

Practical Networking

Introduction to Virtual Machines
(VM Player / VirtualBox)
V 1.0

By Martin Melendez
CTI-RUM

PN–Virtual Machines: Agenda

▶ Introduction

- Virtual Machine Monitor
- VM Resources
- VM is a File

▶ Oracle Virtualbox

- Download
- Installation
- VM creation Wizard
- VM Customize
- VM Path and Disk
- VM Network
- VM Start / Suspend / Resume
- VM Export

▶ VMware VMPlayer

- Download
- Installation
- VM creation Wizard
- VM Customize
- VM Path and Disk
- VM Network
- VM Start / Suspend / Resume
- VM Files

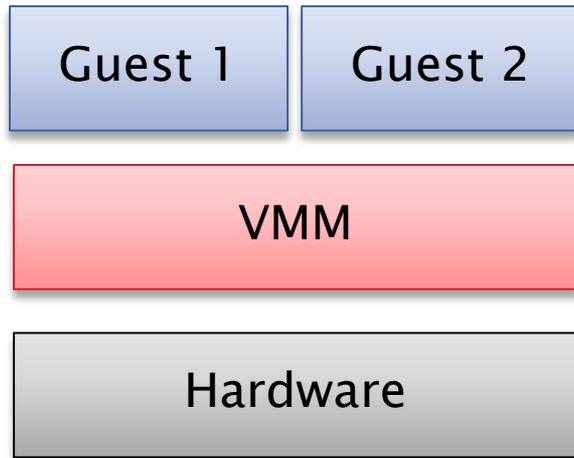
PN-Virtual Machines: Introduction



In computing, a **virtual machine (VM)** is an emulation of a particular computer system.

Virtual machines operate based on the computer architecture and functions of a real or hypothetical computer, and their implementations may involve specialized hardware, software, or a combination of both.

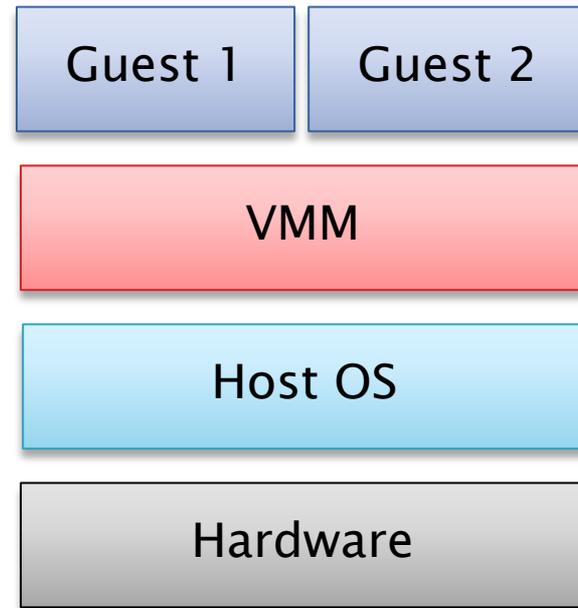
PN-Virtual Machines: Introduction



Type-1: Native Hypervisor

Run directly on the hardware, the guest OS runs on top of them.

Ex. VMWare ESXi

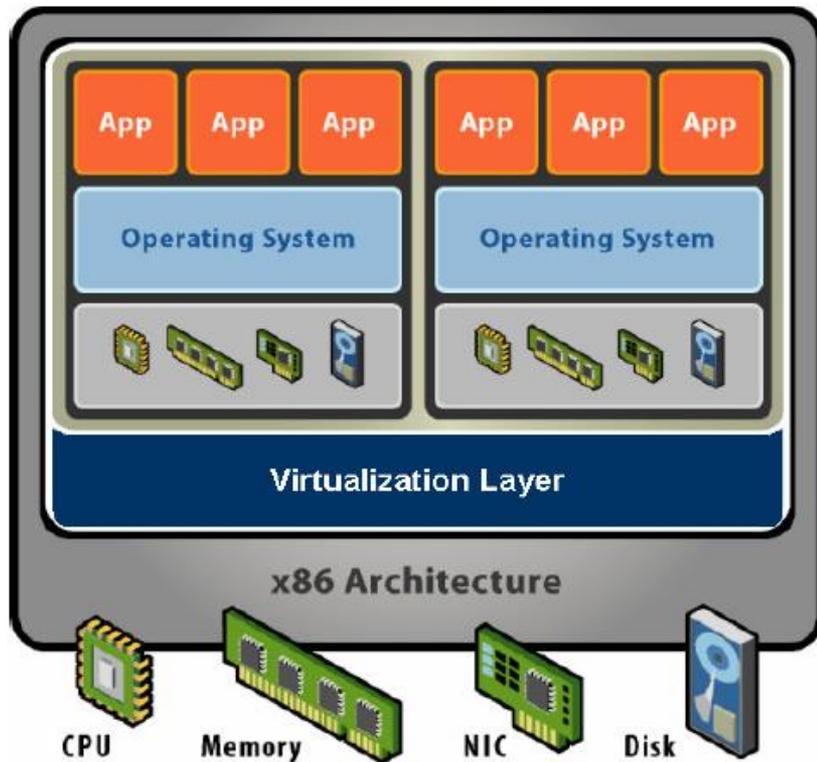


Type-2: Hosted Hypervisor

Runs on top of an existing OS, guests OS run on a third level.

