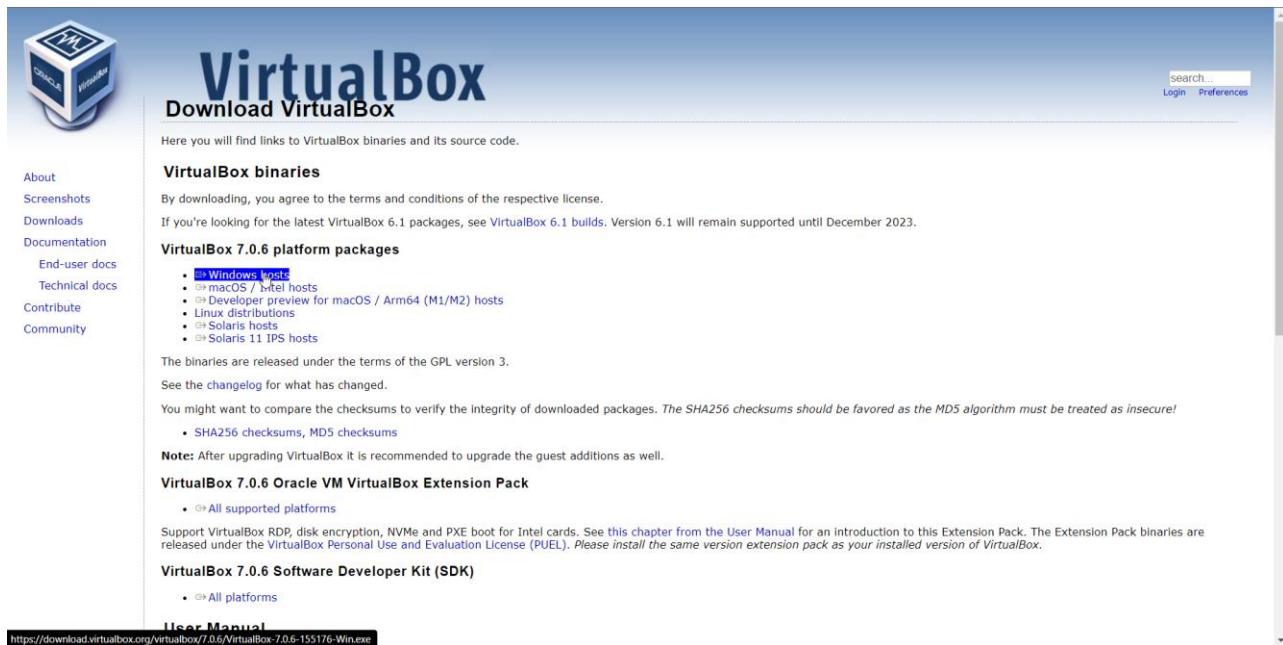


# Setup Instructions:

- Installing VirtualBox.
- Installing Windows Server 2019.
- Adding WSL feature for Windows and installing Ubuntu subsystem.
- Configuration for Forensics virtual machine.
- Installing Forensic Tools.

## Installing VirtualBox

- Link: <https://www.virtualbox.org/wiki/Downloads>
- Downloading VirtualBox 7.0.6:



The screenshot shows the official VirtualBox download page. At the top, there's a navigation bar with links for 'About', 'Screenshots', 'Downloads', 'Documentation', 'End-user docs', 'Technical docs', 'Contribute', and 'Community'. On the right side, there are search and login options. The main content area features the 'VirtualBox' logo and a large blue header 'Download VirtualBox'. Below the header, a sub-header reads 'VirtualBox binaries'. A note states: 'Here you will find links to VirtualBox binaries and its source code.' It also mentions: 'By downloading, you agree to the terms and conditions of the respective license.' and 'If you're looking for the latest VirtualBox 6.1 packages, see VirtualBox 6.1 builds. Version 6.1 will remain supported until December 2023.' Under the heading 'VirtualBox 7.0.6 platform packages', there's a list of supported hosts:

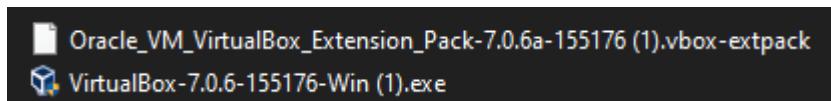
- Windows hosts
- macOS / Intel hosts
- Developer preview for macOS / Arm64 (M1/M2) hosts
- Linux distributions
- Solaris hosts
- Solaris 11 IPS hosts

A note below says: 'The binaries are released under the terms of the GPL version 3.' and 'See the changelog for what has changed.' There's also a note about checksums: 'You might want to compare the checksums to verify the integrity of downloaded packages. The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!' with links for 'SHA256 checksums' and 'MD5 checksums'. A note for users: 'Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.' Under 'VirtualBox 7.0.6 Oracle VM VirtualBox Extension Pack', it says: 'Support VirtualBox RDP, disk encryption, NVMe and PXE boot for Intel cards. See this chapter from the User Manual for an introduction to this Extension Pack. The Extension Pack binaries are released under the VirtualBox Personal Use and Evaluation License (PUEL). Please install the same version extension pack as your installed version of VirtualBox.' Finally, under 'VirtualBox 7.0.6 Software Developer Kit (SDK)', there's a link for 'All platforms'.

- Downloading VirtualBox 7.0.6 Extension Pack:

The screenshot shows the VirtualBox download page. On the left, there's a sidebar with links to About, Screenshots, Downloads, Documentation, End-user docs, Technical docs, Contribute, and Community. The main content area has a heading 'Download VirtualBox'. Below it, a sub-section titled 'VirtualBox binaries' is shown. It contains a note about agreeing to terms and conditions, a link to the latest builds, and a section for 'VirtualBox 7.0.6 platform packages' which lists various host operating systems. There are also sections for the Oracle VM VirtualBox Extension Pack and the Software Developer Kit (SDK). A note at the bottom encourages upgrading guest additions.

- You will have two files:

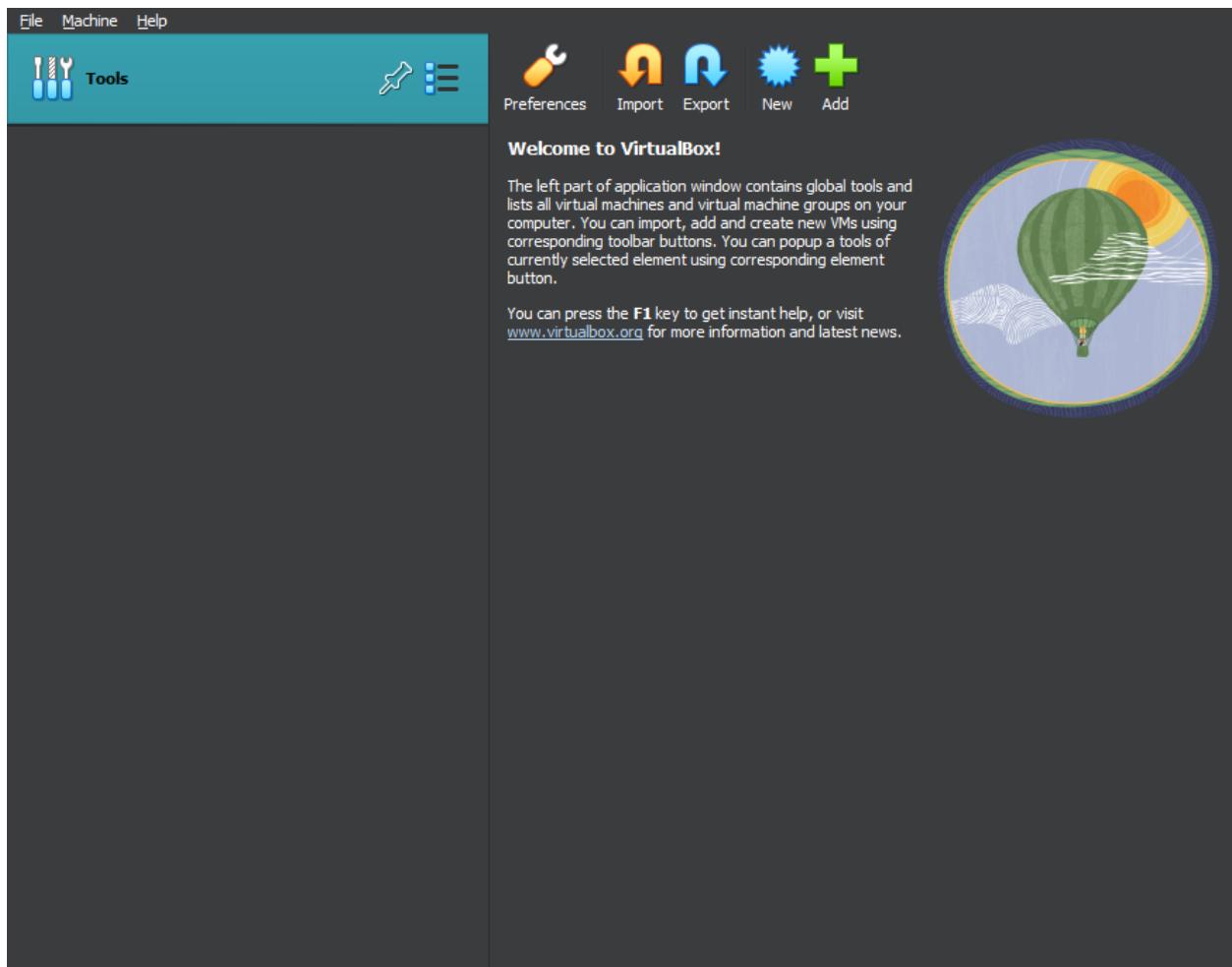


- First install VirtualBox, then import the extension pack for it. There is no need for advanced configuration at installation, just hit next until finish. Now, the system will recognize the extension pack, install it.
- When the extension pack is finished installing, I have used the following folder structure:
  - o C:\
    - Machine Folders for VirtualBox.
    - Shared Folders (with the Virtual Machines).
    - VMs (Files for Virtual Machines: .vhd, .ova).

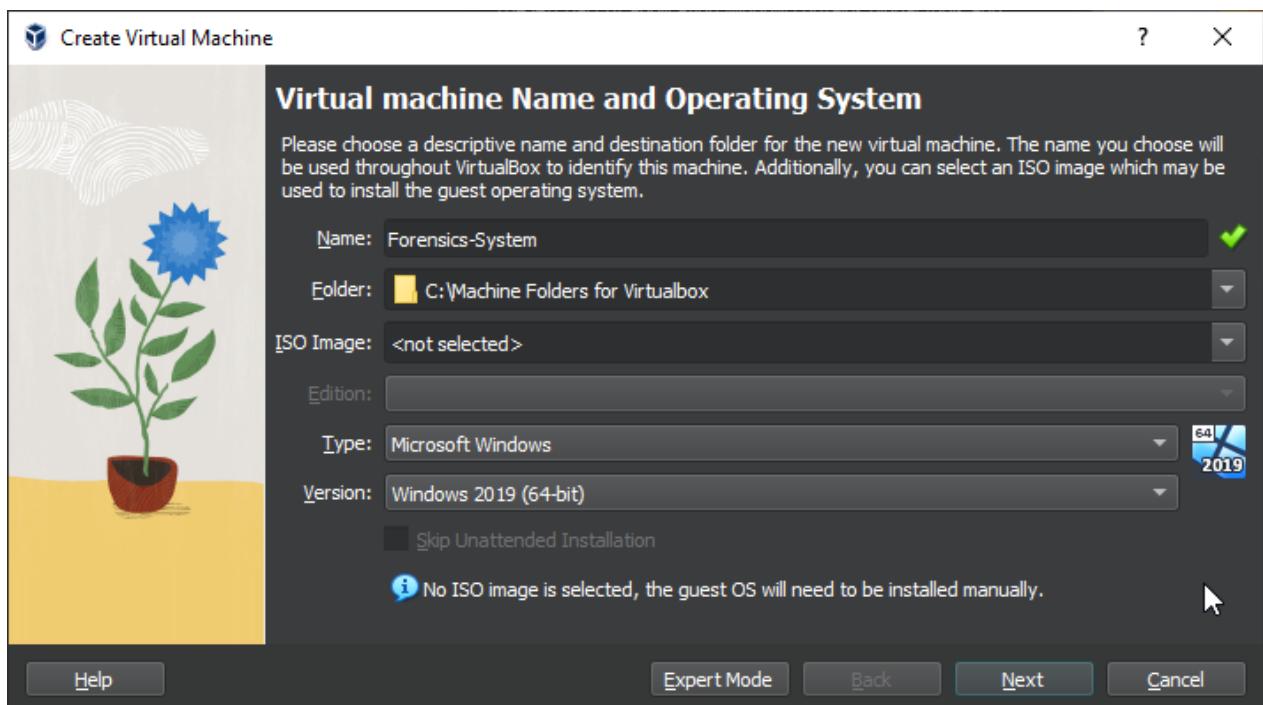
## Installing Windows Server 2019

- Link: <https://go.microsoft.com/fwlink/?linkid=2195334>

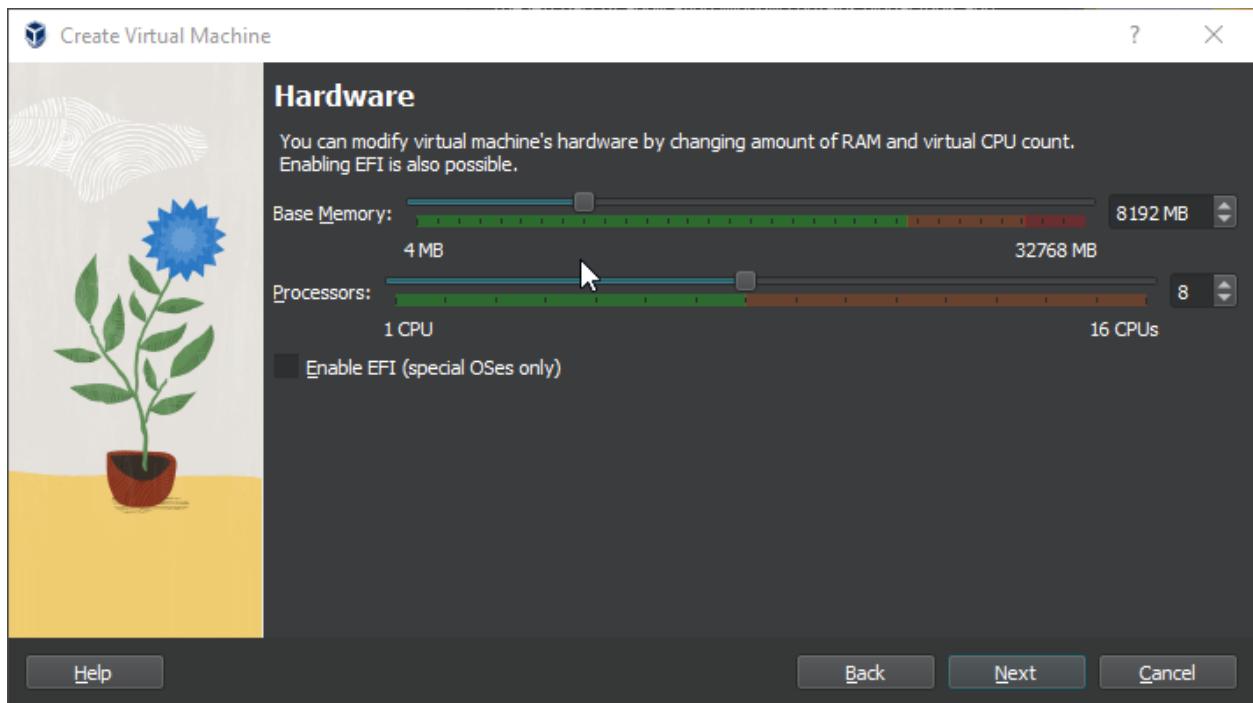




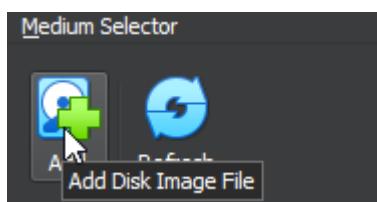
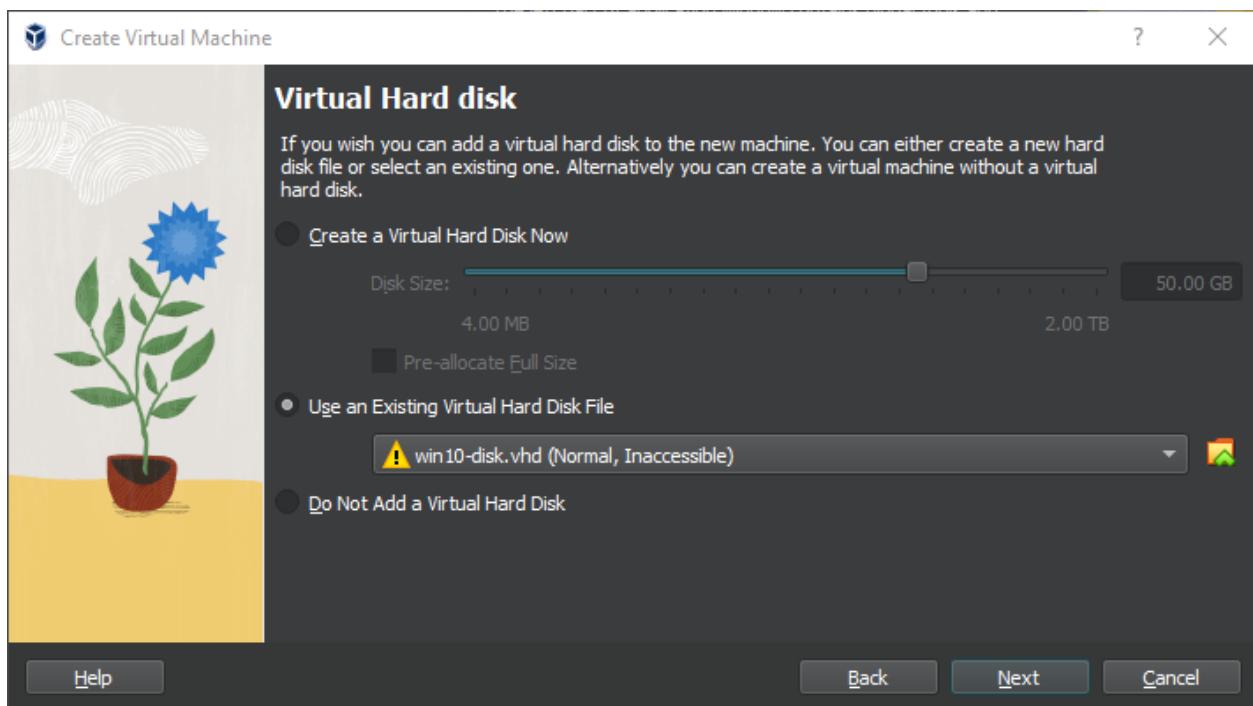
- Press New.

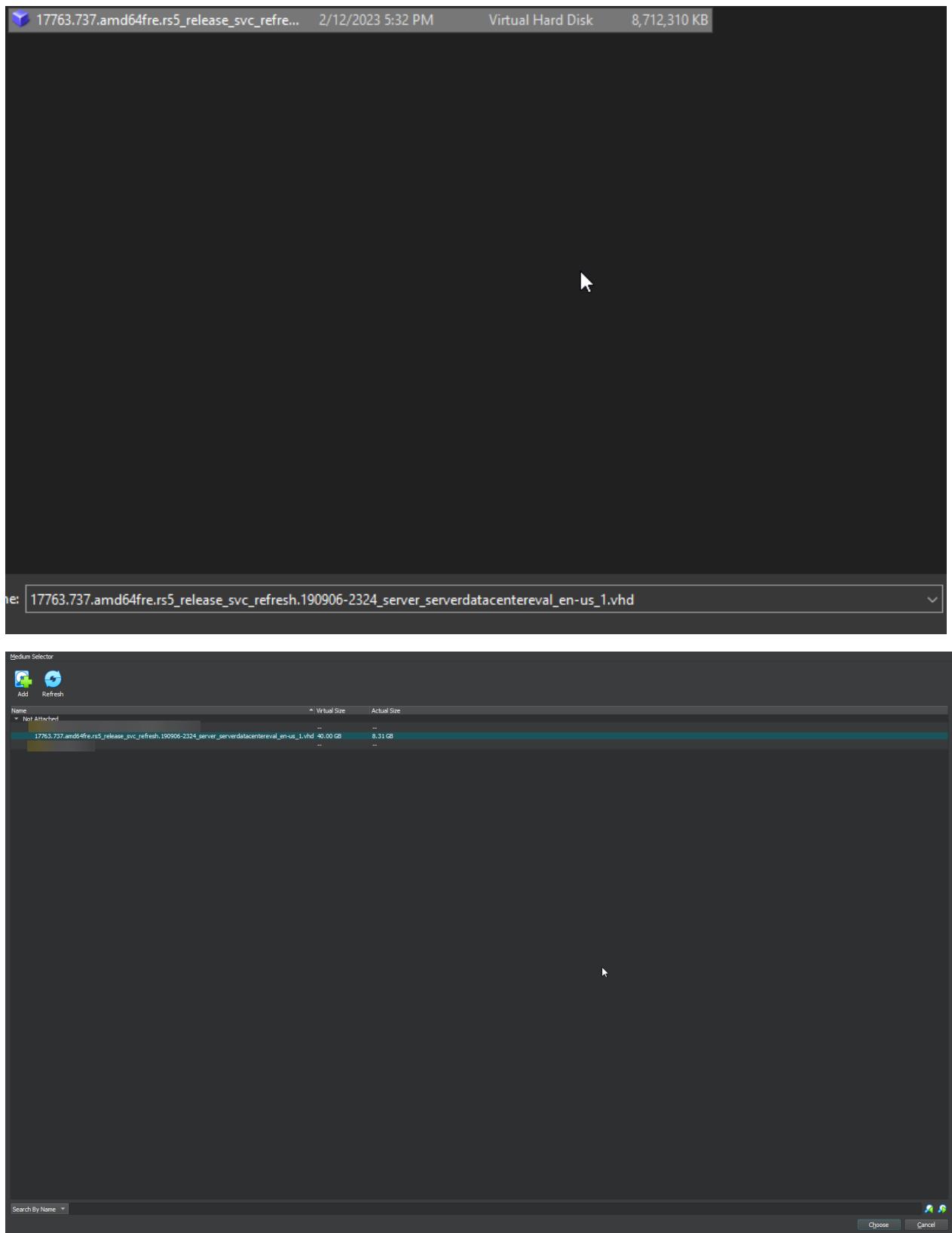


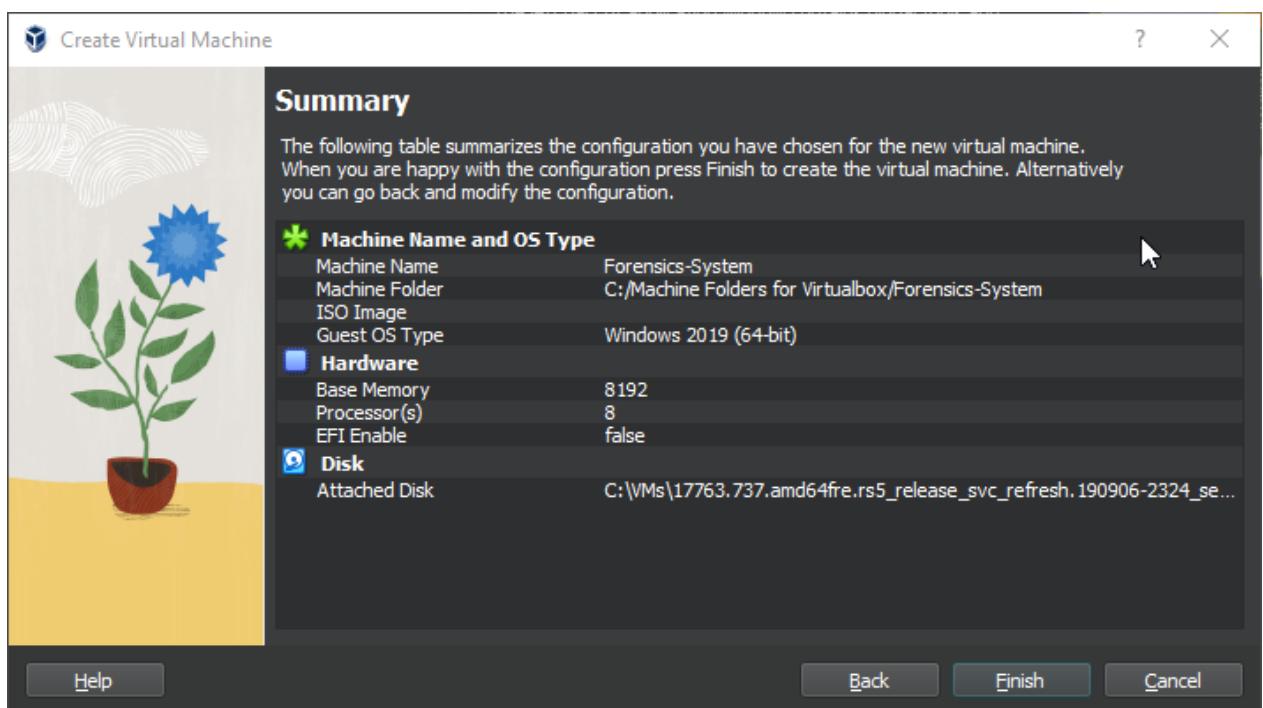
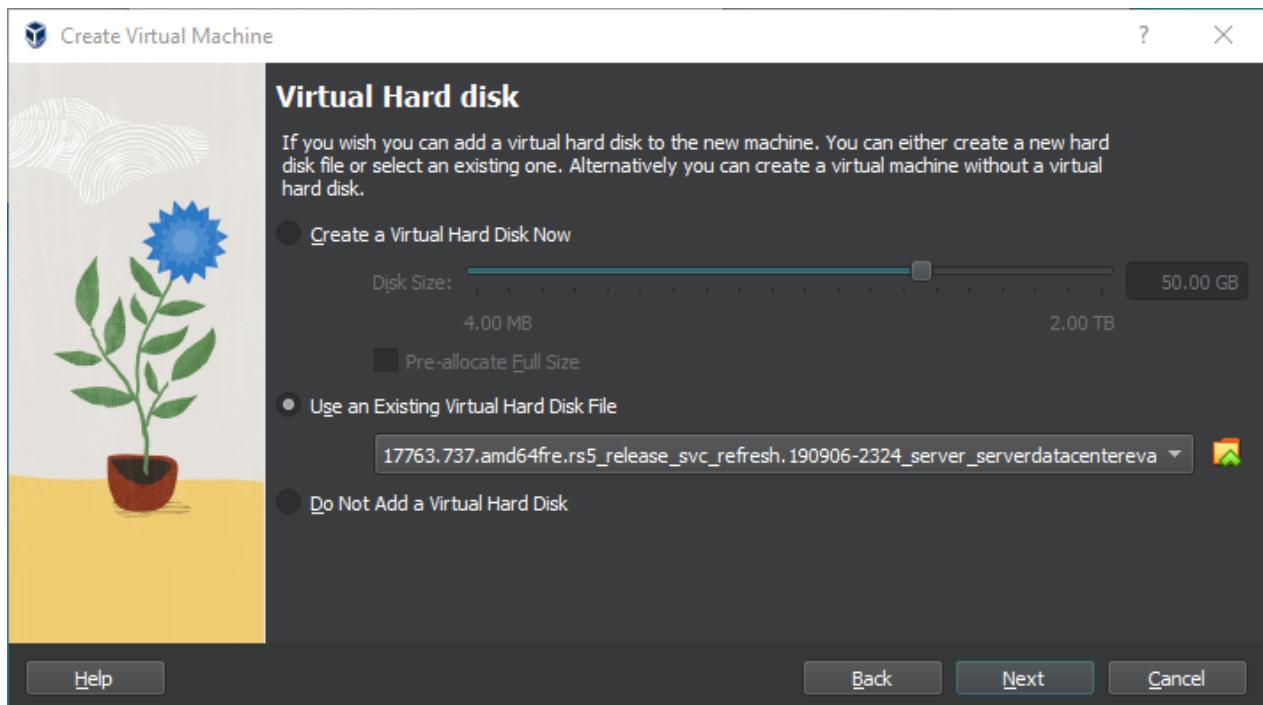
- You can allocate how much resources you want.

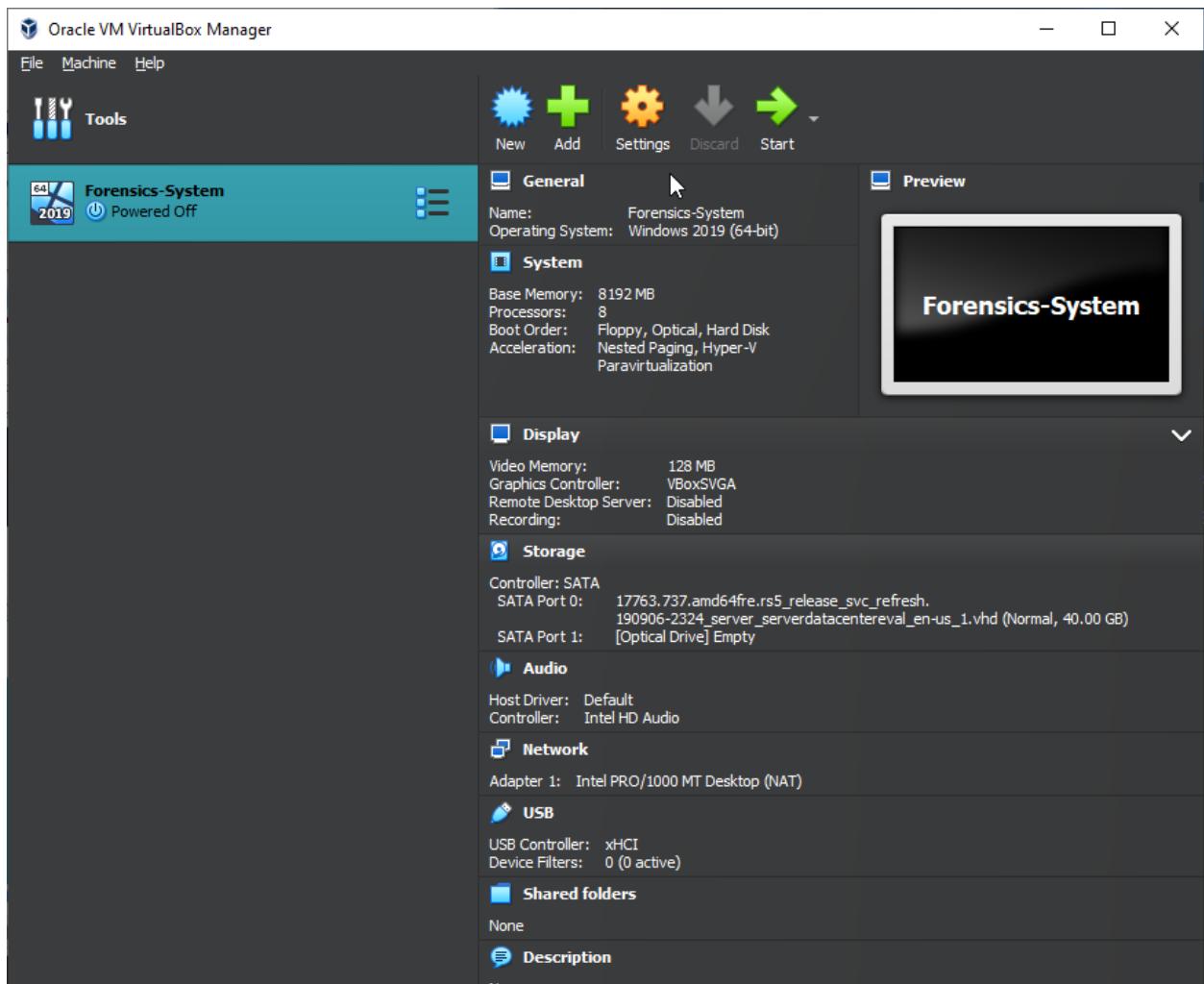


- In this case, we will choose an existing virtual hard disk file (.vhdx) we downloaded earlier.

