

HOW TO CREATE A VIRTUAL MACHINE FOR CYBER SECURITY

SUMMARY

Virtualization is a widely used concept in cyber security.

Concretely, with virtualization, it becomes possible to simulate a computer where you can make tests or simply experiment without damaging your own computer. With virtualization, it's like having a computer inside a computer!

In this edition, we wanted to offer you a small activity so that you can create your own virtual machine or if you prefer your own virtual computer. This way, when you need a virtual machine, you will be able to create it yourself and experiment with the different tools related to cybersecurity.

So, we wish you great discoveries and don't forget: act in a cybersecure way!

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ACTIVITY PLAN

In this activity we want to focus on the installation of an hypervisor called Virtual Box. The role of an hypervisor is to bridge the gap between your computer and the virtual machine that will be created. Here's what's on the menu.

Main Goals

Goal #1: To install an software called Virtual Box.

Goal #2: To prepare a virtual machine for an upcoming installation.

Tool Needed

Tool #1: [Virtual Box](#)

VERIFICATION OF THE NECESSARY TOOLS

To be able to create our virtual machine, we will need a tool to virtualize our environment, i.e. to simulate a computer.

This tool will bridge the gap between your computer and the virtual computer. For the activity, we will use the VirtualBox tool. Other tools exist such as Hyper-V or VMWare.



You can download the tool at the following address:
<https://www.virtualbox.org/wiki/Downloads>.



VIRTUAL MACHINE PREPARATION

To be able to install the Linux operating system, we will use virtualization. This concept allows us to create a simulated environment in our computer which will allow us to proceed with the installation without damaging our computer.

Let's start by starting Virtual Box and prepare the virtual environment. You will need the following information:

- 1) 2GB of RAM (ram)
- 2) 2 processors (cpu)
- 3) 25 GB of hard disk drive space

Click on New

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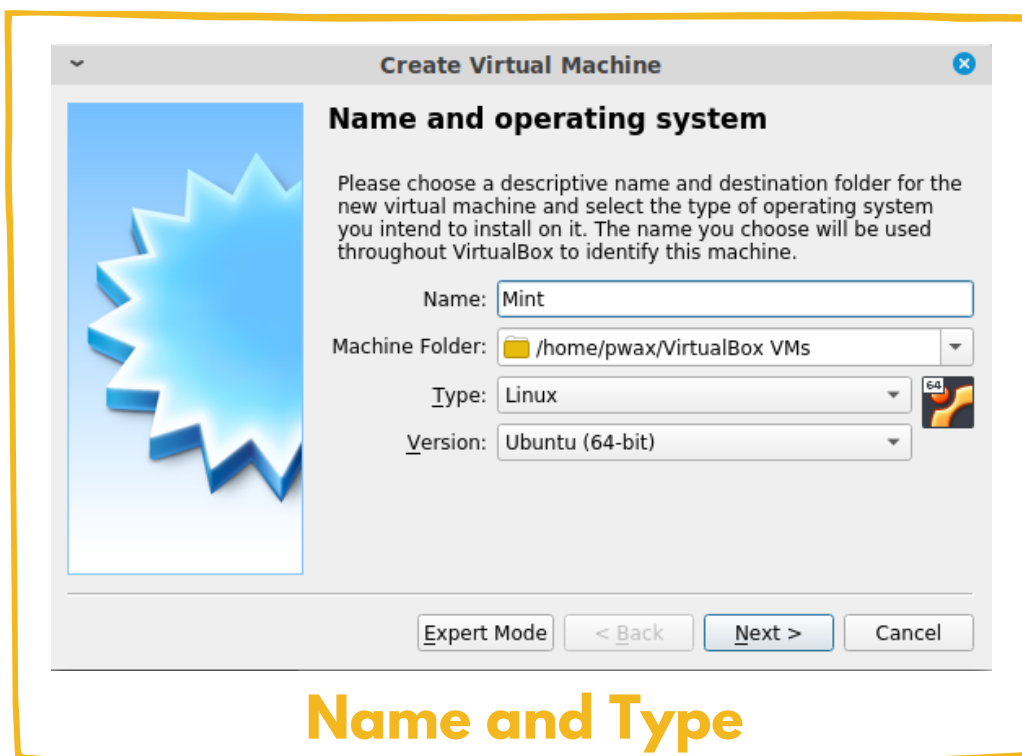
It is possible that the illustrations may be a little different on your side. We use an operating system that is not Windows.



NAME AND TYPE OF VM

First we need to name our new virtual machine (vm). Since we are using Linux Mint, lets name our vm Mint.

The rest should be left as is.



AMOUNT OF RAM

Now you need to specify the amount of RAM that will be assigned to the Ubuntu virtual machine. Keep in mind that the amount that will be assigned will also be subtracted from the total amount of RAM you have in your computer.