Ex. VM Player
Ex. VirtualBox

PN-Virtual Machines: Introduction



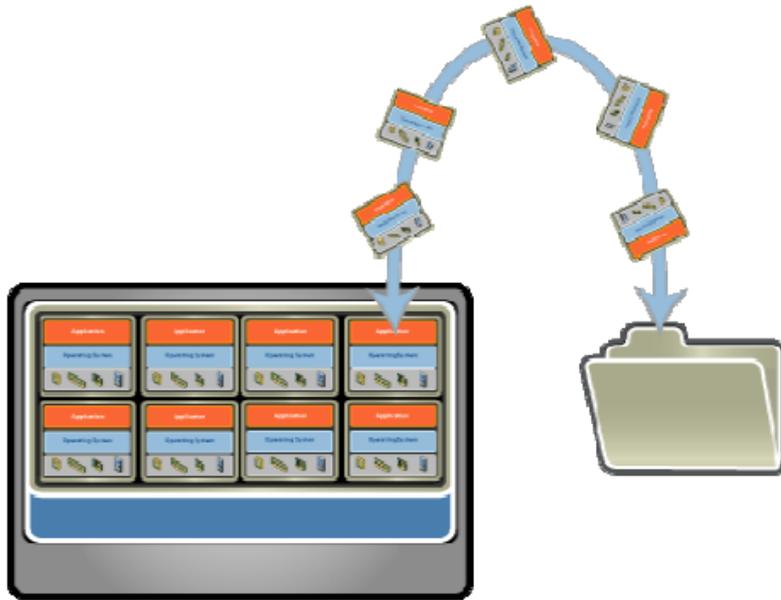
Shared Resources

- CPUs
- Memory
- Network
- Disks

Other Resources

- Monitor
- Keyboard
- USB Ports
- Sound Card

PN-Virtual Machines: Introduction



Entire VM is a File

- OS, applications, data
- Memory
- Device state

Snapshots and Clones

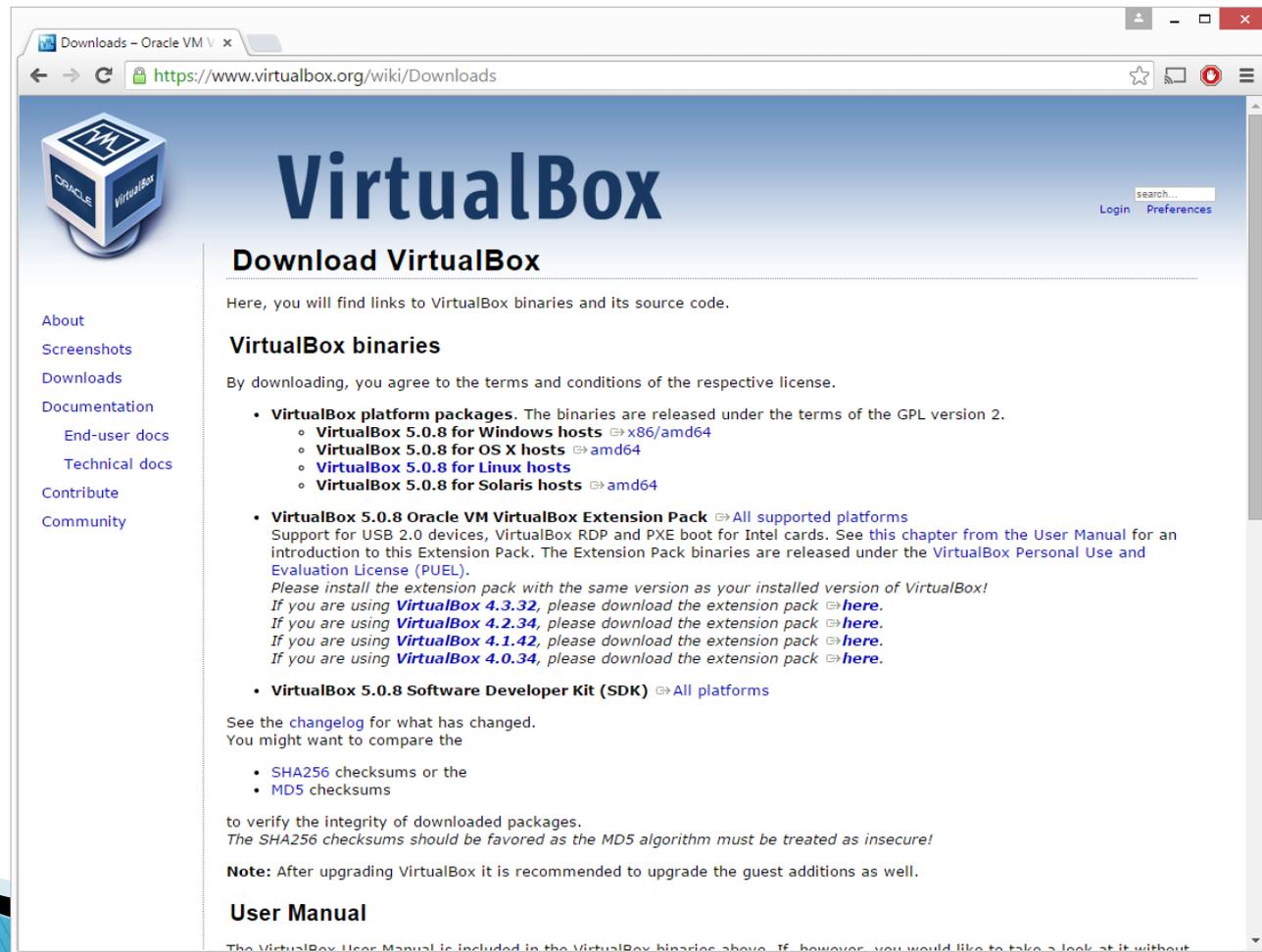
- Capture VM State
- Restore to point in time
- System Provisioning
- Backup

Content Distribution

- Pre-Configure apps
- Demos
- Virtual Appliances

PN–Virtual Machines: Oracle Virtualbox

<https://www.virtualbox.org/wiki/Downloads>



The screenshot shows a web browser window displaying the Oracle VM VirtualBox Downloads page. The page features the VirtualBox logo on the left and a navigation menu with links for About, Screenshots, Downloads, Documentation, End-user docs, Technical docs, Contribute, and Community. The main content area is titled "Download VirtualBox" and includes a search bar, "Login", and "Preferences" links. The page text explains that users will find links to VirtualBox binaries and source code. It lists "VirtualBox binaries" and provides instructions for downloading the platform packages, the Oracle VM VirtualBox Extension Pack, and the Software Developer Kit (SDK). It also mentions checking the changelog and verifying package integrity using SHA256 or MD5 checksums. A note recommends upgrading guest additions after upgrading VirtualBox. The page concludes with a "User Manual" section.