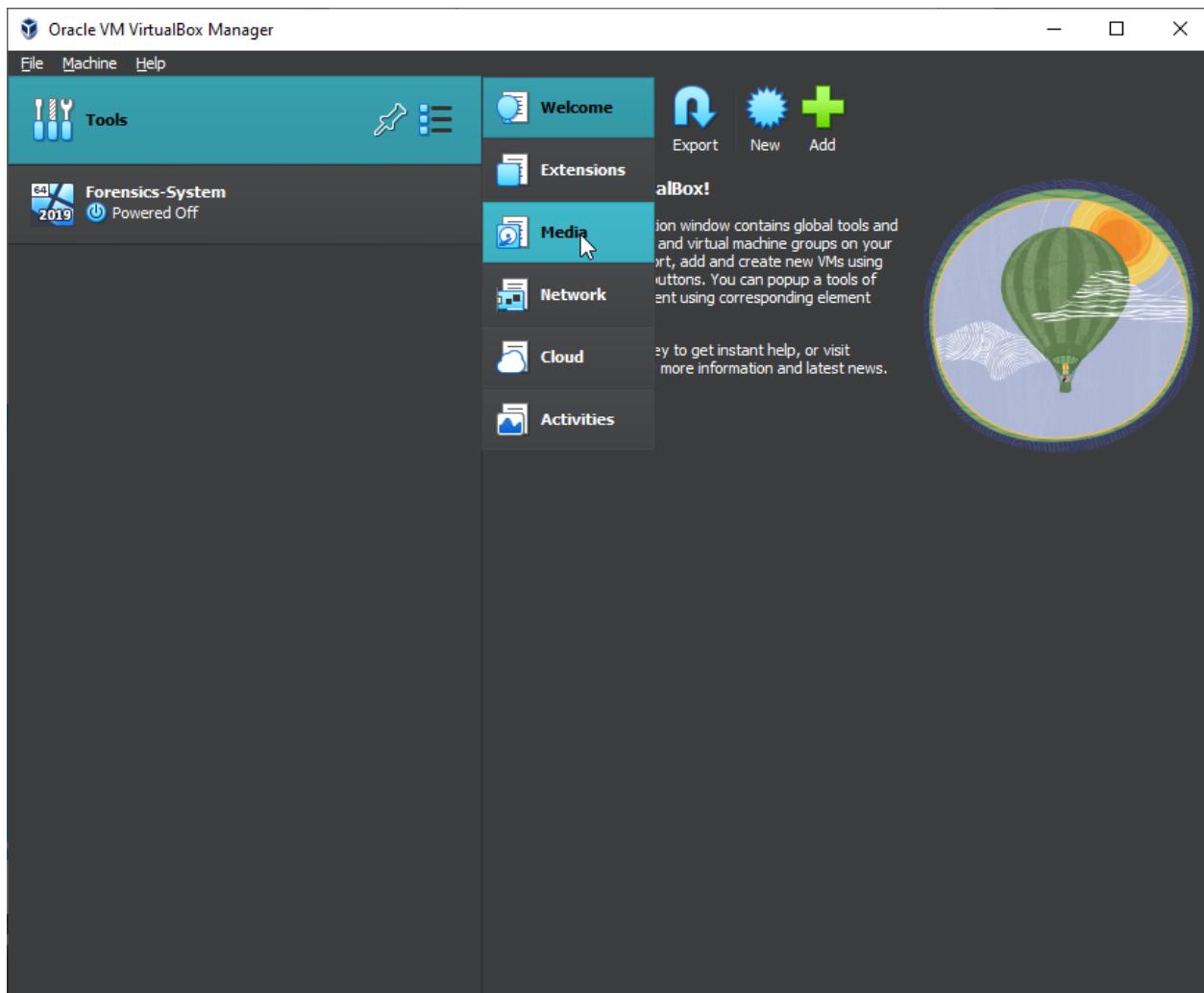


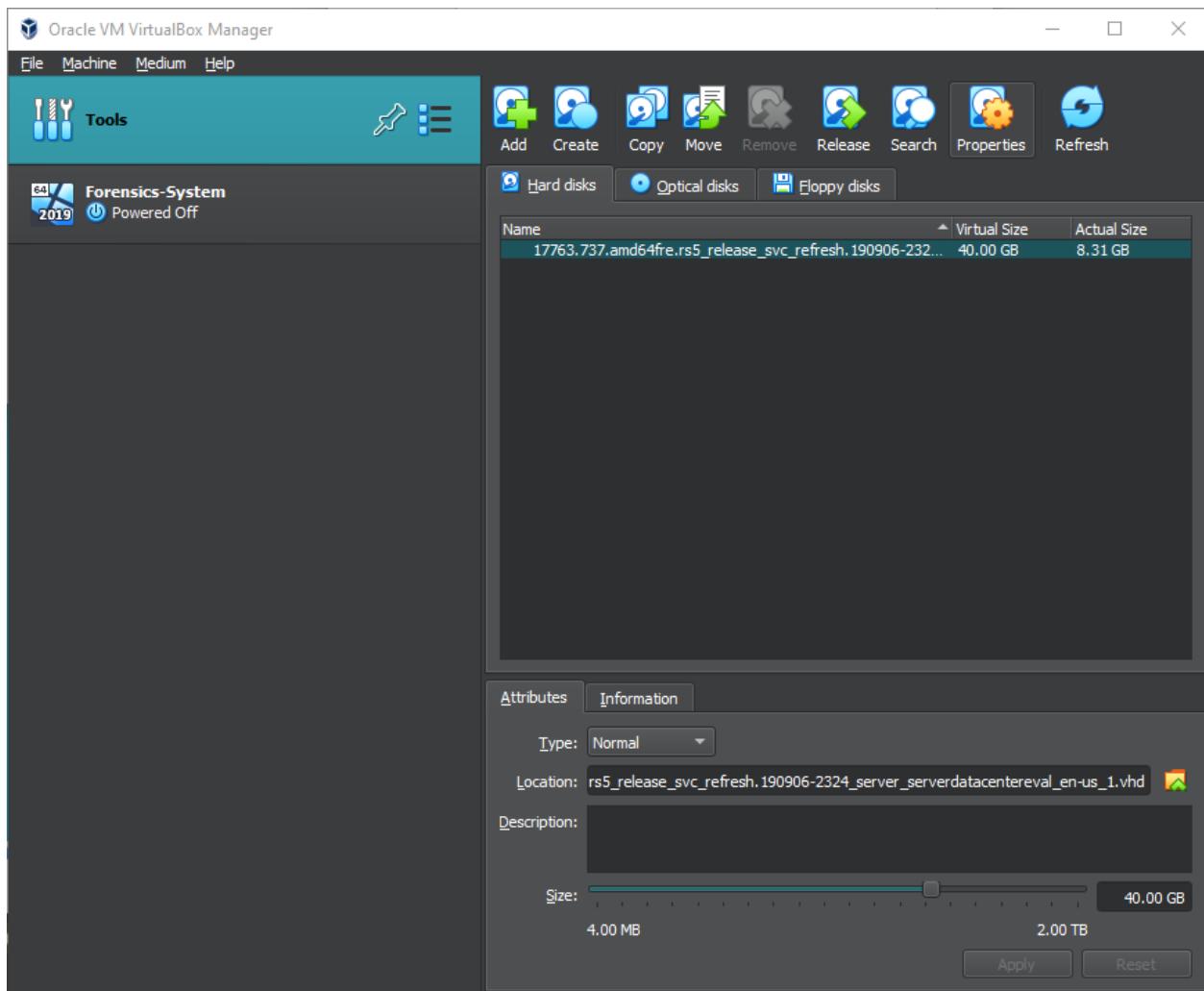




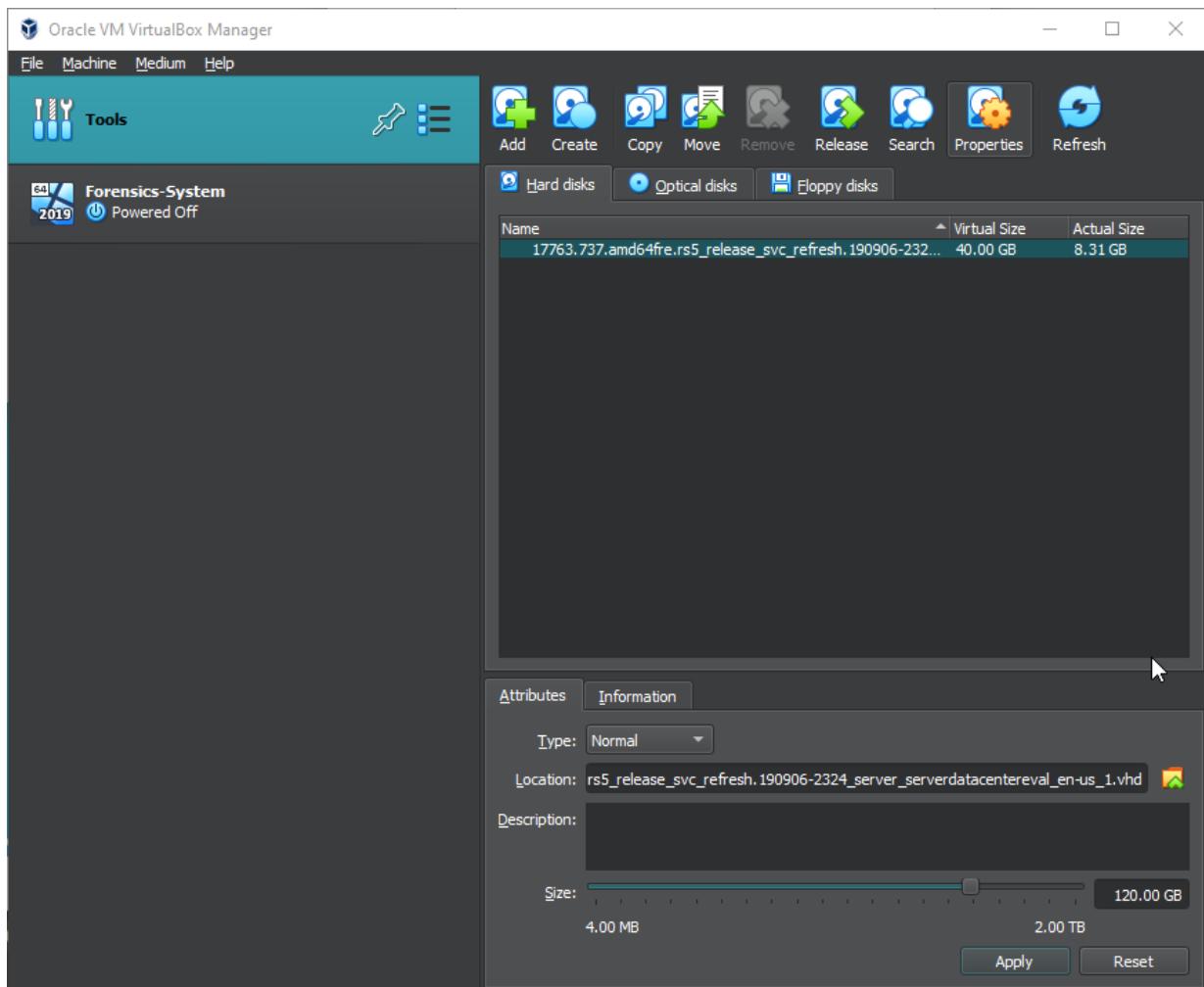


- Now, very important task. Go to Media:

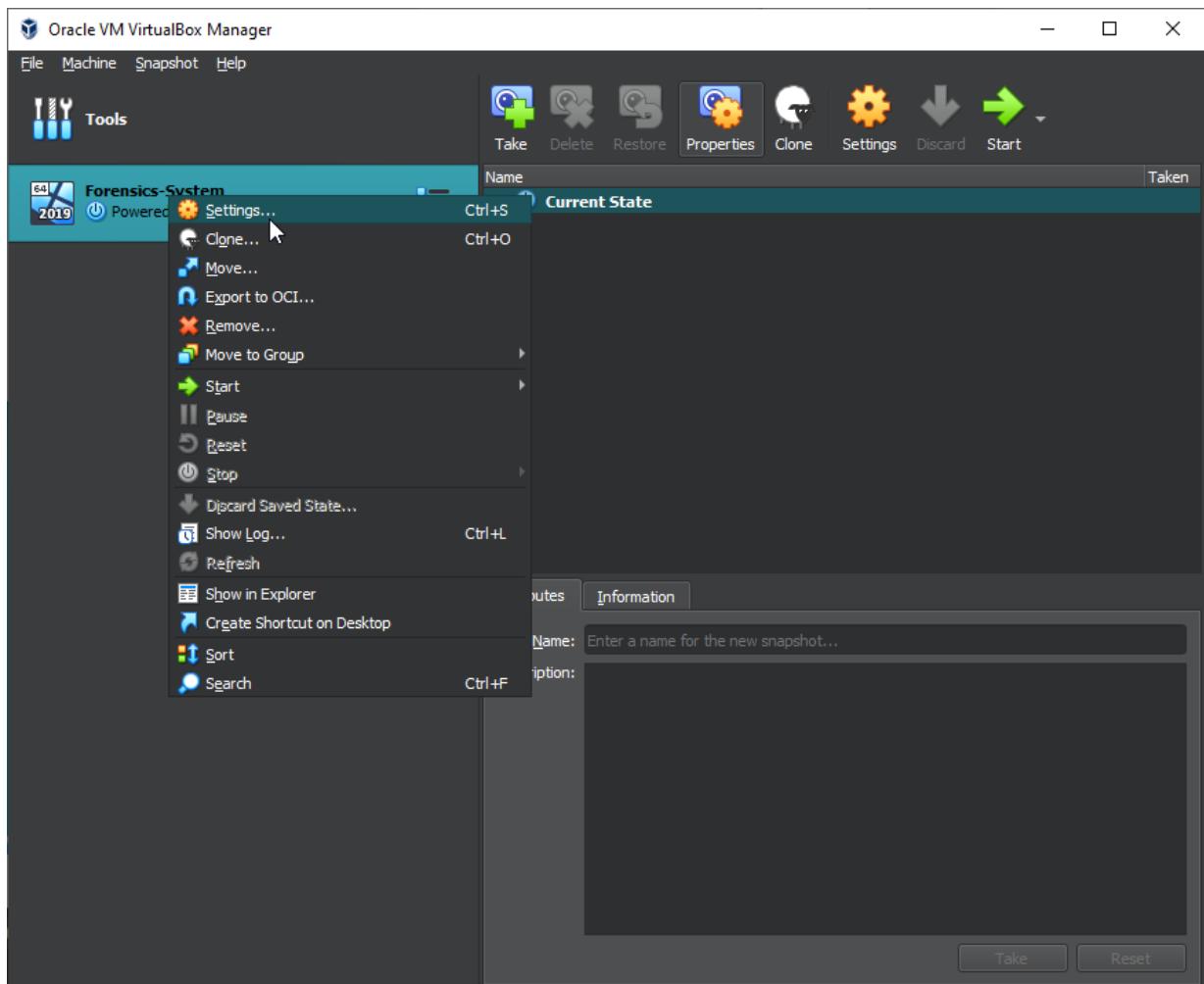




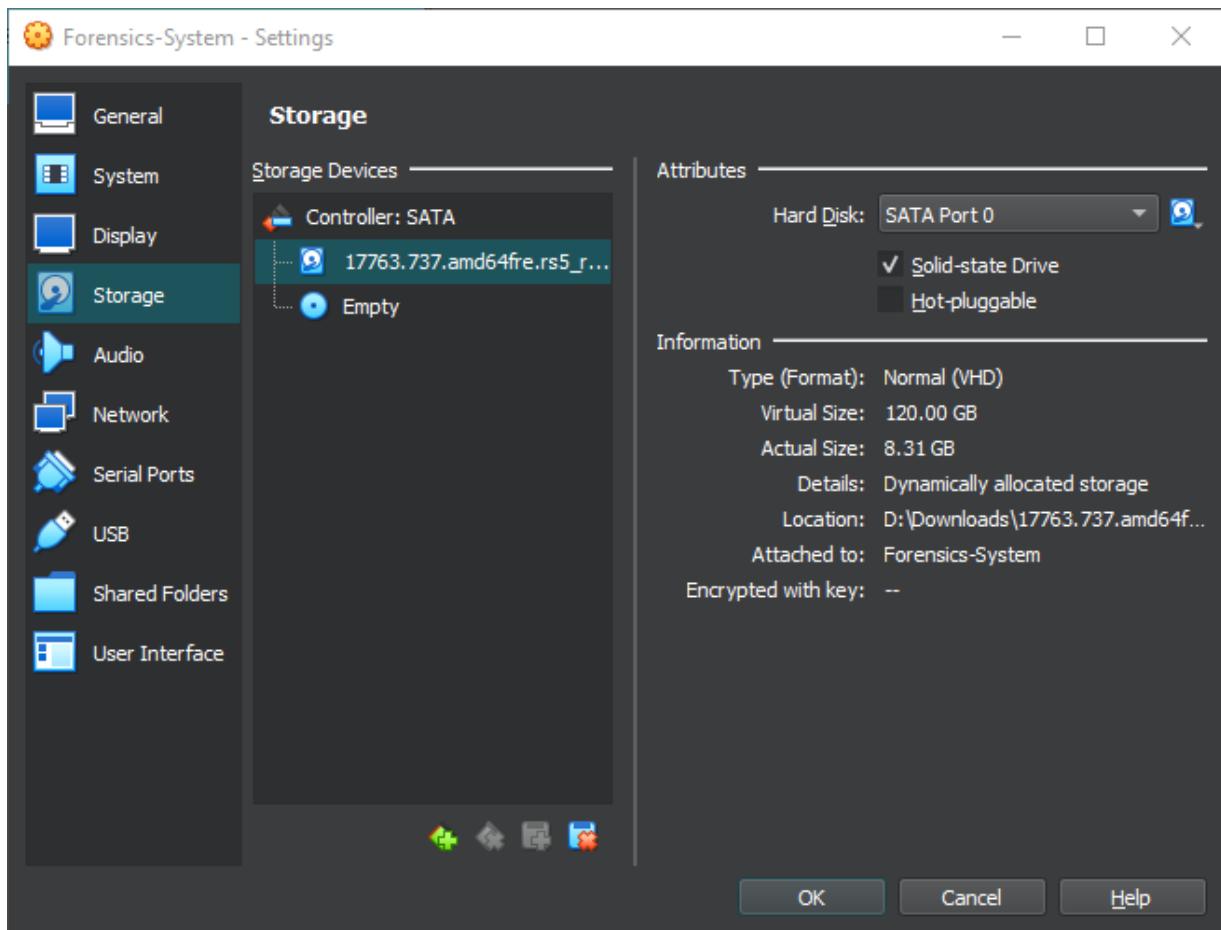
- Change the size of the disk: (Caution!!!: You cannot shrink the virtual disk, make sure you increase the size with what resources you have | You cannot increase the size of a virtual disk for a virtual machine that you have snapshots of).



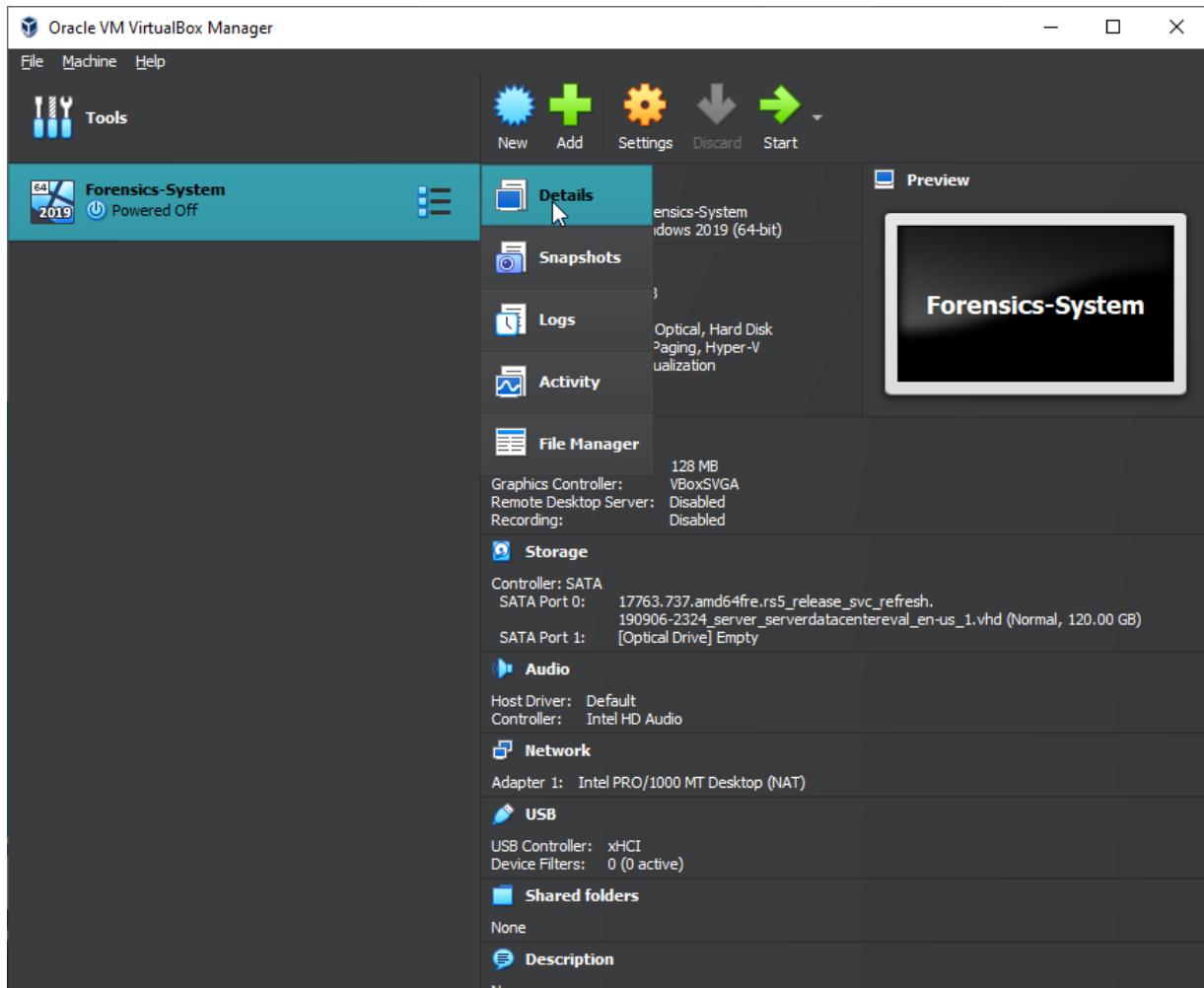
- Press Apply.
- Some performance tweaks:

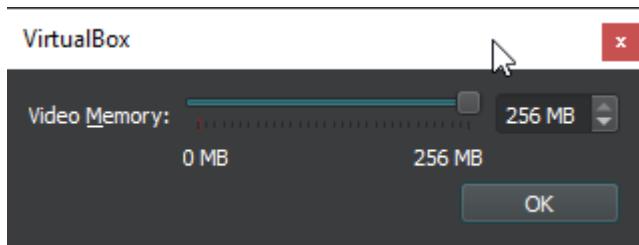
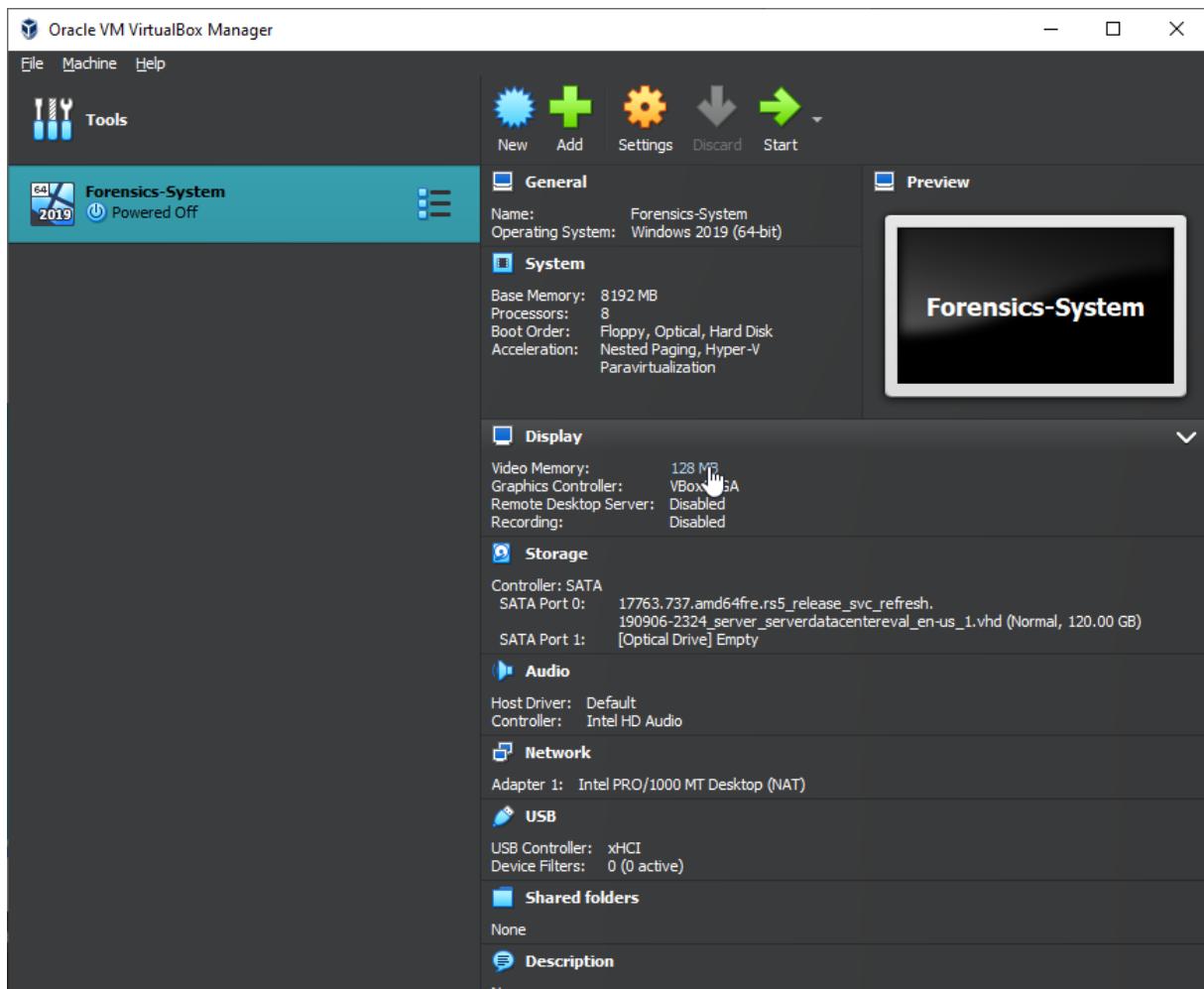


- I have the virtual machines disks on SSD, you can check the Solid-state Drive box for improving performance of the virtual machine.

