

# Getting started with virtual machines

## Virtual Machines

Virtual machines (VMs) are virtual computers that reside on top of your hosting Operating System (OS). While your host OS is running, the VMs will borrow a specified amount of CPU, RAM, and hard drive space.

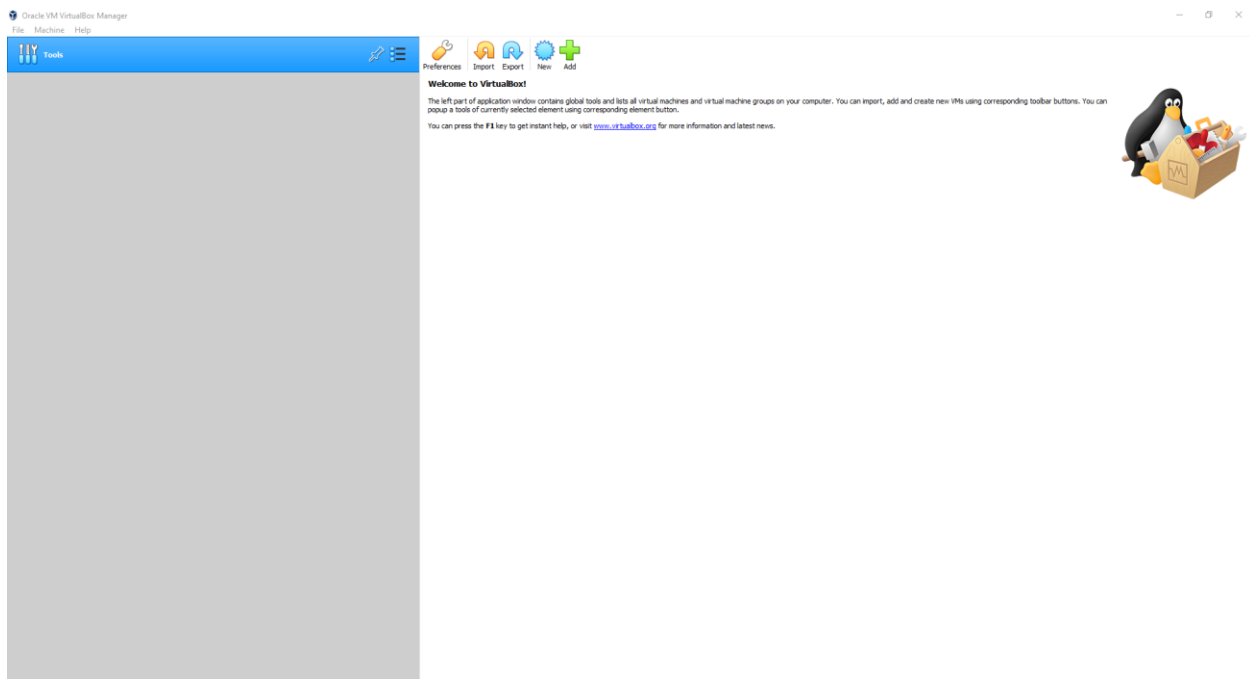
Here are some reasons why VMs are beneficial:

- As VMs are hosted on top of that means you can run multiple OS at the same time.
- VMs are computer files, known as images, which means whatever happens in the VM will not affect the host OS.
- The ability to clone and backup VMs enables us to:
  - perform actions with few worries that the VM may become corrupted or damaged.
  - share VM environments with others for learning, testing, or to get them started.
- VM would cost less in comparison to hosting it as the main OS on new hardware
- The process to create a VM is easy for those new to VMs

## Virtual Machine Manager

To begin, download [VirtualBox](#).

