Kali inside VirtualBox (Guest VM)

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This guide is about virtualizing Kali Linux inside of VirtualBox, allowing you to have a Kali VM. This is a great way to use Kali, as it is completely separate from the host, allows you to interact with other VMs (as well as the host machine and other machines on the network), and allows you to revert to snapshots.

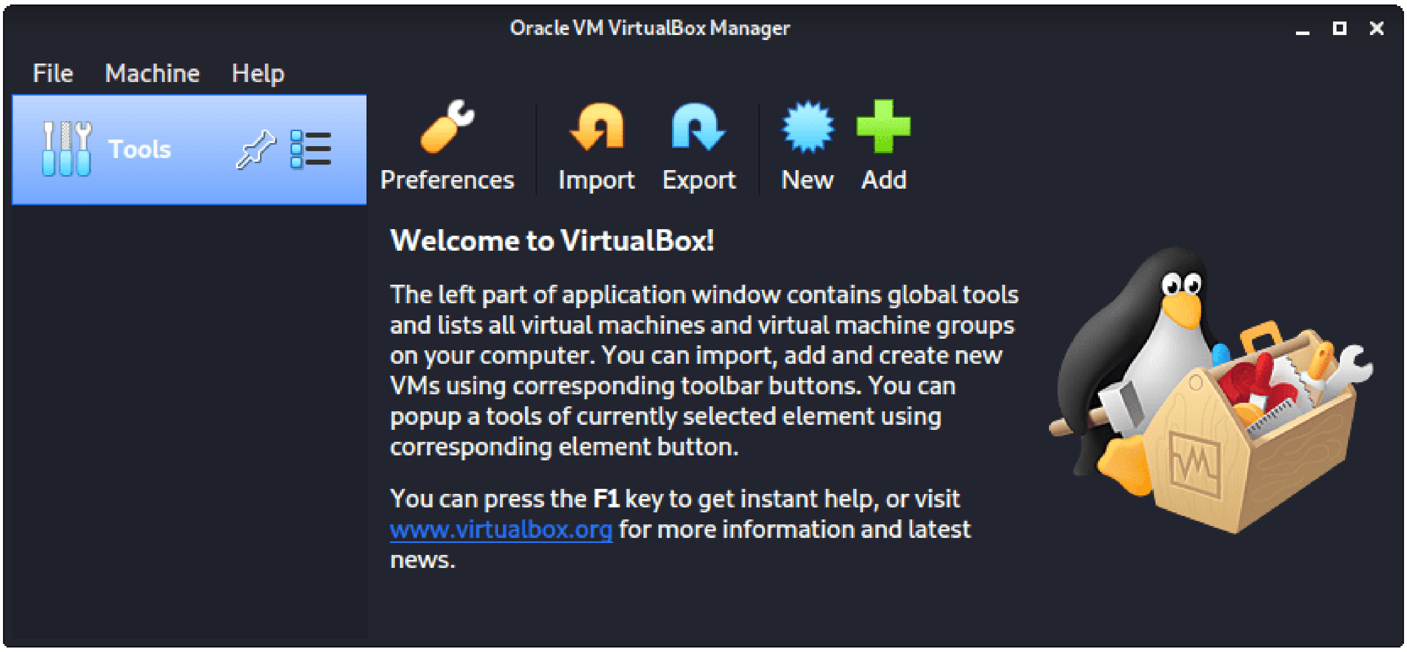
You may wish to follow our other guide if you are trying to install VirtualBox on Kali Linux (as a host).

The guide below is what we use to generate our pre-made Kali Linux VirtualBox images. You may alter this to your needs. We always generate the images using the latest version of VirtualBox.

You may need to enable virtualization in your BIOS/UEFI for (e.g. Intel VT-x/AMD-V)

Wizard

Upon starting up VirtualBox, select “New” (Machine -> New).



Welcome to VirtualBox!

The left part of application window contains global tools and lists all virtual machines and virtual machine groups on your computer. You can import, add and create new VMs using corresponding toolbar buttons. You can popup a tools of currently selected element using corresponding element button.

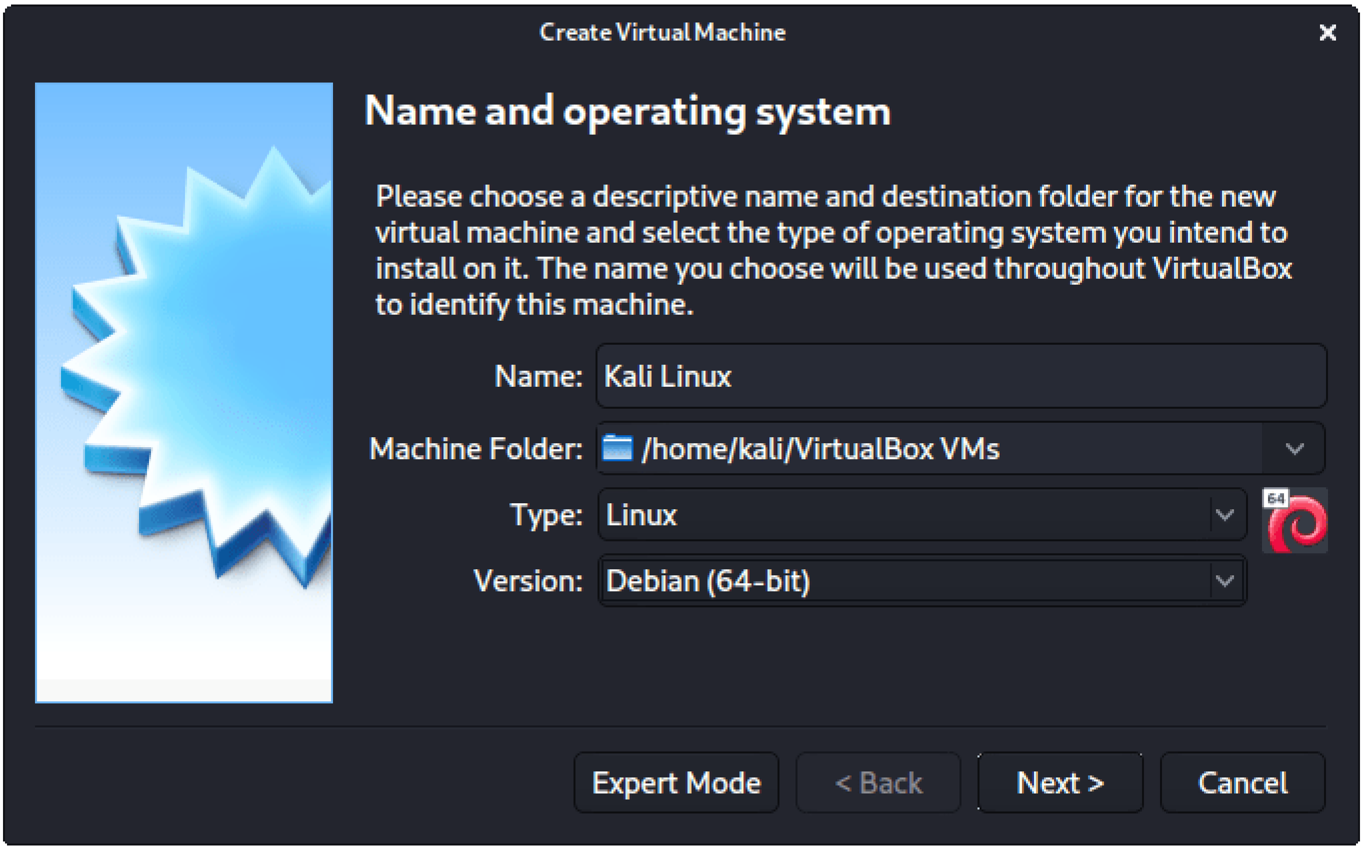
You can press the **F1** key to get instant help, or visit www.virtualbox.org for more information and latest news.

The next screen is “Name and operating system” which is where you name the VM. This name is also used in any filenames (such as the configuration, hard disk and snapshot - which isn’t changed from this point).

We are keeping it generic in this guide (as Kali is a rolling distribution, and we update it), however for our releases, we use the version number in the name as it is a fixed release *(`kali-linux-YYYY.N-vbox-`*

`ARCH`*. Example:* `kali-linux-2023.3-vbox-amd64`*)*.

For the “Type”, we set it as `Linux`. For the “Version”, we are going to be using the x64 desktop image, so we are going to select `Debian (64-bit)`.