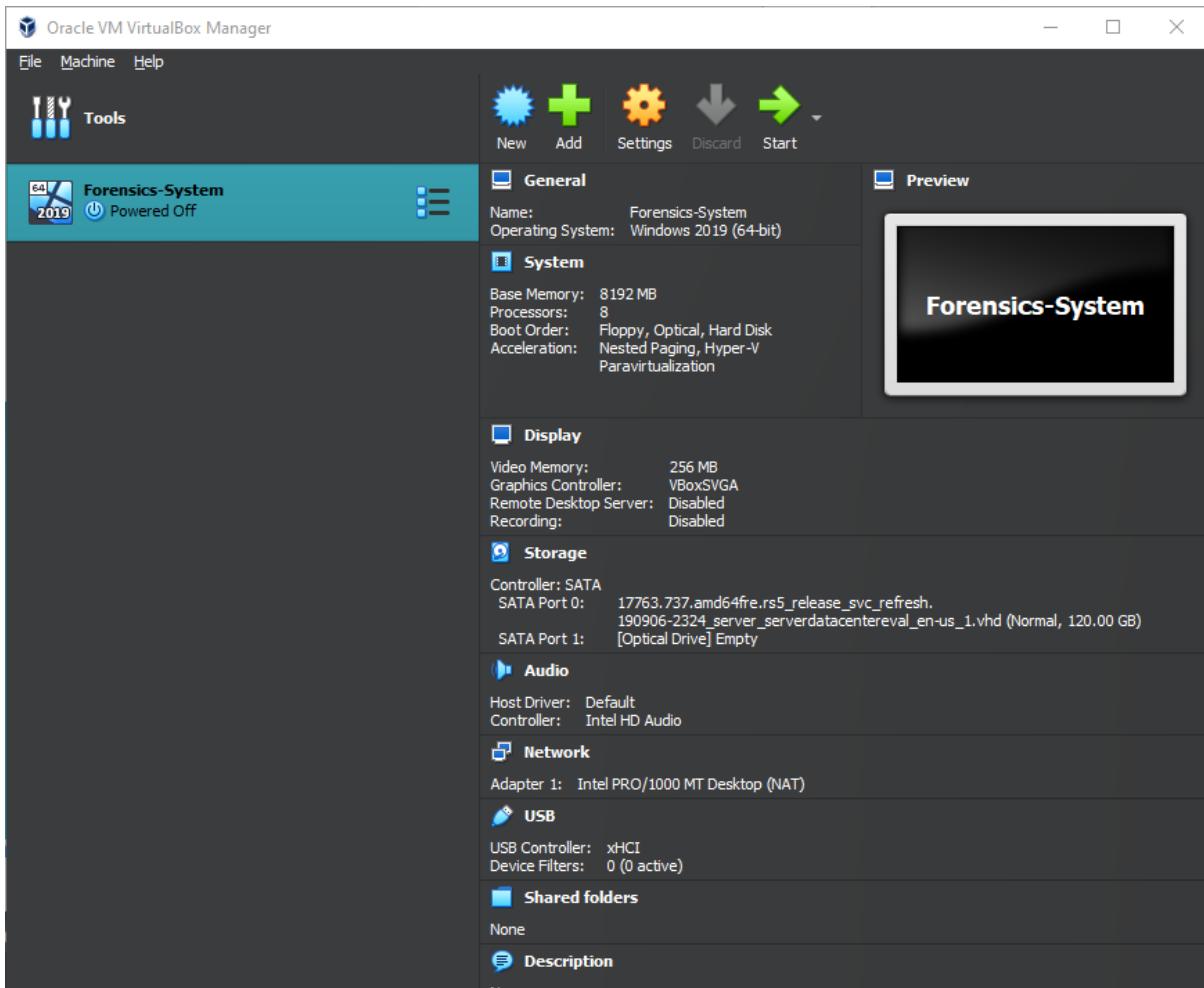


- Go to Details and increase video memory:

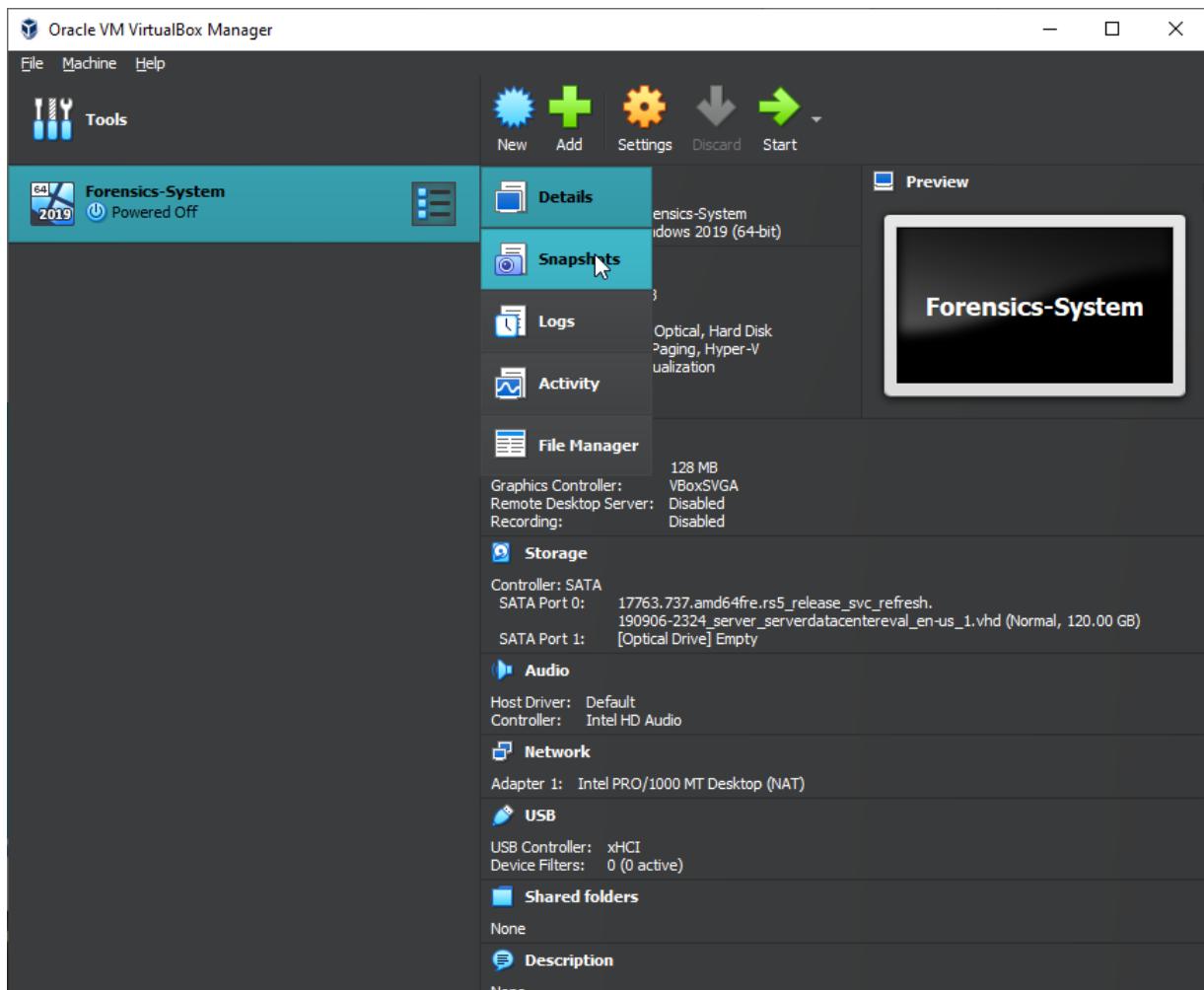


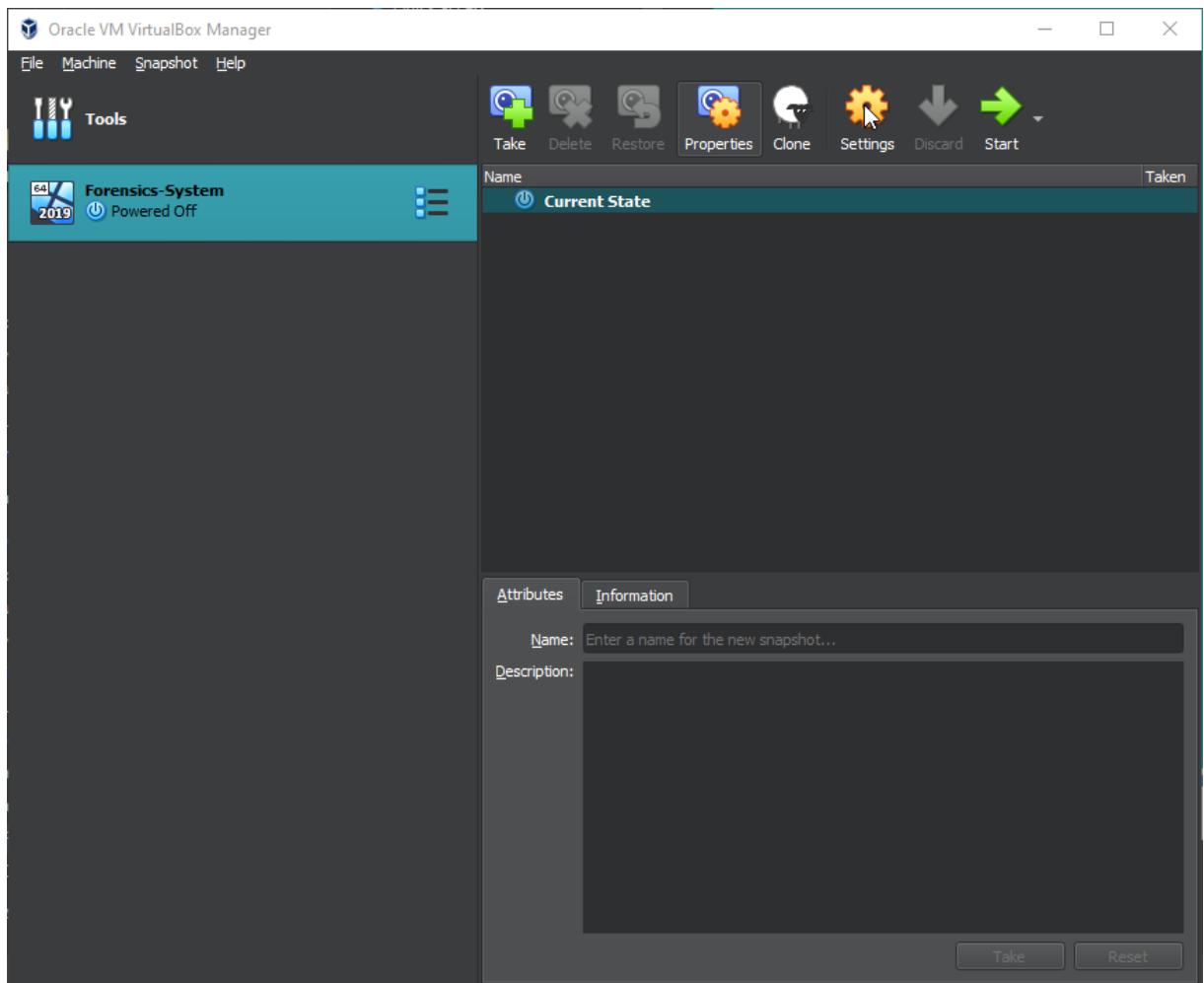


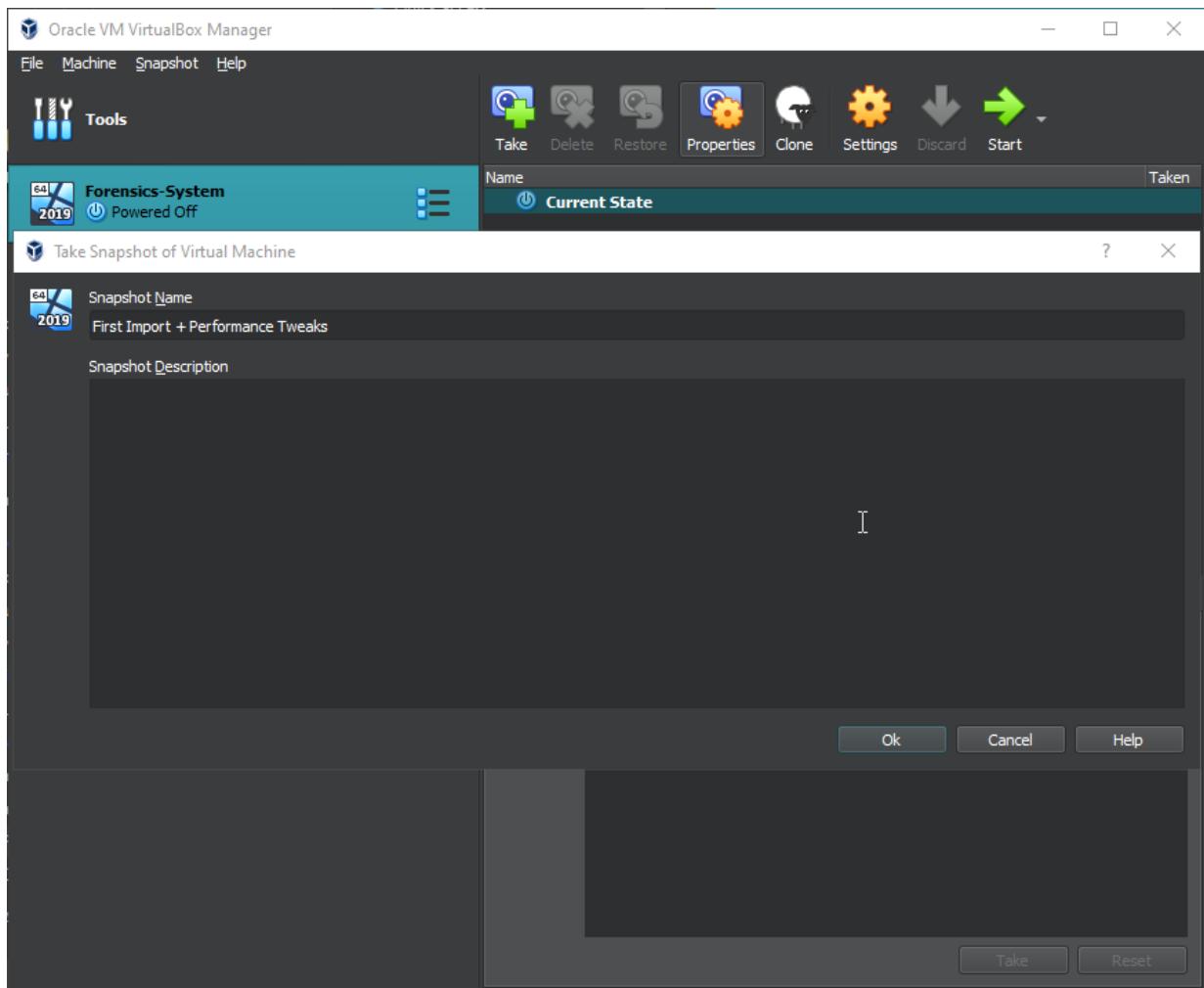
- This is the final form of the virtual machine, ready to take a snapshot.



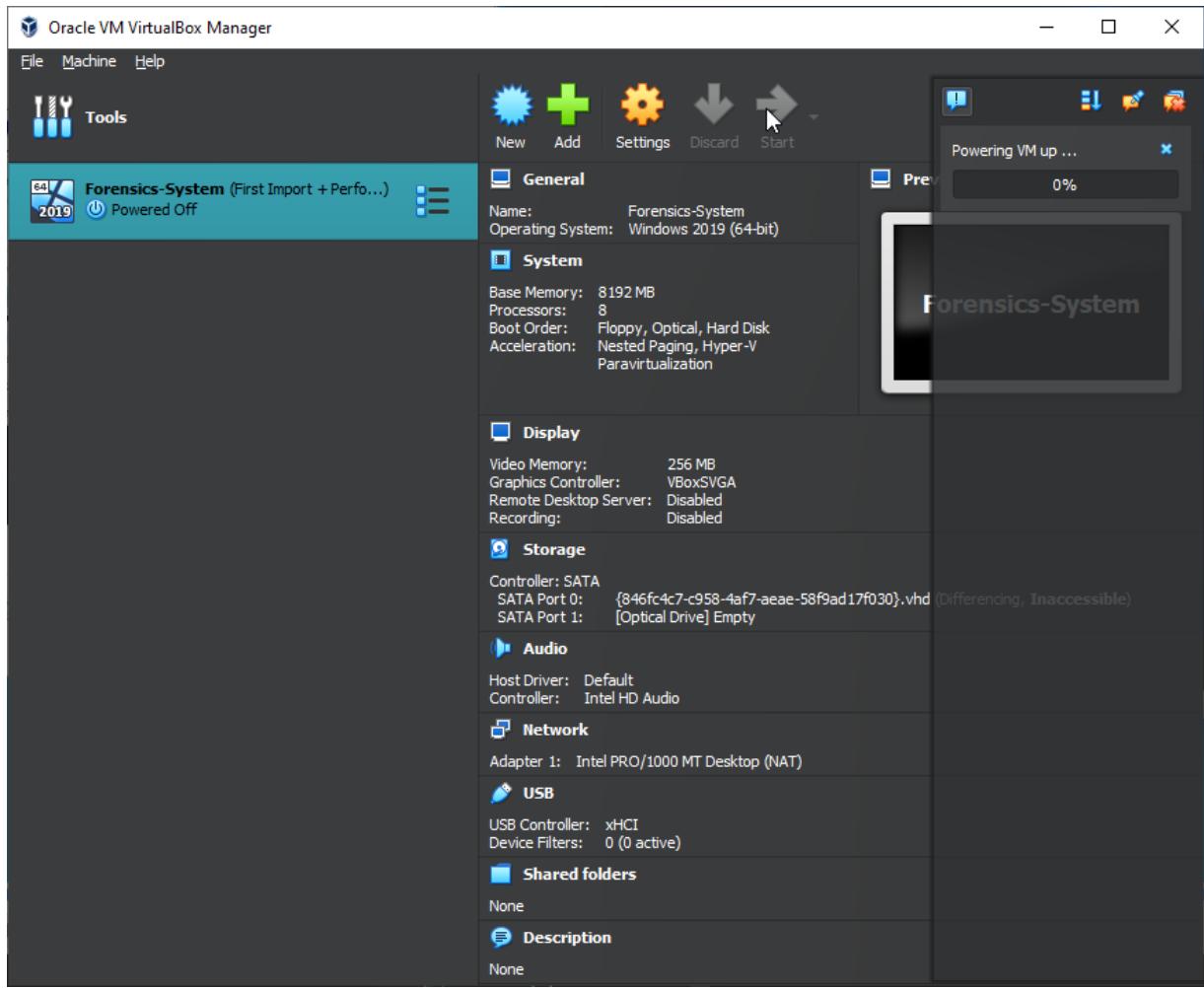
- Now go back and go to Snapshots and take a snapshot.

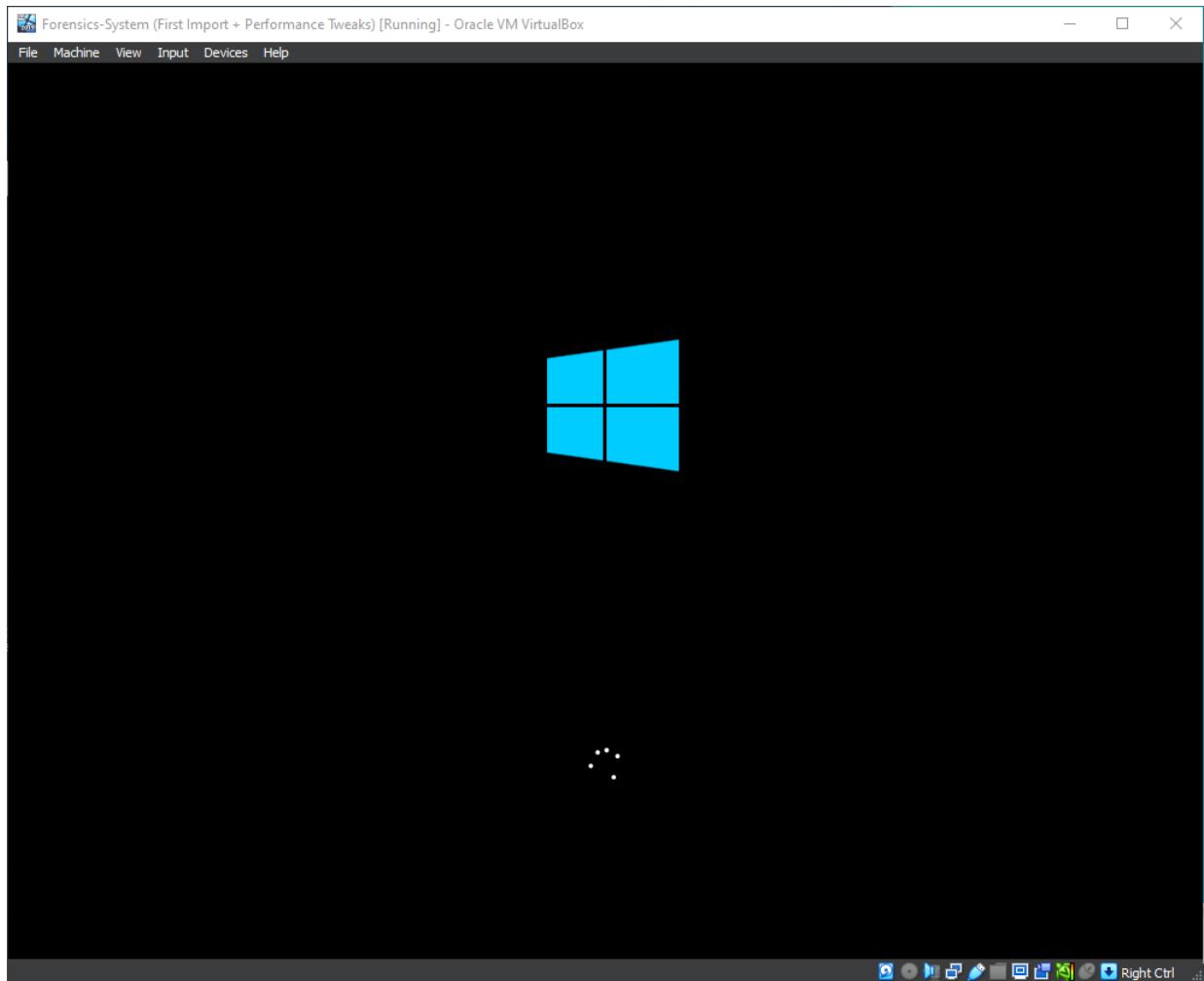




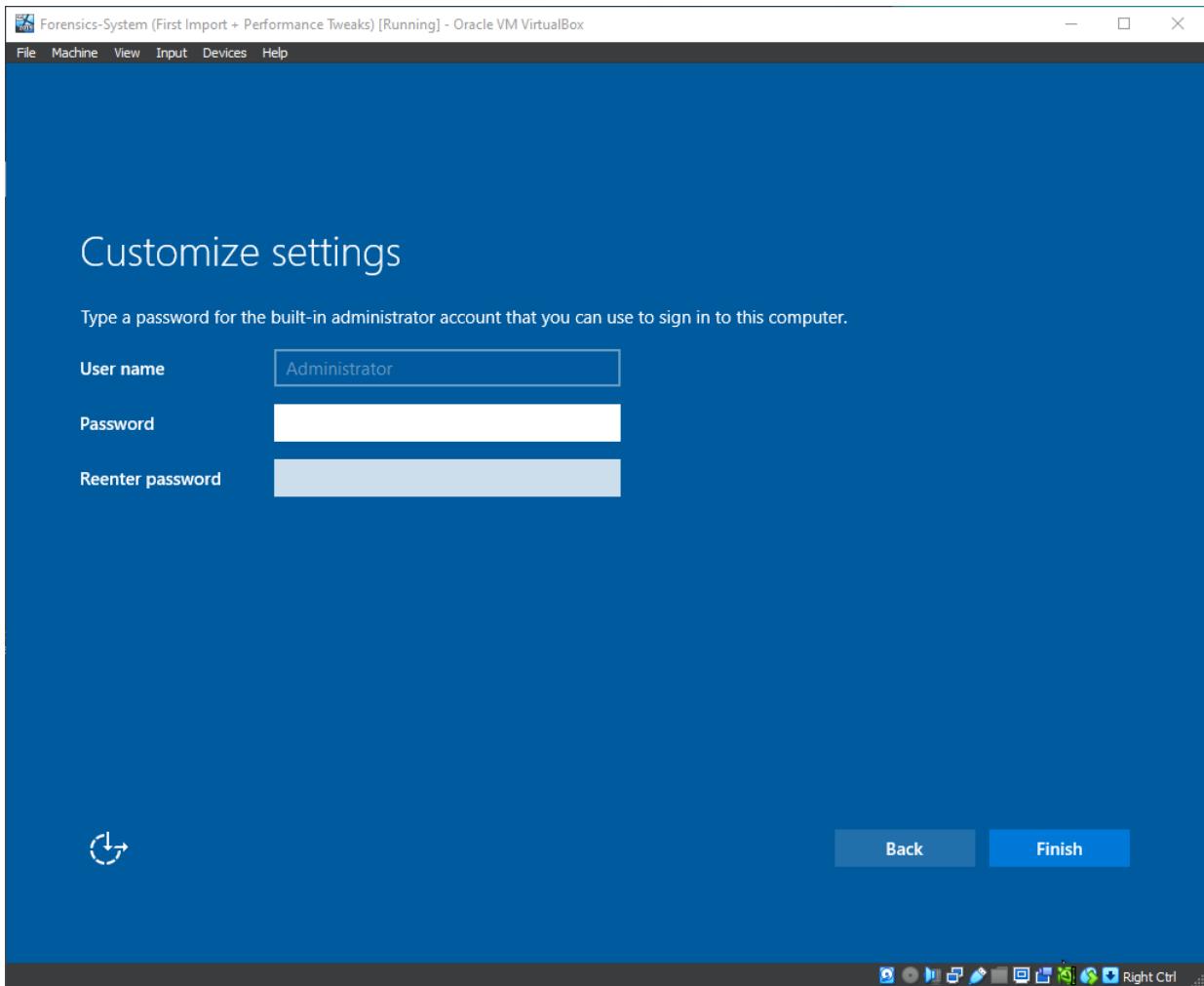


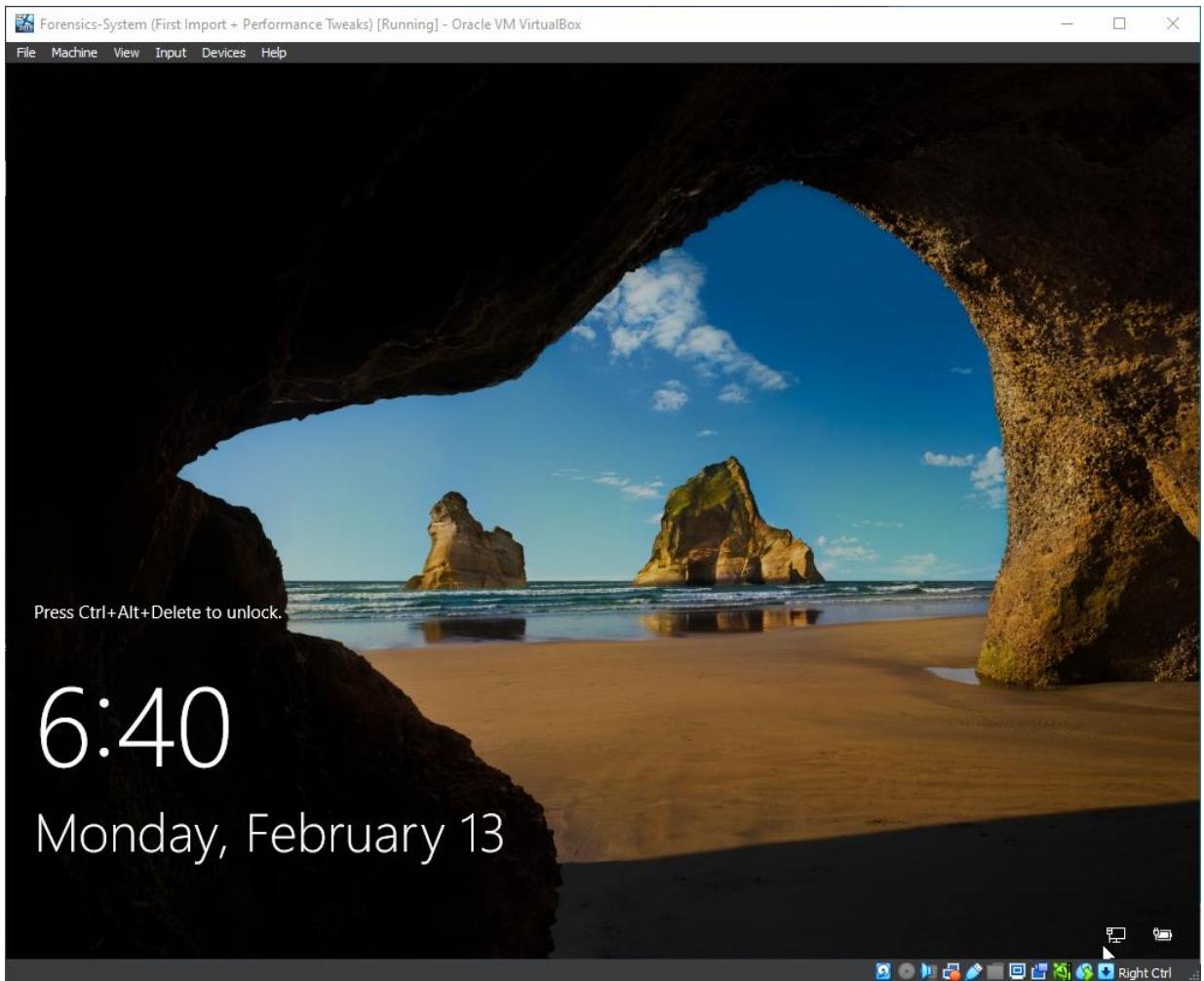
- Start the vm.

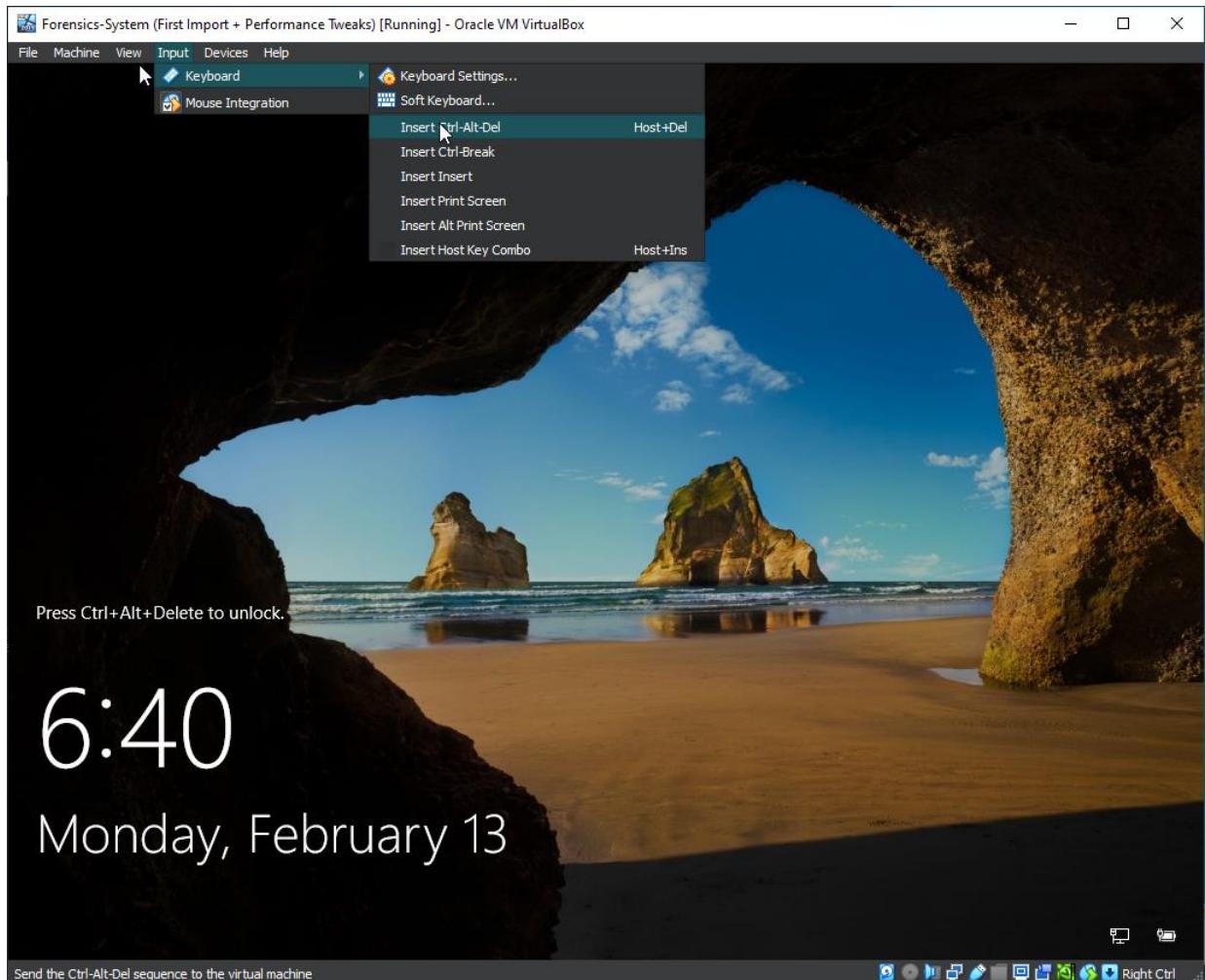




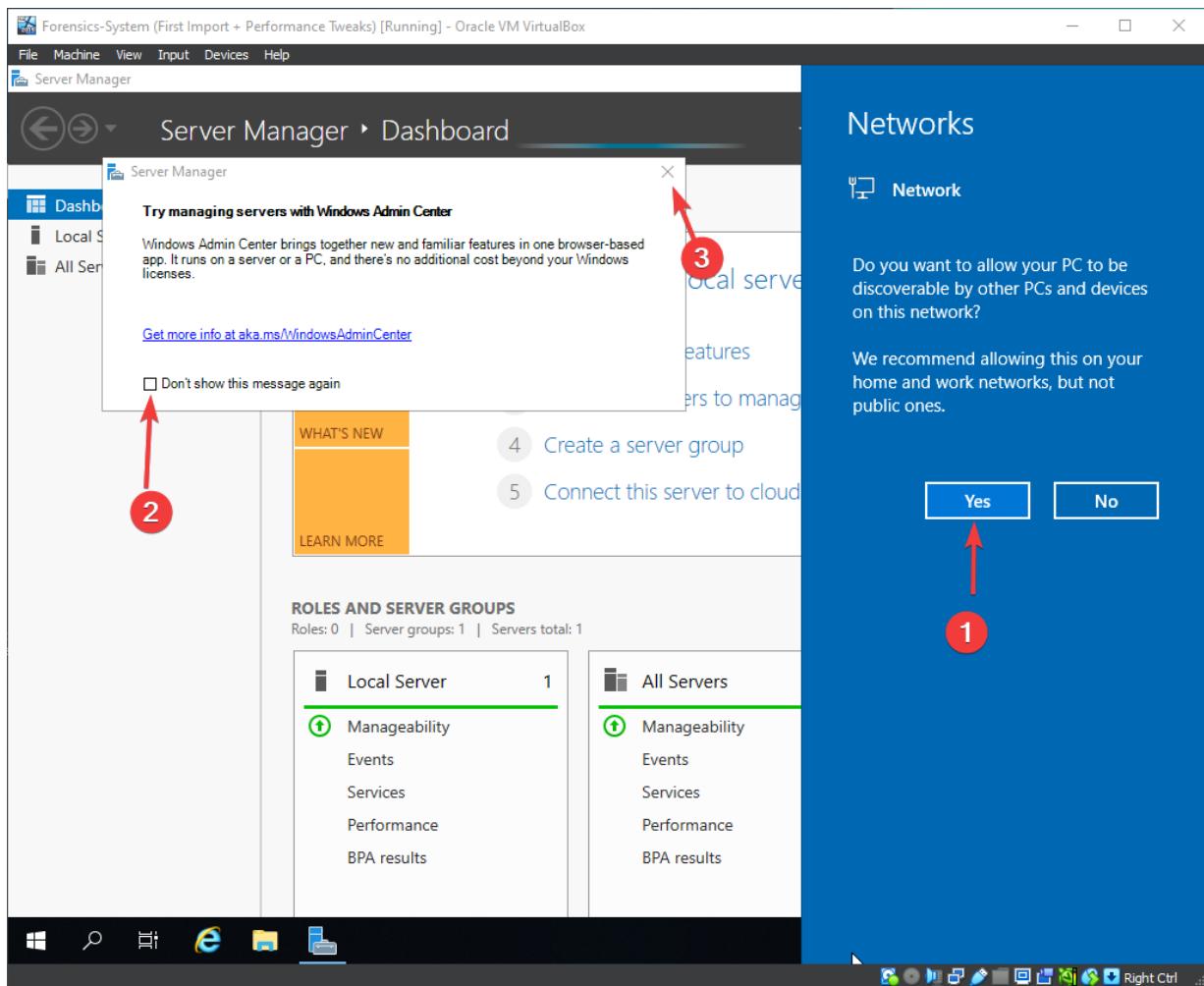
- You need to put an Administrator account password.