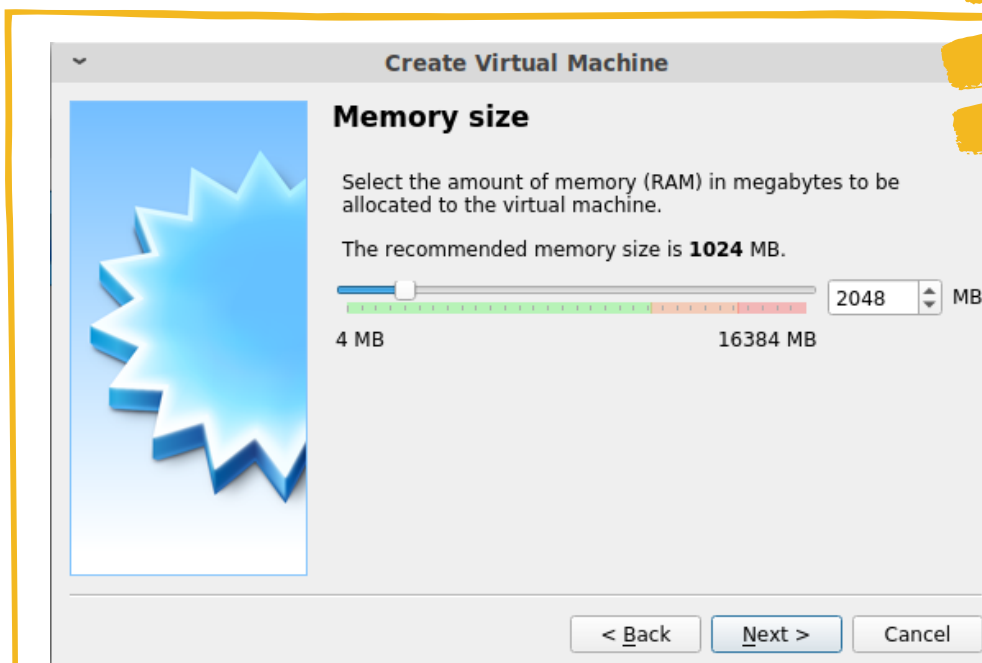
For example, if you have 16GB of RAM and you would like to assign 4GB to the Linux machine, you will have 12GB left for your computer. It is therefore important not to give everything to the Ubuntu virtual machine, otherwise your computer will have no more RAM for it and it will become very slow or even impossible to use.

We will use 2GB for Linux.



Little math quiz!

If 1024 MB = 1 GB, how many MB equals 2 GB?



Specify the Amount of RAM

CREATING THE VIRTUAL HARD DISK

The operating system will be kept on the virtual hard disk. It is therefore important to allocate enough space for your operating system.

When specifying the required size, remember to consider operating system maintenance. In cyber security for example, it becomes essential to be able to update it regularly. So, make sure you have enough space to accommodate future software updates.

We will use 25GB for Ubuntu. But before, let's create the disk.



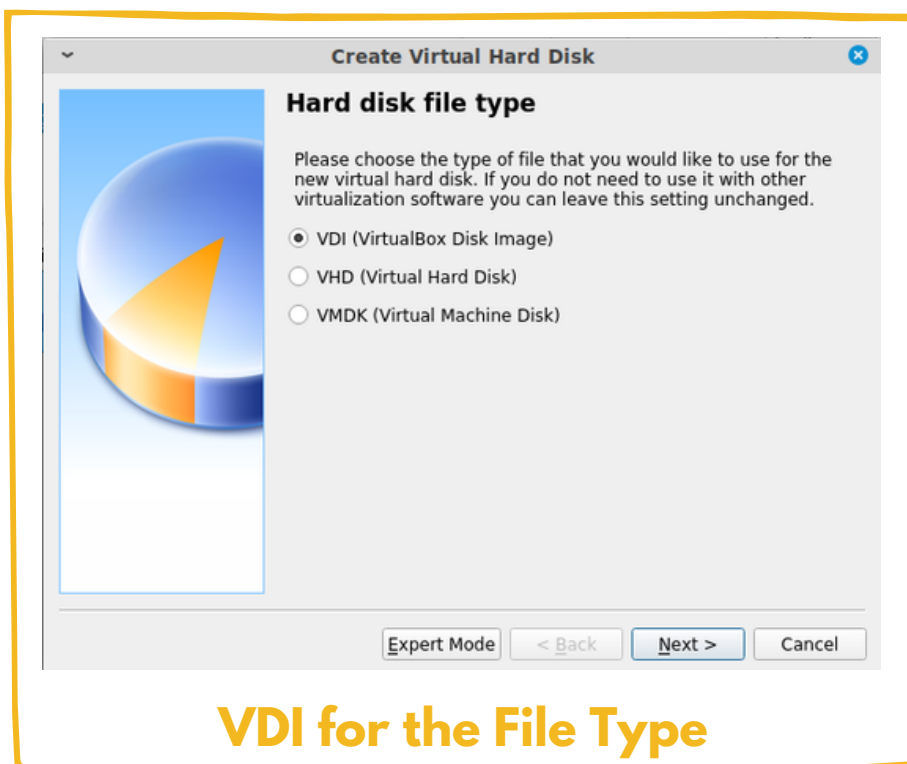
The hard disk will be virtual, i.e. it will be in the form of a file.