Create Virtual Machine

Name and operating system

Please choose a descriptive name and destination folder for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

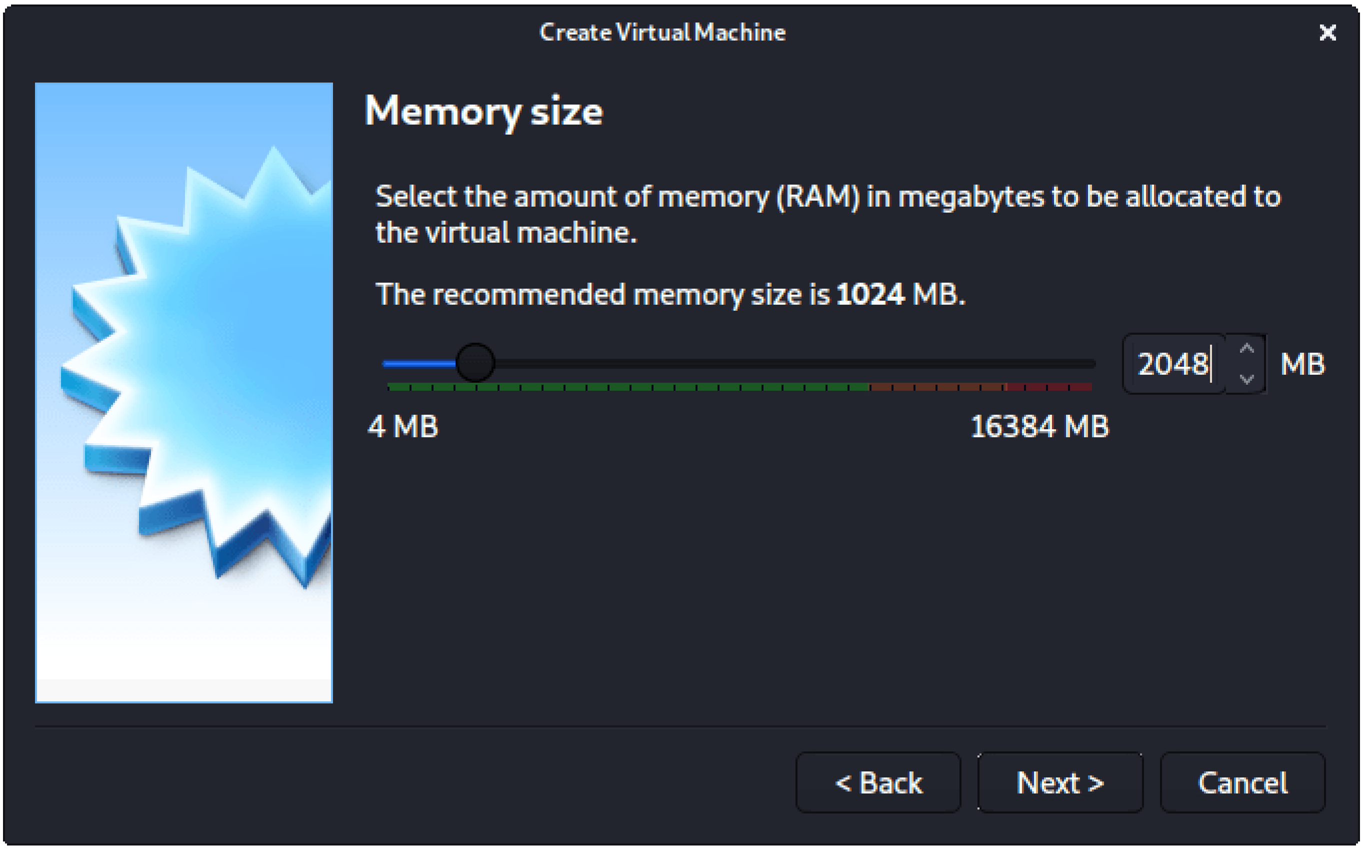
Name: Kali Linux

Machine Folder: /home/kali/VirtualBox VMs

Type: Linux

Version: Debian (64-bit)

“Memory size” is the next section, where we can define how much RAM to use. Again, the higher the amount of RAM, the more applications can be open and at increased performance. Various tools inside of Kali can be demanding of resources. When we make the general VMs, we select `2048 MB` (2GB) for RAM, but we often increase this for our personal machines as we have high-performing devices with spare RAM which Kali can utilize.



Create Virtual Machine

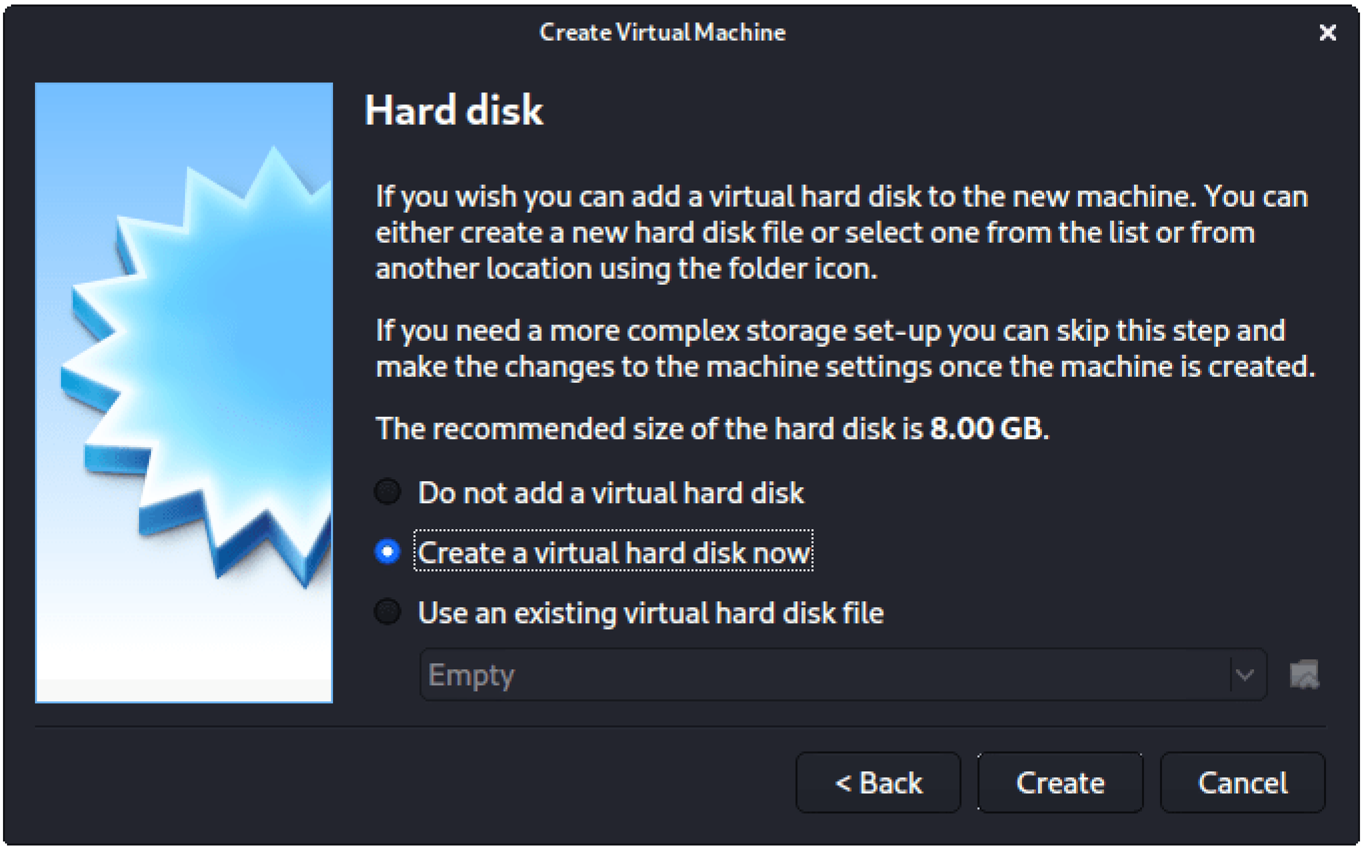
Memory size

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

The recommended memory size is **1024** MB.

2048 MB

This screen below, “Hard disk”, allows us to `Create a new virtual disk now`.



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 **8.00 GB**.