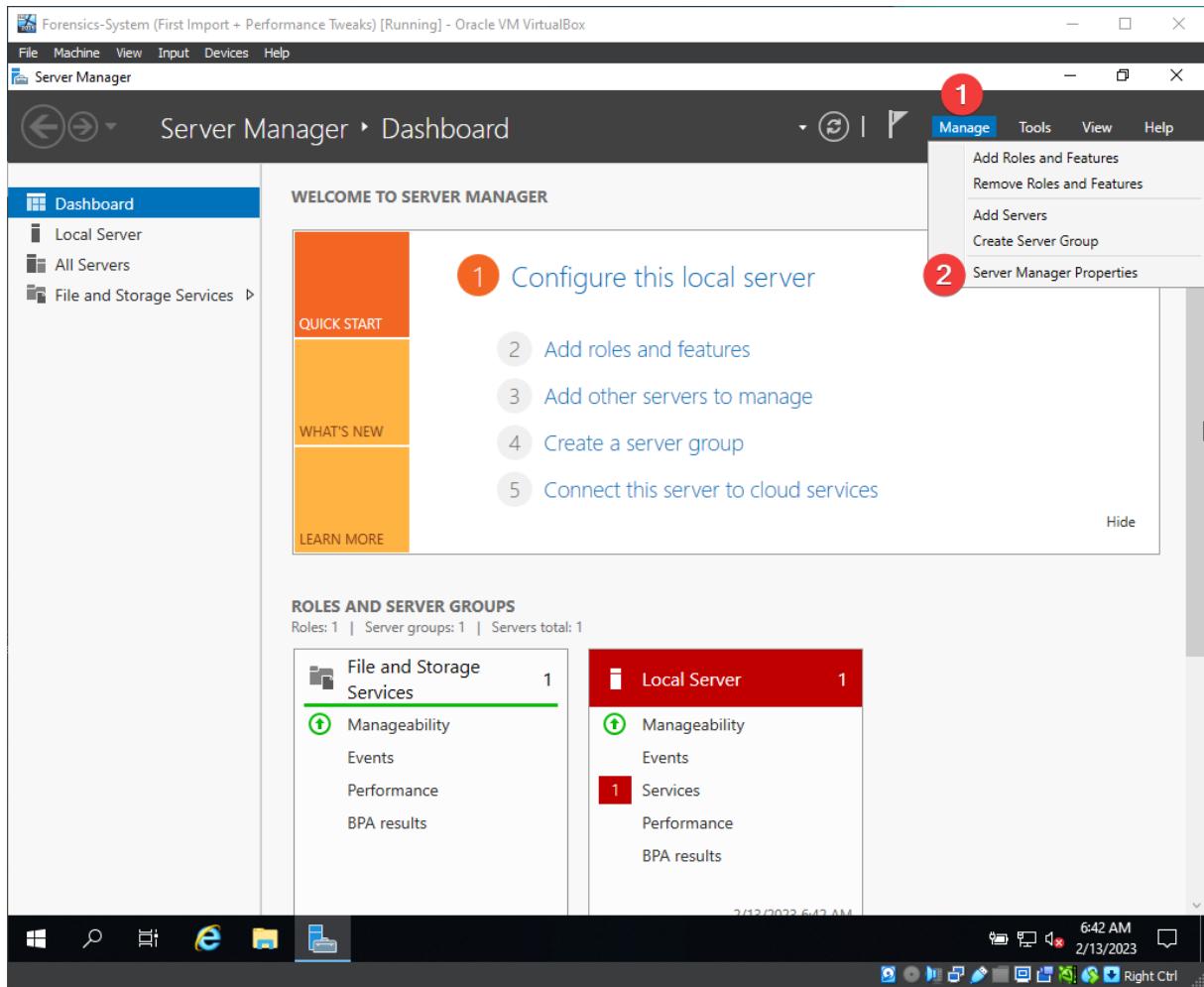


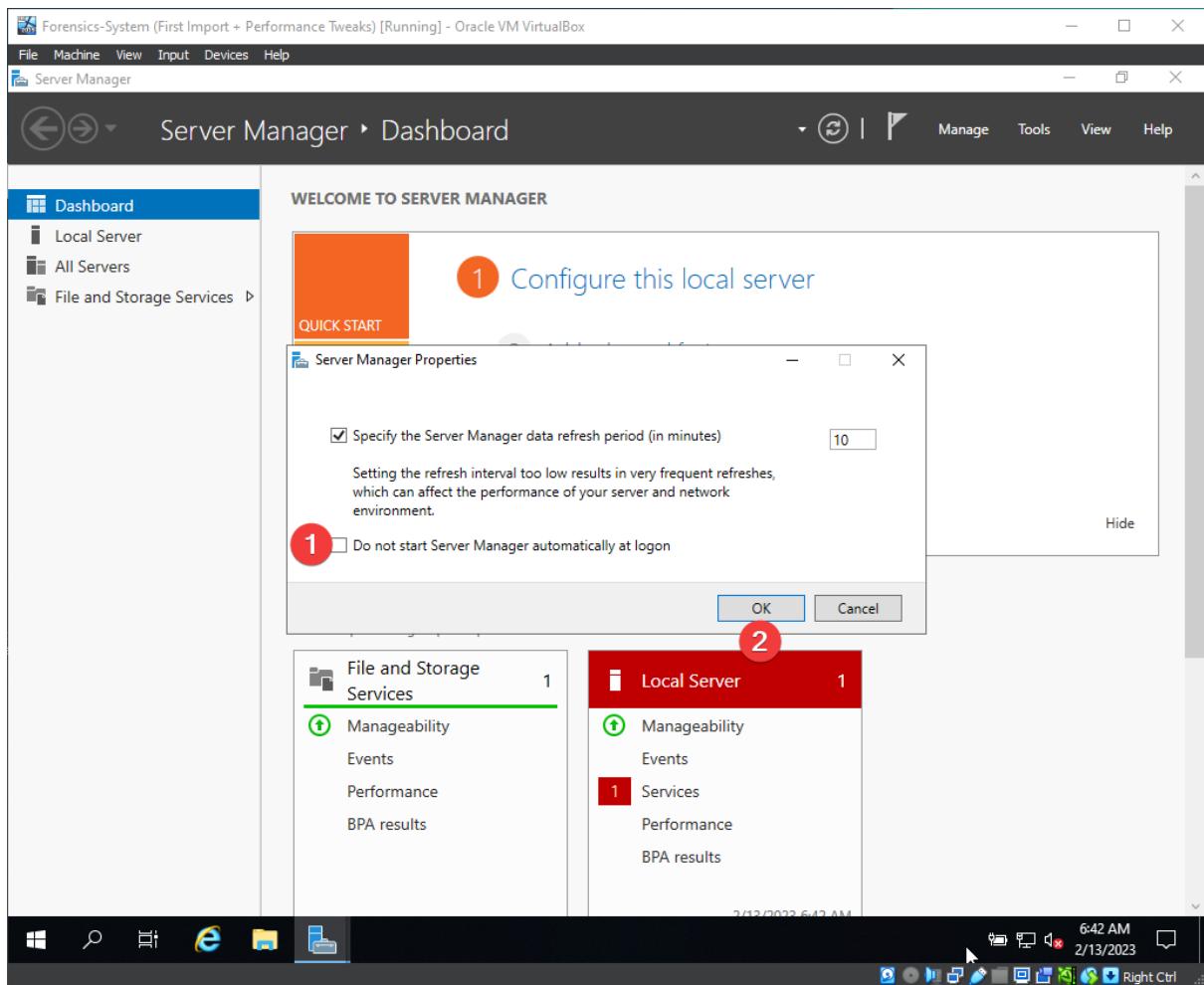


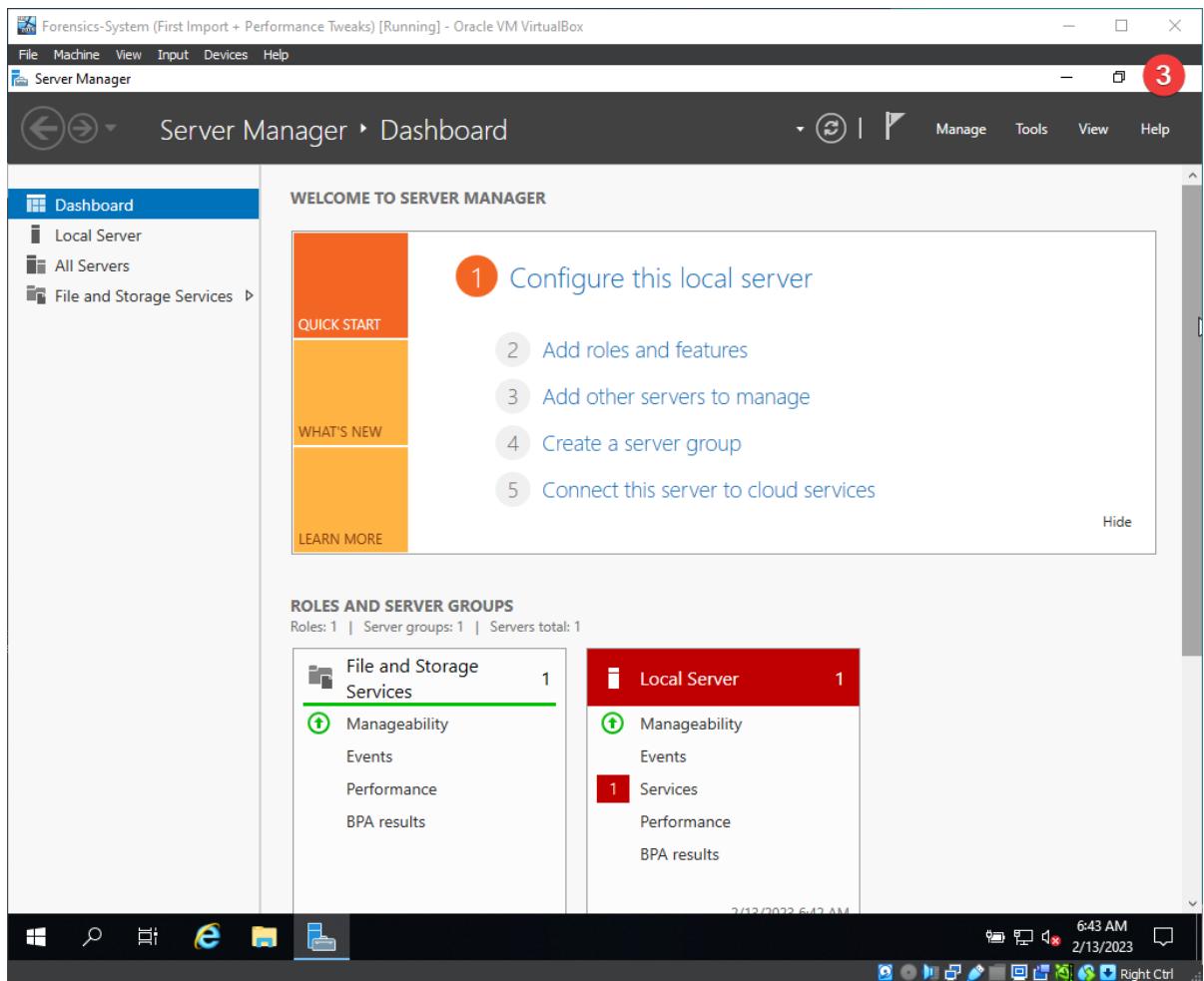


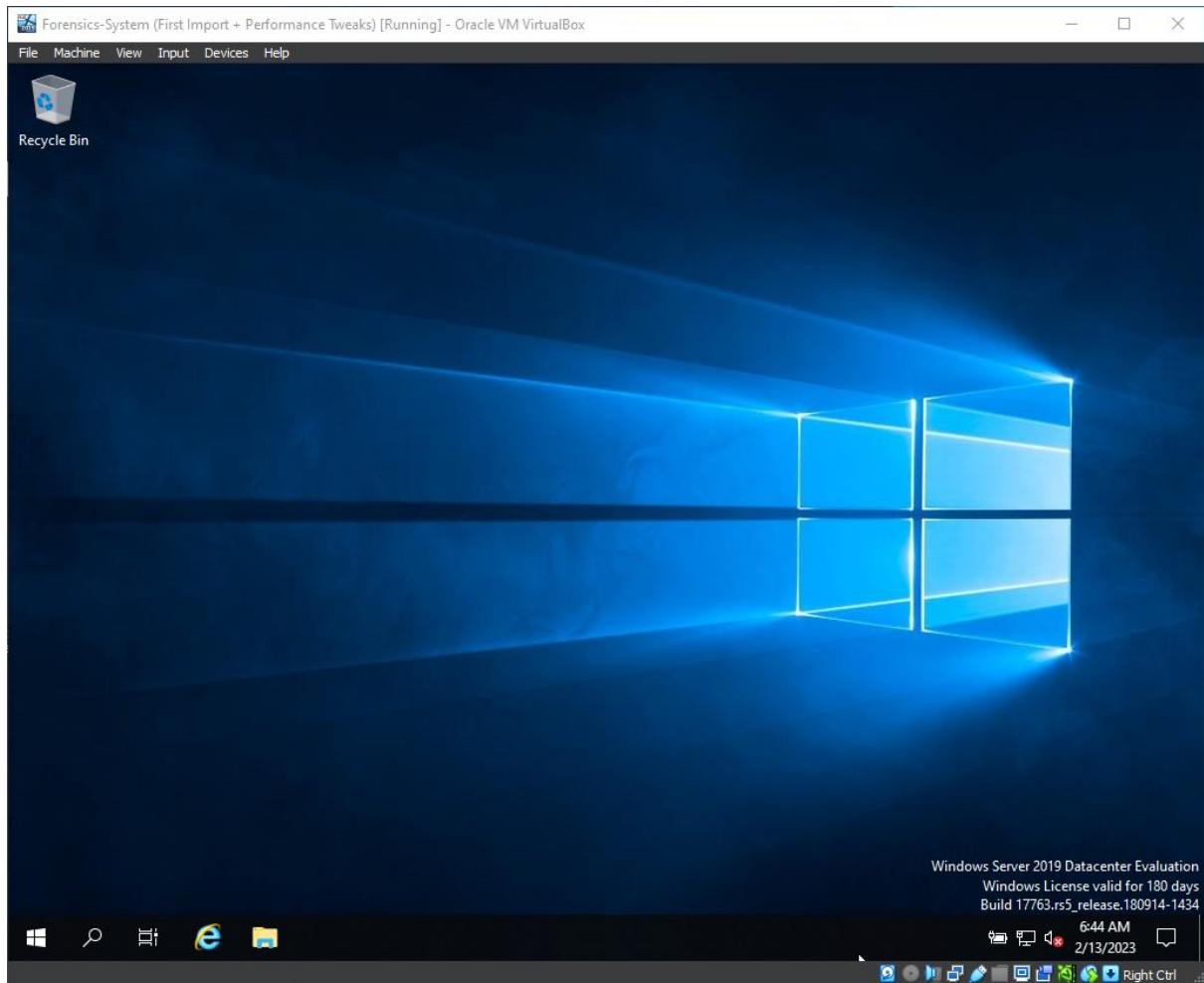
- Input the password, and login.



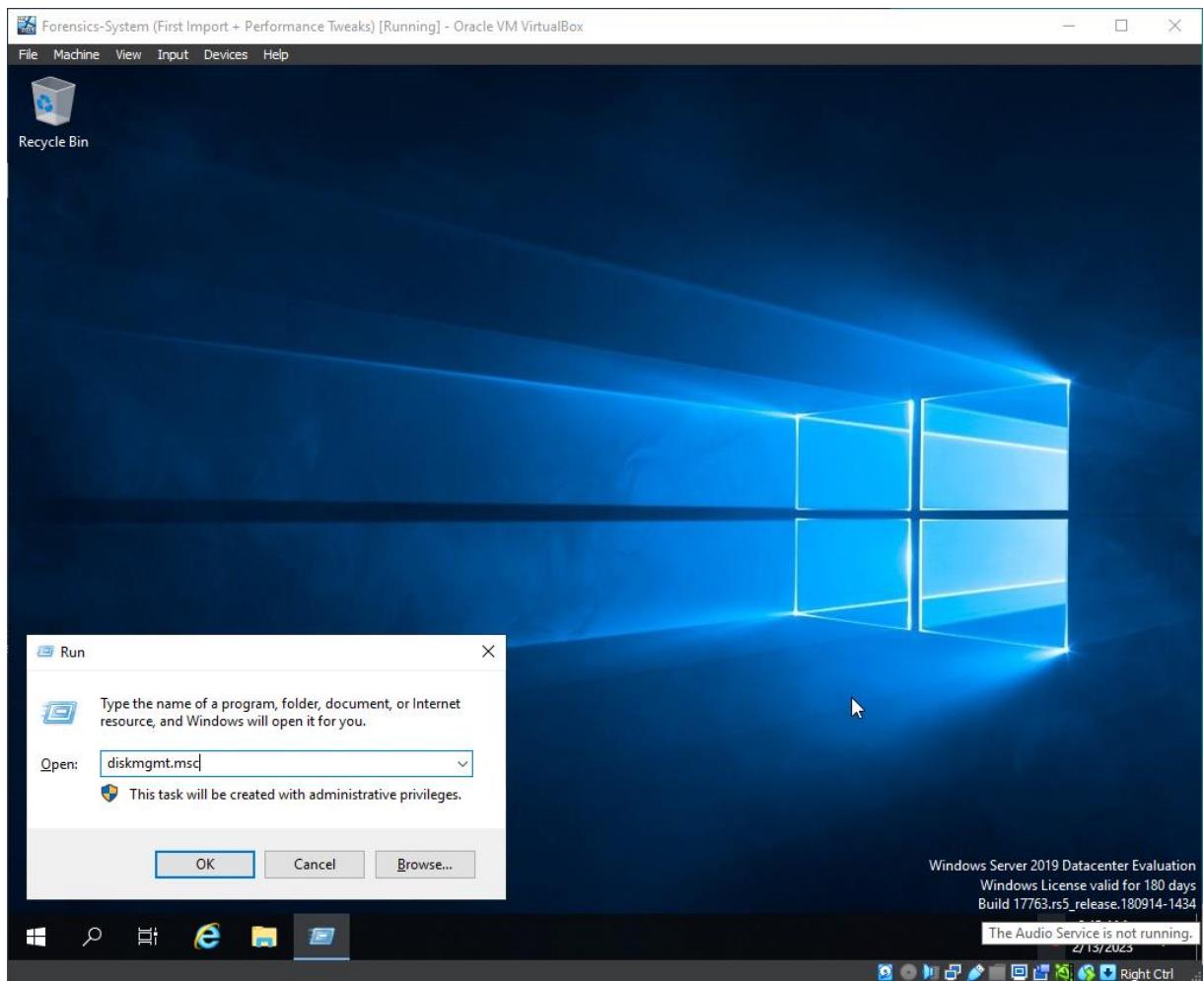


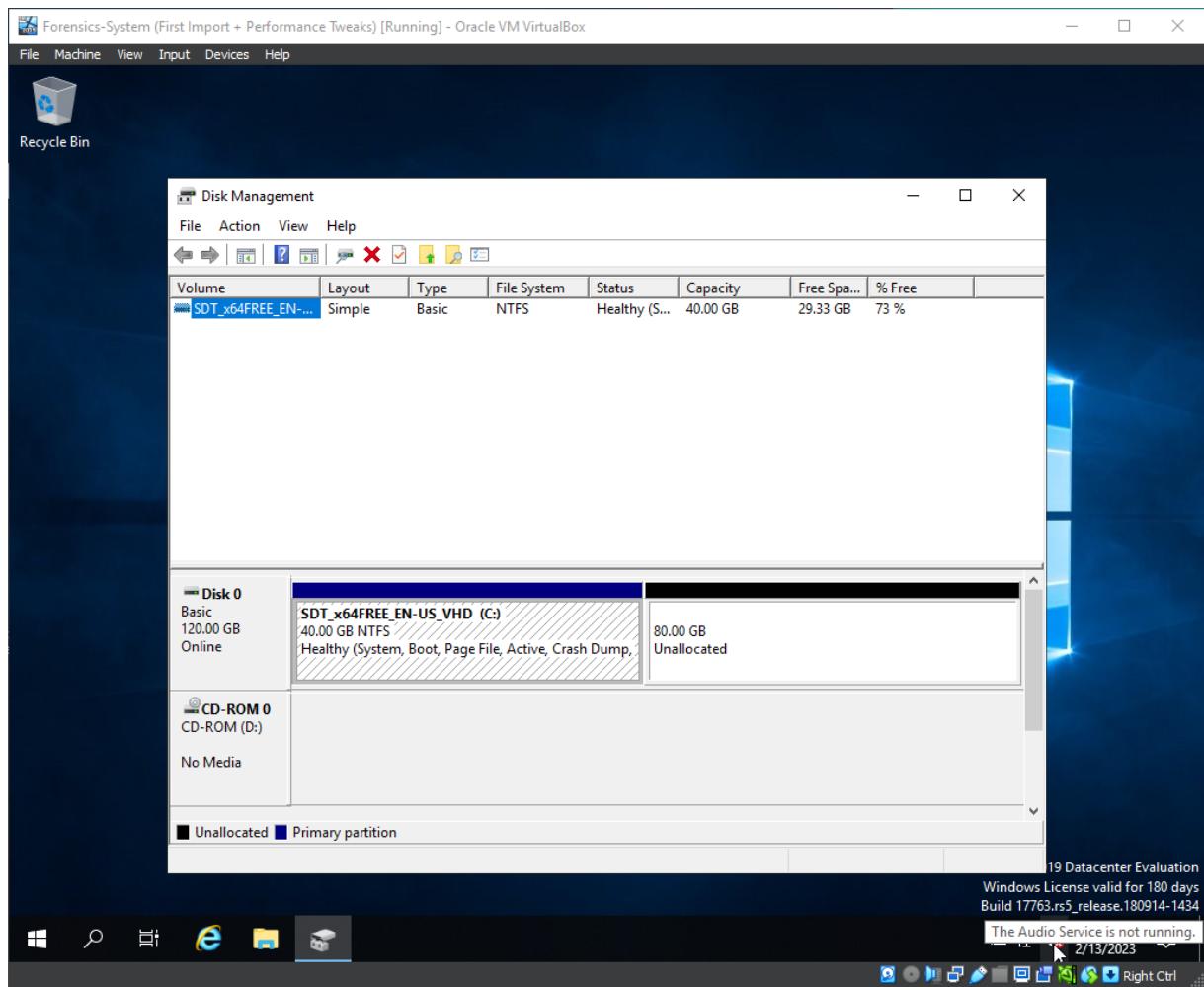


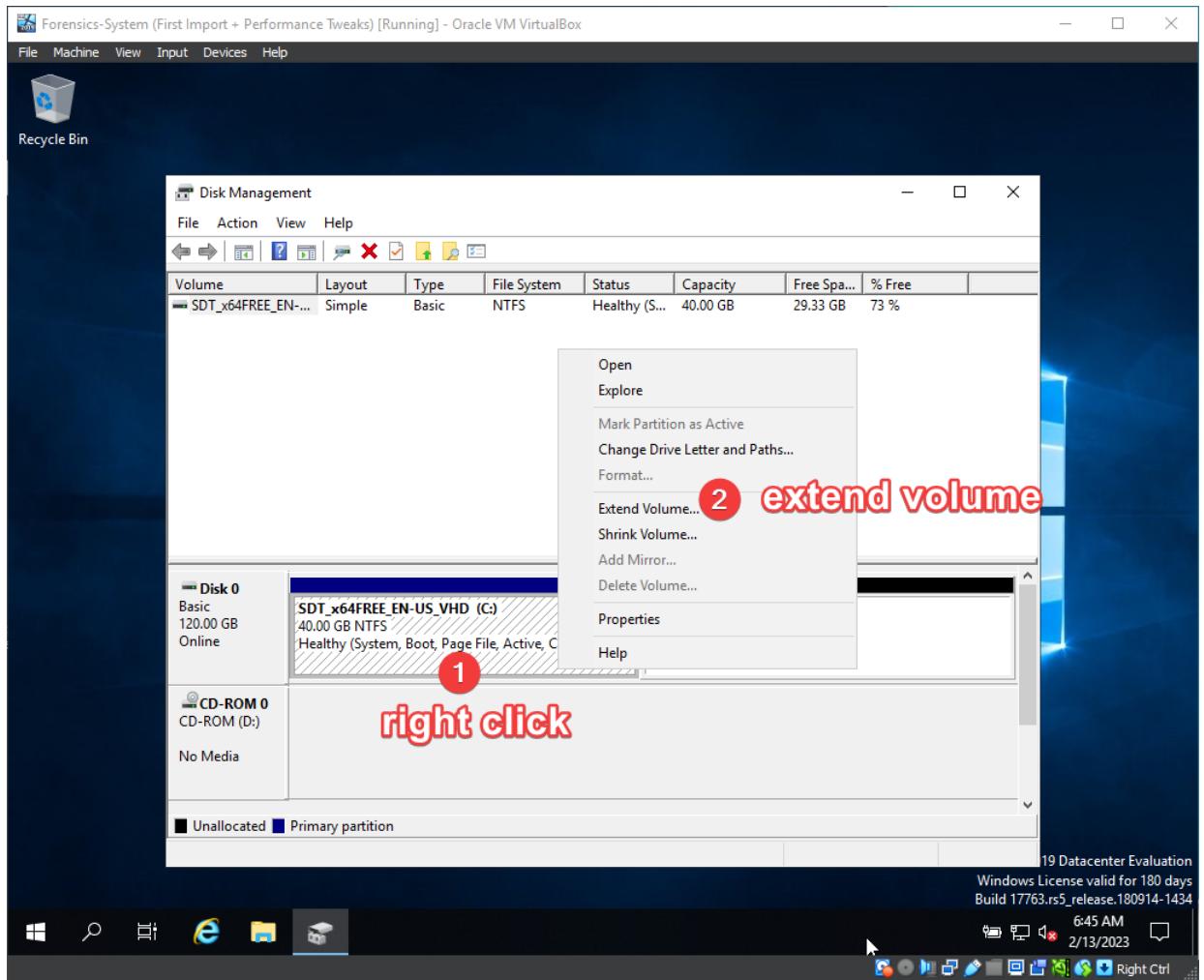




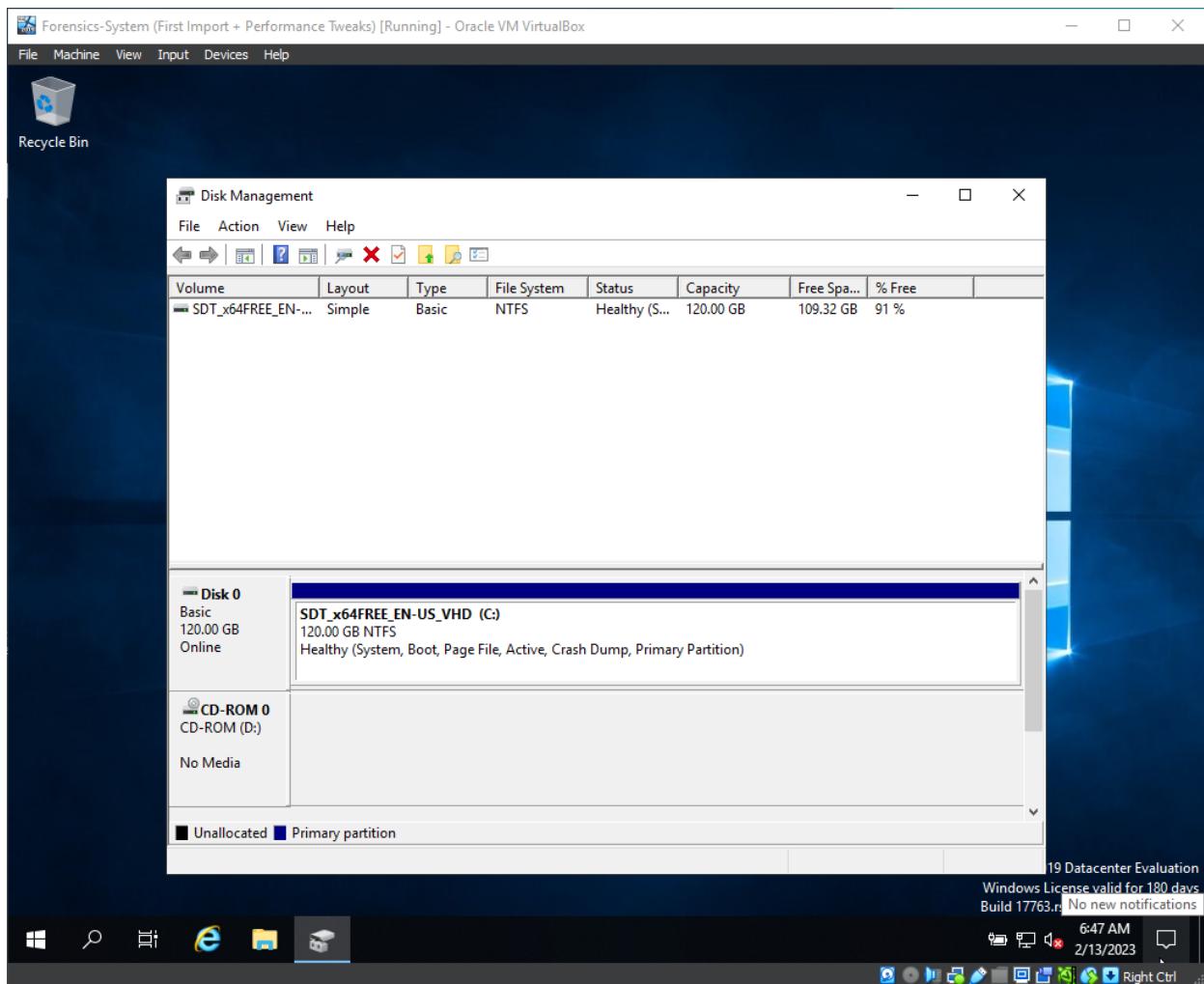
- Go to Disk Management (Win key + R : diskmgmt.msc).