There are other virtual machine managers, but VirtualBox is free and has a simple interface for beginners to learn. Once downloaded and installed, you are greeted by this screen:

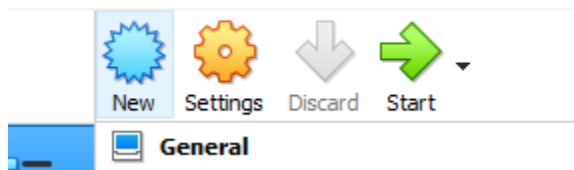


## Creating a virtual machine

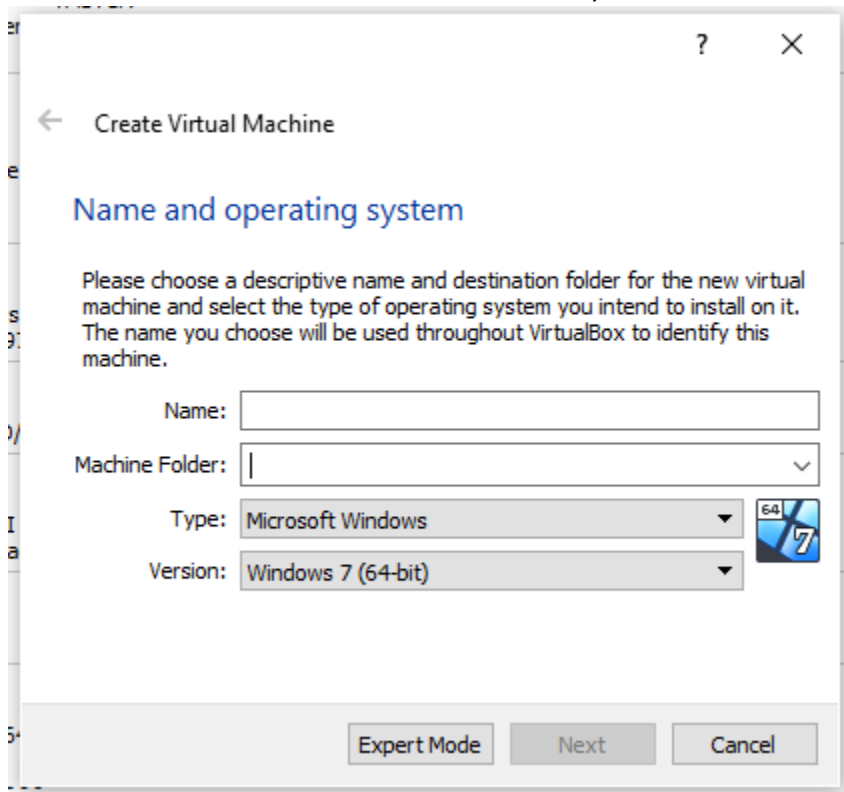
Before we continue with VirtualBox, you should determine which OS your VM will run. Each OS has their own appeals which assist users with their desired task. To download the OS for VM, I suggest downloading the ISO file or an existing Image file.

If you obtained an Image file, then you can simply import it and [jump here for the next steps](#). Whereas the ISO will need some configurations:

1. First create a new VM



2. Create a name for your new VM and determine the location in which the VM will reside. You'll also state which OS it is and which version your OS is.



3. Select how much RAM the VM will borrow. For now, leave it at default and I'll explain it later.

The screenshot shows the 'Memory size' step of the 'Create Virtual Machine' wizard. It features a slider bar ranging from 4 MB to 16384 MB. A blue arrow points to the 2048 MB mark on the slider. To the right of the slider is a text box containing '2048' and 'MB'. Above the slider, text indicates that the recommended memory size is 2048 MB. At the bottom of the window are 'Next' and 'Cancel' buttons.

← Create Virtual Machine

### Memory size

Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.

The recommended memory size is **2048 MB**.

4 MB 16384 MB

2048 MB

Next Cancel

4. Next create a Virtual Hard disk. If you're playing around with the VM and do not plan on storing anything in it, then you can choose to not create one.

The screenshot shows the 'Hard disk' step of the 'Create Virtual Machine' wizard. It provides instructions on adding a virtual hard disk, including options to create a new file, select from a list, or use an existing file. The recommended size is 32.00 GB. Three radio buttons are present: 'Do not add a virtual hard disk', 'Create a virtual hard disk now' (which is selected), and 'Use an existing virtual hard disk file'. Below the radio buttons is a dropdown menu showing 'Kali-Linux-2021.3-vbox-amd64-disk001.vdi (Normal, 80.00 GB)' and a folder icon. At the bottom are 'Create' and 'Cancel' buttons.

← Create Virtual Machine

### Hard disk

If you wish you can add a virtual hard disk to the new machine. You can either create a new hard disk file or select one from the list or from another location using the folder icon.

If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.

The recommended size of the hard disk is **32.00 GB**.