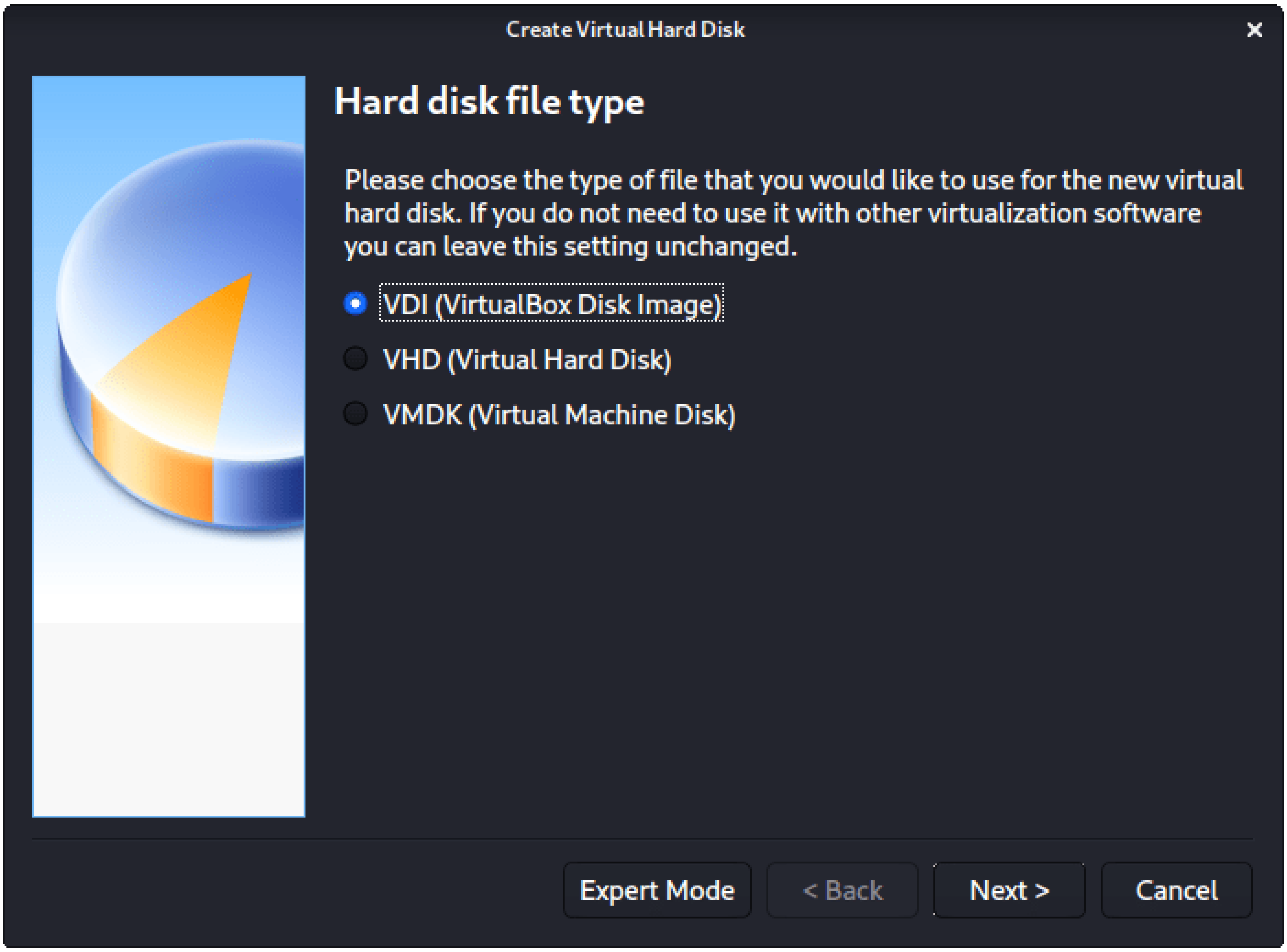
○ Do not add a virtual hard disk

● Create a virtual hard disk now

○ Use an existing virtual hard disk file

Empty

For the “Hard disk file type”, we select `VDI (VirtualBox Disk Image)` (and its the default option).



Create Virtual Hard Disk

Hard disk file type

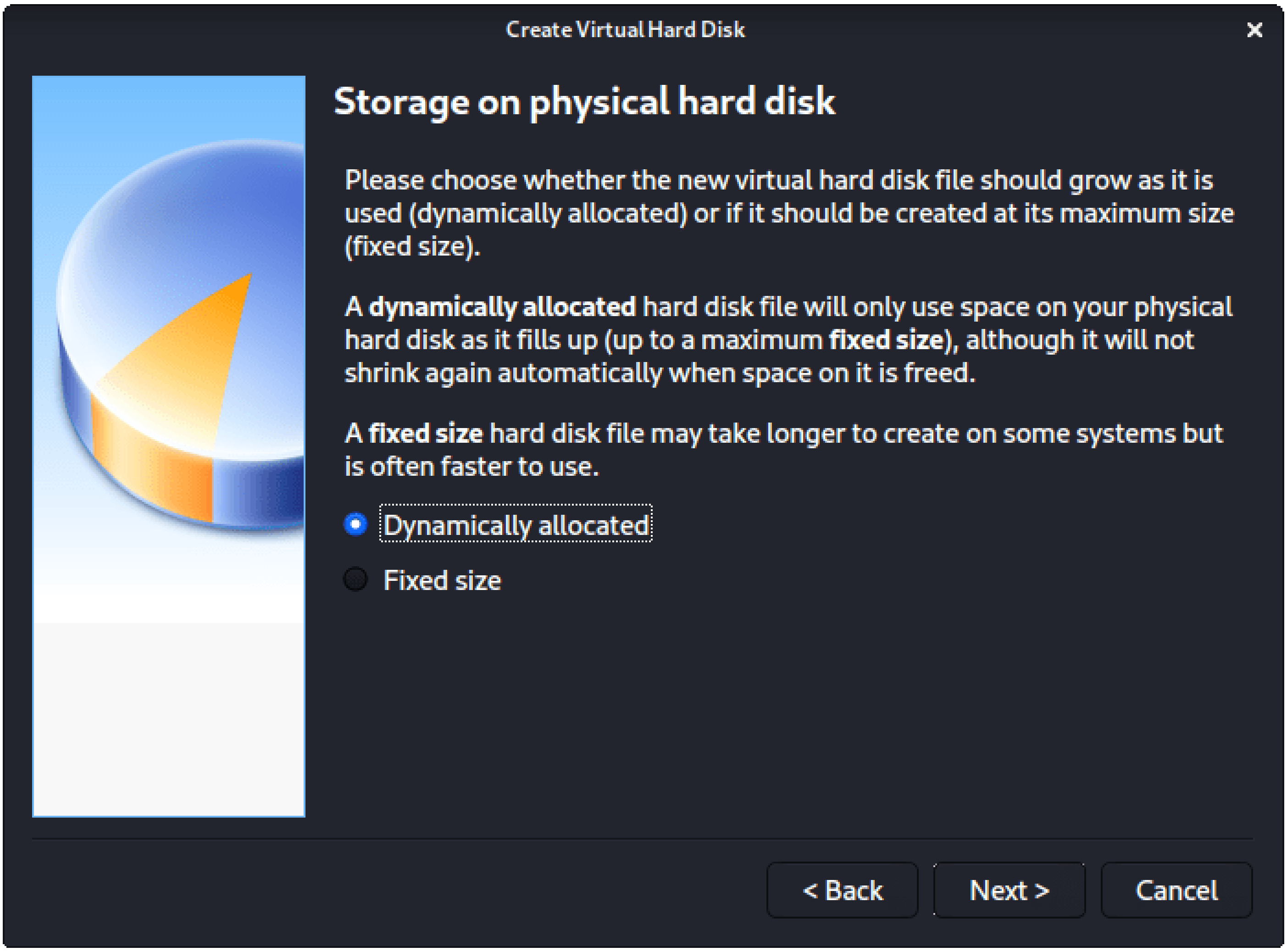
Please choose the type of file that you would like to use for the new virtual hard disk. If you do not need to use it with other virtualization software you can leave this setting unchanged.

● VDI (VirtualBox Disk Image)

○ VHD (Virtual Hard Disk)

○ VMDK (Virtual Machine Disk)

For the following screen, “Storage on physical hard disk”, we go with the default option of `Dynamically allocated`.



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).