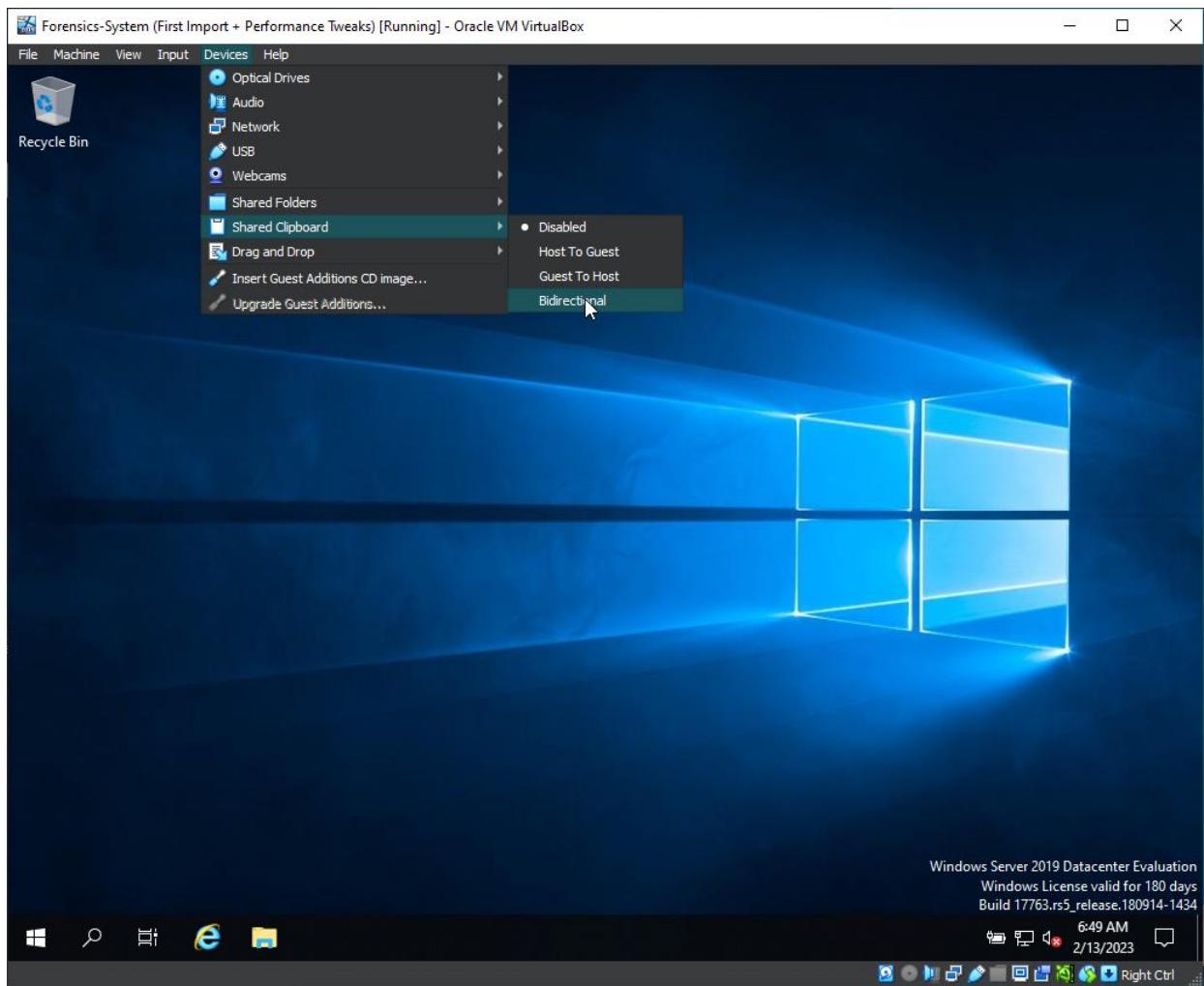
- Next until finish.

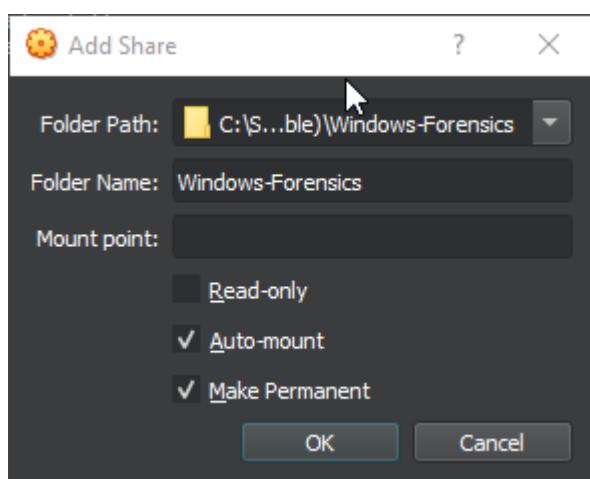
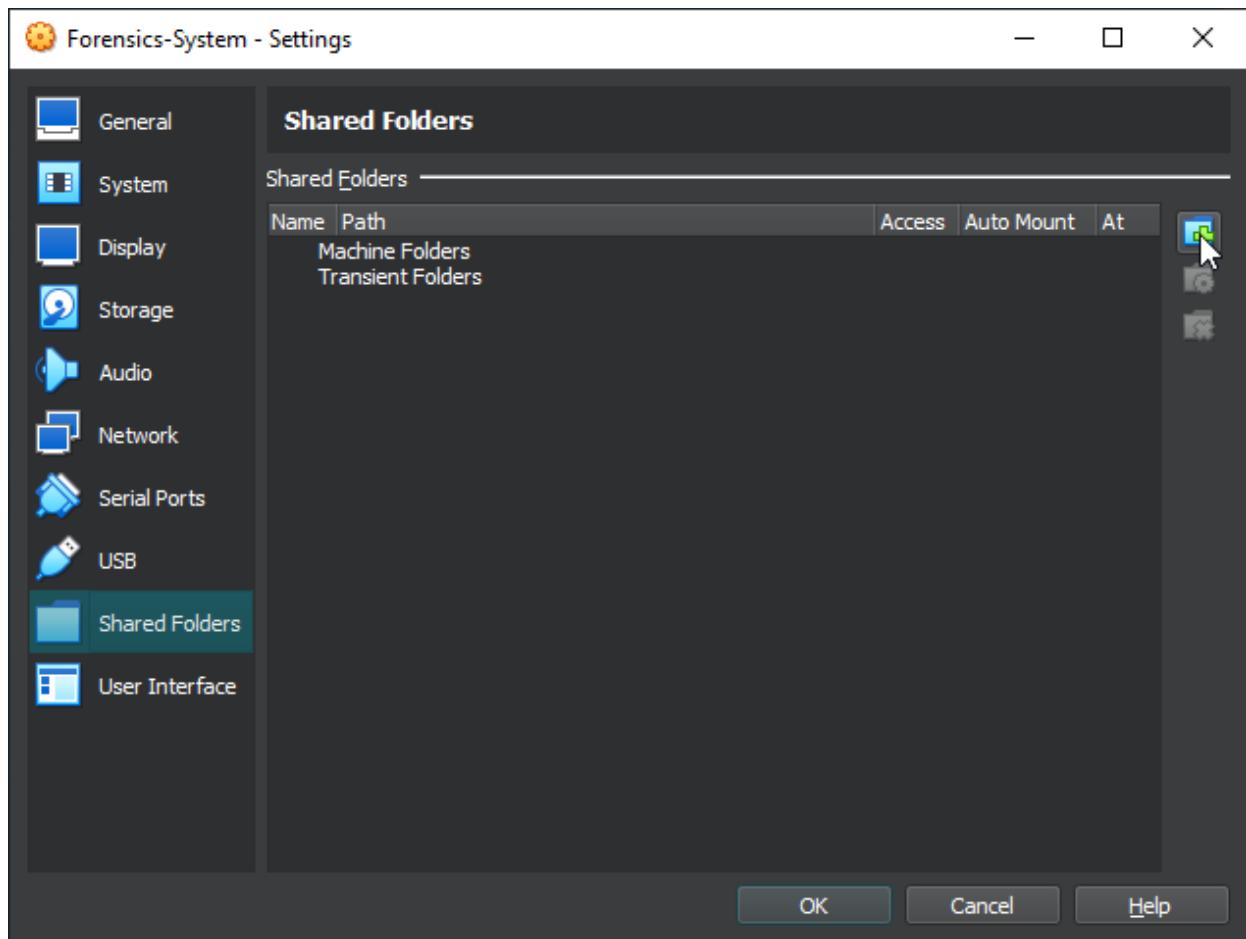


Volume	Layout	Type	File System	Status	Capacity	Free Spa...	% Free
SDT_x64FREE_EN-...	Simple	Basic	NTFS	Healthy (S...)	120.00 GB	109.32 GB	91 %

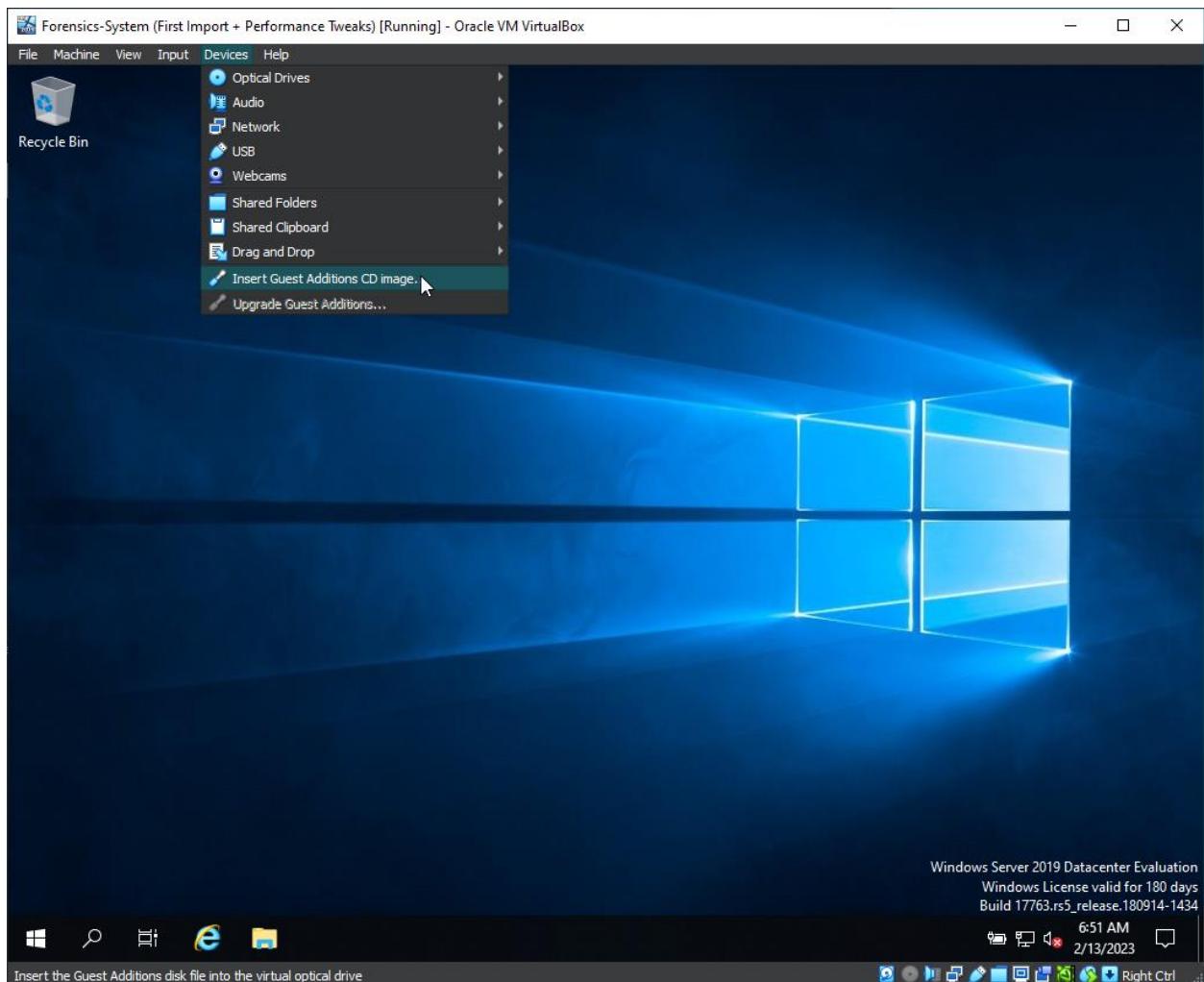
Disk 0	SDT_x64FREE_EN-US_VHD (C:)
Basic	120.00 GB
Online	
CD-ROM 0	CD-ROM (D:)
CD-ROM	No Media
Unallocated	Primary partition

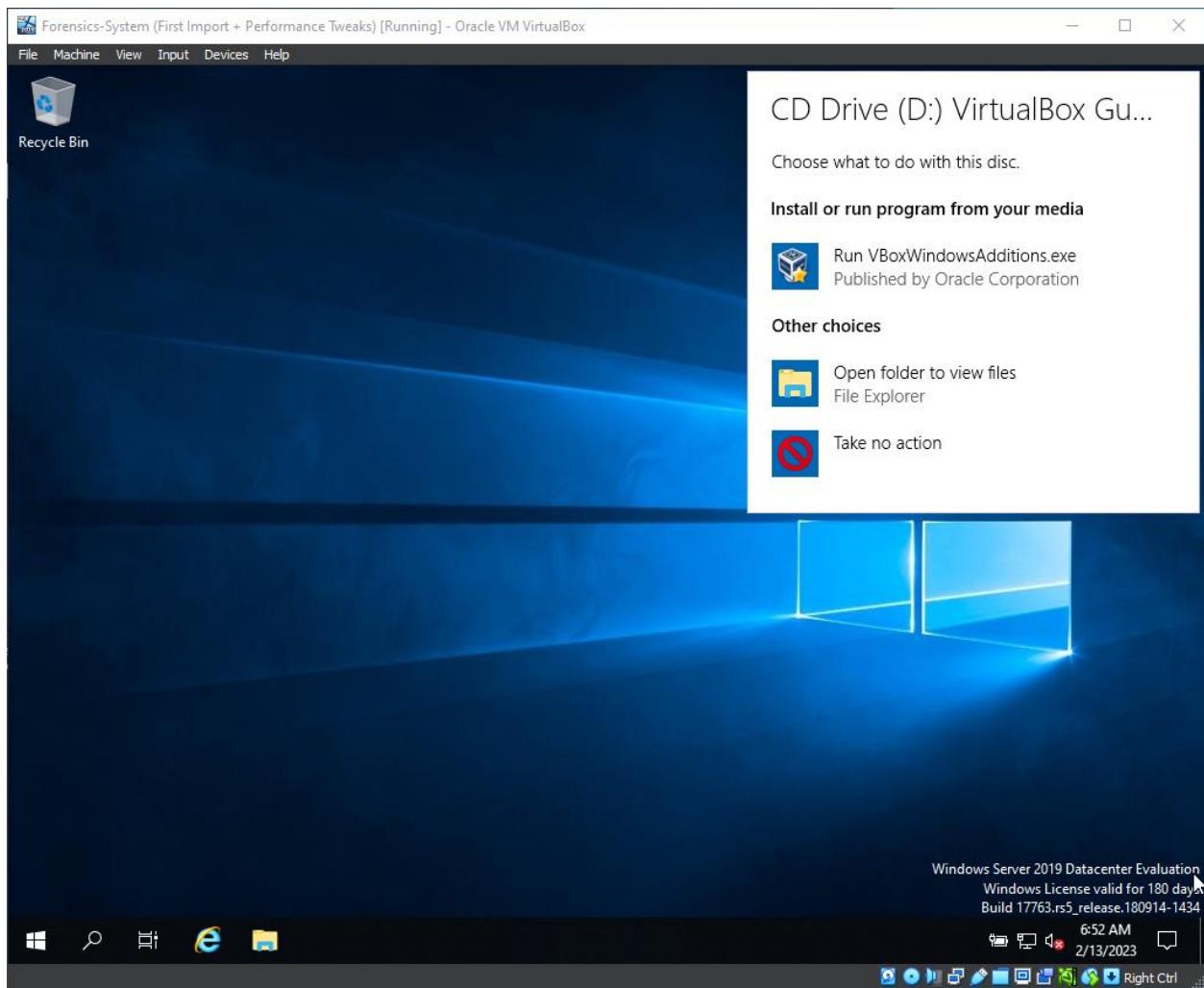
- Adding bidirectional clipboard, file drag and drop, and shared folder. Input what path of the folder do you want to share with the virtual machine.

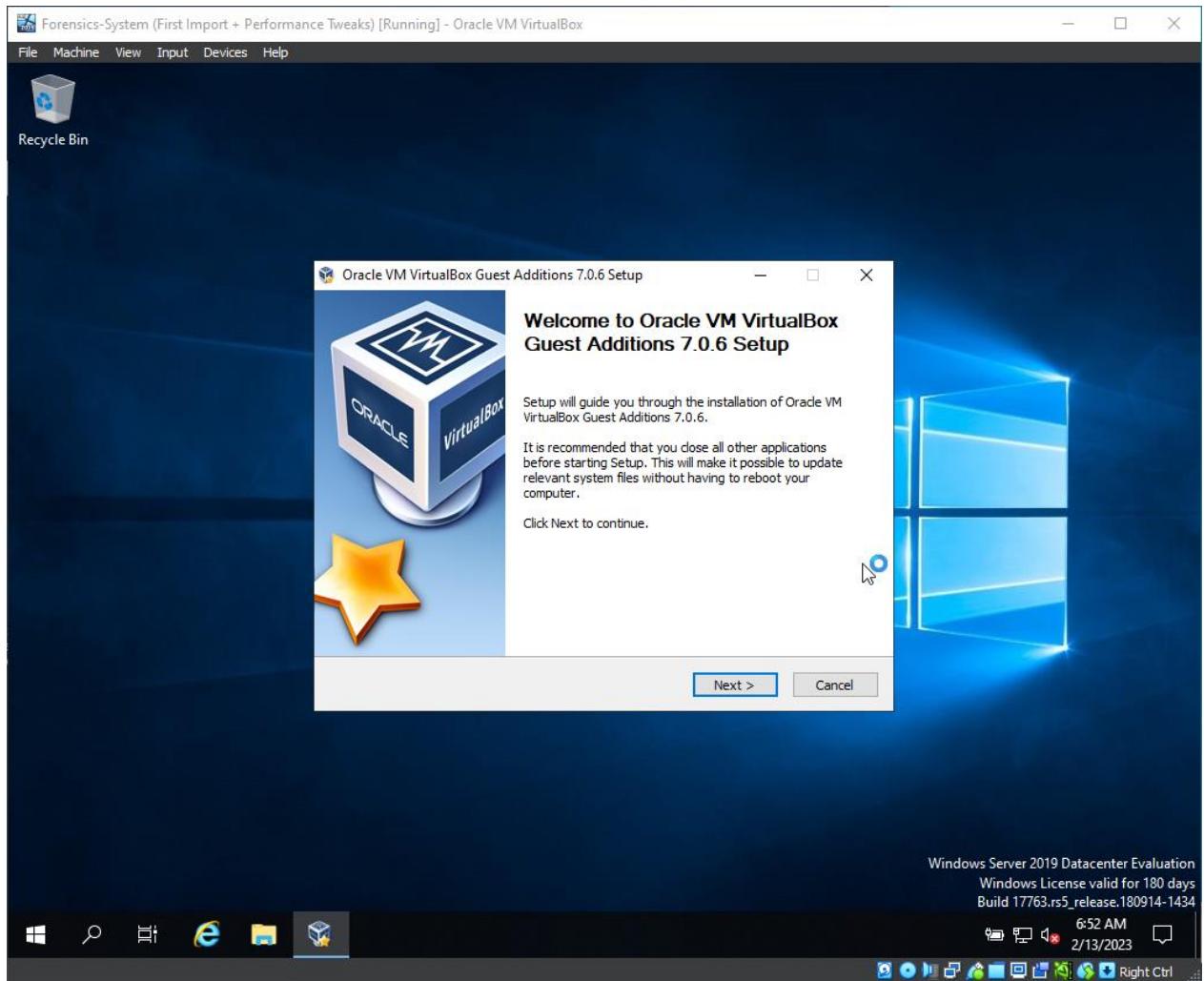




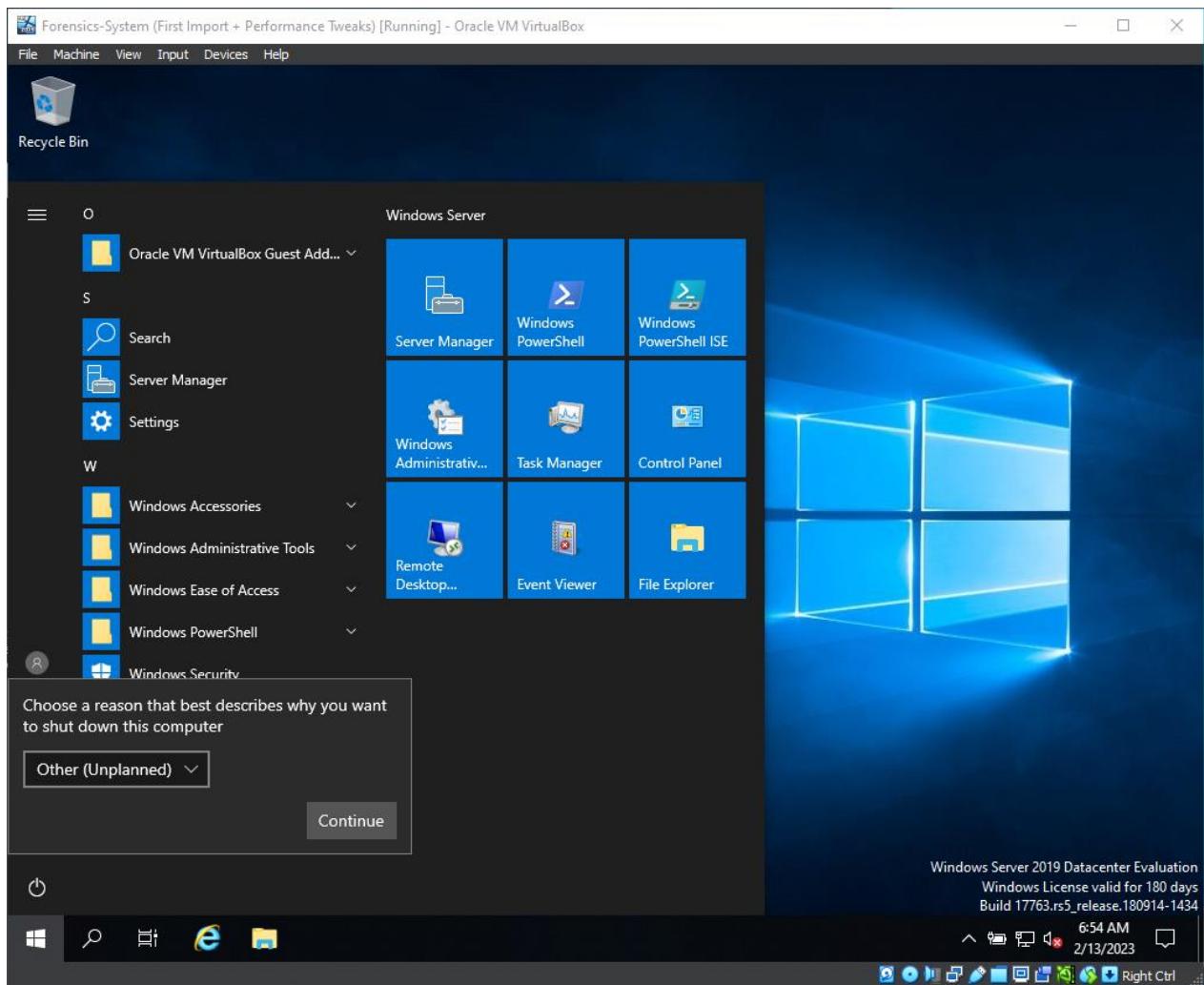
- Insert Guest Additions and install it.

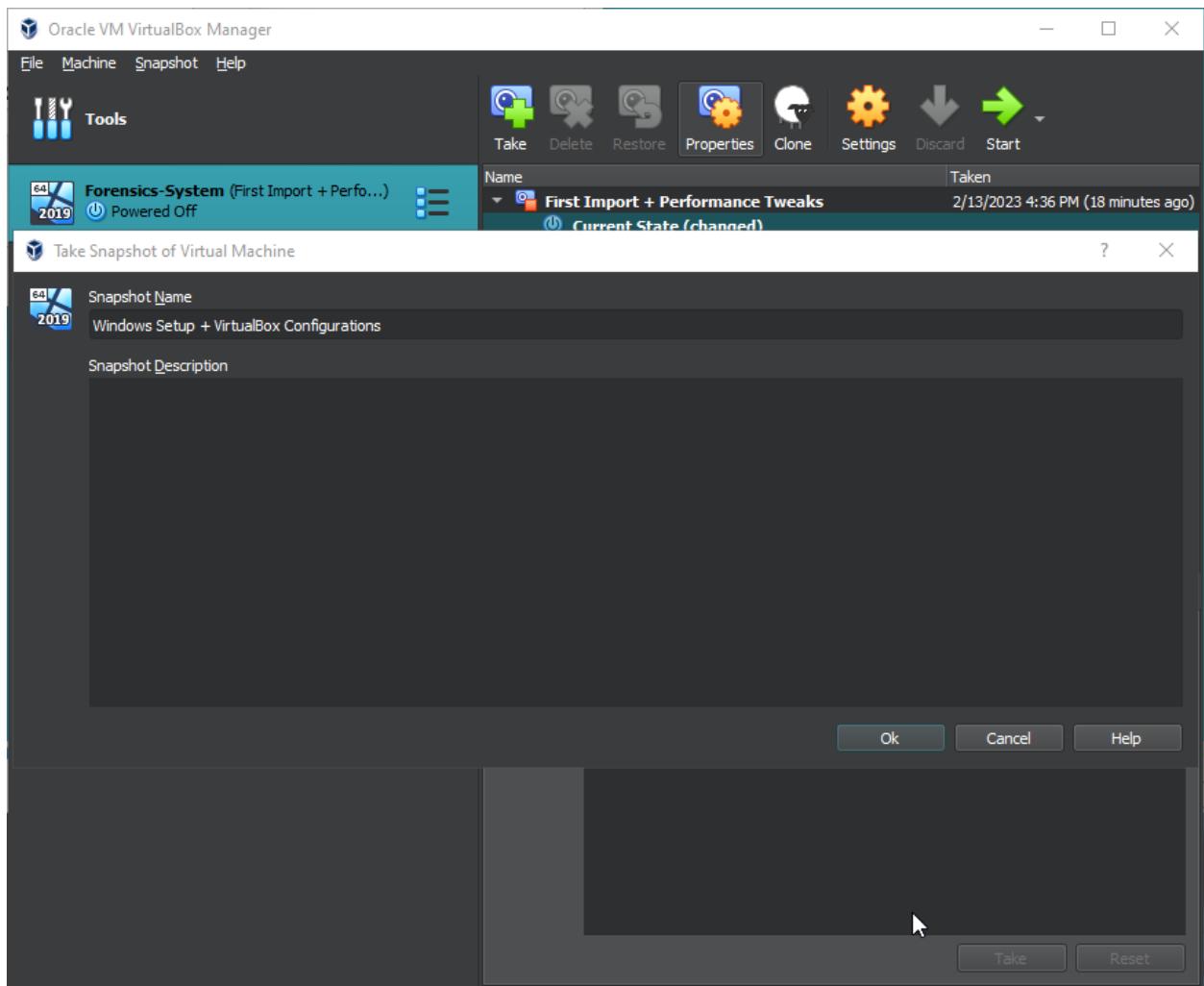






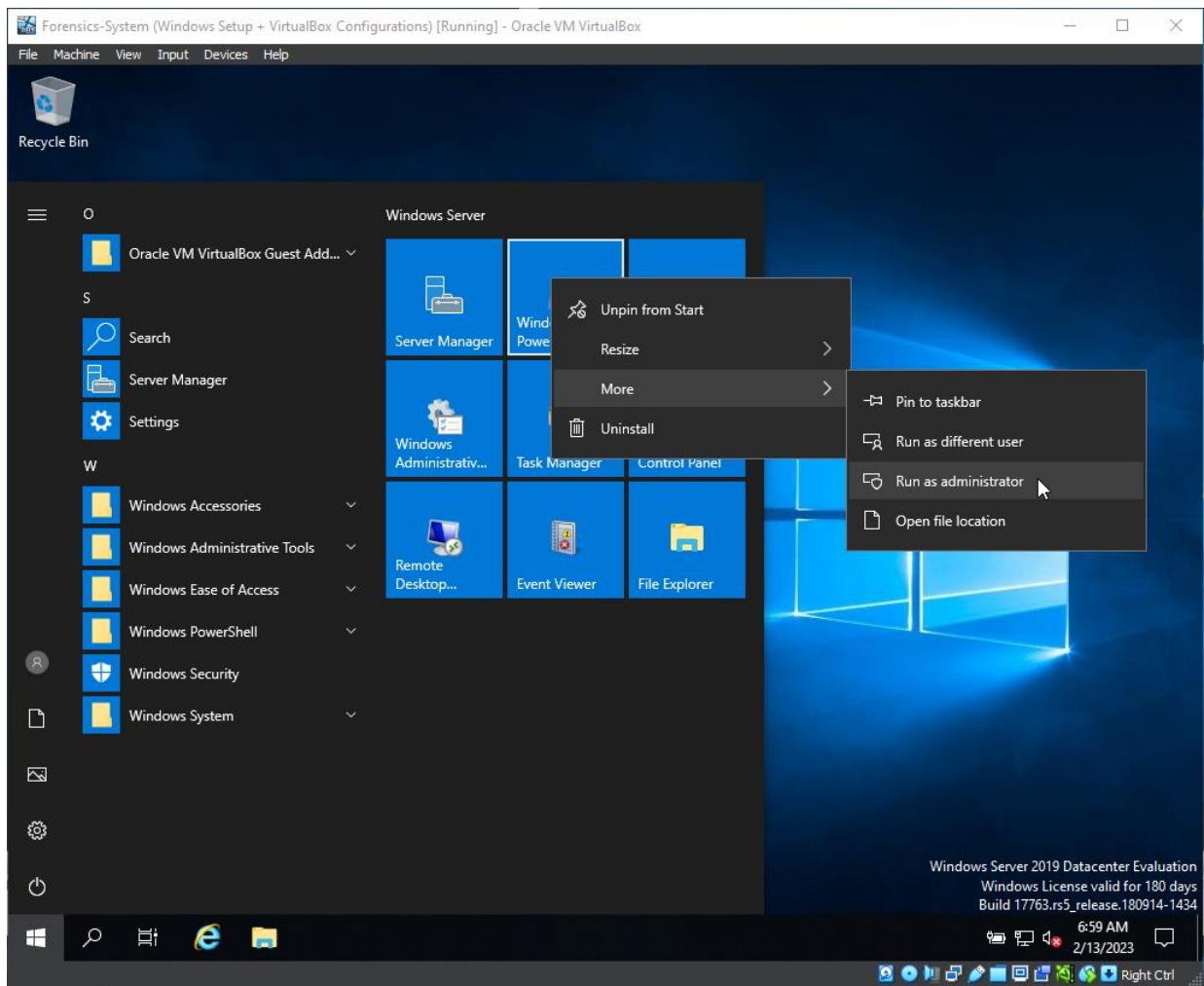
- Reboot the machine. Wait for it to boot, login, then shut it down.





