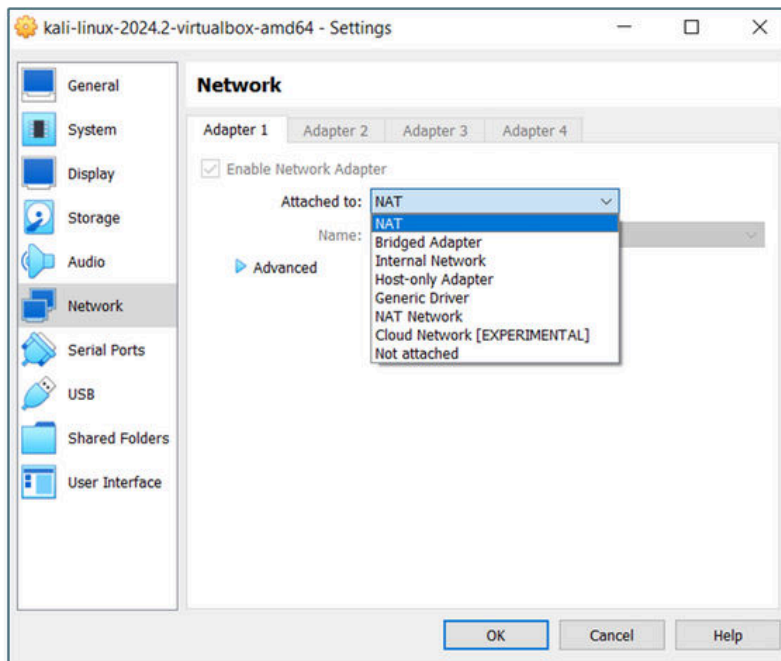
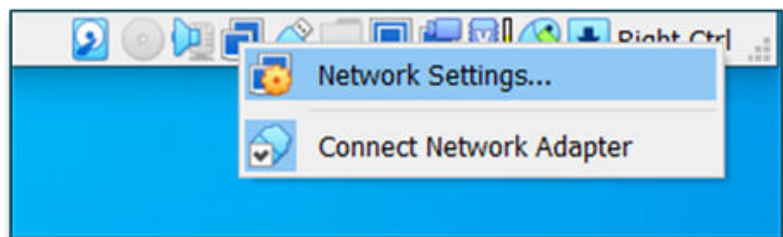
In NAT mode, the VM uses your computer's internet connection, like it's hiding behind your computer.

In bridged mode, the VM gets its own internet connection, just like any other computer in your house.

By default, most VMs use NAT; the main difference is that your VM will not get an IP address for the network your laptop is on due to it not being on that network. If you want your VM to get an IP address that you recognise as part of your network you will need to use bridged mode



VM is currently in NAT mode. By right clicking the icon of two computers, we get the option to look at the network settings