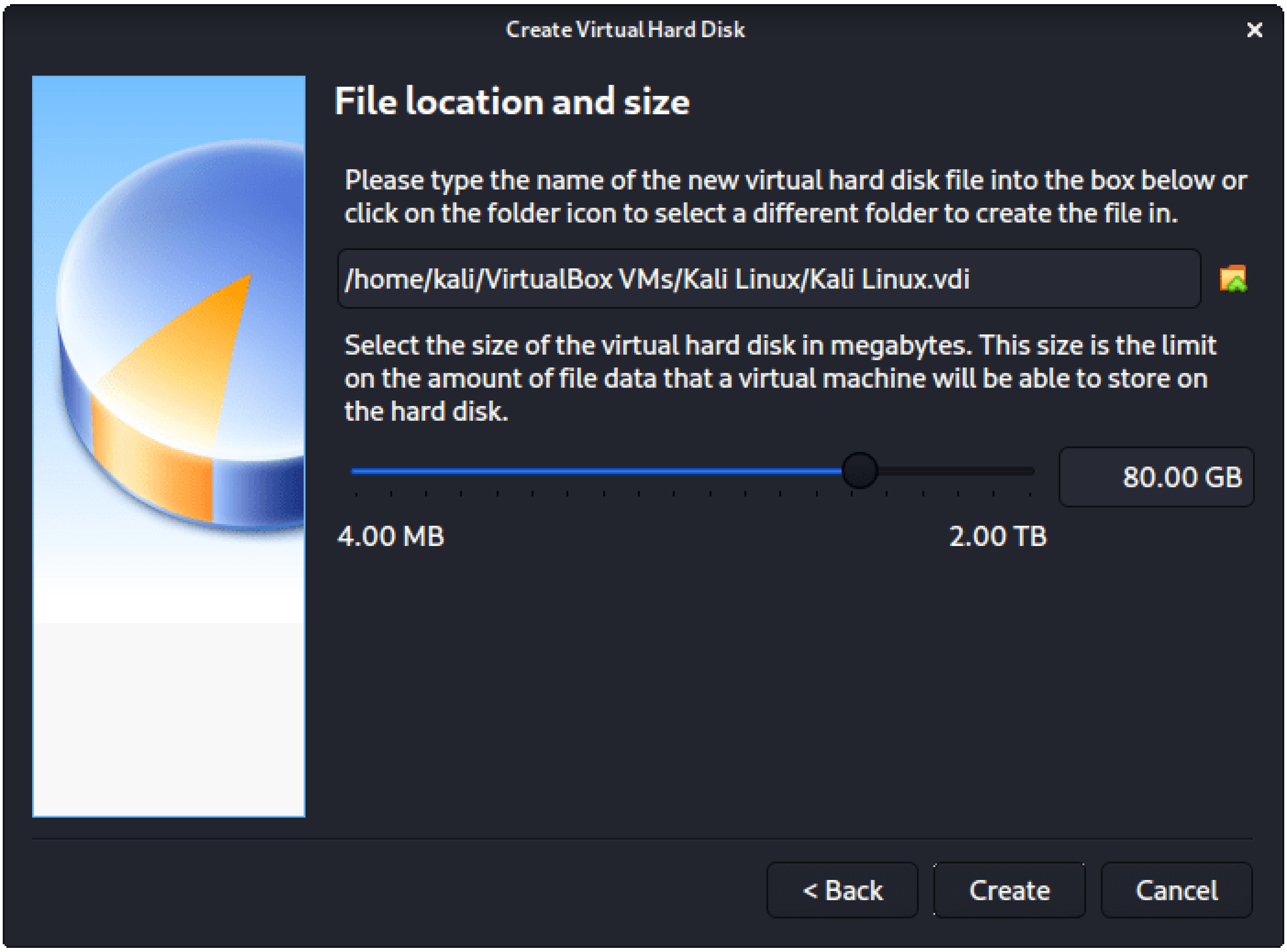
A **dynamically allocated** hard disk file will only use space on your physical hard disk as it fills up (up to a maximum **fixed size**), although it will not shrink again automatically when space on it is freed.

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

● Dynamically allocated

○ Fixed size

Now with “File location and size”, we can now define how large the virtual hard disk will be. We use `80.00 GB` for our VMs.



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.

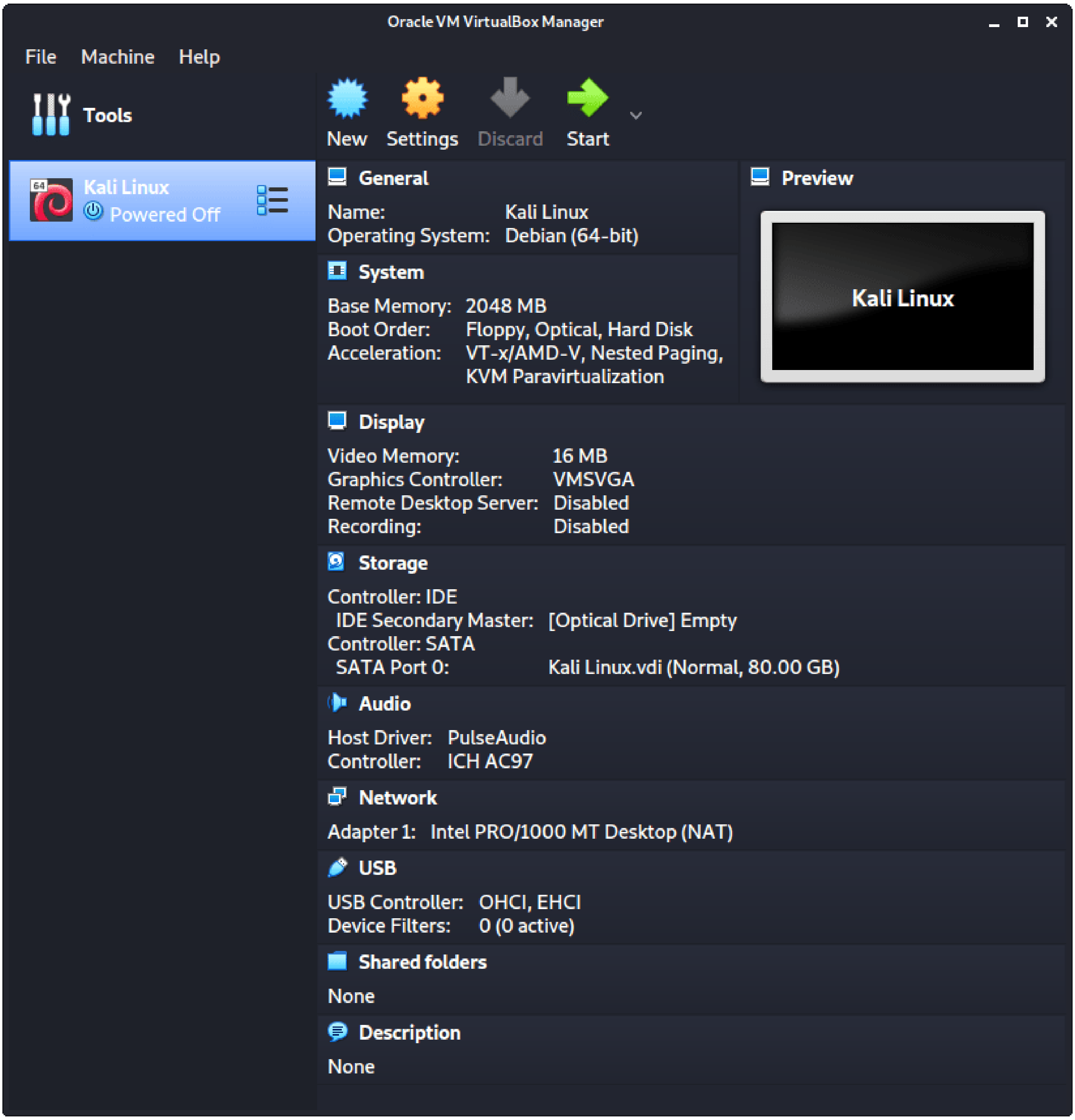
/home/kali/VirtualBox VMs/Kali Linux/Kali Linux.vdi

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.

80.00 GB

After clicking on “Create”, the wizard is complete.

Now we click on “Settings”, to customize the VM further.



General

Name: Kali Linux
Operating System: Debian (64-bit)

System

Base Memory: 2048 MB
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Display

Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage

Controller: IDE
IDE Secondary Master: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Kali Linux.vdi (Normal, 80.00 GB)

Audio

Host Driver: PulseAudio
Controller: ICH AC97

Network

Adapter 1: Intel PRO/1000 MT Desktop (NAT)

USB

USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)