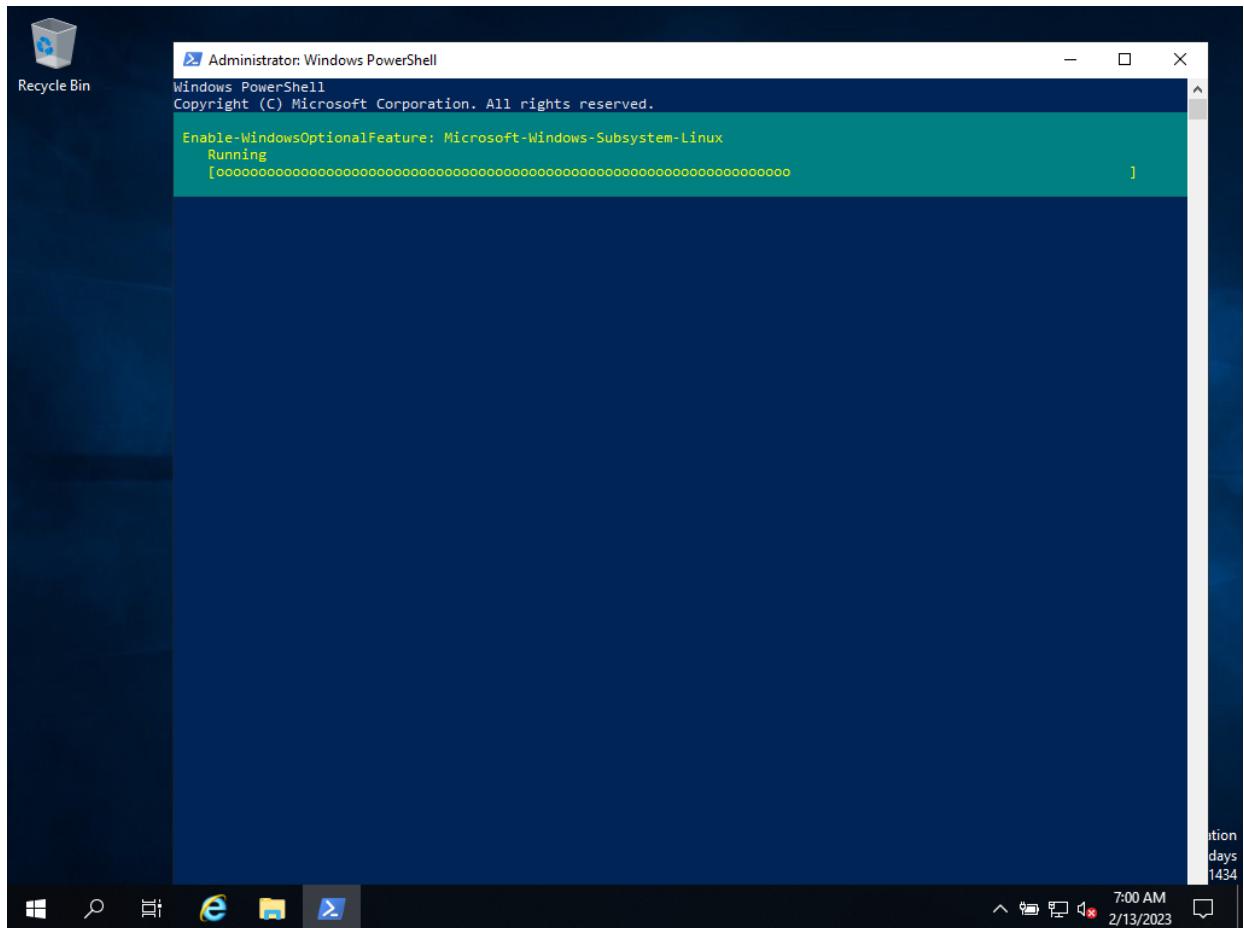
## Adding WSL feature for Windows and installing Ubuntu subsystem

- Open up the Forensic virtual machine and enable wsl feature.

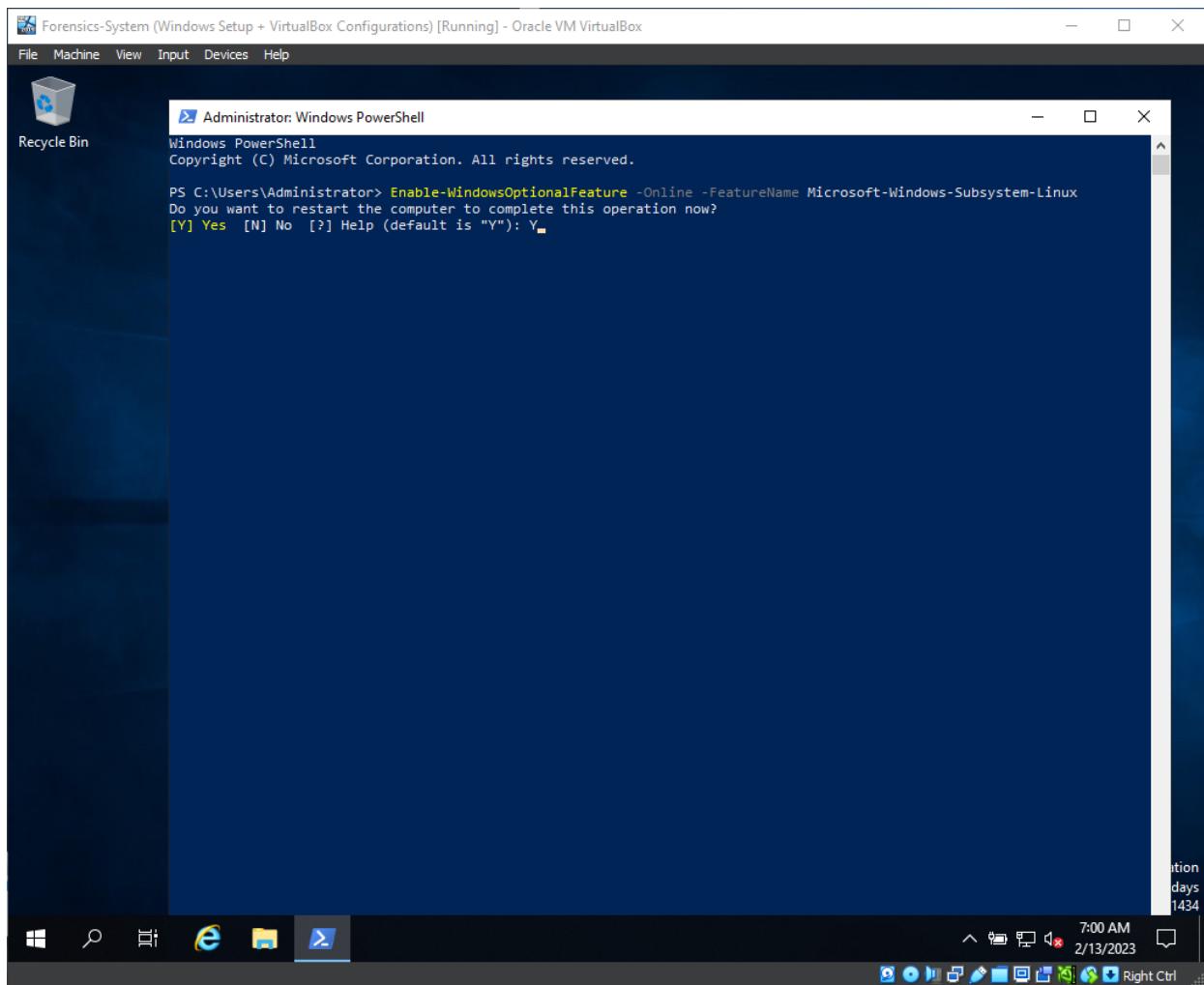


- Input:

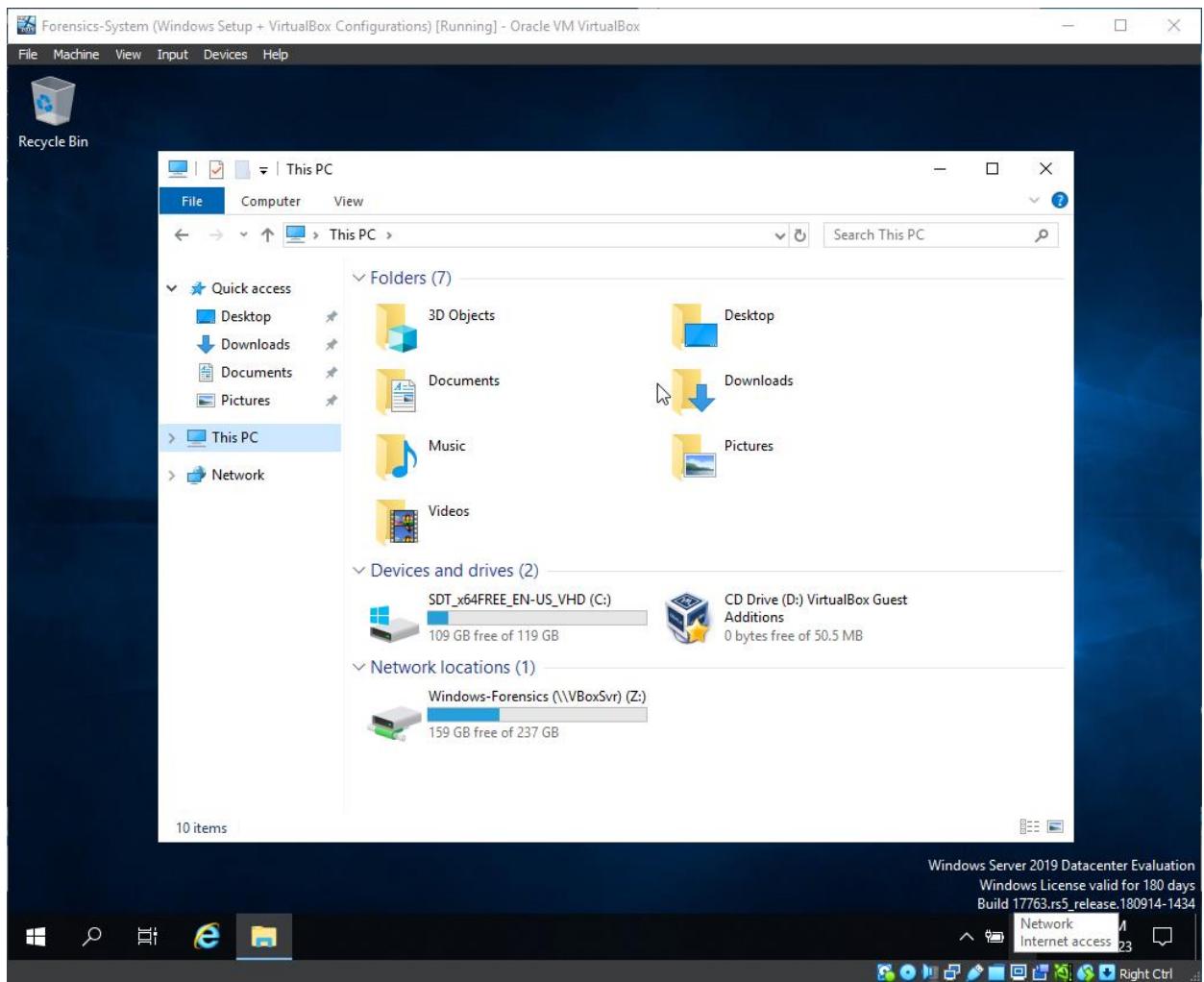
```
Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Windows-Subsystem-Linux
```



- Reboot the system to finish adding the feature.



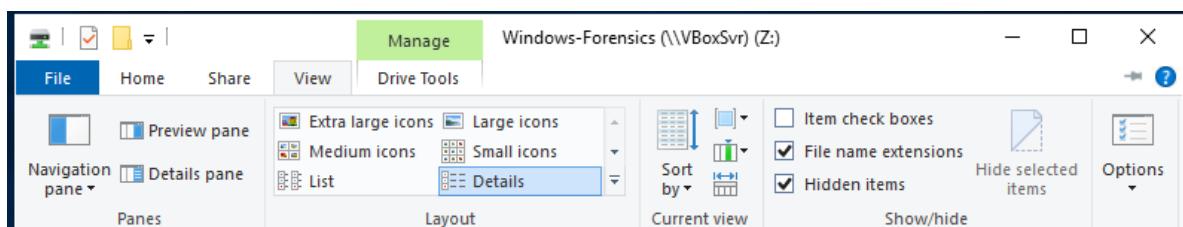
- Download the ubuntu 20.04 distribution: <https://aka.ms/wslubuntu2004>



- You will download a file with .AppxBundle extension.

**CanonicalGroupLimited.UbuntuonWindows\_2004.2021.825.0.AppxBundle**

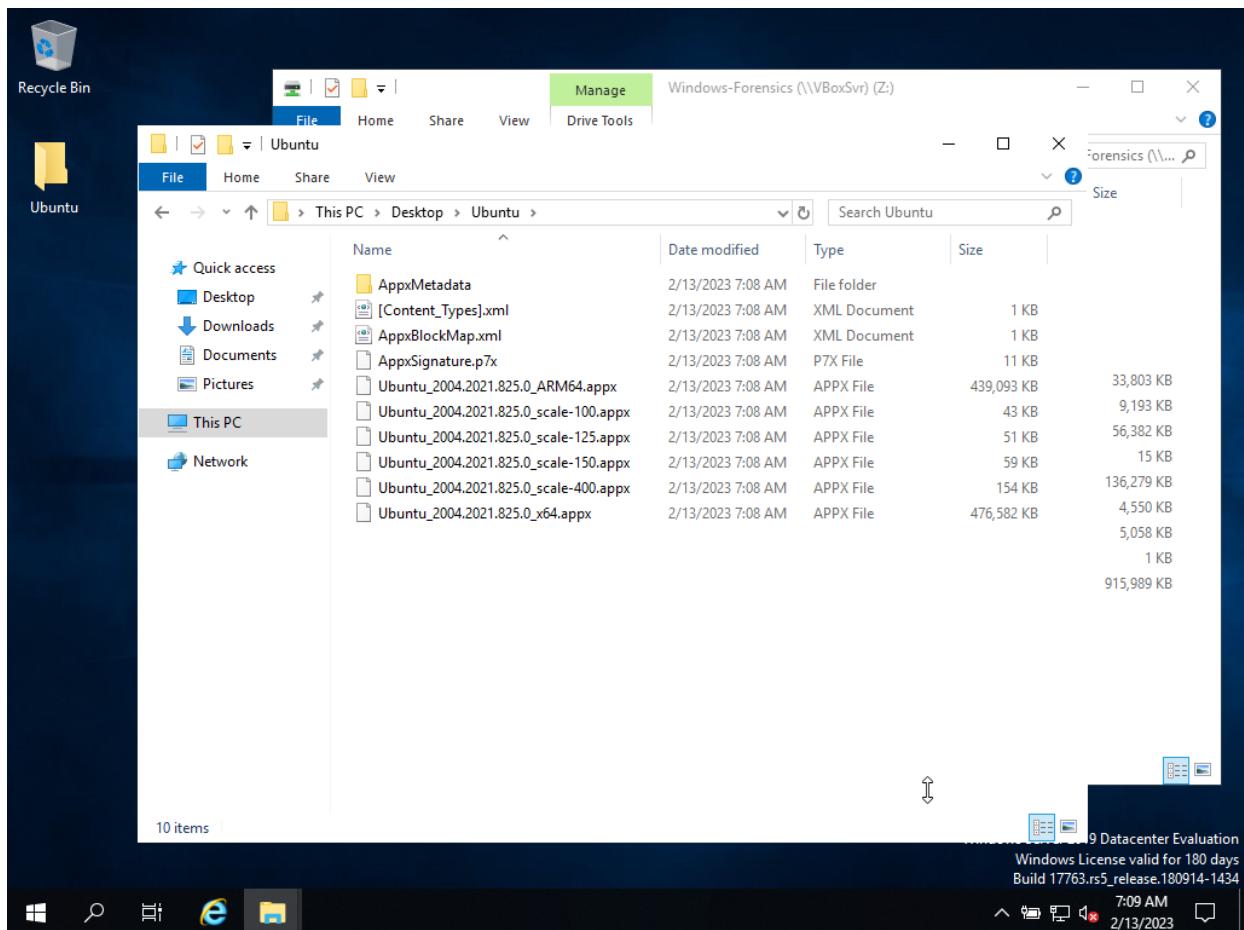
- Change it to .zip (Just by renaming the file in file explorer).
- Make sure to have File name extensions and Hidden items checked in File explorer>View.



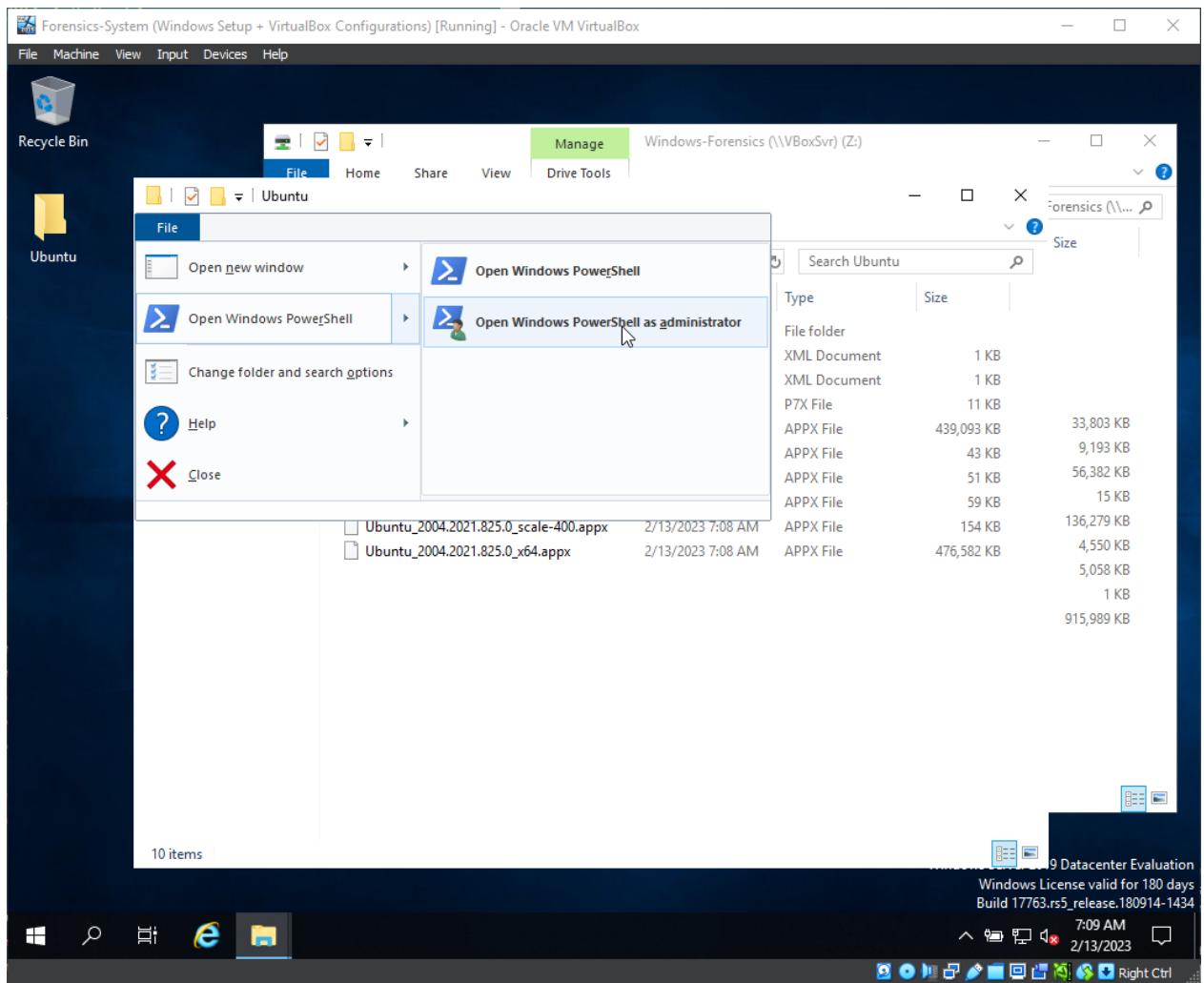
- I renamed the file for more easy management.

**Ubuntu2004-220404.zip**      2/8/2023 3:38 AM      Compressed (zipp...)      915,989 KB

- Extract all the files, in my case I extracted all on Desktop:



- Open a Powershell command line as administrator.



- Input the following command to add ubuntu subsystem:

```
Add-AppxPackage .\Ubuntu_2004.2021.825.0_x64.appx
```

For Forensics-System (Windows Setup + VirtualBox Configurations) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Administrator: Windows PowerShell

Recycle BPS C:\Users\Administrator\Desktop\Ubuntu> dir

	Mode	LastWriteTime	Length	Name
Ubuntu	----	-----	-----	-----
d----		2/13/2023 7:08 AM		AppxMetadata
-a----		2/13/2023 7:08 AM	338	AppxBlockMap.xml
-a----		2/13/2023 7:08 AM	10904	AppxSignature.p7x
-a----		2/13/2023 7:08 AM	449630398	Ubuntu_2004.2021.825.0_ARM64.appx
-a----		2/13/2023 7:08 AM	43374	Ubuntu_2004.2021.825.0_scale-100.appx
-a----		2/13/2023 7:08 AM	51586	Ubuntu_2004.2021.825.0_scale-125.appx
-a----		2/13/2023 7:08 AM	59864	Ubuntu_2004.2021.825.0_scale-150.appx
-a----		2/13/2023 7:08 AM	157671	Ubuntu_2004.2021.825.0_scale-400.appx
-a----		2/13/2023 7:08 AM	488019108	Ubuntu_2004.2021.825.0_x64.appx
-a----		2/13/2023 7:08 AM	469	[Content_Types].xml

PS C:\Users\Administrator\Desktop\Ubuntu> Add-AppxPackage .\Ubuntu\_2004.2021.825.0\_x64.appx

7:10 AM Show hidden icons 3/2023 Right Ctrl

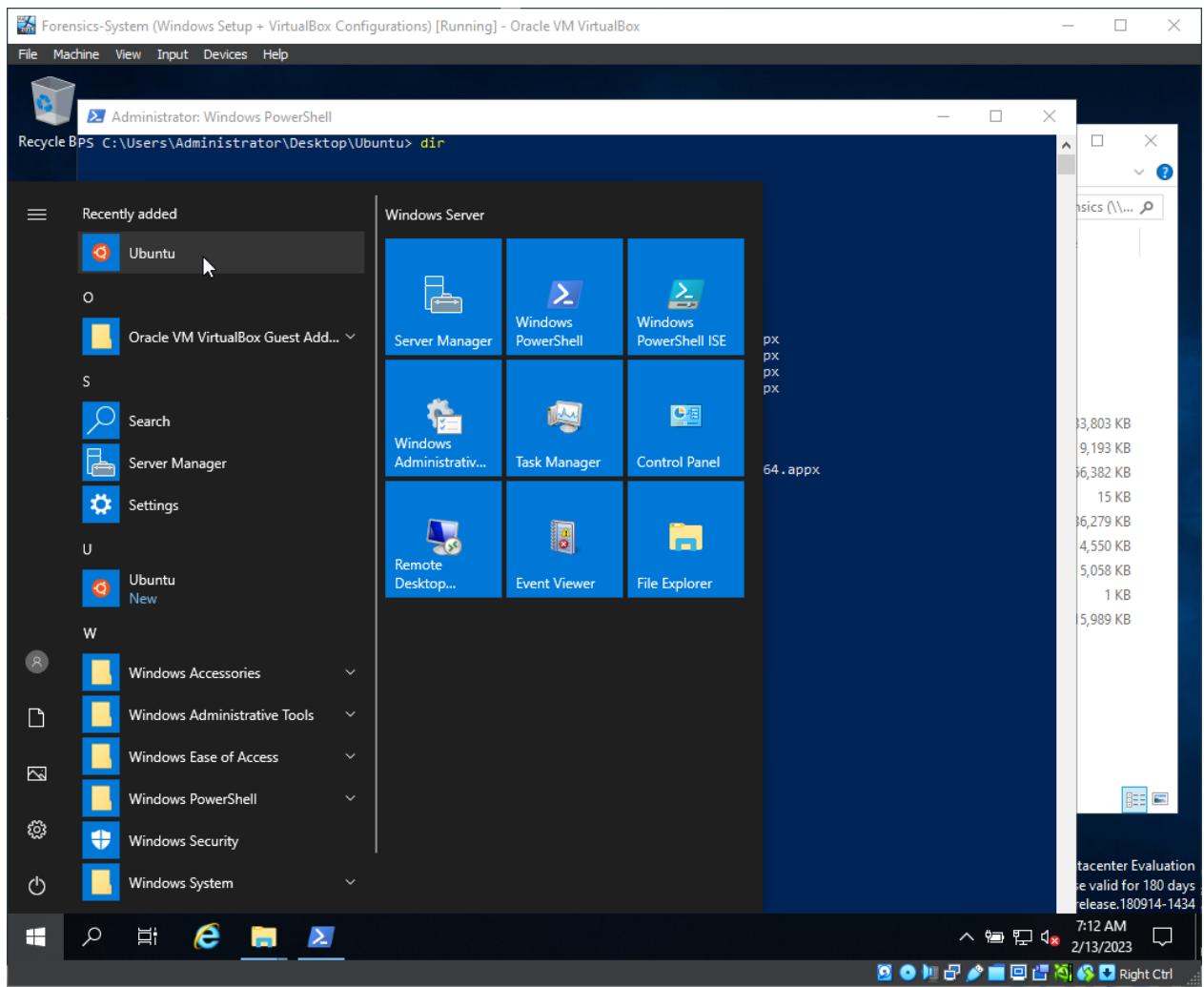
tacenter Evaluation  
e valid for 180 days  
lease.180914-1434

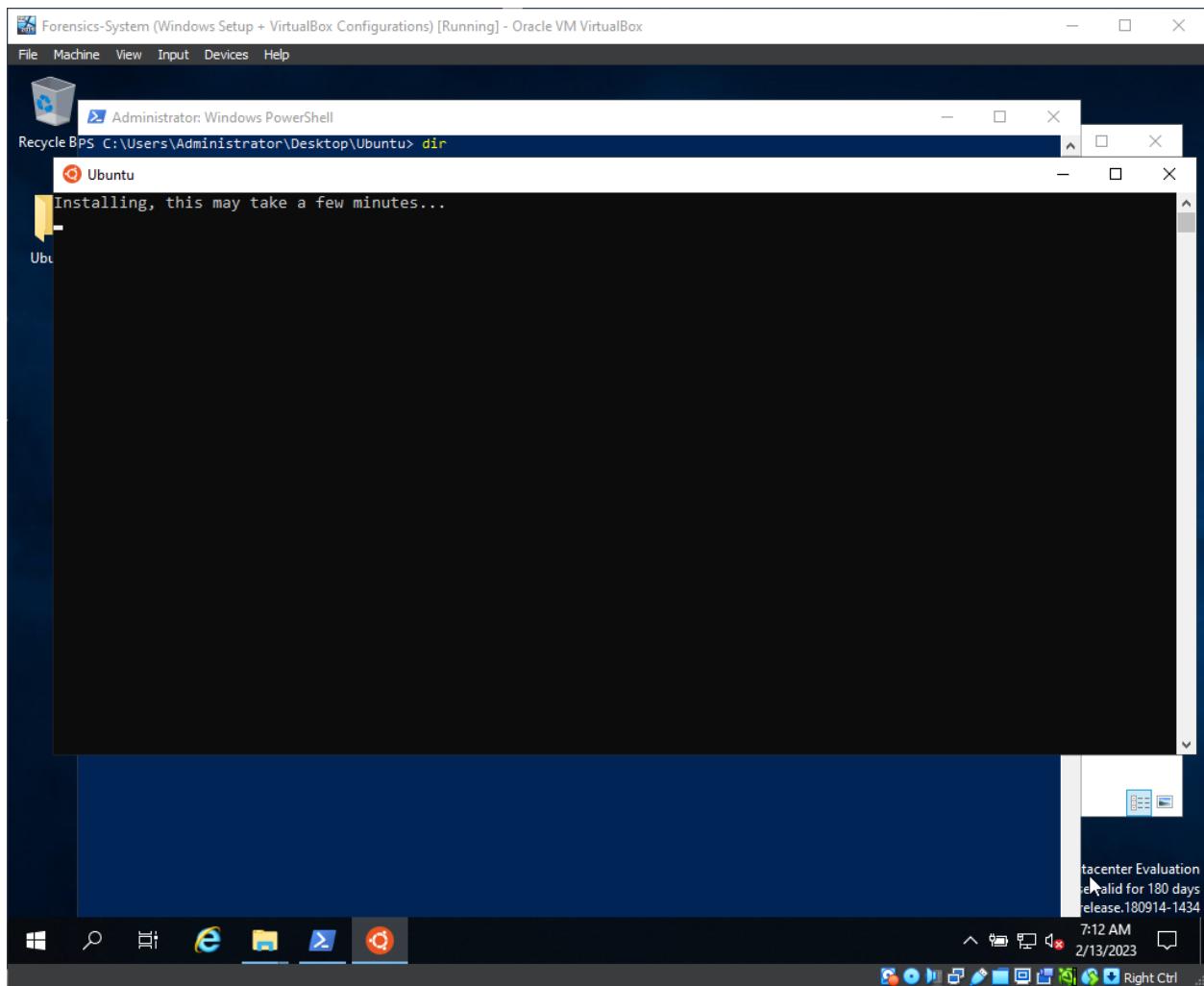
```
Administrator: Windows PowerShell
Recycle BPS C:\Users\Administrator\Desktop\Ubuntu> dir

Directory: C:\Users\Administrator\Desktop\Ubuntu

Mode                LastWriteTime         Length Name
----                -----        ----  --
d----
```