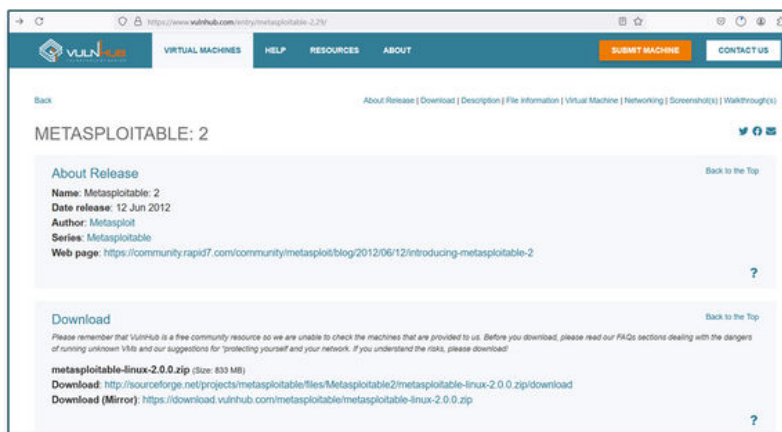


# HOW TO CREATE A TARGET MACHINE

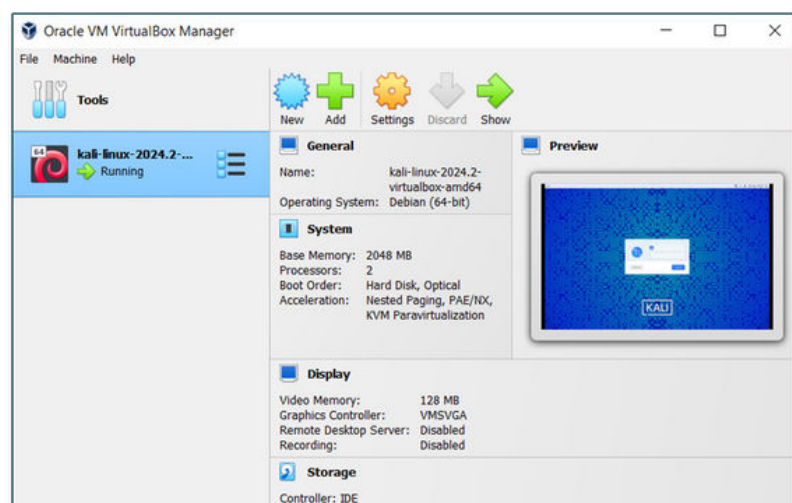
Now it's time to create a couple of target machines to practice against.

We are going to use Metasploitable 2 (an old and well documented vulnerable machine so there are plenty of walkthroughs online if you get stuck).

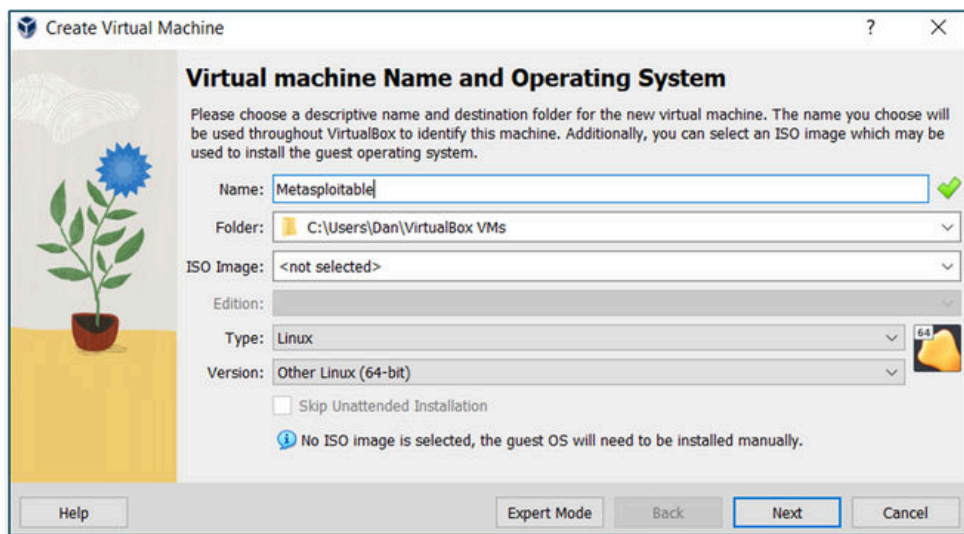
First of all, navigate to <https://www.vulnhub.com/entry/metasploitable-2,29/> and download the virtual machine.



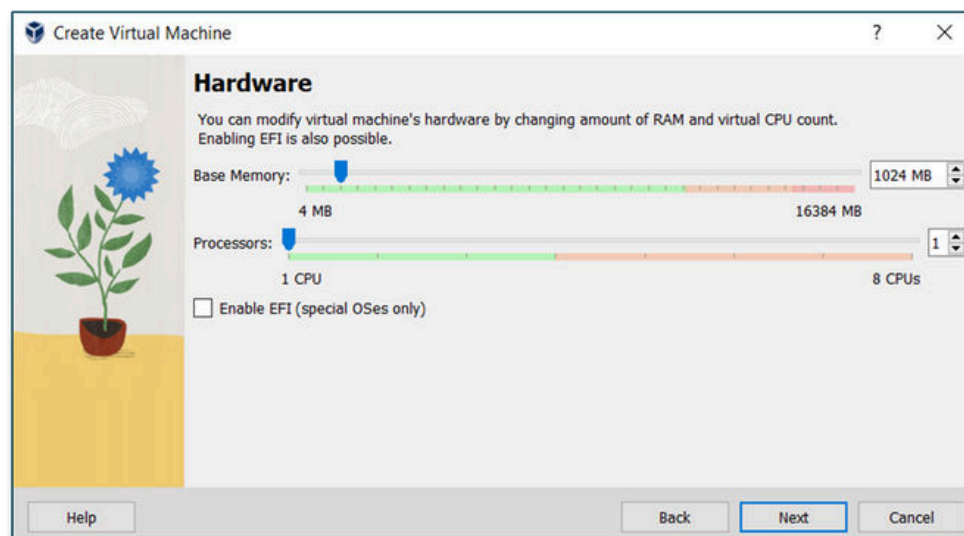
This will download a zipped VDI file (Virtual Disk Image) – essentially the hard drive of a machine, rather than the whole virtual machine. This means that we have to set up a VM and then provide this file as the 'hard drive' to be used. Go to your VirtualBox manager interface.