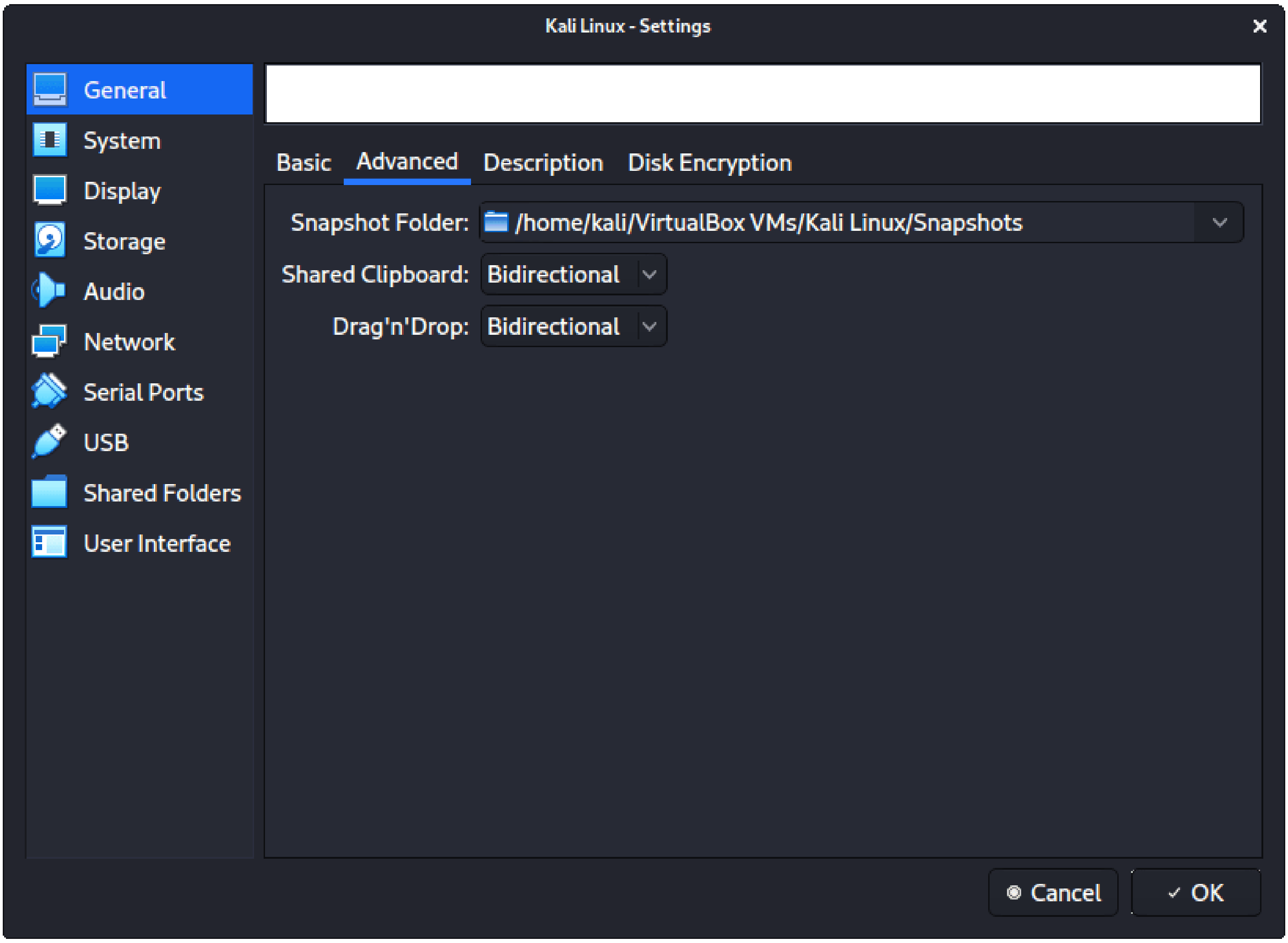
Shared folders

None

Description

None

In “General” -> “Advanced”, we make sure to set “Shared Clipboard” to `bidirectional`, as well as “Drag’n’Drop” to `bidirectional`

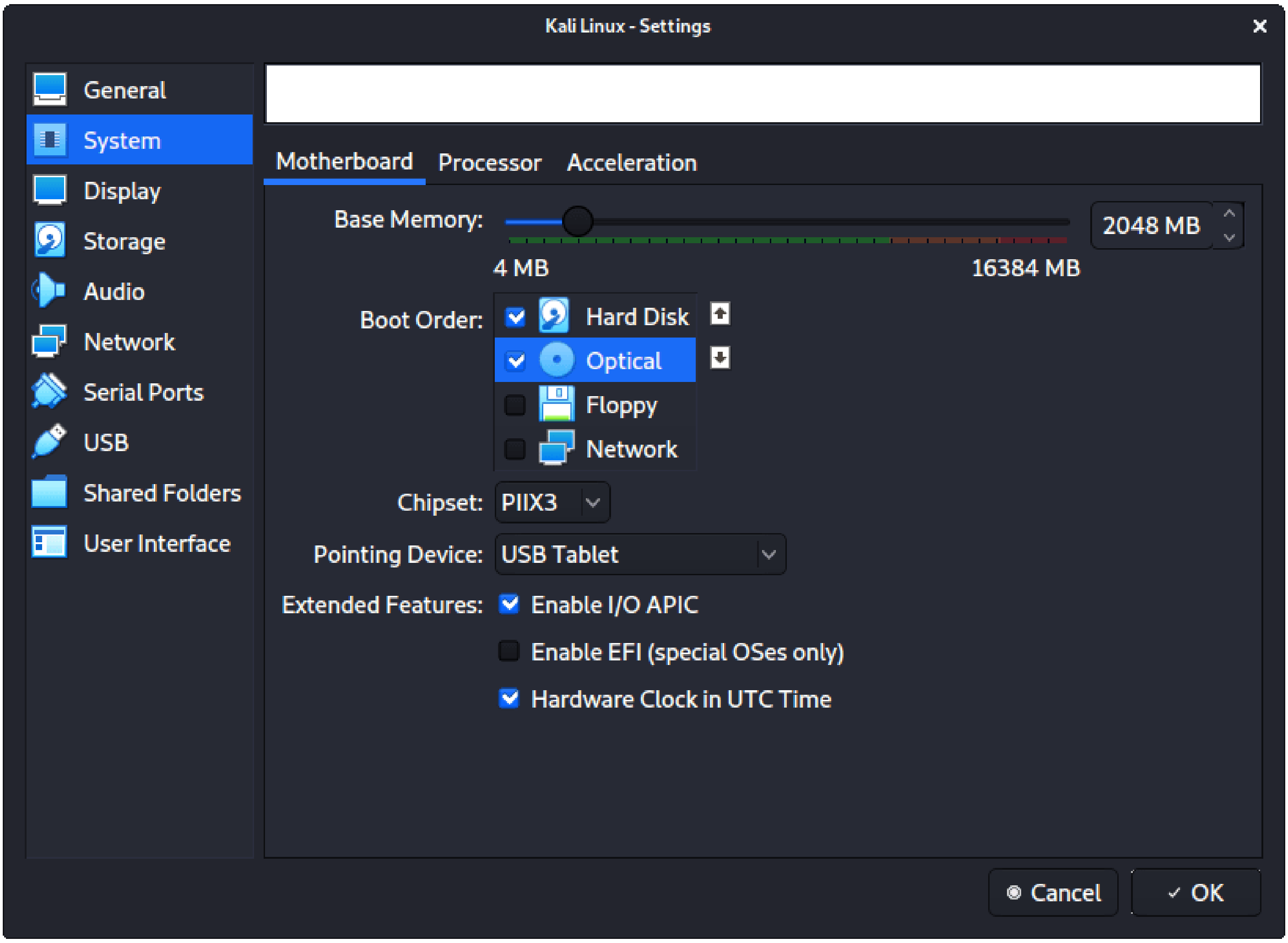


Snapshot Folder: /home/kali/VirtualBox VMs/Kali Linux/Snapshots

Shared Clipboard: Bidirectional

Drag'n'Drop: Bidirectional

In “System” -> “Motherboard”, we change the “Boot Order” to make sure `Hard Disk` is top and `Optical` is the second. Everything else is disabled.