Downloads – Oracle VM V x

<https://www.virtualbox.org/wiki/Downloads>

 **VirtualBox** [Login](#) [Preferences](#)

Download VirtualBox

Here, you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

- **VirtualBox platform packages.** The binaries are released under the terms of the GPL version 2.
 - **VirtualBox 5.0.8 for Windows hosts** ⇨ [x86/amd64](#)
 - **VirtualBox 5.0.8 for OS X hosts** ⇨ [amd64](#)
 - **VirtualBox 5.0.8 for Linux hosts**
 - **VirtualBox 5.0.8 for Solaris hosts** ⇨ [amd64](#)
- **VirtualBox 5.0.8 Oracle VM VirtualBox Extension Pack** ⇨ [All supported platforms](#)
Support for USB 2.0 devices, VirtualBox RDP 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 extension pack with the same version as your installed version of VirtualBox!
*If you are using **VirtualBox 4.3.32**, please download the extension pack ⇨ [here](#).*
*If you are using **VirtualBox 4.2.34**, please download the extension pack ⇨ [here](#).*
*If you are using **VirtualBox 4.1.42**, please download the extension pack ⇨ [here](#).*
*If you are using **VirtualBox 4.0.34**, please download the extension pack ⇨ [here](#).*
- **VirtualBox 5.0.8 Software Developer Kit (SDK)** ⇨ [All platforms](#)

See the [changelog](#) for what has changed.
You might want to compare the

- [SHA256](#) checksums or the
- [MD5](#) checksums

to verify the integrity of downloaded packages.
The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!

Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.

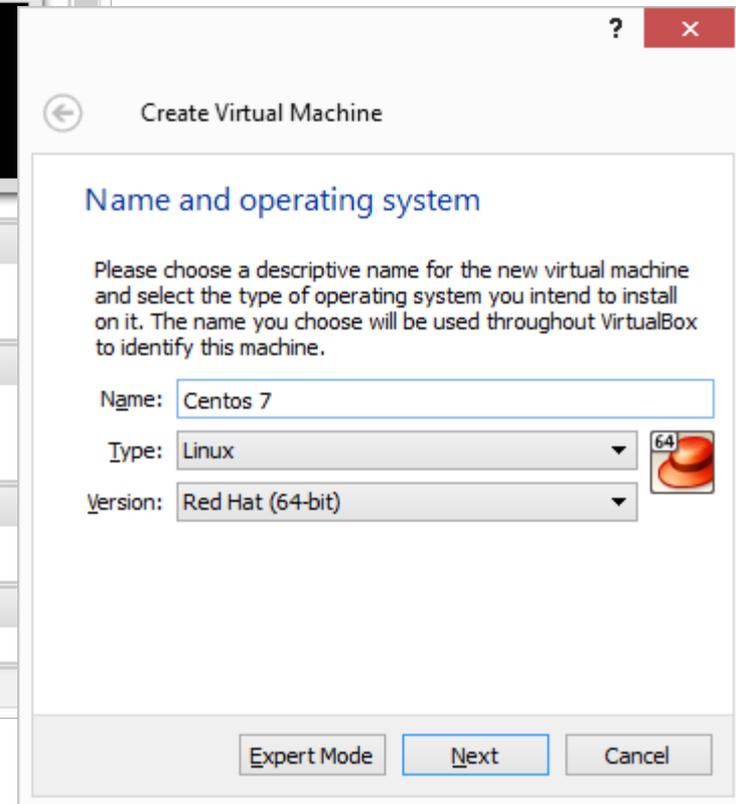
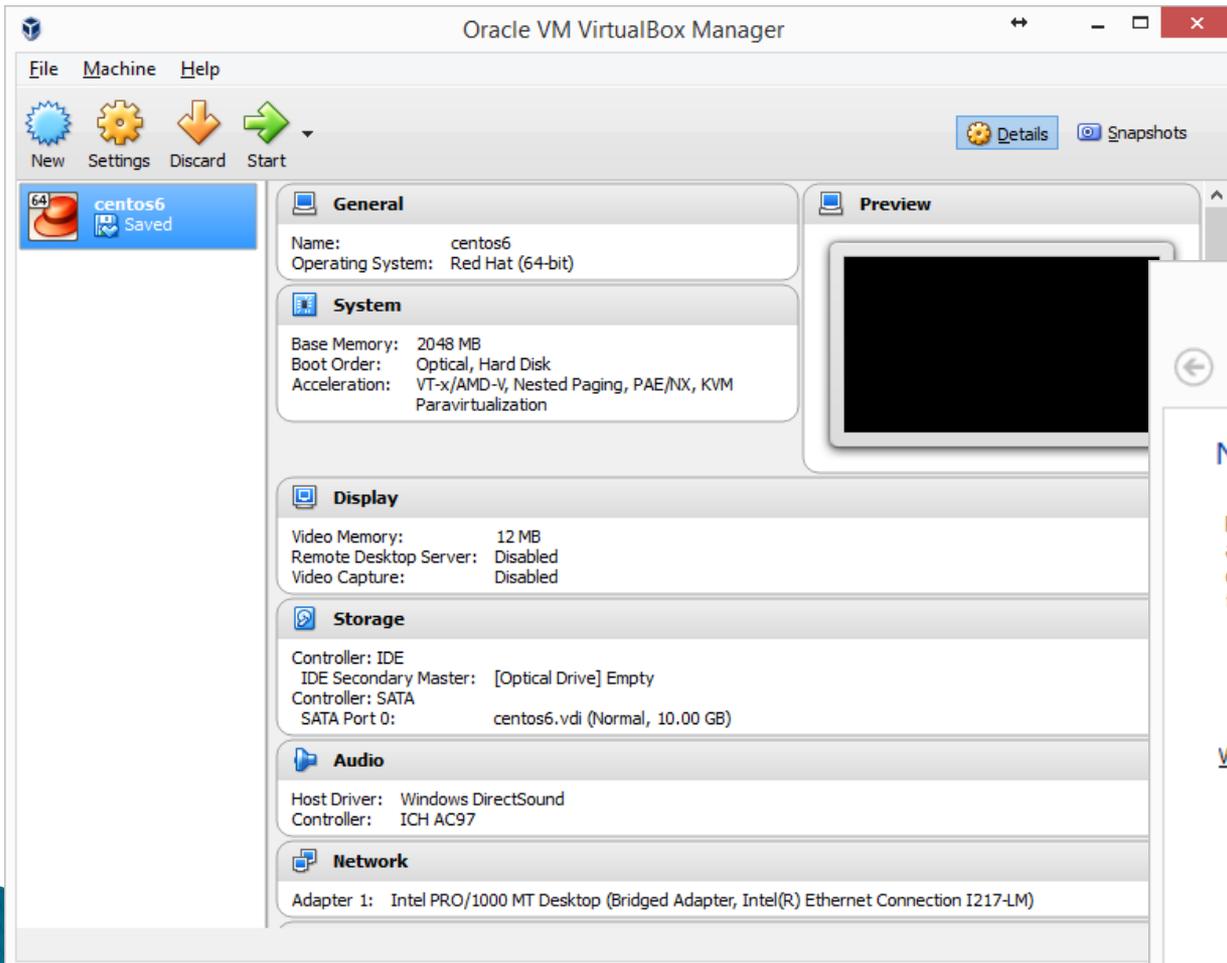
User Manual