Click **New** and **Name** the virtual machine what ever you choose. Then set the **Type** to **Linux** and **Version** to **Other Linux (64-bit)**.

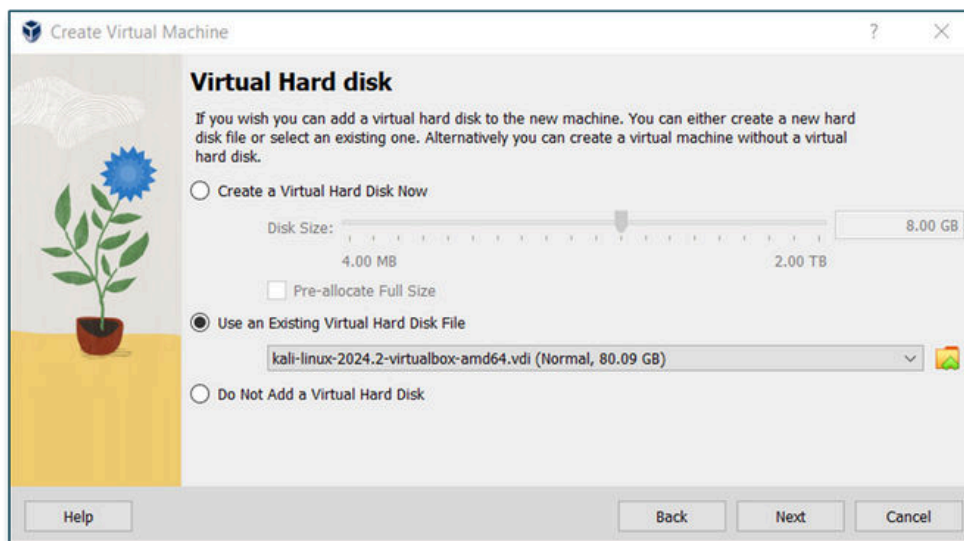


Next you will configure how much RAM you want to assign to this virtual machine (1GB should be plenty).

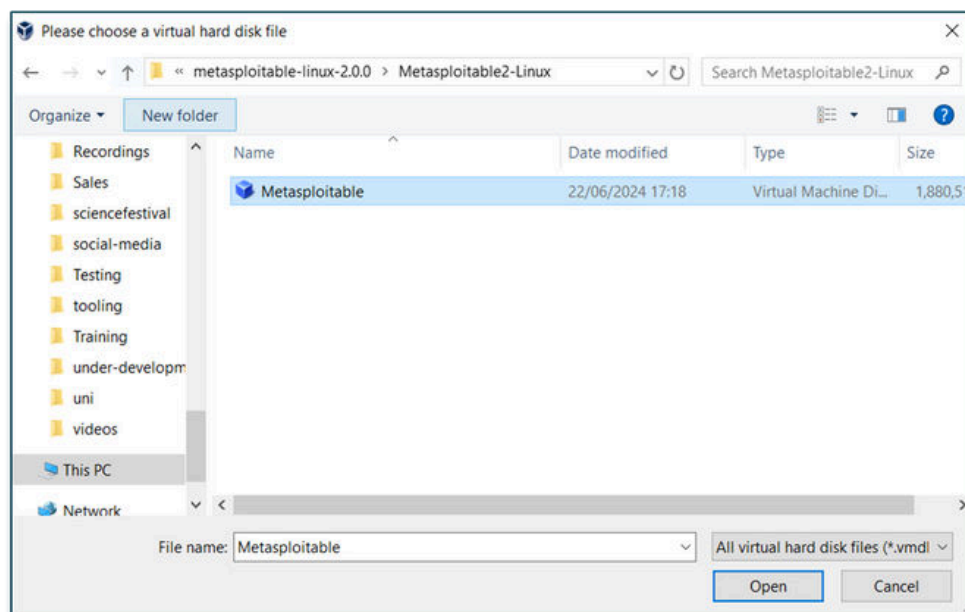


Then you will select the hard disk, choose the option **Use an Existing Virtual Hard Disk File** and click the **Folder** icon.