☐ Do not add a virtual hard disk

☒ Create a virtual hard disk now

☐ Use an existing virtual hard disk file

Kali-Linux-2021.3-vbox-amd64-disk001.vdi (Normal, 80.00 GB)

Create Cancel

5. If you selected to create a Virtual hard disk, then you'll need to decide which type it will be. This option matters when you are planning on bringing it over to other VM managers like VMware. For now, leave it at default.

← Create Virtual Hard Disk

### Hard disk file type

Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.

☒ VDI (VirtualBox Disk Image)

☐ VHD (Virtual Hard Disk)

☐ VMDK (Virtual Machine Disk)

Expert Mode Next Cancel

6. Select your preferred storage type.

← 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


Next Cancel

7. Chose the side and location.  
You can leave the size to default.


← Create Virtual Hard Disk

**File location and size**

Please type the name of the new virtual hard disk file into the box below or click on the folder icon to select a different folder to create the file in.

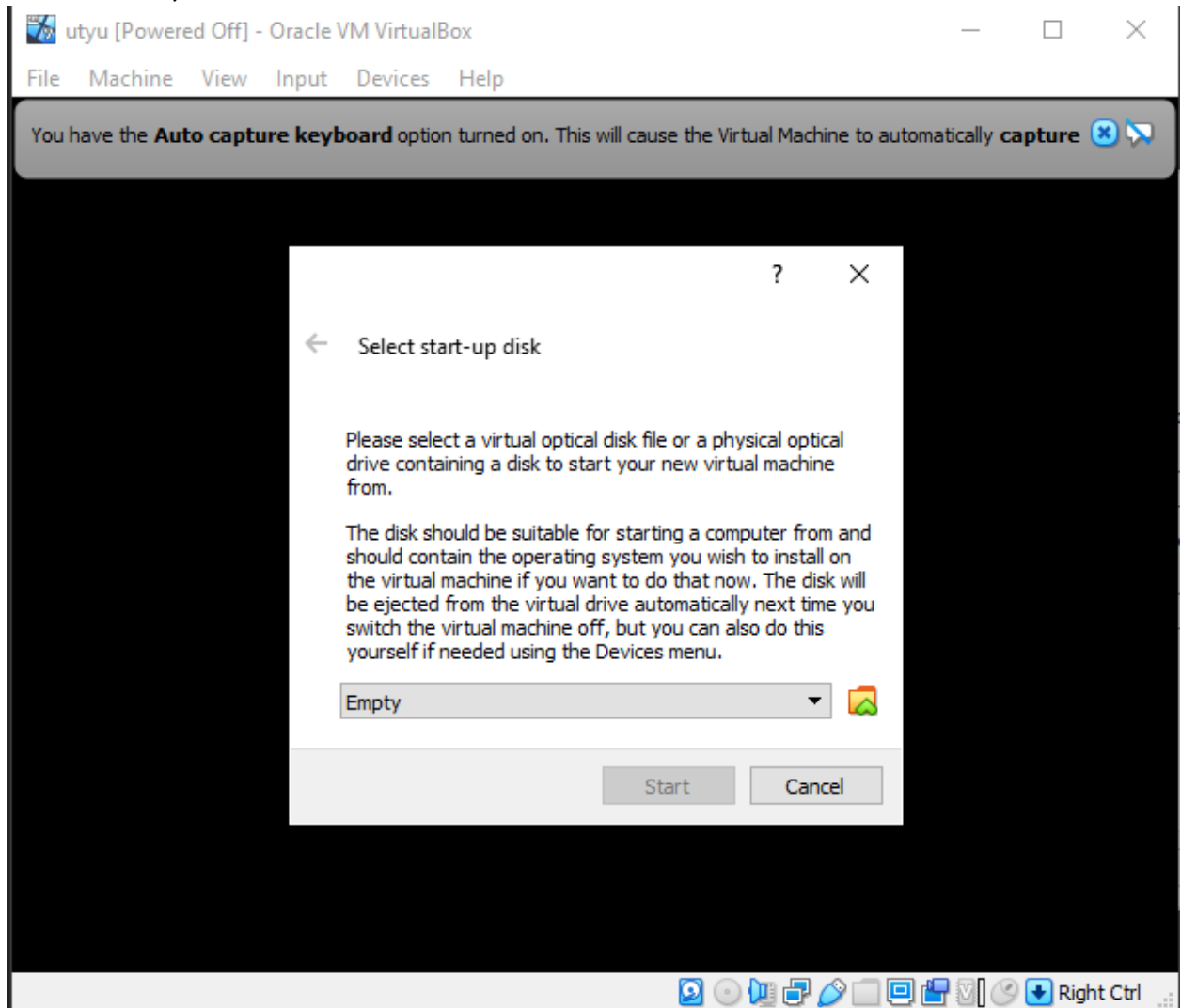


Select the size of the virtual hard disk in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard disk.

4.00 MB  2.00 TB 32.00 GB

Create Cancel

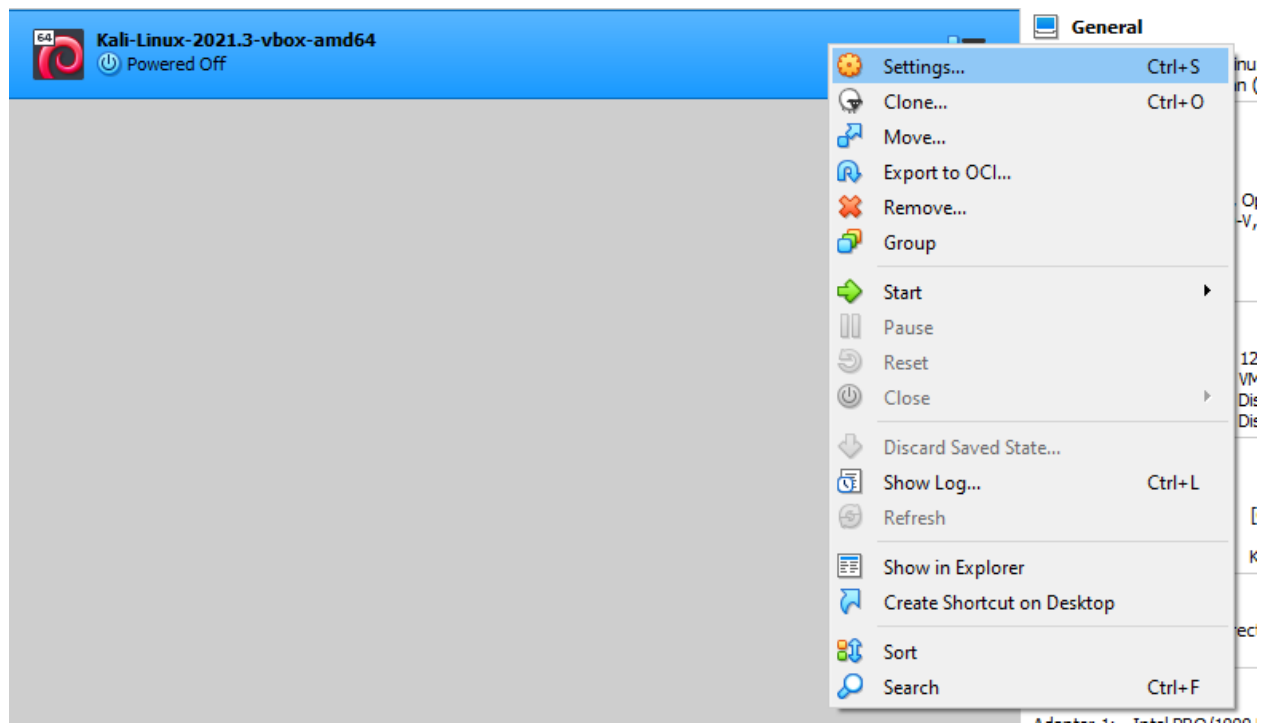
8. Start up your VM. There should be a pop-up that asks you to add the start-up disk. That would be the ISO file you downloaded.