The VirtualBox User Manual is included in the VirtualBox binaries above. If, however, you would like to take a look at it without

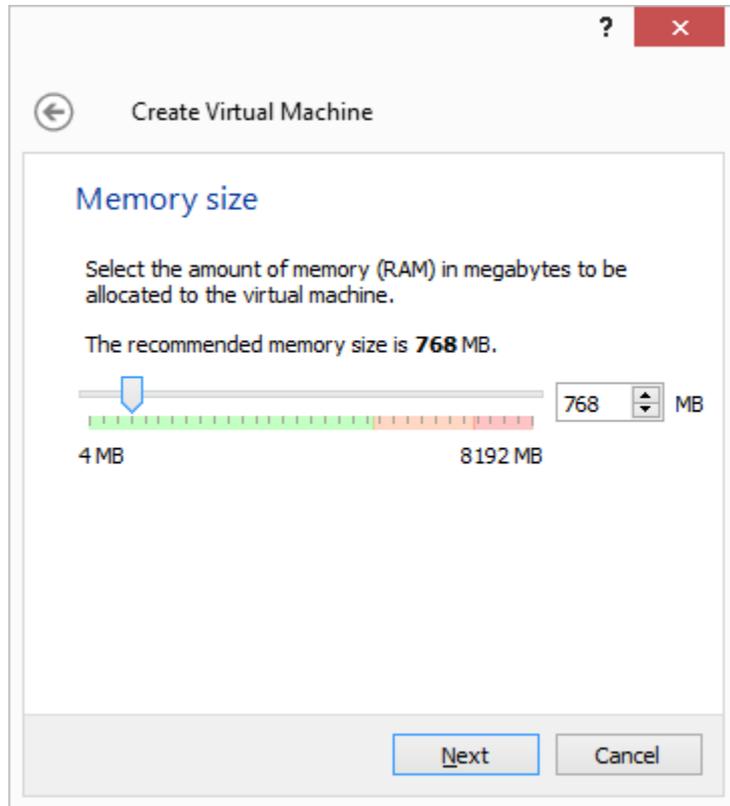
PN-Virtual Machines: Oracle Virtualbox

New VM Wizard

- VM Name
- OS Type

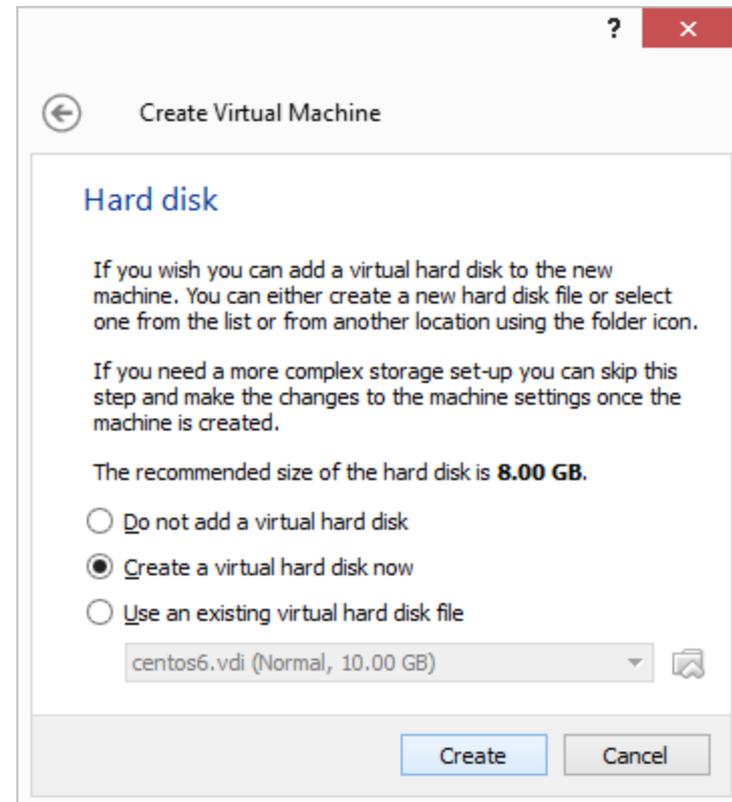


PN-Virtual Machines: Oracle Virtualbox