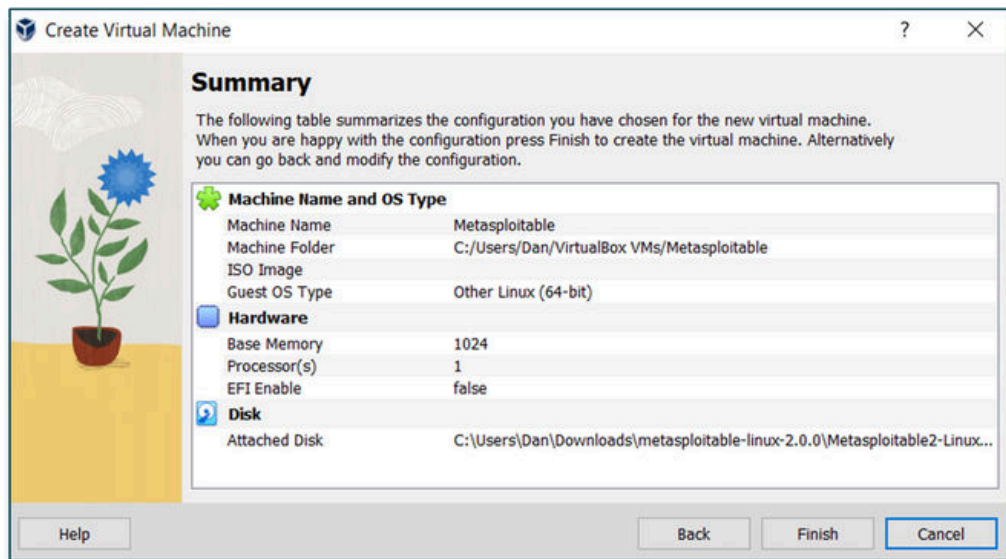
Choose to **Add** a hard disk and then navigate to your Metasploitable download (make sure you have unzipped the file) and hit **Open**, then **Choose**.



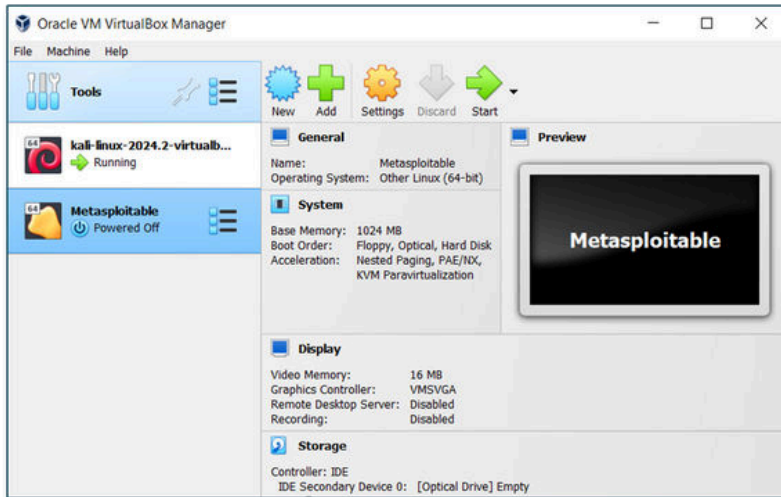
Then you will select the hard disk, choose the option **Use an Existing Virtual Hard Disk File** and click the **Folder** icon.