9. Follow the instructions laid out on screen by the OS.

## Additional settings

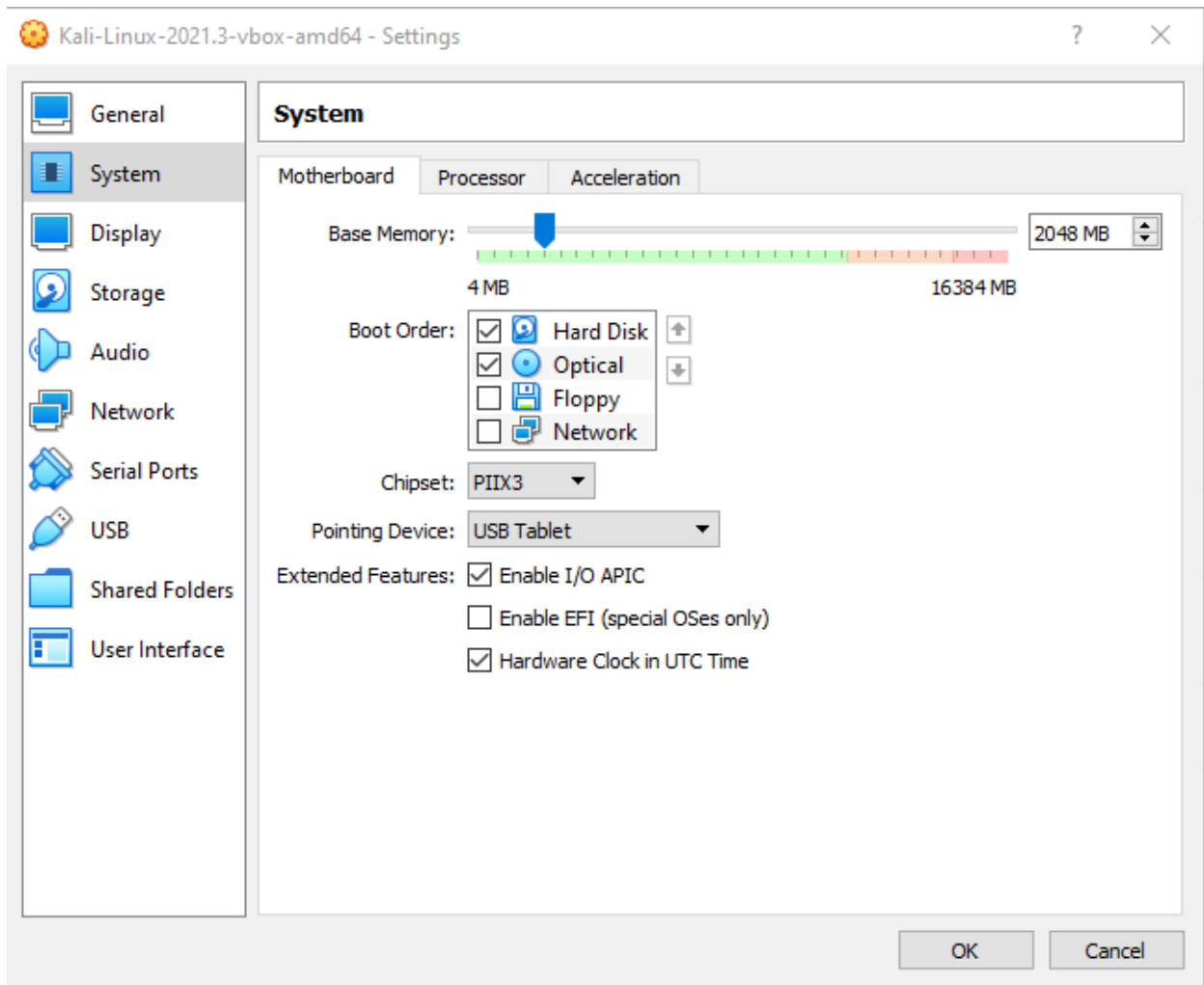
There may come a time in which you feel like your VM needs to borrow more from the host OS. Clicking on the VM's setting:





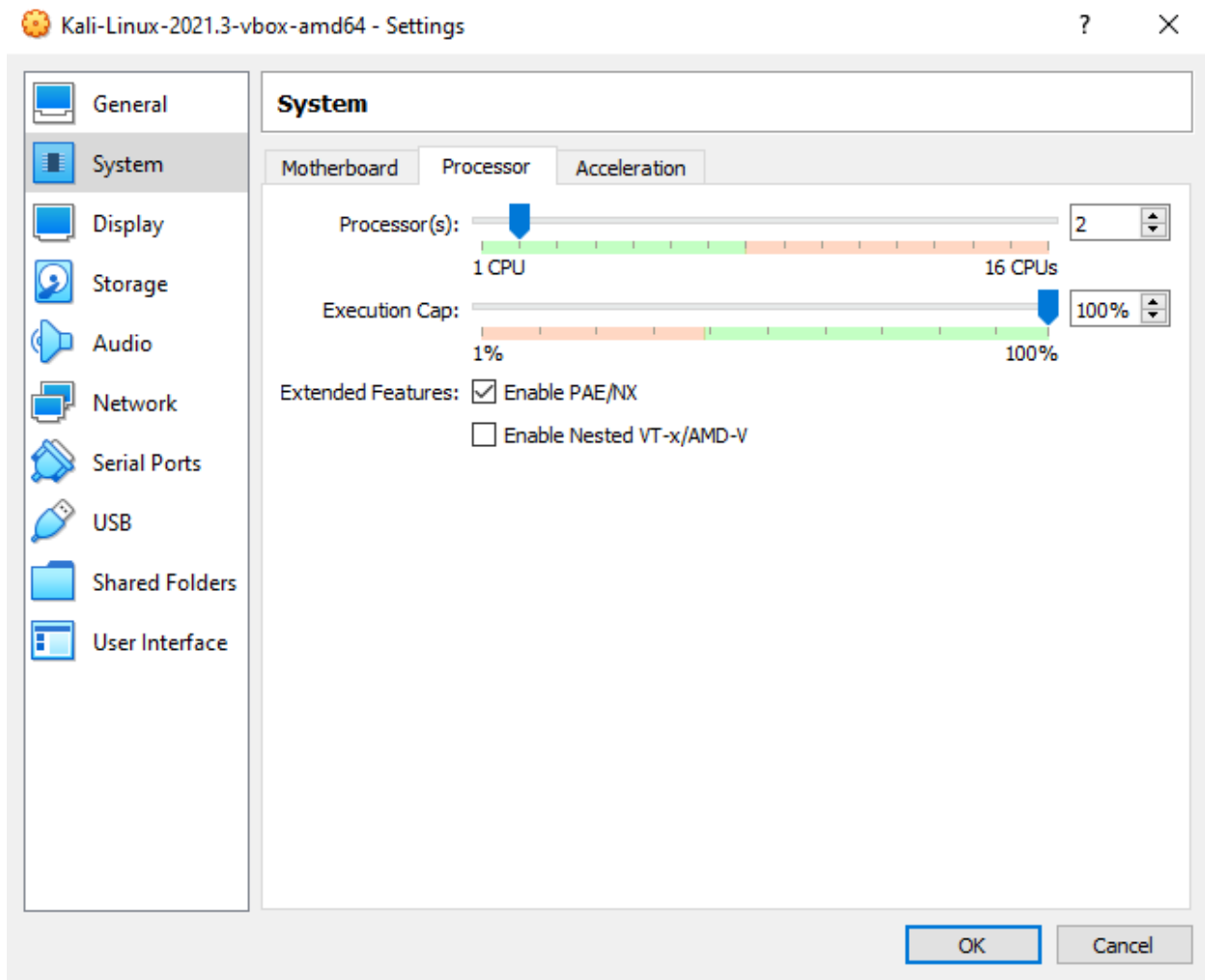
## Systems

### Motherboard



- **Base memory** is the amount of RAM your VM will borrow; By default, it is **2 GB** (2048 MB). RAM is temporary memory that is important for running applications. If there is insufficient RAM, applications will fight each other for what little RAM you have, leading to slow applications. If you are not planning to run many applications, then the default is sufficient. Otherwise, the highest amount of RAM I would usually put is **4 GB** (4096 MB).
- **Boot Order** contains the options in which the OS will boot from. Once your VM is set-up, then the OS will reside in the Hard disk. Optical is what we had used to set up our VM from the ISO file. Unless you plan on replacing the OS, this boot order can stay at default.
- The rest should stay at default unless your OS specifies otherwise.