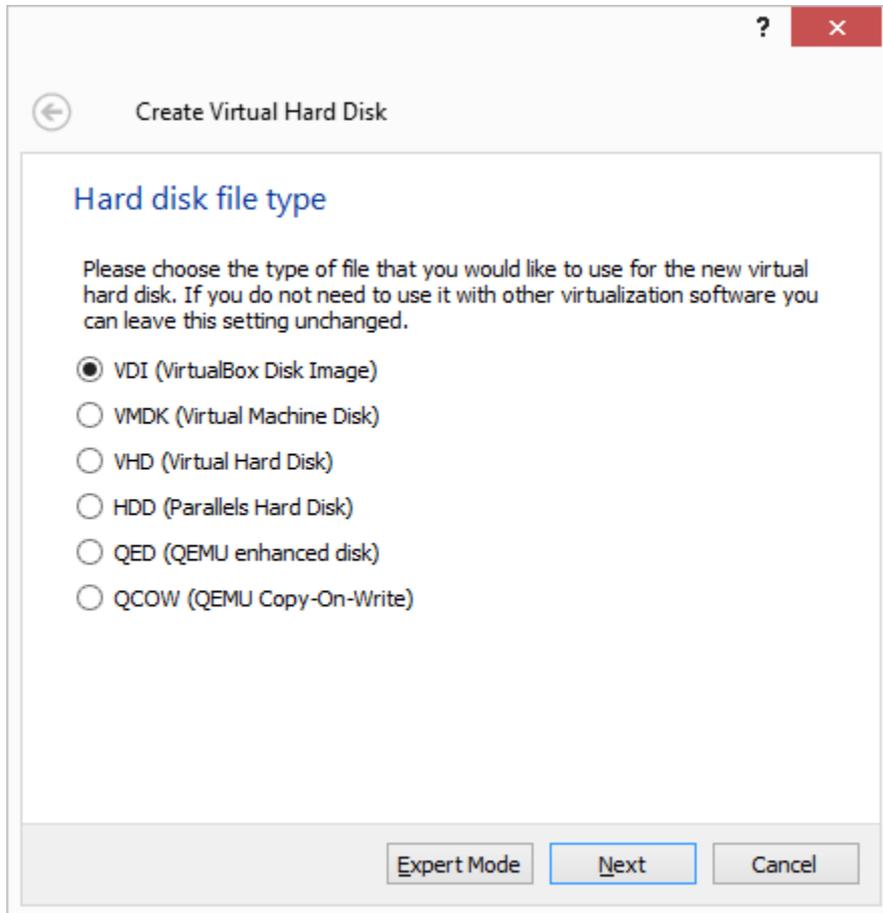


New VM Wizard

- Memory Size
- New/Old Hard Disk



PN-Virtual Machines: Oracle Virtualbox



VM Hard Disk

- File type

VDI – Virtualbox

VMDK – Vmware

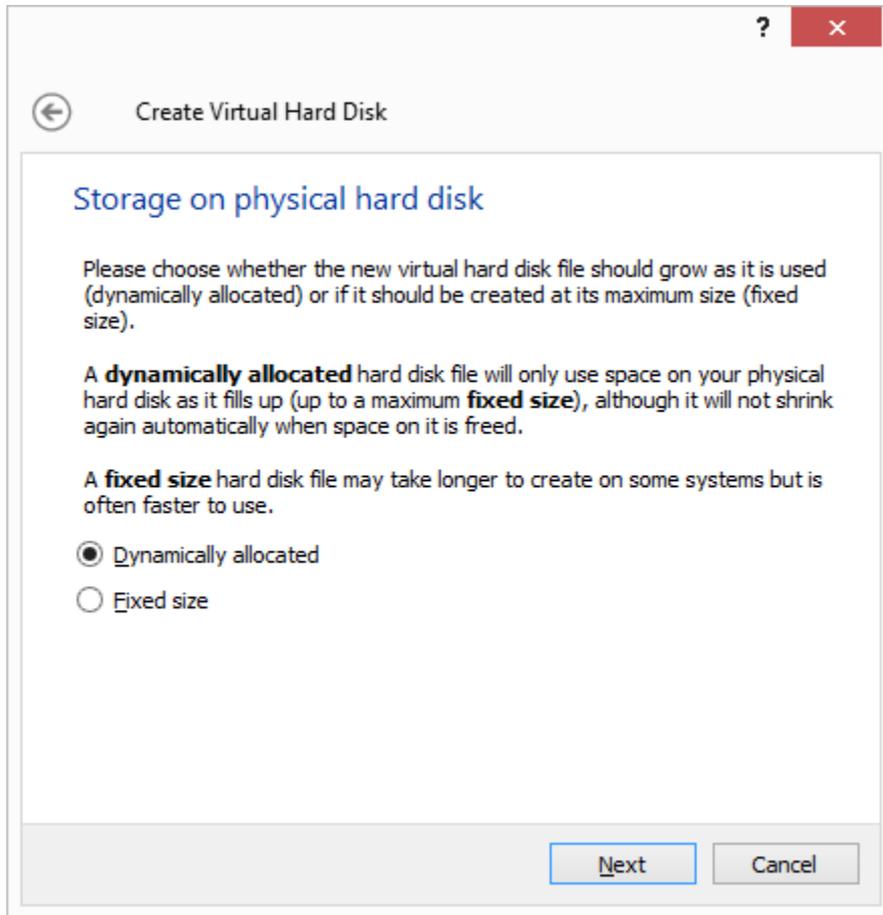
VHD – Microsoft

HDD – Parallels

QED – Linux QEMU