Hit **Next**. Then at the following screen, hit **Finish** 

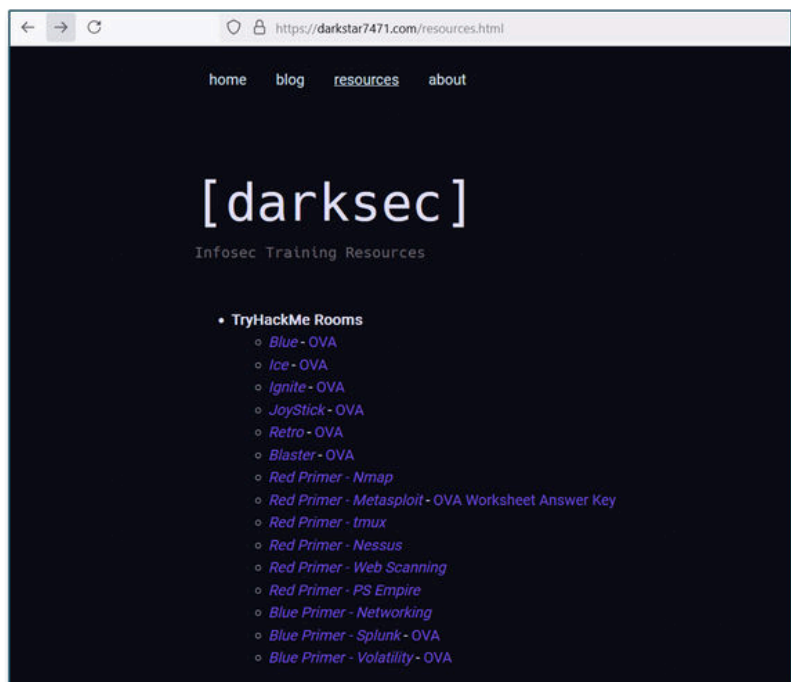


Metasploitable is now available from VirtualBox and can be turned on (if you need to log into the machine the credentials are **msfadmin:msfadmin**).



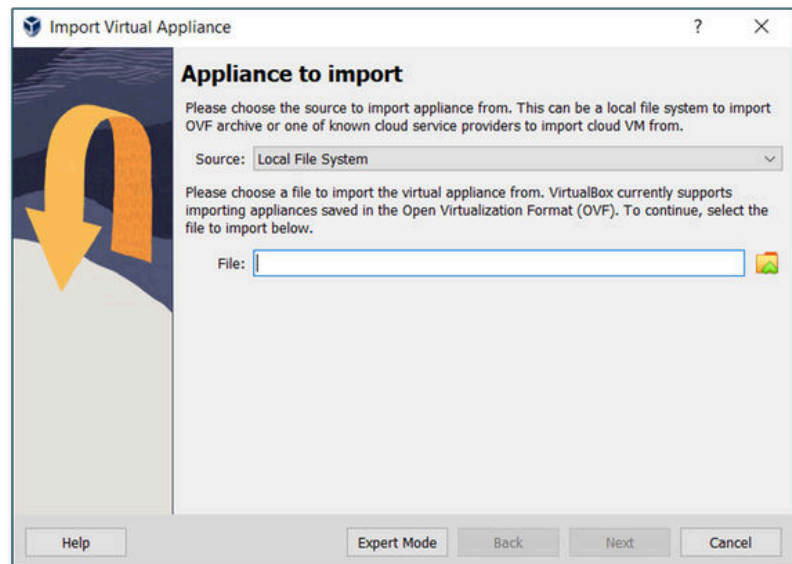
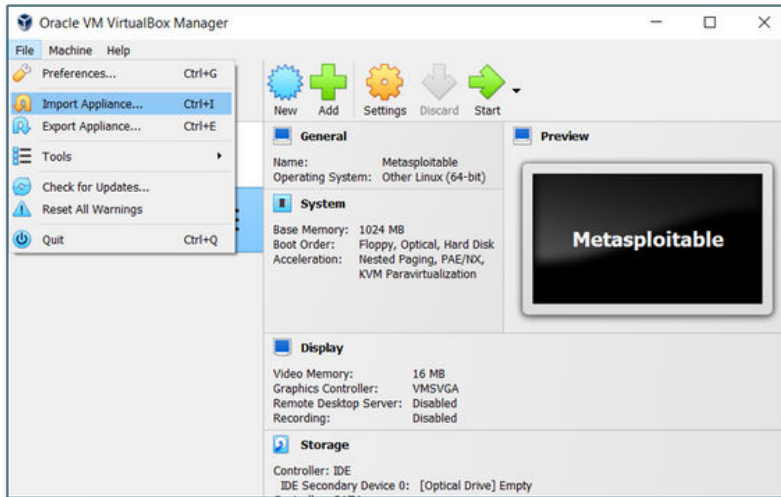
To have a Windows machine to test against, we will use the machine **Blue** from **Hack The Box**. This is a commonly used vulnerable Windows machine, again with plenty of write ups available across the internet in case you get stuck.