- For finishing installation you need to open the application:





- It will take 5 to 10-15 minutes, depending to the resources of the virtual machine. To finish the installation, you need to enter an username and password, in my case I used forensic/forensic.

```
forensic@WIN-90HAJ6CQHQM: ~
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: forensic
fNew password:
Retype new password:
Ub:passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 4.4.0-17763-Microsoft x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

 System information as of Mon Feb 13 07:27:16 STD 2023

 System load:  0.52      Processes:          7
 Usage of /home: unknown  Users logged in:    0
 Memory usage: 19%       IPv4 address for eth0: 10.0.2.15
 Swap usage:   0%

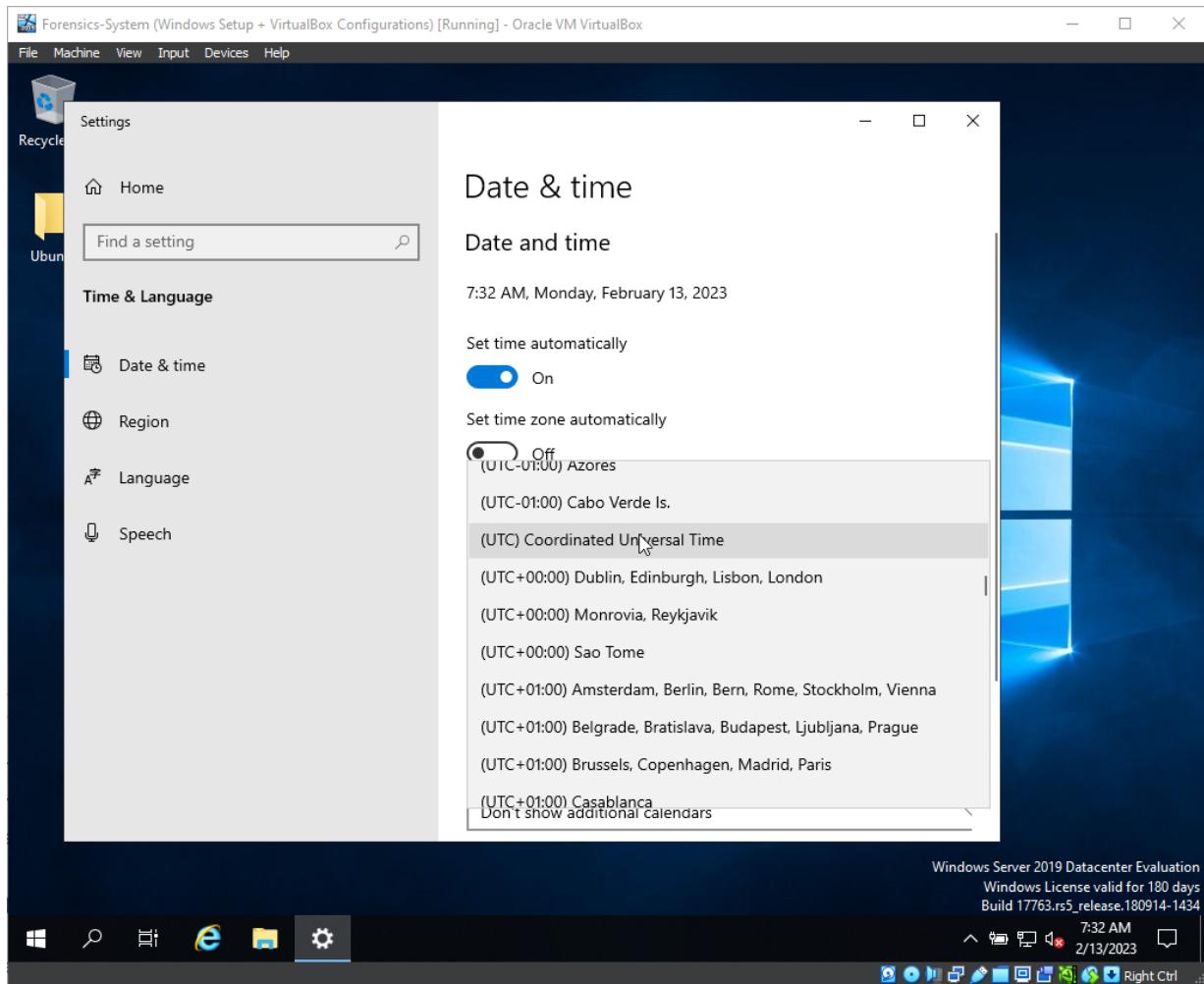
1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

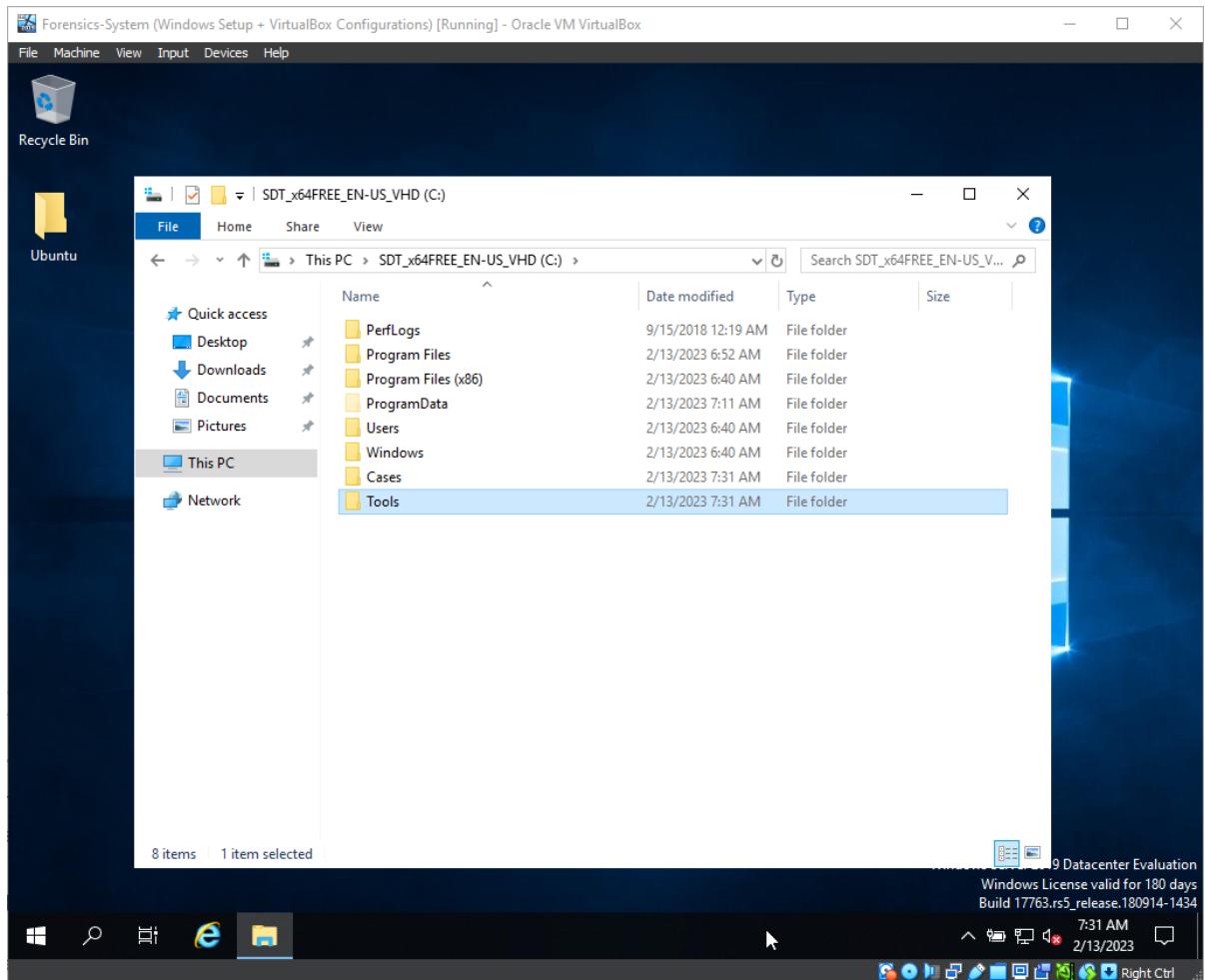
This message is shown once a day. To disable it please create the
/home/forensic/.hushlogin file.
forensic@WIN-90HAJ6CQHQM:~$
```

## Configuration for Forensics virtual machine

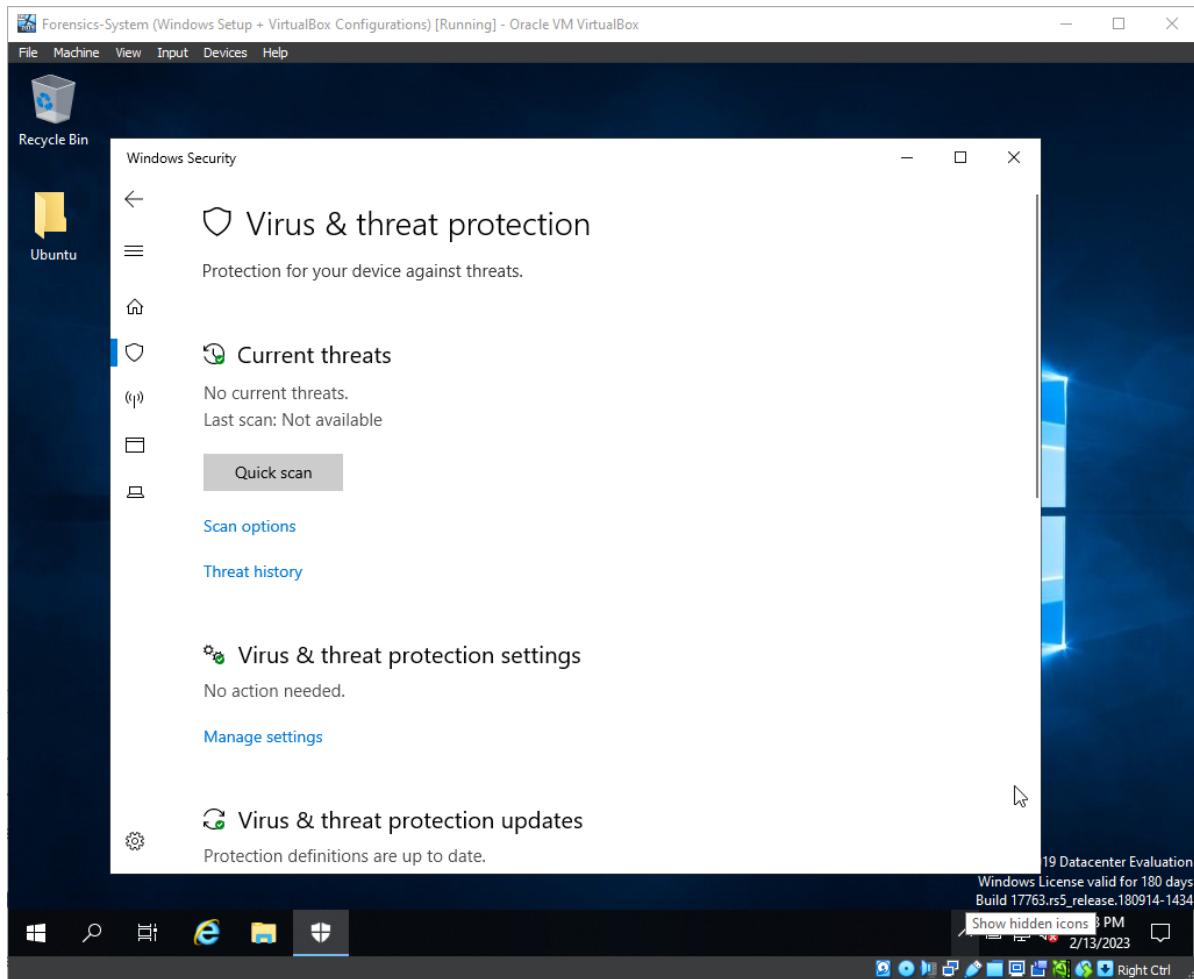
- Change time to UTC, this is a general best practice for working with forensic analysis.

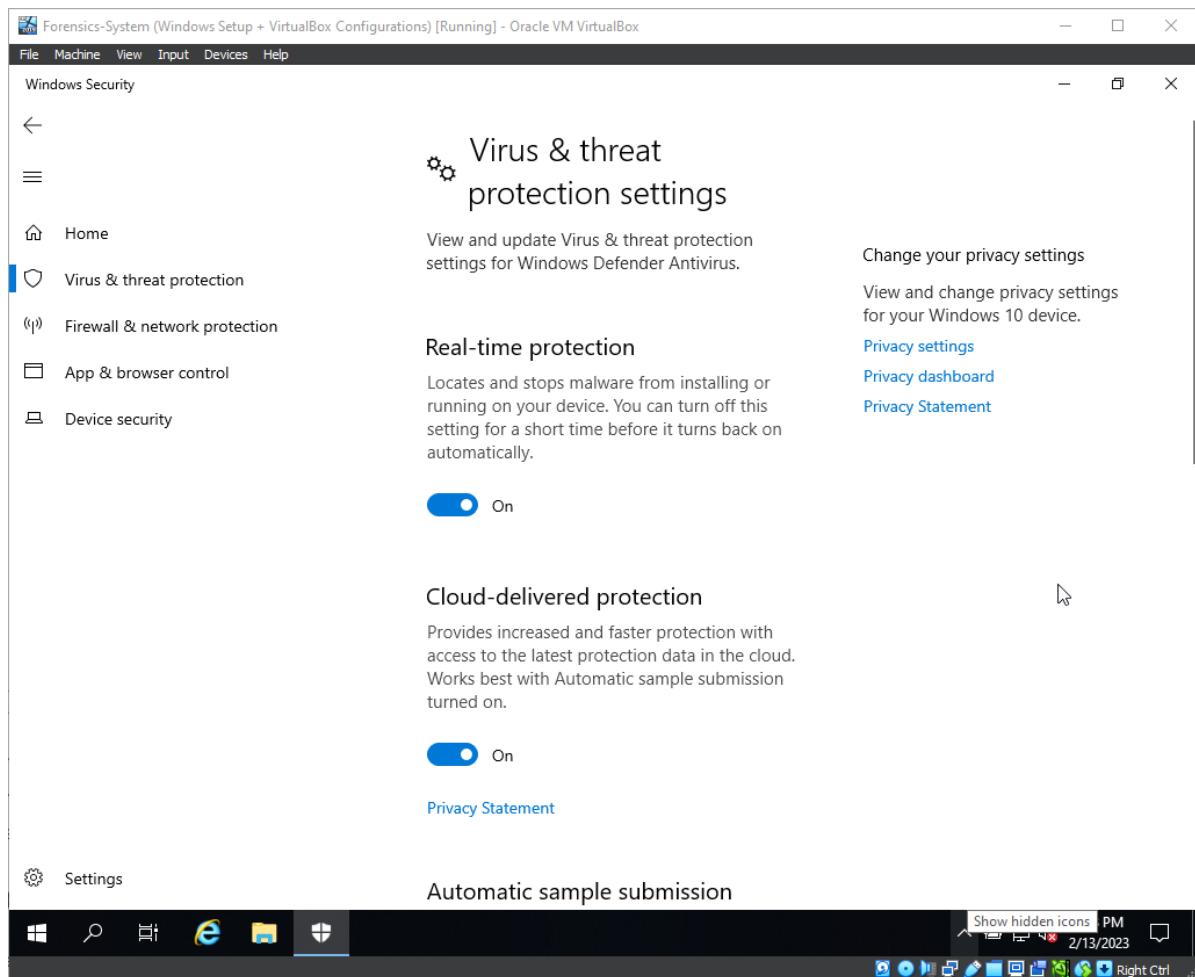


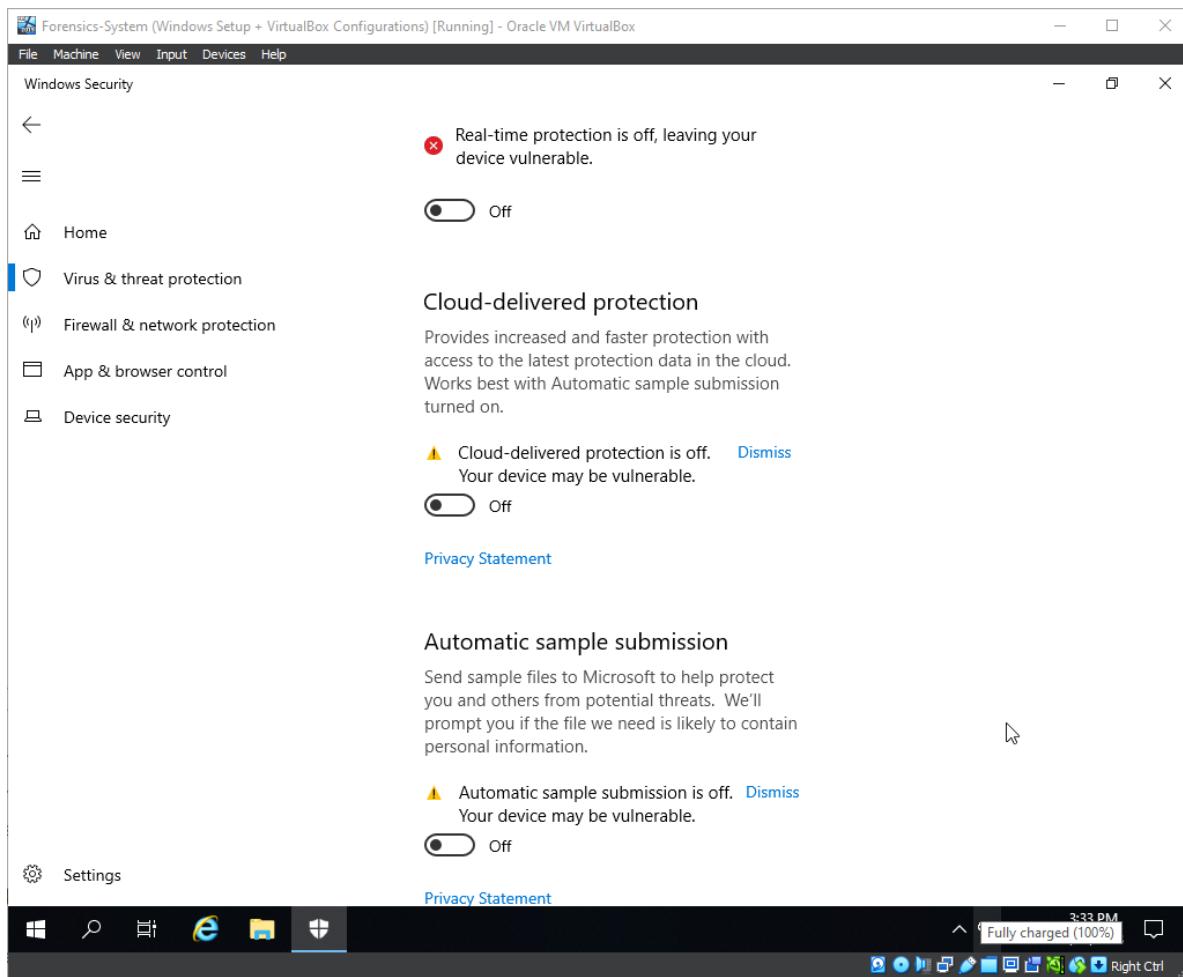
- Create two folders for Cases and Tools.



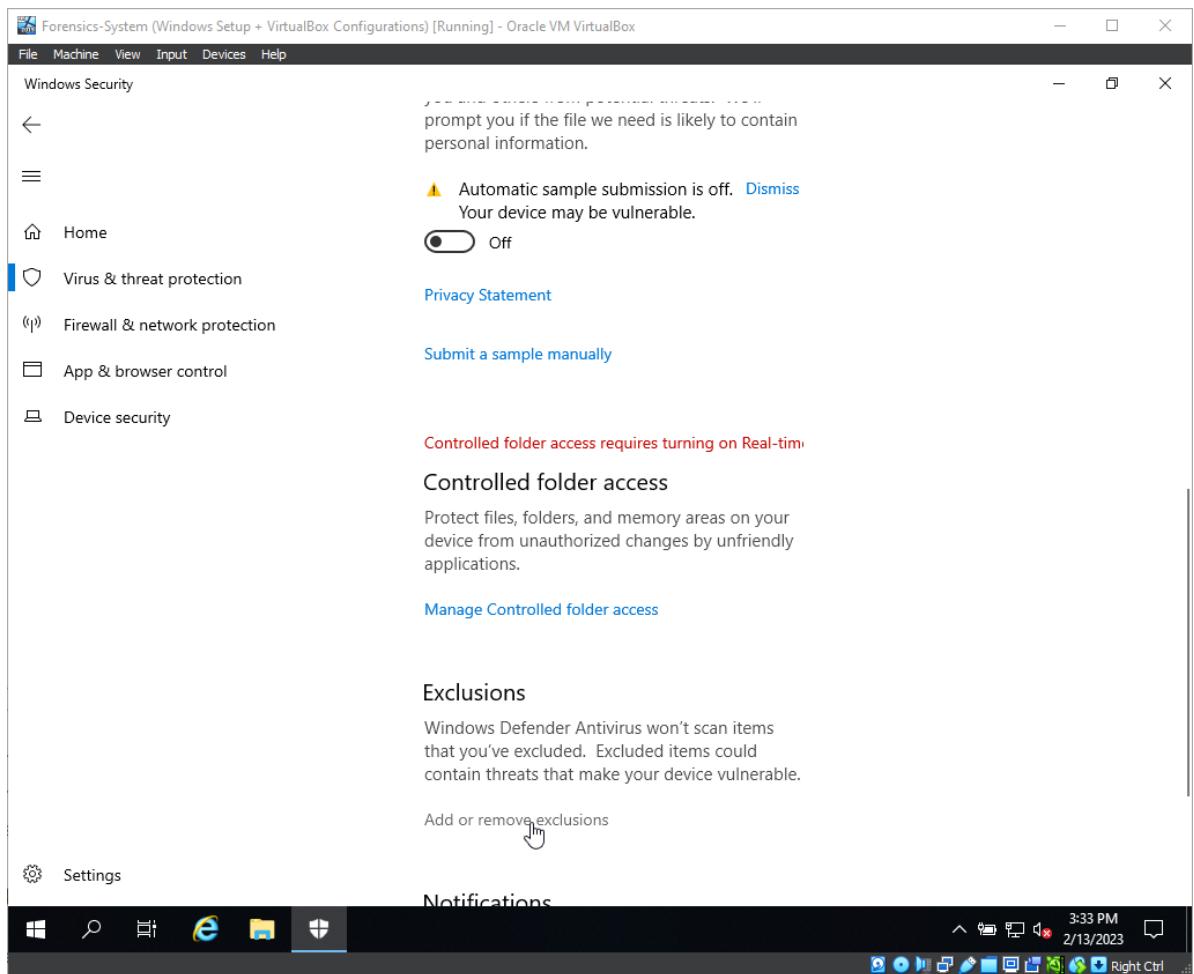
- Disable all protection in Windows Security>Virus & threat protection.

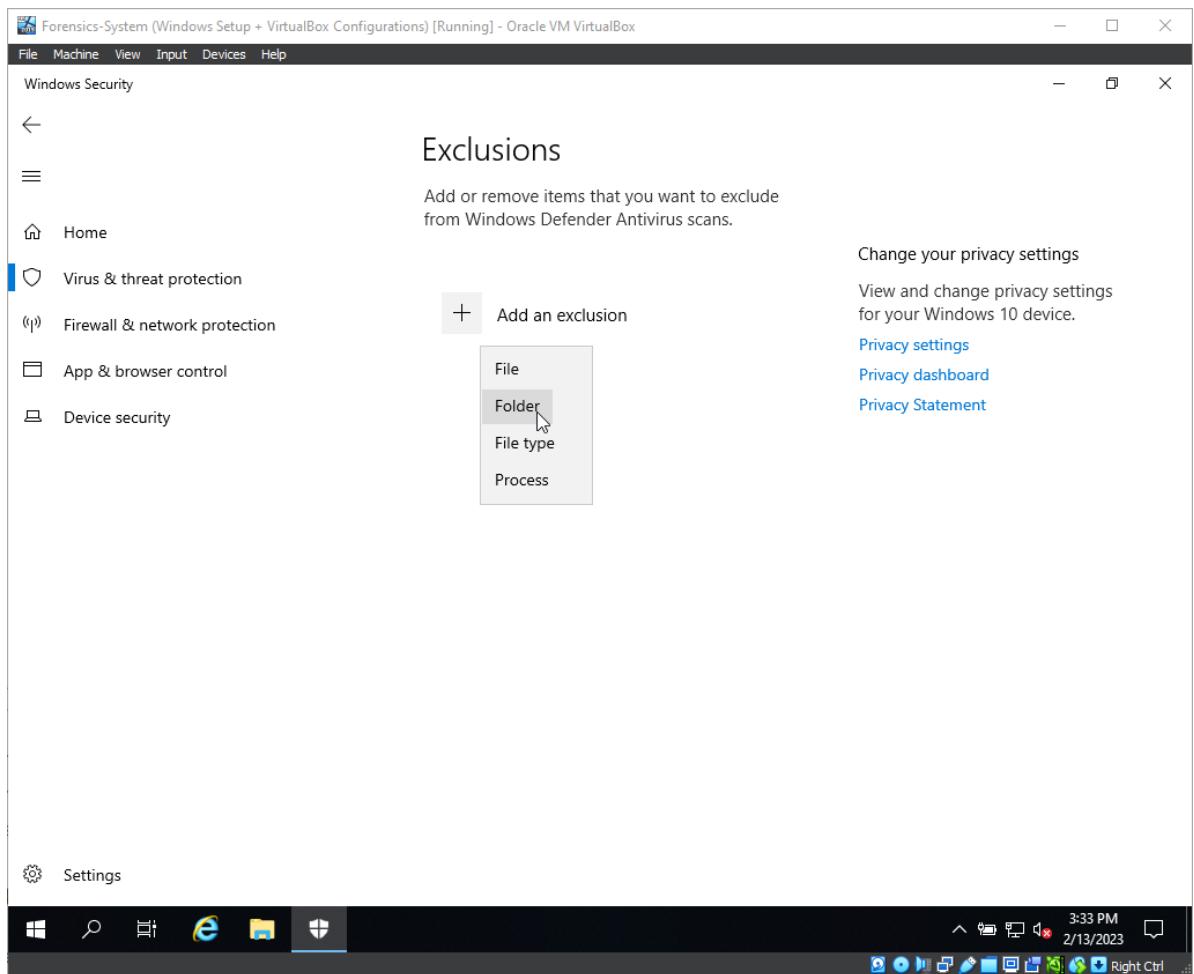


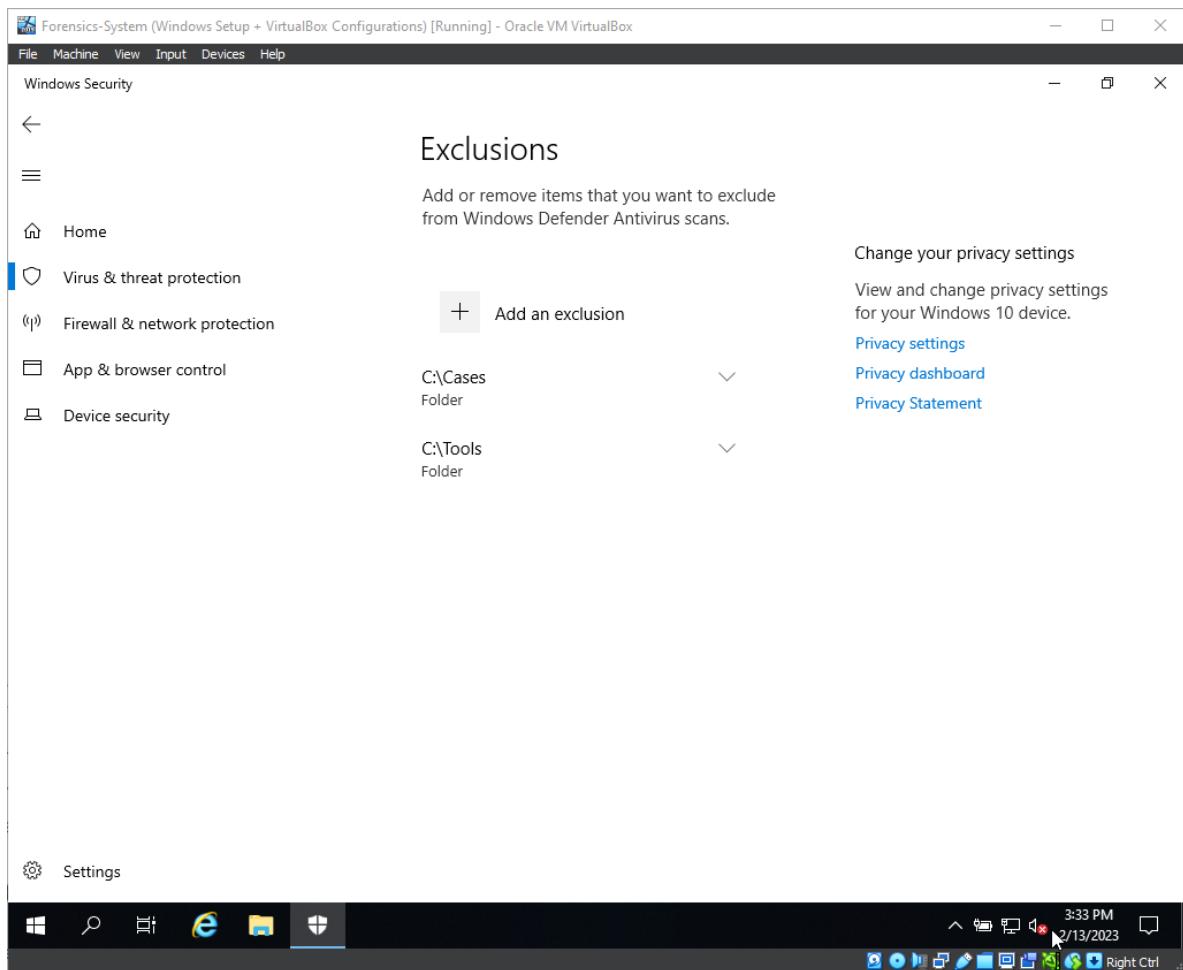




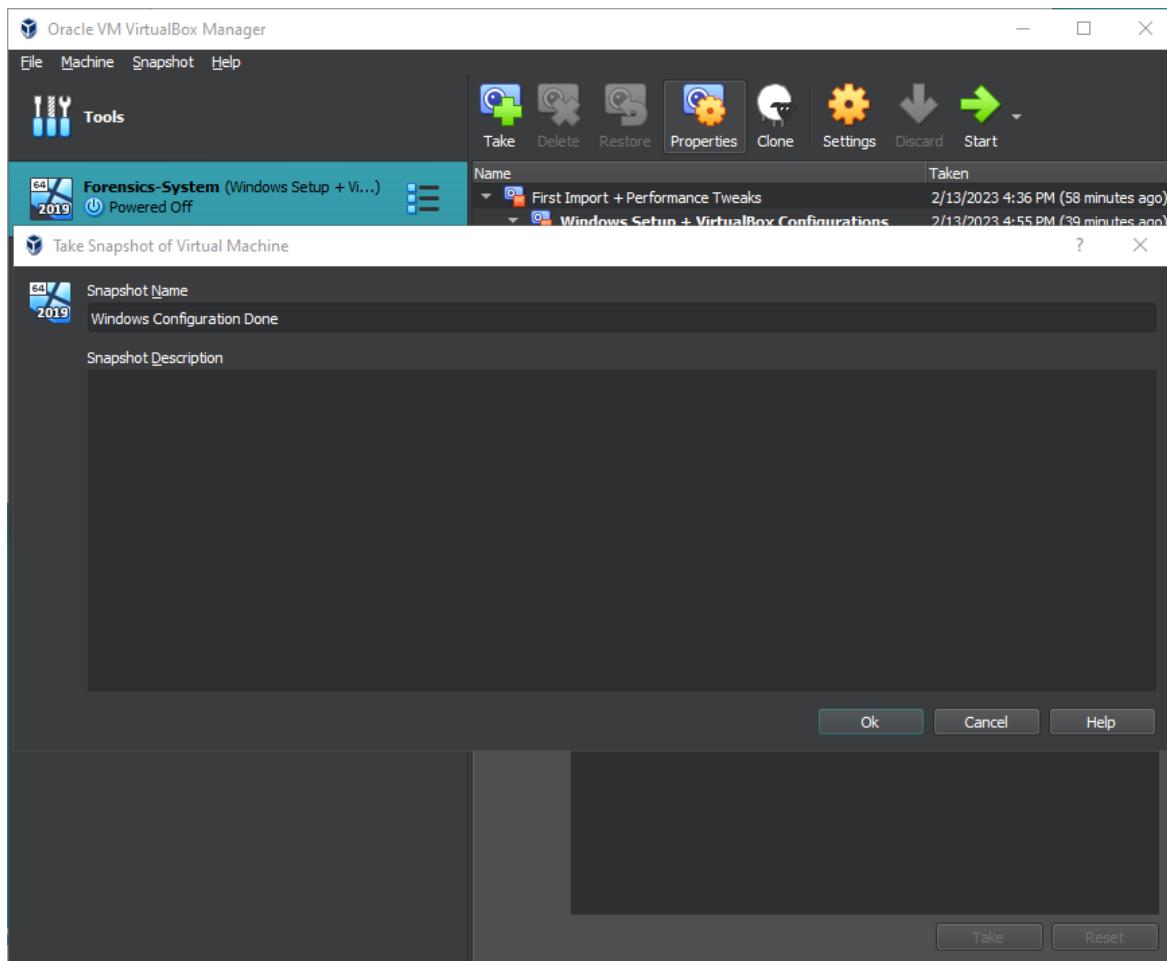
- Exclude the two folders from above from protection scanning, because Windows Security will delete right away all types of files that could be compromisable.