Kali Linux - Settings

Base Memory: 2048 MB

Boot Order:
- ☑ Hard Disk
- ☑ Optical
- □ Floppy
- □ Network

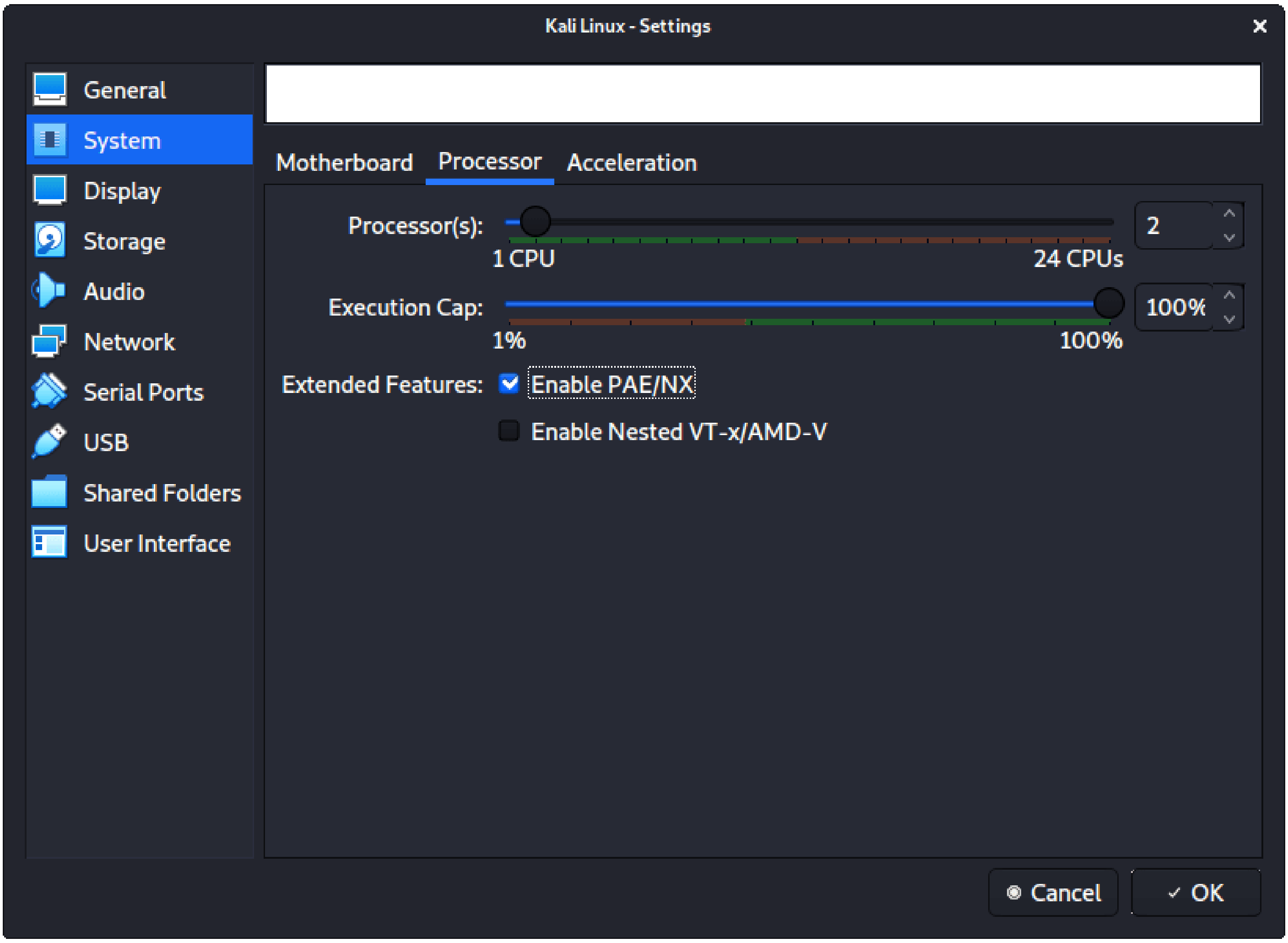
Chipset: PIIX3

Pointing Device: USB Tablet

Extended Features:
- ☑ Enable I/O APIC
- □ Enable EFI (special OSes only)
- ☑ Hardware Clock in UTC Time

In “System” -> “Processor”, we increase the “Processor(s)” to be `2`.

At the same time, we also enable “Extended Features” for `Enable PAE/NX`.



Processor(s): 2

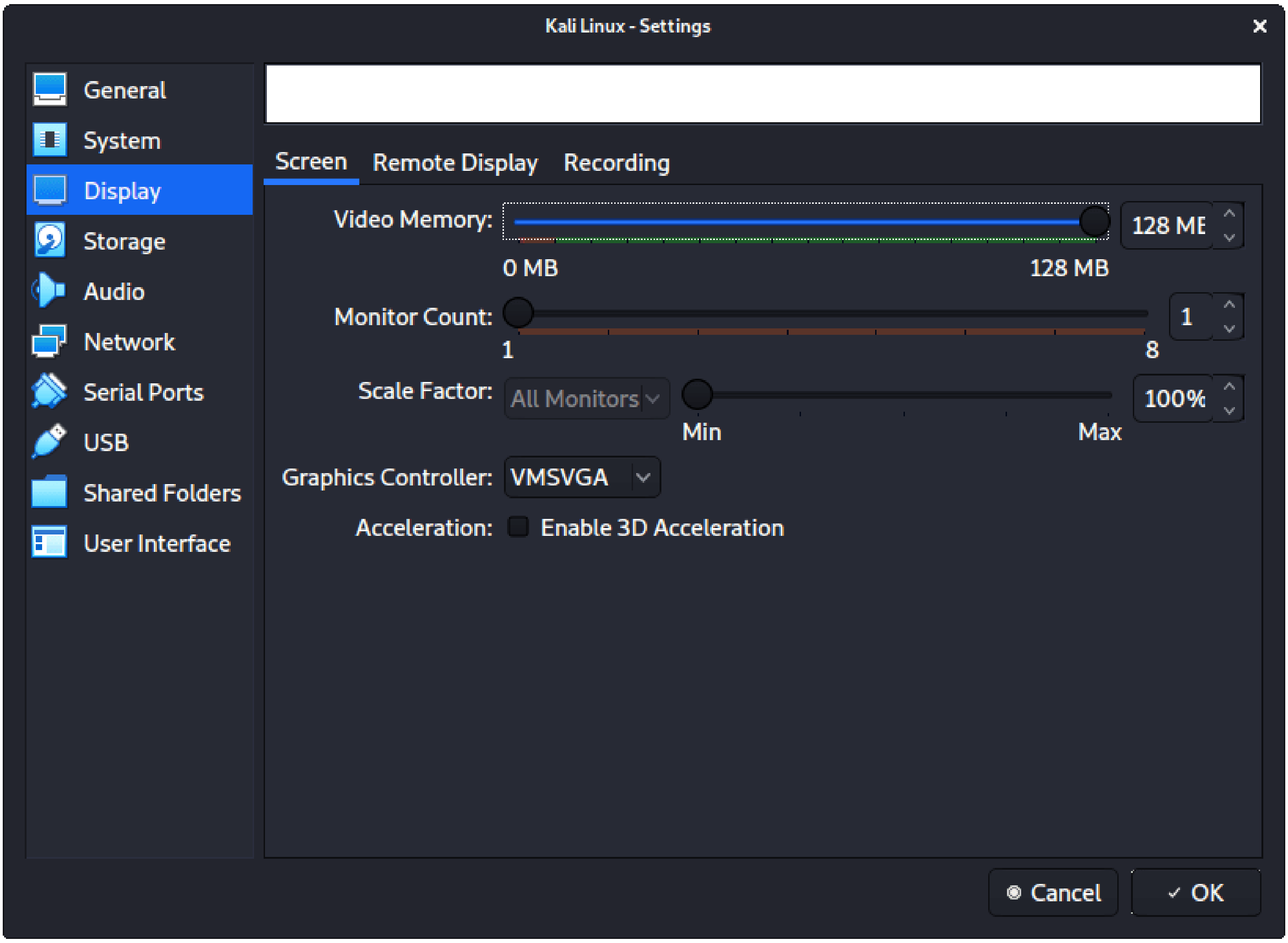
Execution Cap: 100%

Extended Features: ☑ Enable PAE/NX

☐ Enable Nested VT-x/AMD-V

In “Display” -> “Screen”, we make sure to have “Video Memory” set to `128 MB`

Another item to point out is to make sure that “Accelerated 3D graphics” is **disabled**, as people have reported that causes issues.



Kali Linux - Settings

Video Memory: 128 MB (0 MB – 128 MB)

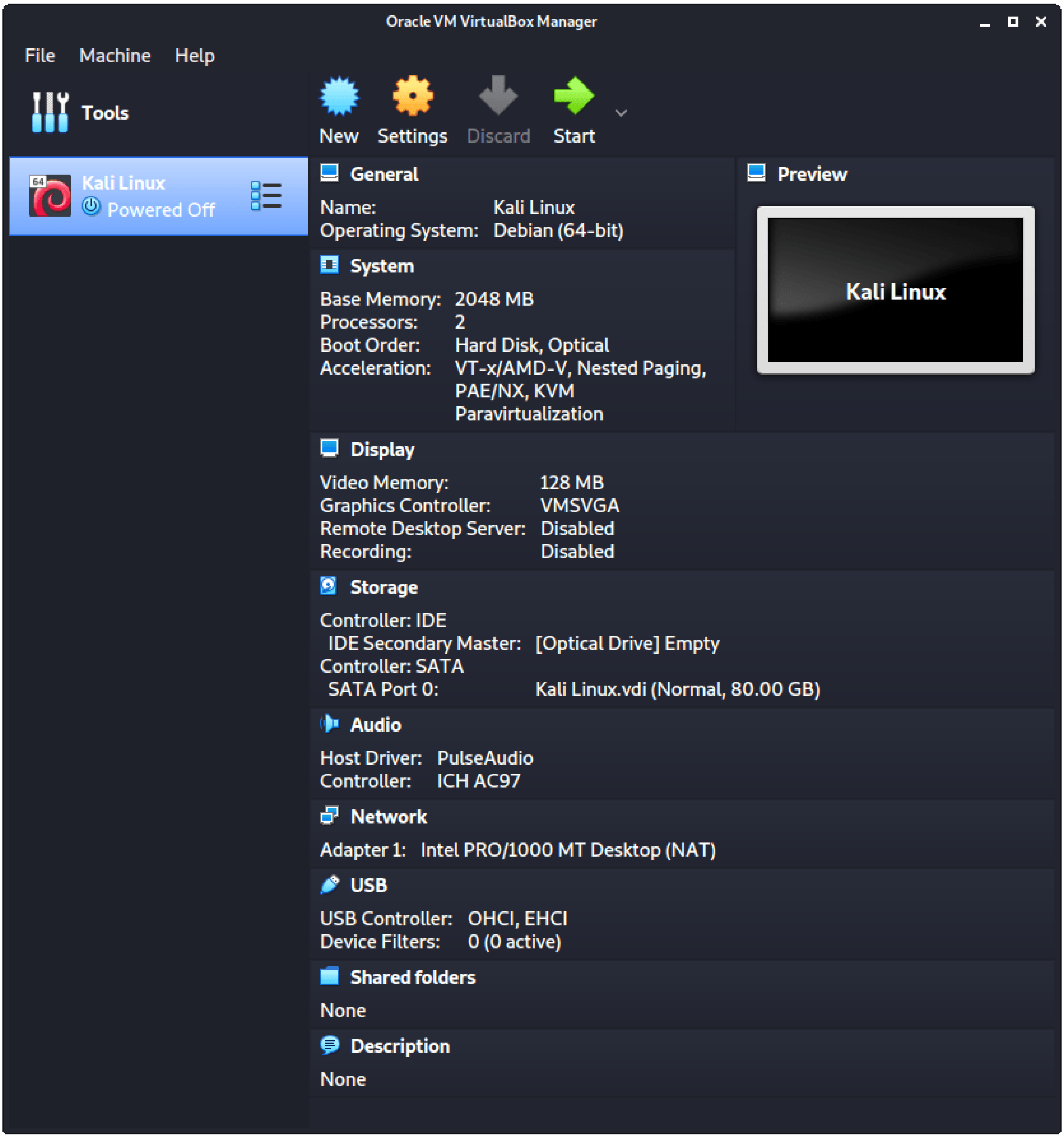
Monitor Count: 1 (1 – 8)