QCOW – Linux QEMU

PN-Virtual Machines: Oracle Virtualbox



VM Hard Disk

- Allocation

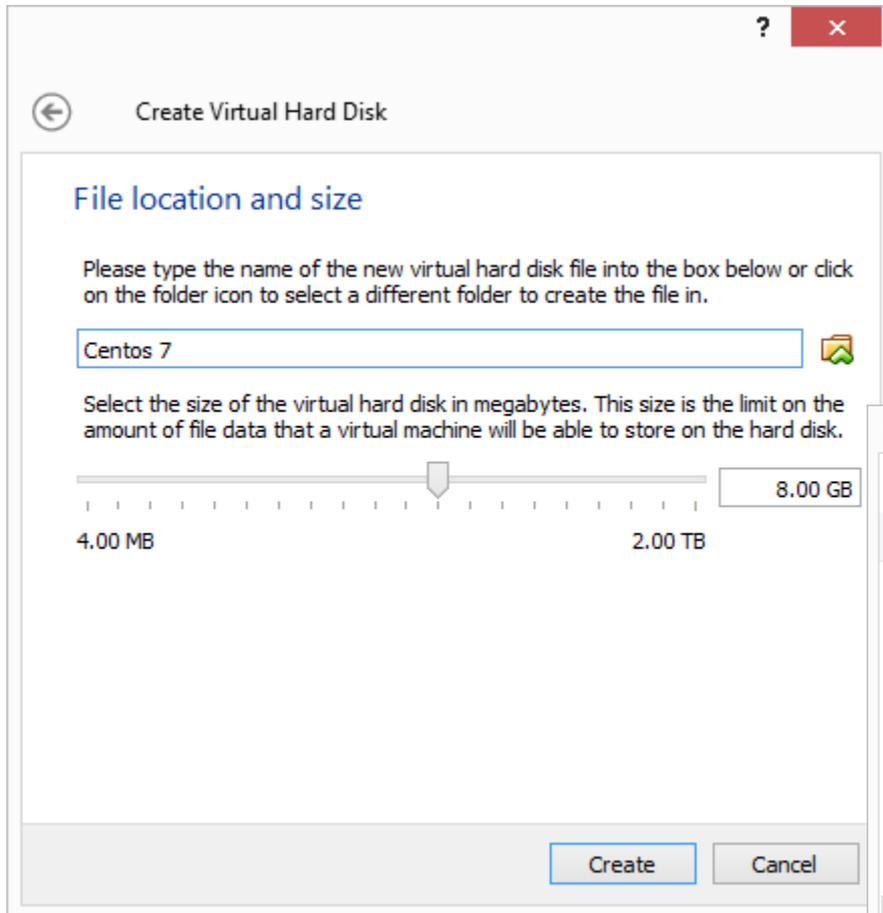
Dynamic

- Will grow as needed
- Consume more resources
- Is slower while growing

Fixed

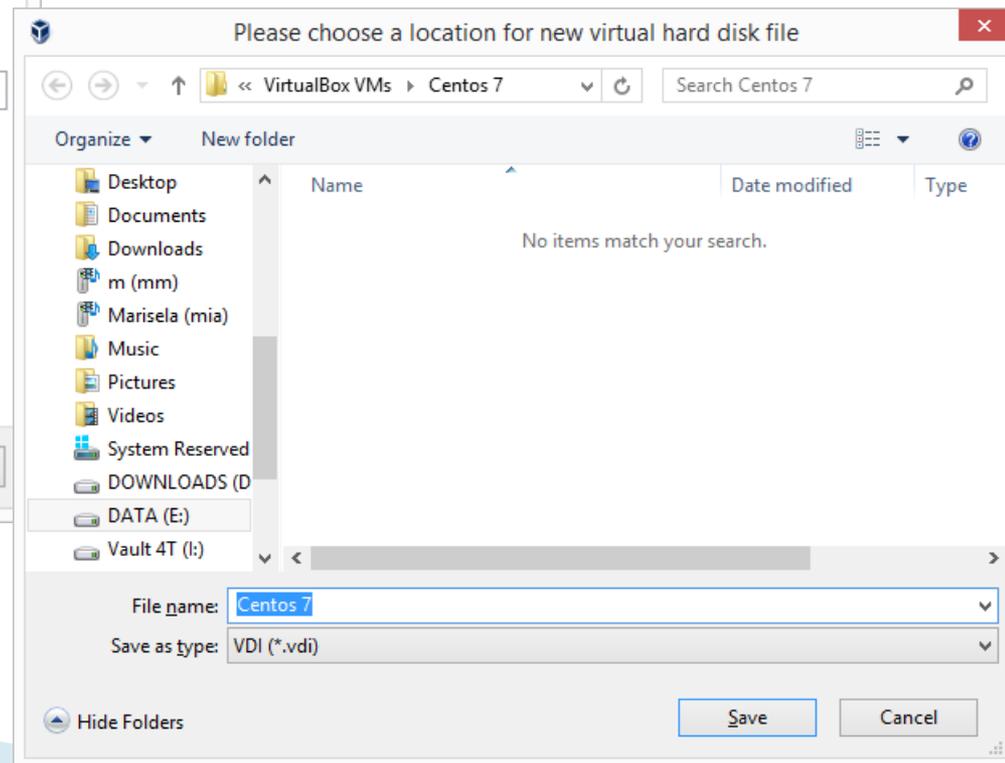
Separate all the defined space at the disk creation.