To get started, download **Blue** from <https://darkstar7471.com/resources.html> by choosing the **OVA** link next to Blue.

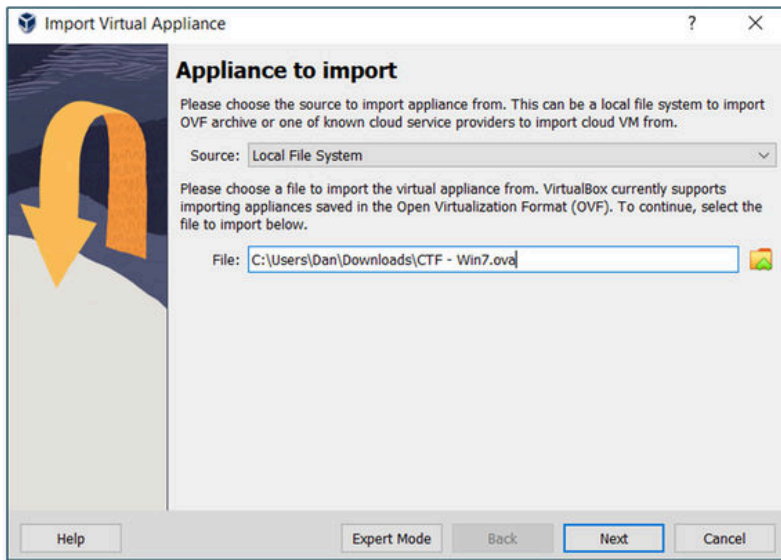


This will download a zip file that contains the prebuilt VM called **CTF - Win7**.

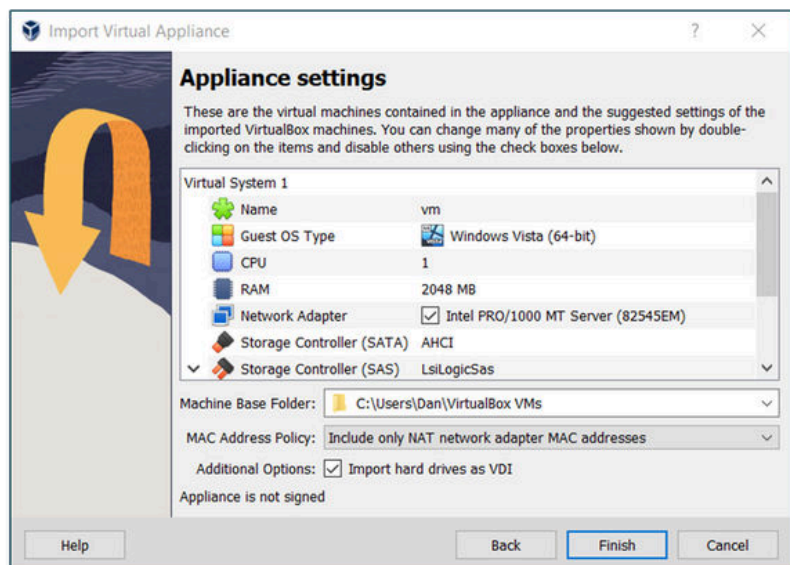
We can now import this file into VirtualBox as an appliance, by navigating to **File, Import Appliance**.



From here, we simply select the **CTF – Win 7 OVA** file and hit **Next** 



Then **Finish** 



To be able to scan both the Metasploitable and Blue VMs, make sure that they are both set to **Bridged Mode** so that they are given an IP address on your network.

## **Congratulations – you've now set up your very own lab environment with VirtualBox!**

**By following this guide, you've taken an important step towards becoming a proficient penetration tester.**

**Your new lab provides a safe space to explore, test, and refine your skills without the risk of causing harm to live systems.**

**Remember, the world of cybersecurity is vast and ever evolving.**

**Use your lab environment to continuously practice and stay up to date with the latest tools and techniques.**

**And don't forget to keep an eye out for future guides, on adding more functionality to your lab environment.**



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