Scale Factor: All Monitors 100% (Min – Max)

Graphics Controller: VMSVGA

Acceleration: □ Enable 3D Acceleration

The final settings view looks like the following:



General

Name: Kali Linux
Operating System: Debian (64-bit)

System

Base Memory: 2048 MB
Processors: 2
Boot Order: Hard Disk, Optical
Acceleration: VT-x/AMD-V, Nested Paging, PAE/NX, KVM Paravirtualization

Display

Video Memory: 128 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage

Controller: IDE
IDE Secondary Master: [Optical Drive] Empty
Controller: SATA
SATA Port 0: Kali Linux.vdi (Normal, 80.00 GB)

Audio

Host Driver: PulseAudio
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Network

Adapter 1: Intel PRO/1000 MT Desktop (NAT)

USB

USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)

Shared folders

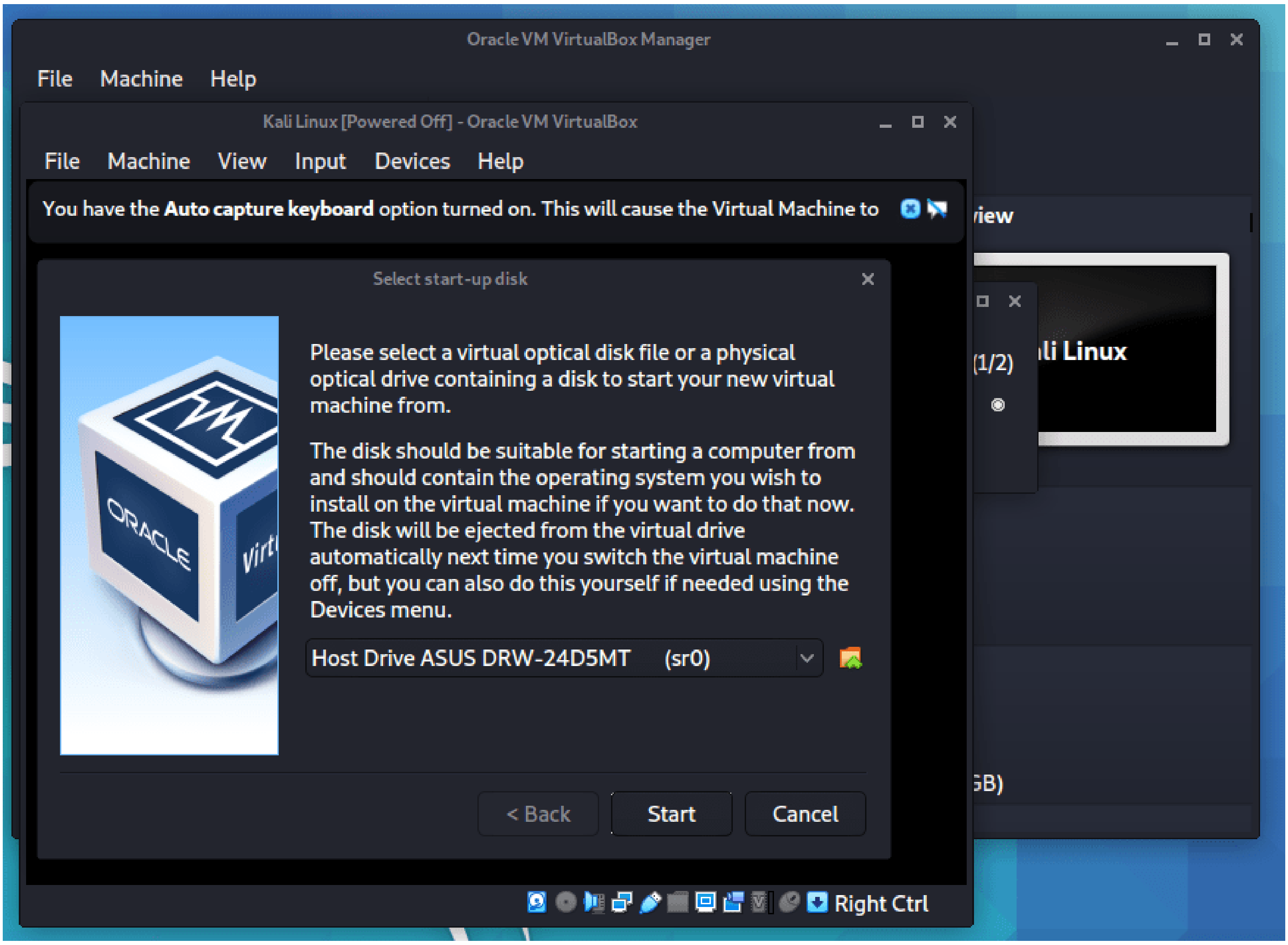
None

Description

None

When we are ready to go, press “Start”.

The first time we run it, we will get a prompt saying do we wish to mount an image to use as a “start-up disk”. We want to use our Kali image, rather than a physical drive, so we select the icon to the side of the drop down.



Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine from.

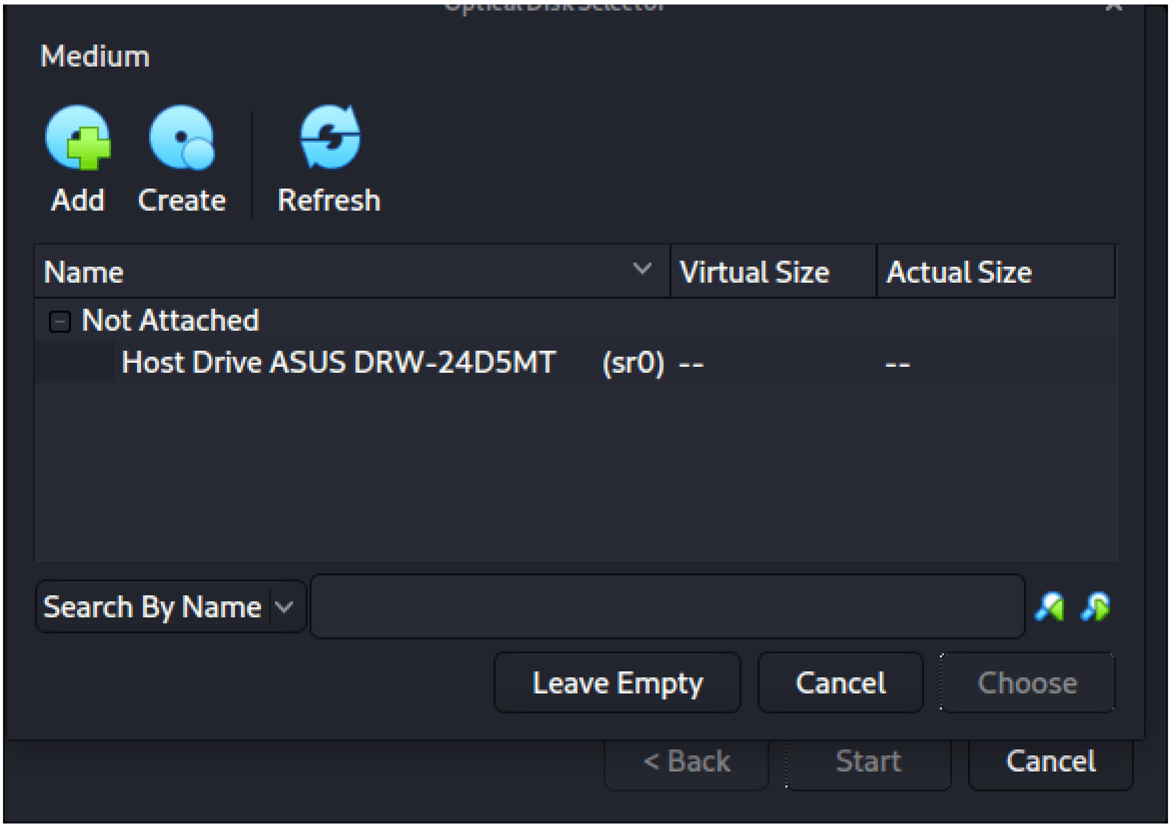
The disk should be suitable for starting a computer from and should contain the operating system you wish to install on the virtual machine if you want to do that now. The disk will be ejected from the virtual drive automatically next time you switch the virtual machine off, but you can also do this yourself if needed using the Devices menu.