PN-Virtual Machines: Oracle Virtualbox



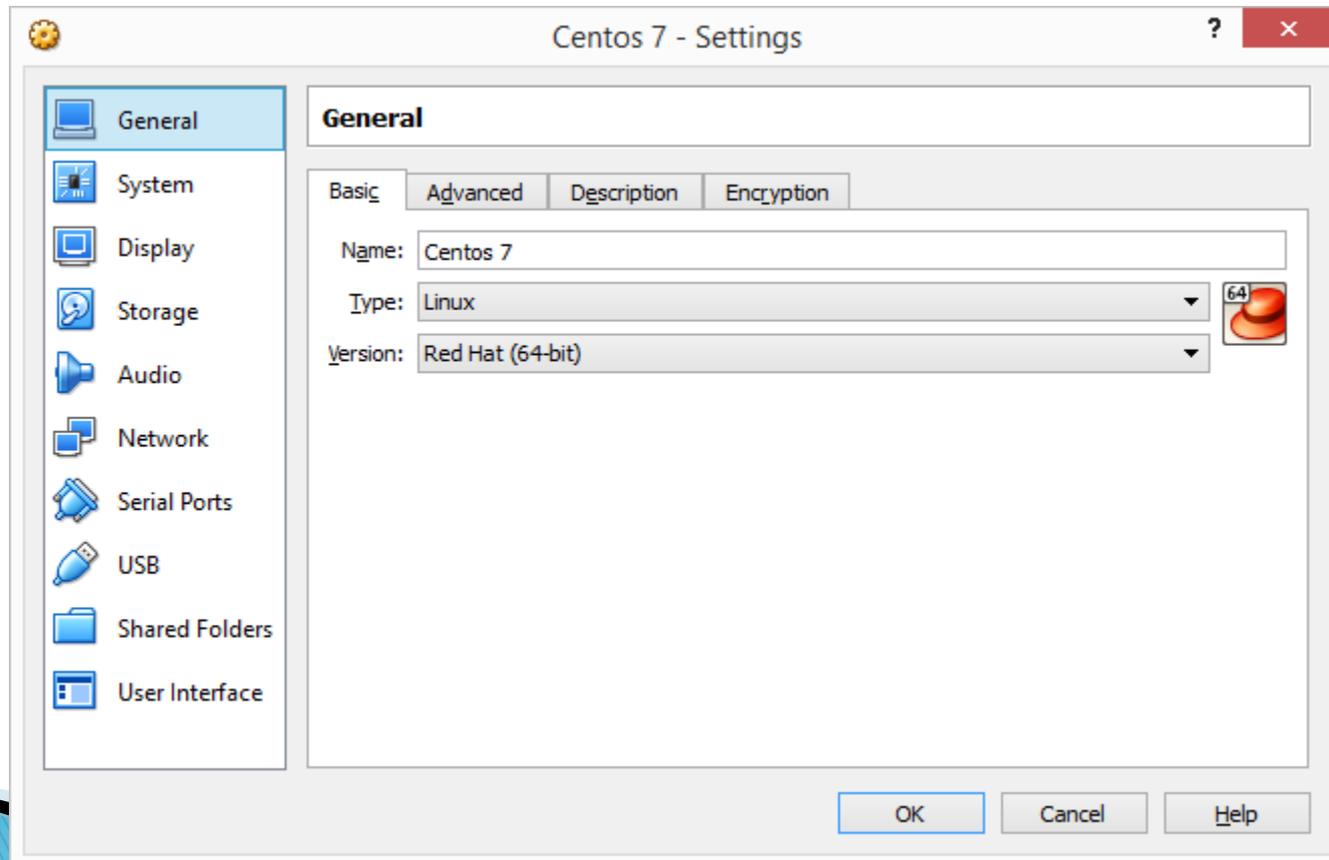
VM Hard Disk

- Name
- Size
- Location

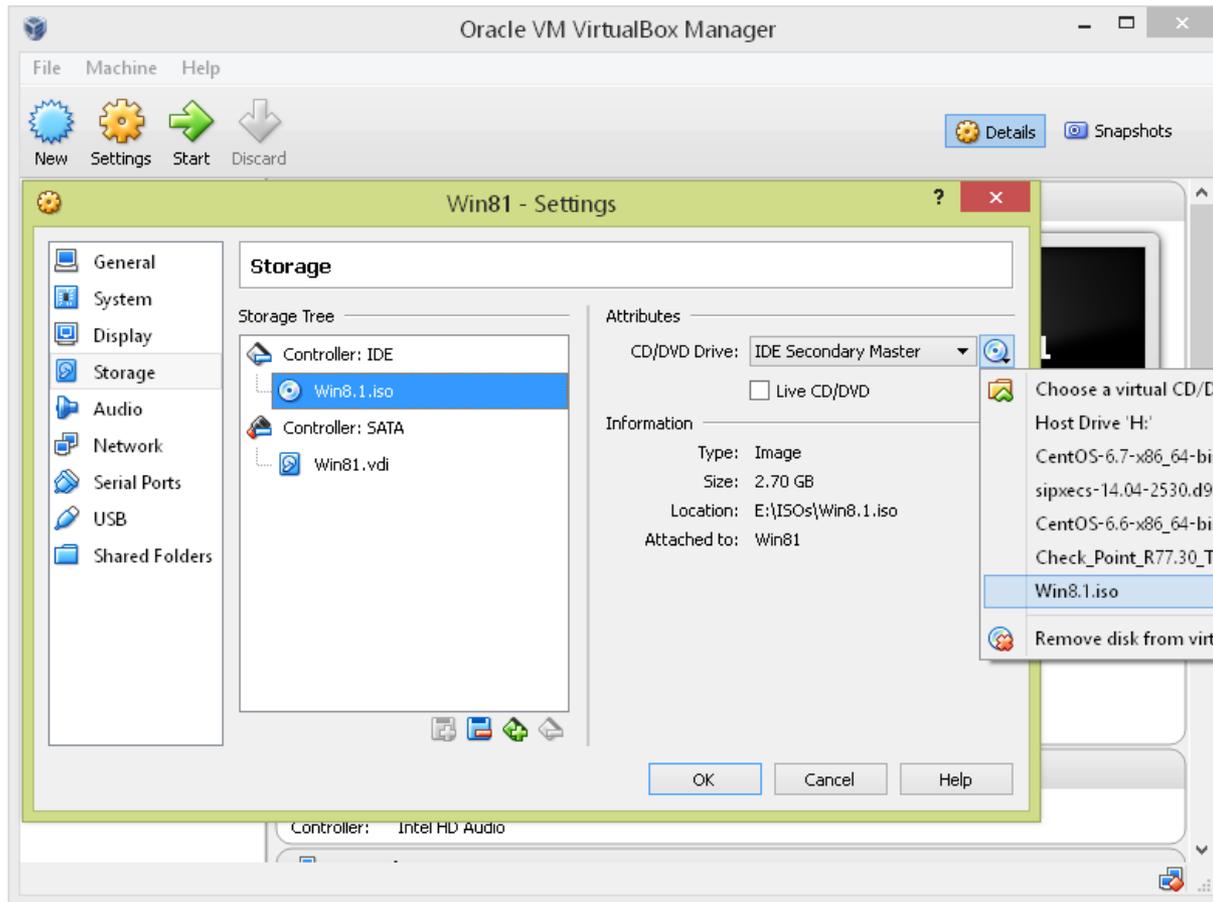


PN-Virtual Machines: Oracle Virtualbox