- Shut down the virtual machine and take a snapshot.



## Installing Forensic Tools.

- We will need the following tools (Make sure you use a browser without adblocking feature, that will interfere with the downloading of some of the tools enumerated below):
  - o Arsenal Image Mounter:

<https://arsenalrecon.com/downloads>

- o Eric Zimmerman Tools:

<https://ericzimmerman.github.io/#!index.md>

- o Event Log Explorer:

<https://eventlogxp.com/>

- o KAPE:

<https://www.kroll.com/en/insights/publications/cyber/kroll-artifact-parser-extractor-kape>

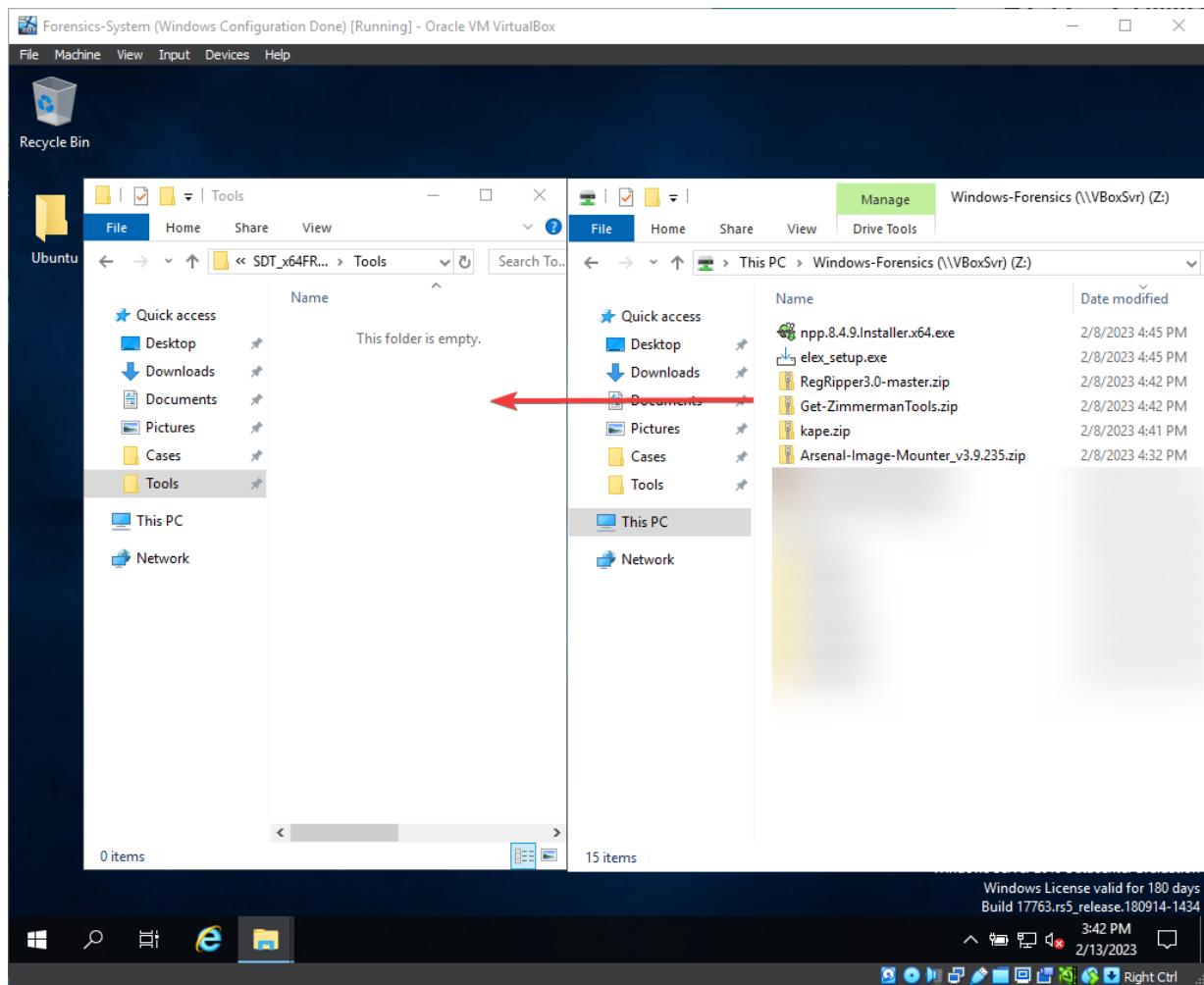
- Notepad++:

<https://notepad-plus-plus.org/downloads/>

- RegRipper 3.0:

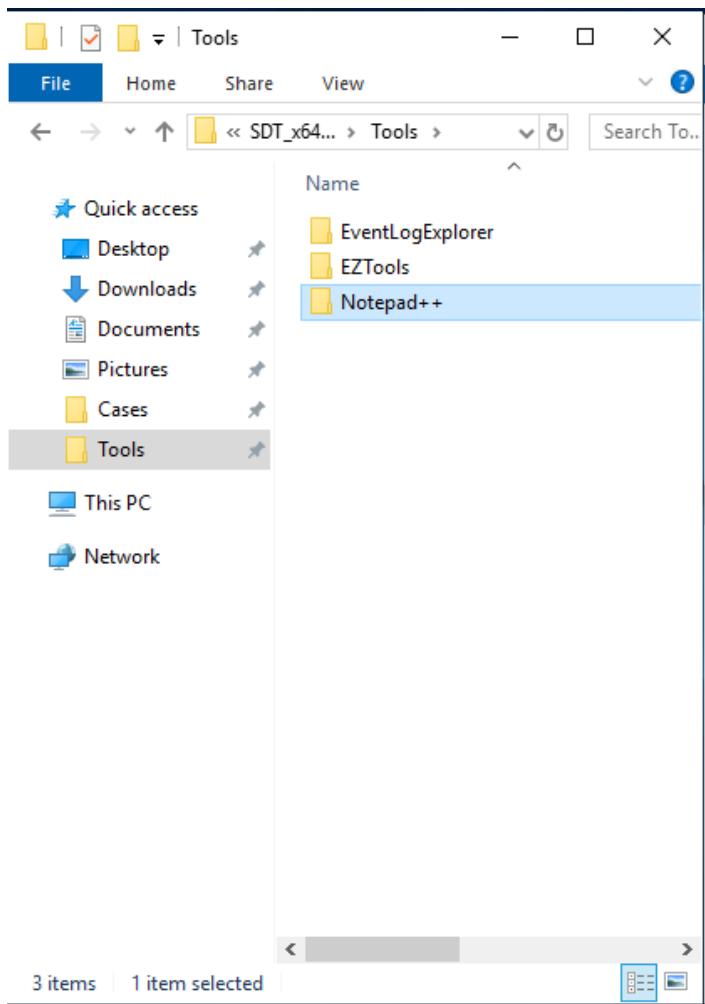
<https://github.com/keydet89/RegRipper3.0>

- Extract to C:\Tools.

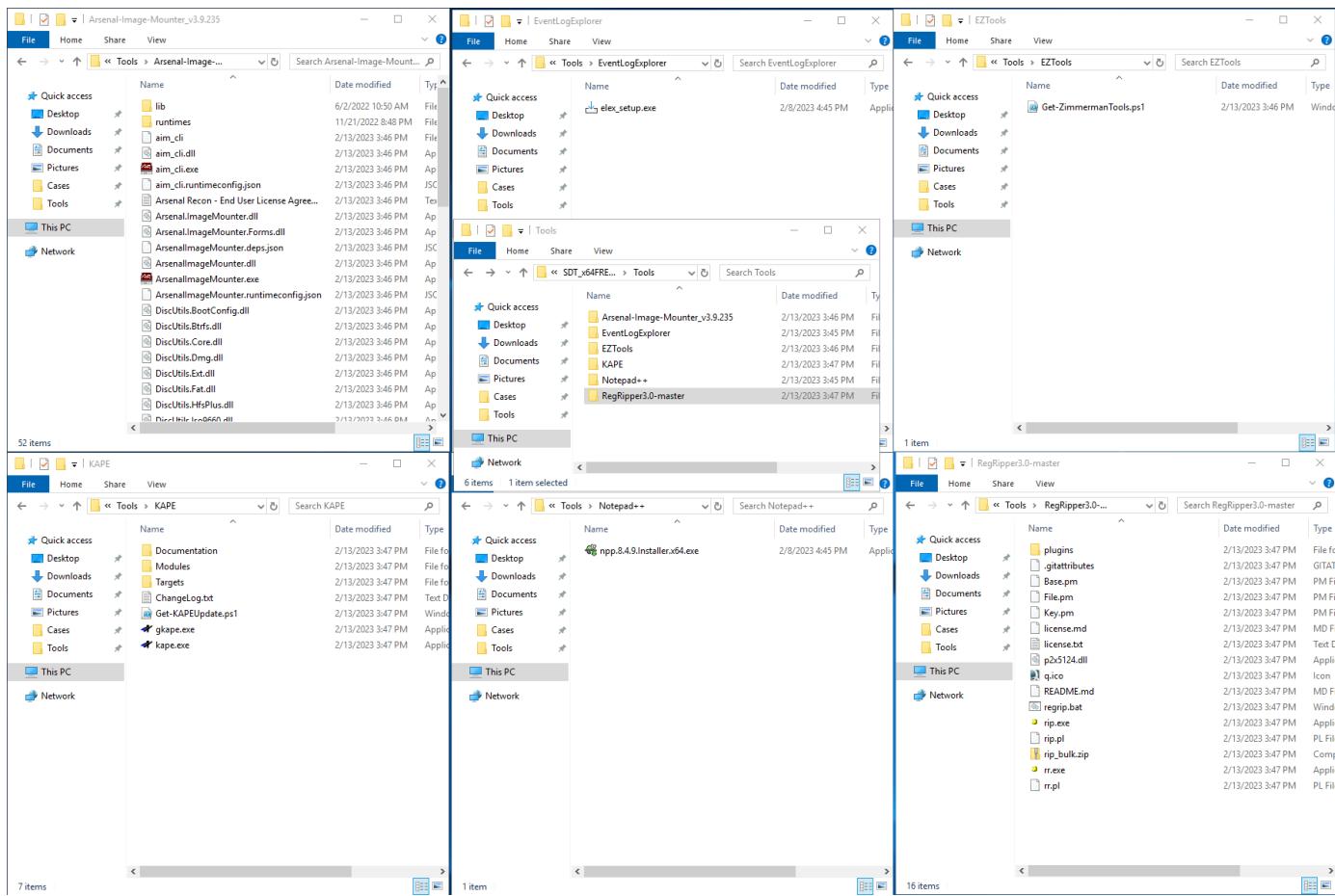


- Create Folders under C:\Tools (for structure purposes):

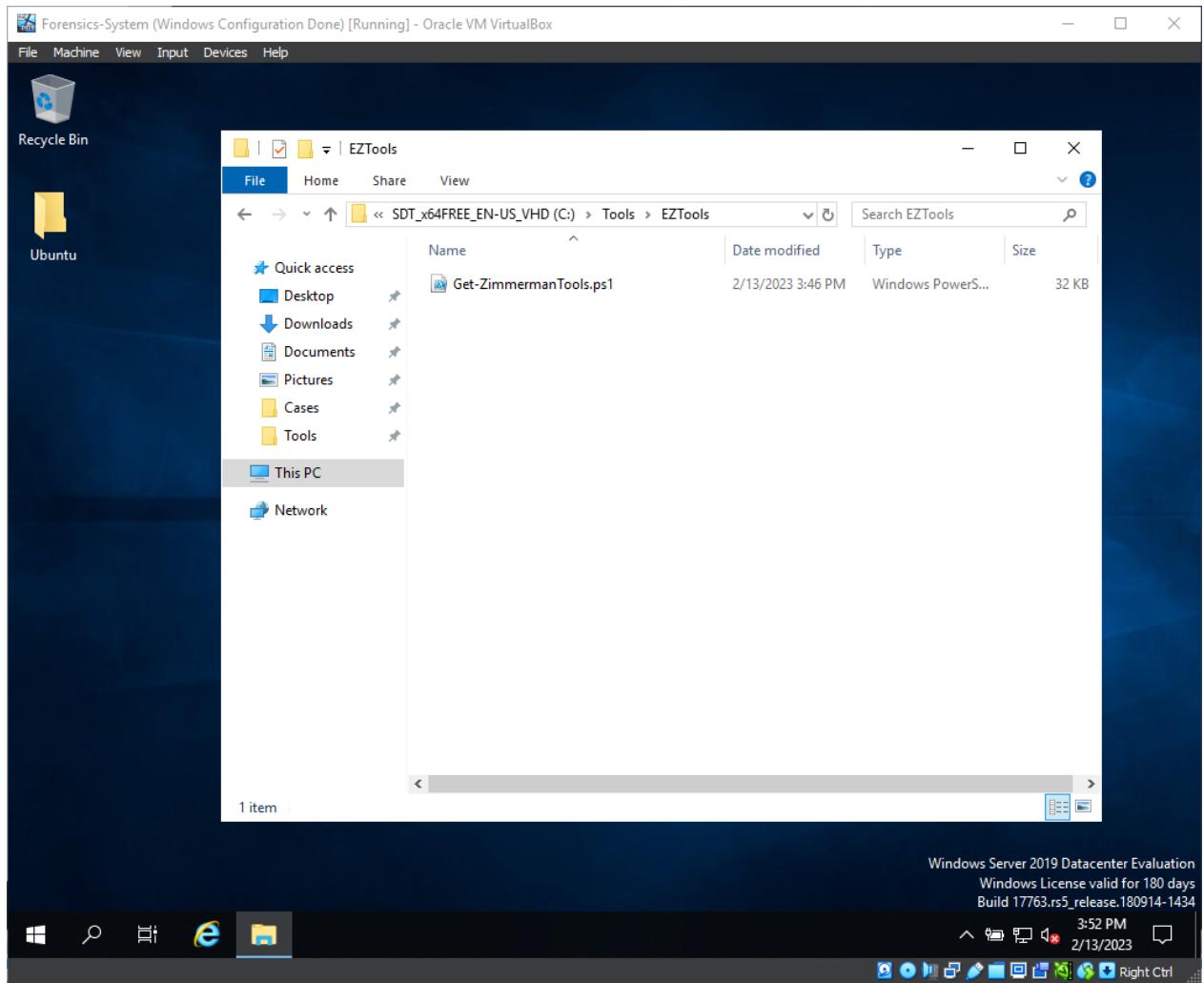
- EventLogExplorer.
- EZTools.
- Notepad++.

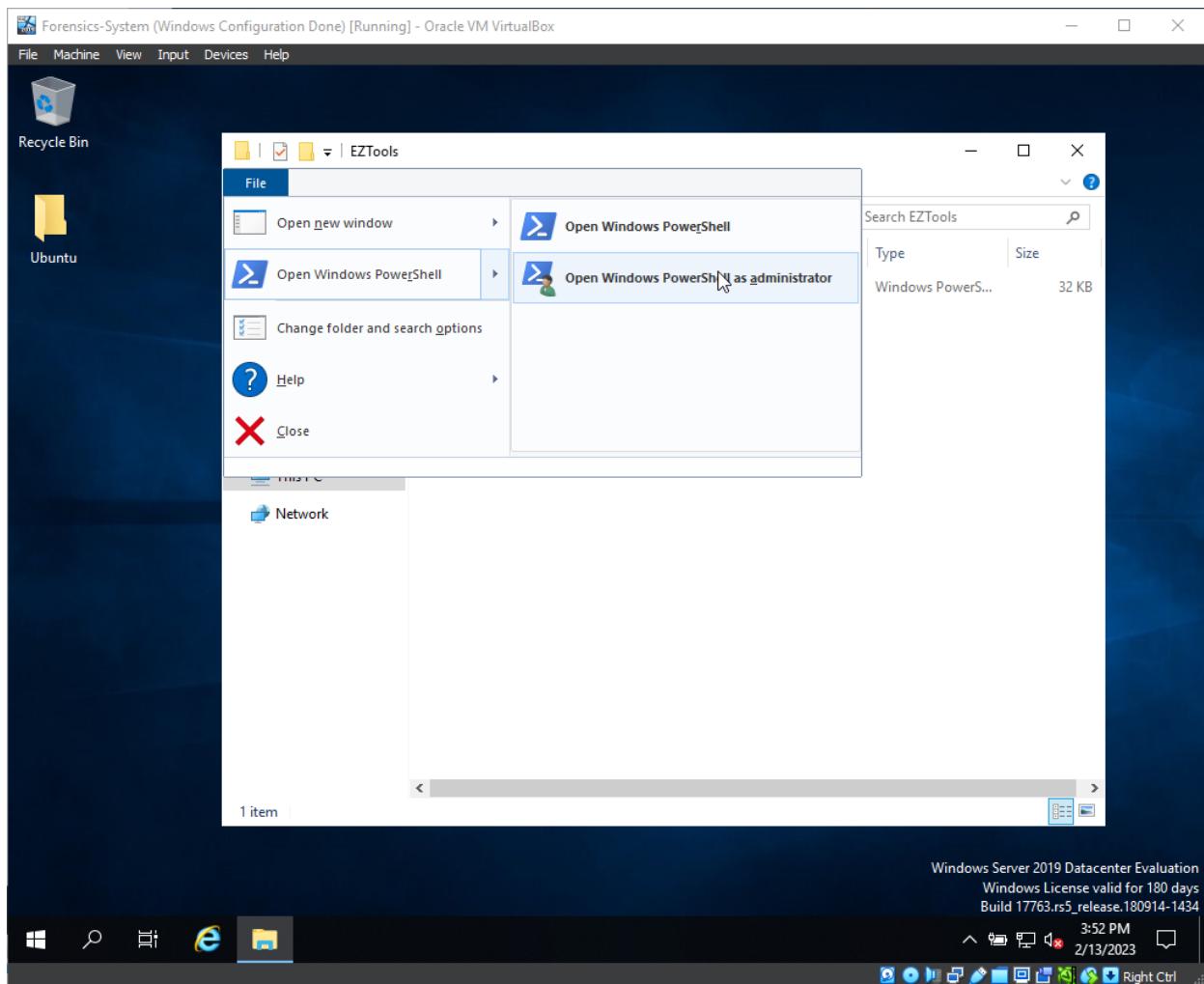


- Copy and paste/Extract installation executables and scripts in above folders.
- Extract to C:\Tools , the remaining ones.
- Folder structure you should have.

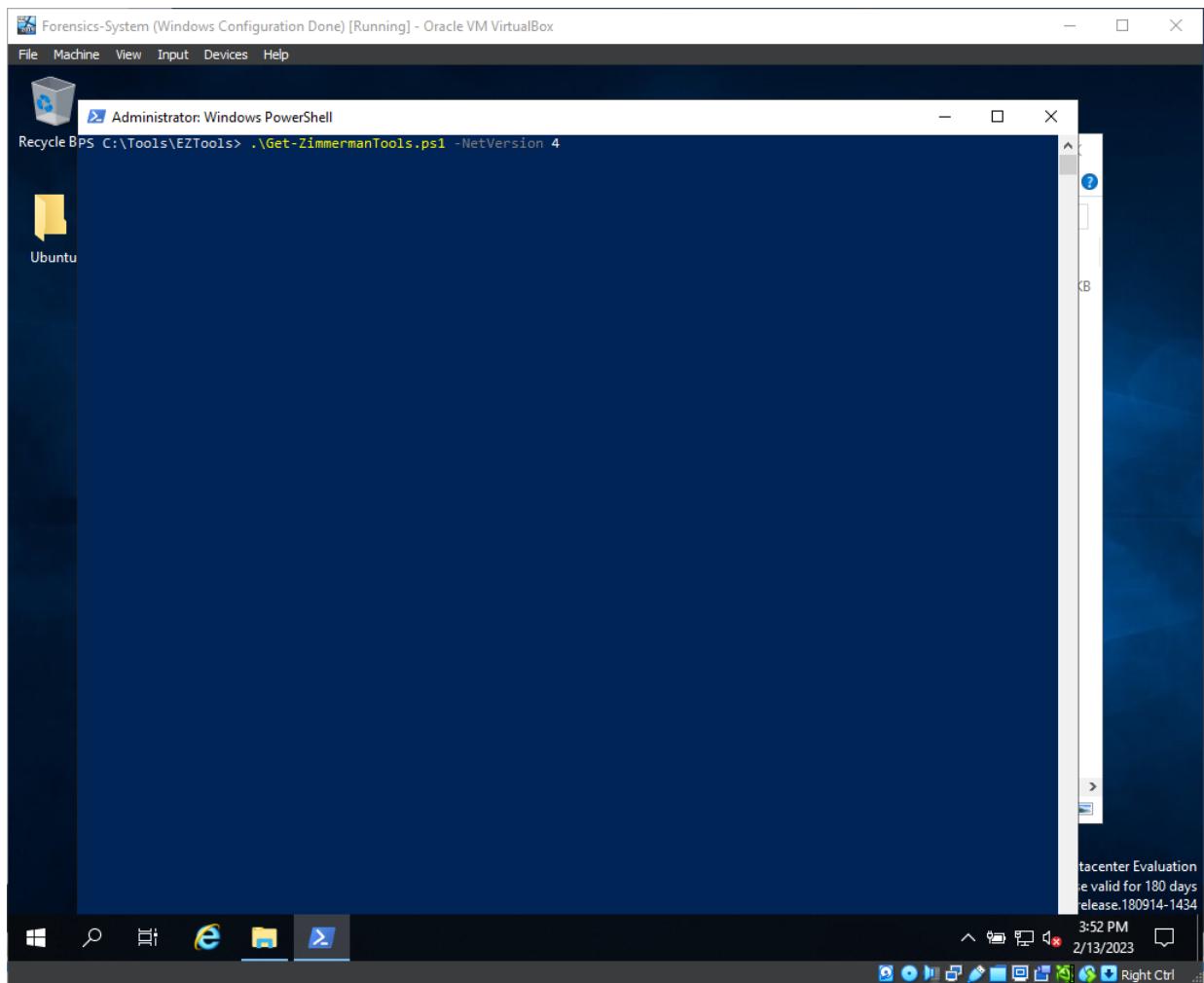


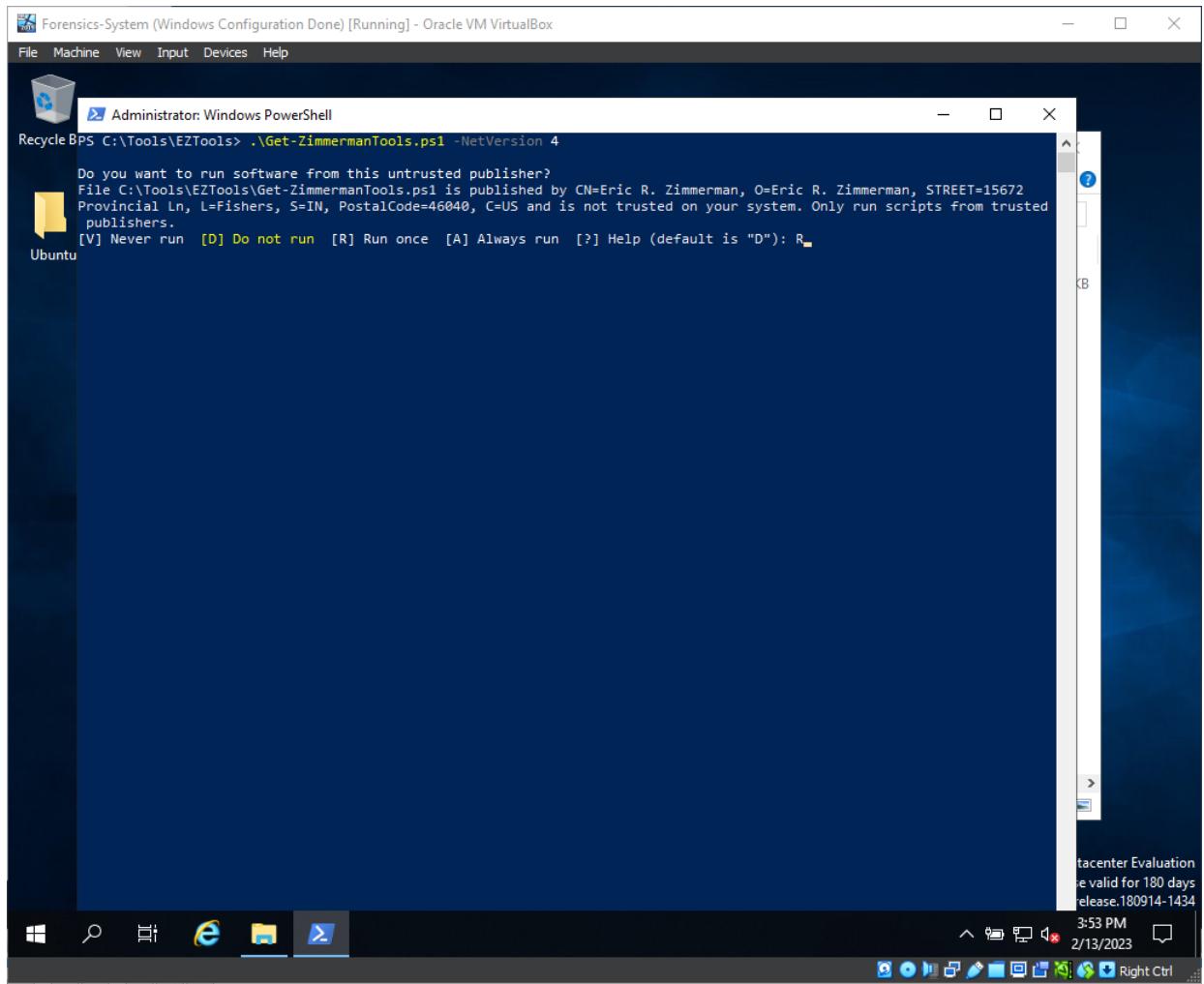
## - Installation for EZTools:





.\Get-ZimmermanTools.ps1 -NetVersion 4





```
Administrator: Windows PowerShell
RecycleBso rerunning the script will only download new versions.

To redownload, remove lines from or delete the CSV file created under C:\Tools\EZTools and rerun. Enjoy!
Use -NetVersion to control which version of the software you get (4 or 6). Default is getting both versions

* Getting available programs...
Ubuntu* Files to download: 31
* Downloaded Get-ZimmermanTools.zip (Size: 15,158)
* Downloaded AmcacheParser.zip (Size: 4,416,262)
* Downloaded AppCompatCacheParser.zip (Size: 4,358,362)
* Downloaded strings.zip (Size: 3,667,557)
* Downloaded EvtvECmd.zip (Size: 5,559,931)
* Downloaded EZViewer.zip (Size: 73,114,127)
* Downloaded Hasher.zip (Size: 51,299,411)
* Downloaded DLECmd.zip (Size: 4,246,033)
* Downloaded JumboListxplorer.zip (Size: 96,040,286)
* Downloaded LECmd.zip (Size: 4,616,448)
* Downloaded MFTExplorer.zip (Size: 4,296,268)
* Downloaded MFTExplorer.zip (Size: 56,560,655)
* Downloaded PECmd.zip (Size: 3,600,100)
* Downloaded RBCmd.zip (Size: 3,359,831)
* Downloaded RecentFileCacheParser.zip (Size: 3,210,510)
* Downloaded RECmd.zip (Size: 5,610,289)
* Downloaded RegistryExplorer.zip (Size: 64,705,000)
* Downloaded rla.zip (Size: 4,208,694)
* Downloaded SDBExplorer.zip (Size: 64,787,575)
* Downloaded SBFCmd.zip (Size: 4,486,677)
* Downloaded ShellBagExplorer.zip (Size: 77,989,497)
* Downloaded SQLCmd.zip (Size: 6,036,917)
* Downloaded SrumECmd.zip (Size: 4,447,389)
* Downloaded SumCmd.zip (Size: 3,603,159)
* Downloaded TimelineExplorer.zip (Size: 63,456,641)
* Downloaded VSCMount.zip (Size: 3,177,299)
* Downloaded WxCmd.zip (Size: 4,141,090)
* Downloaded xslGeolocate.zip (Size: 36,458,180)
* Downloaded TimeApp.zip (Size: 182,347)
* Downloaded XxFIM.zip (Size: 63,531,757)
* Downloaded ChangeLog.txt (Size: 33,067)

* Saving downloaded version information to C:\Tools\EZTools\!!!RemoteFileDetails.csv

PS C:\Tools\EZTools> -
```

- For EventLogExplorer and Notepad++, there is no advanced installation, just next until finish.
- Make a snapshot.