Host Drive ASUS DRW-24D5MT (sr0)

You have the **Auto capture keyboard** option turned on. This will cause the Virtual Machine to

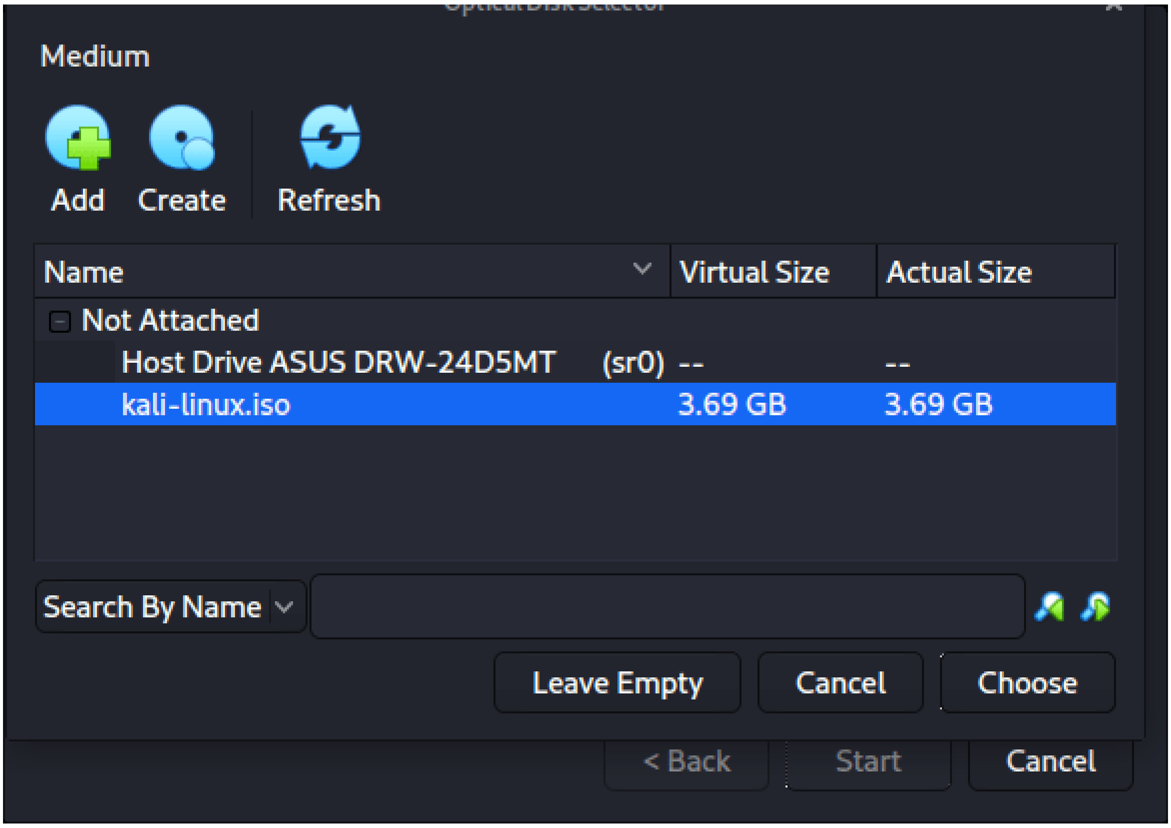
Oracle VM VirtualBox Manager
File Machine Help
Kali Linux [Powered Off] - Oracle VM VirtualBox
File Machine View Input Devices Help
Select start-up disk
< Back
Start
Cancel
Right Ctrl

A new pop up will open, “Optical Disk Selector”. We will now press “Add”, then navigate to where our ISO is located.



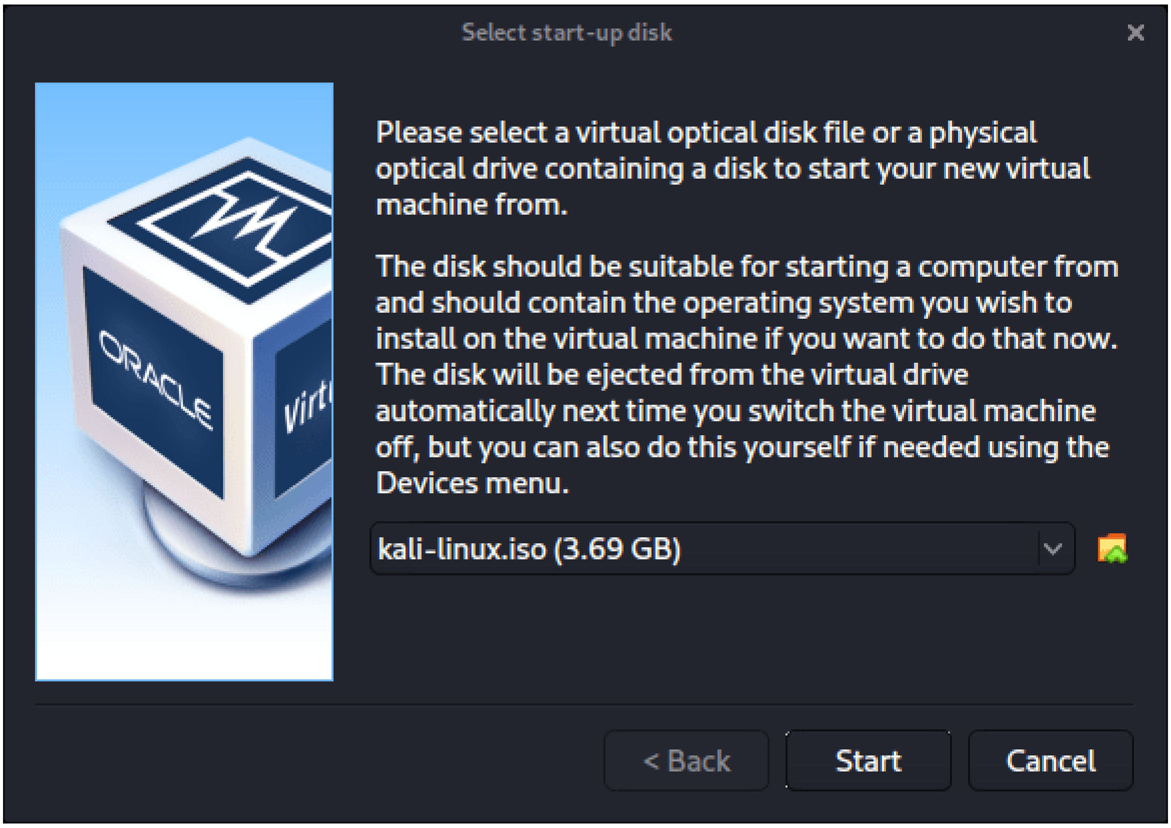
Name	Virtual Size	Actual Size
⊟ Not Attached		
Host Drive ASUS DRW-24D5MT (sr0)	--	--

After pressing “Open”, we can see its been added, so we make sure its selected and press “Choose”.



Name	Virtual Size	Actual Size
⊟ Not Attached		
Host Drive ASUS DRW-24D5MT (sr0)	--	--
kali-linux.iso	3.69 GB	3.69 GB

All that is left now to do is press “Start”.



Select start-up disk

Please select a virtual optical disk file or a physical optical drive containing a disk to start your new virtual machine from.

The disk should be suitable for starting a computer from and should contain the operating system you wish to install on the virtual machine if you want to do that now. The disk will be ejected from the virtual drive automatically next time you switch the virtual machine off, but you can also do this yourself if needed using the Devices menu.

kali-linux.iso (3.69 GB)

After all this is done, we save, start up the VM, and then continue installing Kali Linux as we normally would for a bare metal install.

During Kali Linux setup process, the install wizard should **detect if its inside a VM**. If it is, should then **automatically install any additional tools** (such as `virtualbox-guest-x11`) to give a better user experience. If you want to manually re-install it, you can see our VirtualBox Guest Guide.

Updated on: 2023-Aug-22
Author: g0tmi1k