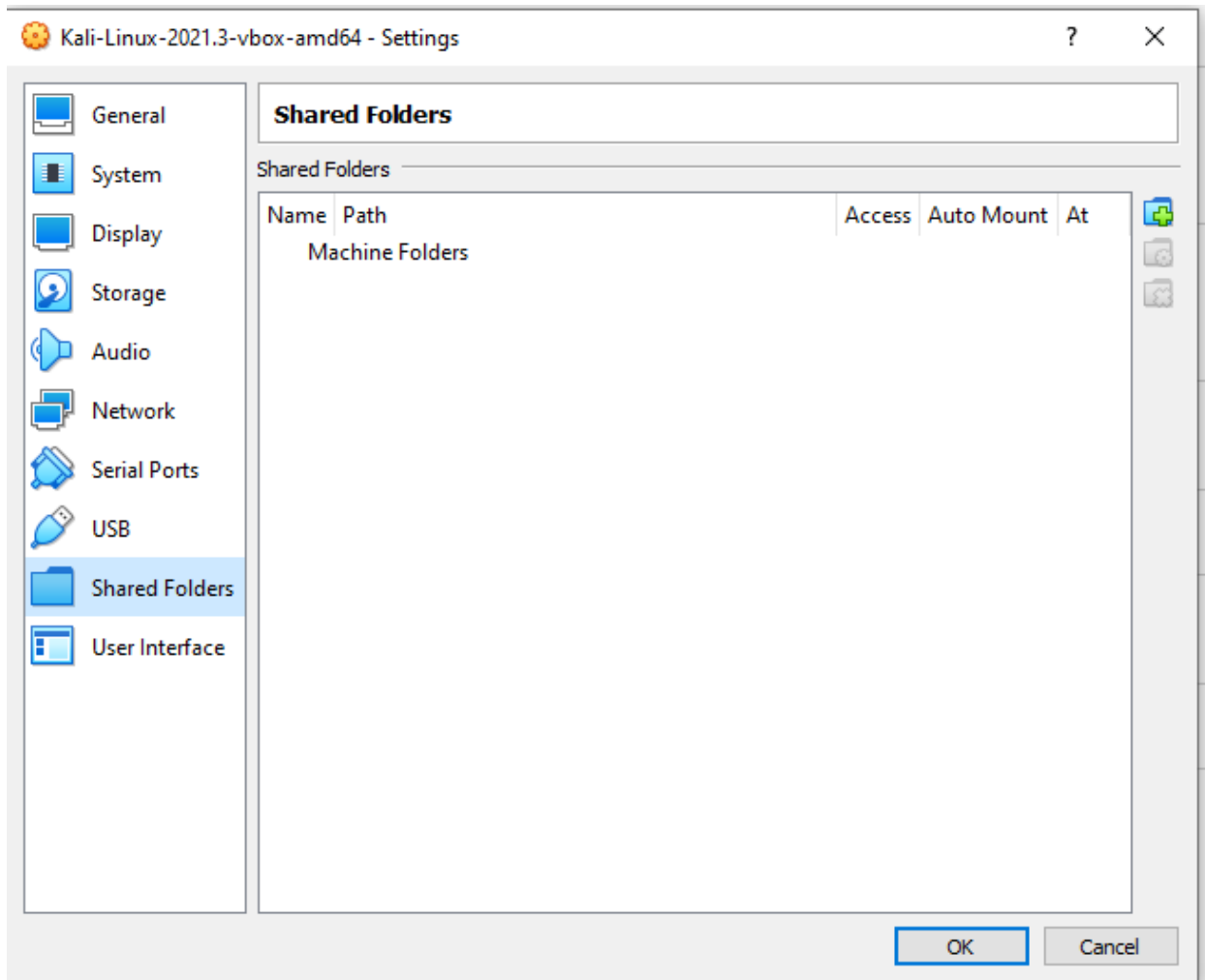
## Processor



In all your devices, there resides a chip called the CPU. The CPU is the brain of your computer; it receives instructions from your hardware and performs actions based on those instructions.

- **Processor** is the number of logical processors you would like your VM to borrow. The more processors, the quicker your VM will be at processing calculations and instructions. The default is sufficient (2 CPUs). If you need your VM to run faster, 4 CPU is the maximum I would lend.
- The rest can stay at default.

## Shared Folder



Shared folder allows us to designate a directory on our host OS to share with the VM. This is useful for carrying over things like scripts for quick testing.