Creating the Virtual Hard Disk

HARD DISK TYPE

Now you need to specify the file type. In our case, we will use VDI. Other formats belong to other manufacturers. VHD belongs to Microsoft (Hyper-V) and VMDK belongs to VMWare.



STORAGE ON THE PHYSICAL HARD DISK

The virtual hard drive will be stored on your computer's physical hard drive. You should therefore be aware that the disk space will be shared with the physical hard drive. If your hard drive has 120GB of space and you would like to assign 25GB to your virtual hard drive, you will have to subtract this amount from the total space of your physical hard drive.



So we will have 2 choices at our disposal:

- 1) we can assign the space in a dynamic way;
- 2) in a fixed manner.

?

Dynamic: space will be used as space is needed. If we only need 12GB the system will not use more.

Fixed: 25GB will be assigned immediately, in full.

Create Virtual Hard Disk



Storage on physical hard disk

Please choose whether the new virtual hard disk file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).

A **dynamically allocated** hard disk file will only use space on your physical hard disk as it fills up (up to a maximum **fixed size**), although it will not shrink again automatically when space on it is freed.

A **fixed size** hard disk file may take longer to create on some systems but is often faster to use.

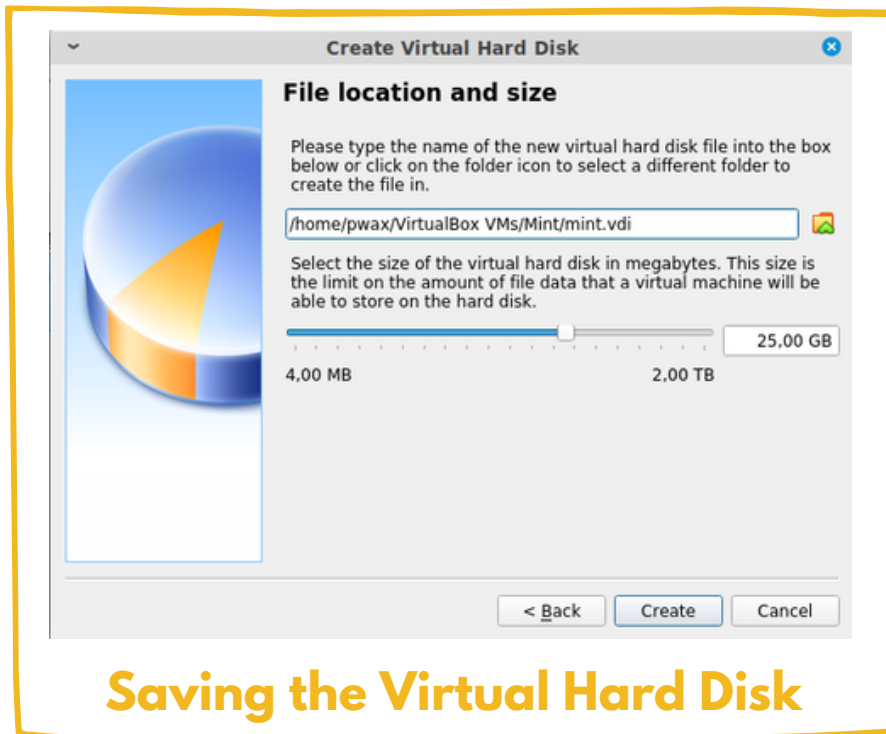
Dynamically allocated
 Fixed size

< Back
Next >
Cancel

How to Allocate the Space

WHERE TO SAVE THE VIRTUAL HARD DISK

Now you can choose the location to save your virtual hard drive and its size. In our case, we will choose 25GB.



It can also be interesting to name your file. We chose the name Ubuntu and you can notice the automatic addition of the .vdi extension.

VIRTUALIZATION AND CYBER SECURITY

Now you are able to create your own virtual machine. With this activity, we wanted to make you realize that it is possible to create your own virtual machine.

In fact, we would like to know what you learned from this activity. What links can you make between virtualization and cyber security? In other words, why is the use of virtualization important?



Reason 1 :



Reason 2 :



Reason 3 :