VM Settings



PN-Virtual Machines: Oracle Virtualbox



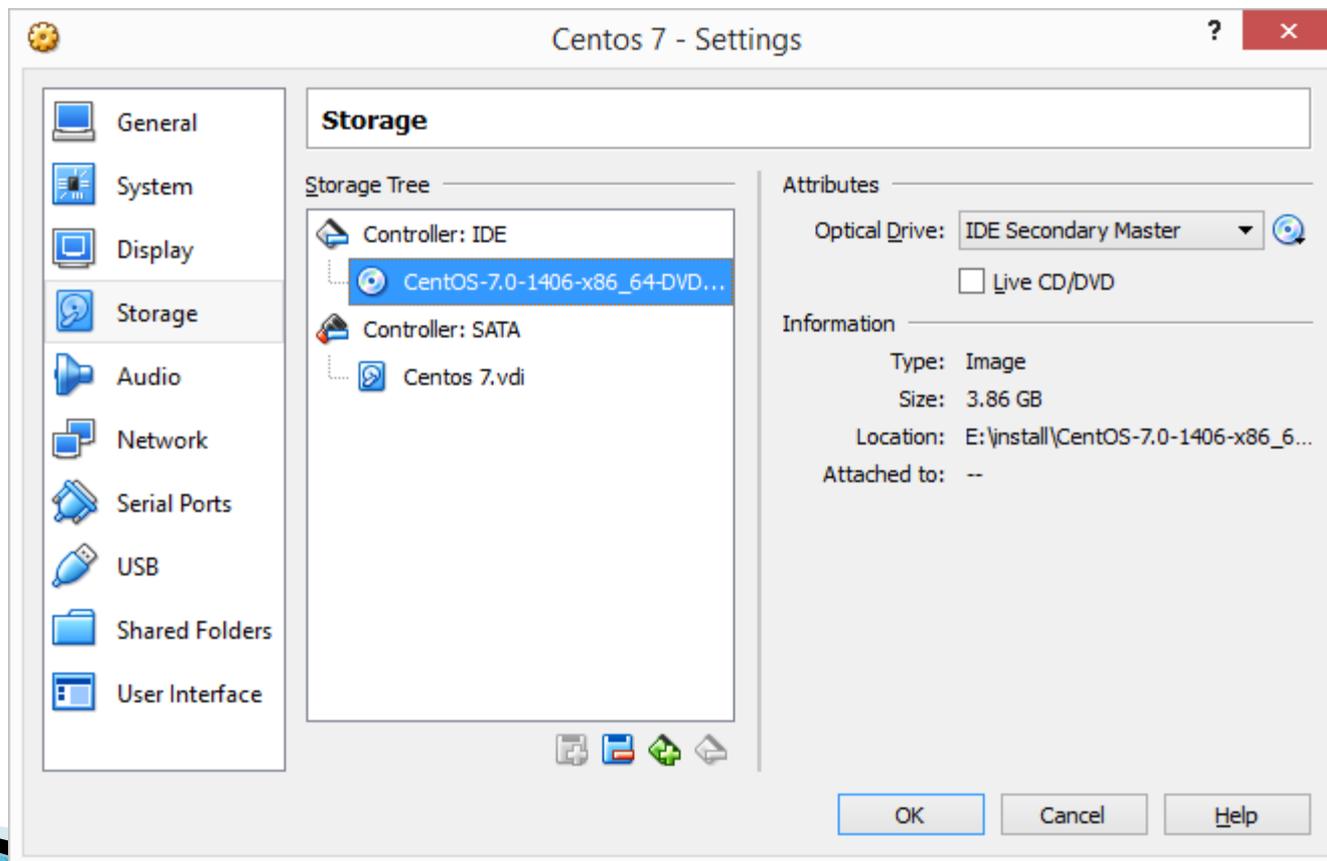
VM Storage

- IDE Controller
- Select ISO Image

PN-Virtual Machines: Oracle Virtualbox

VM Storage

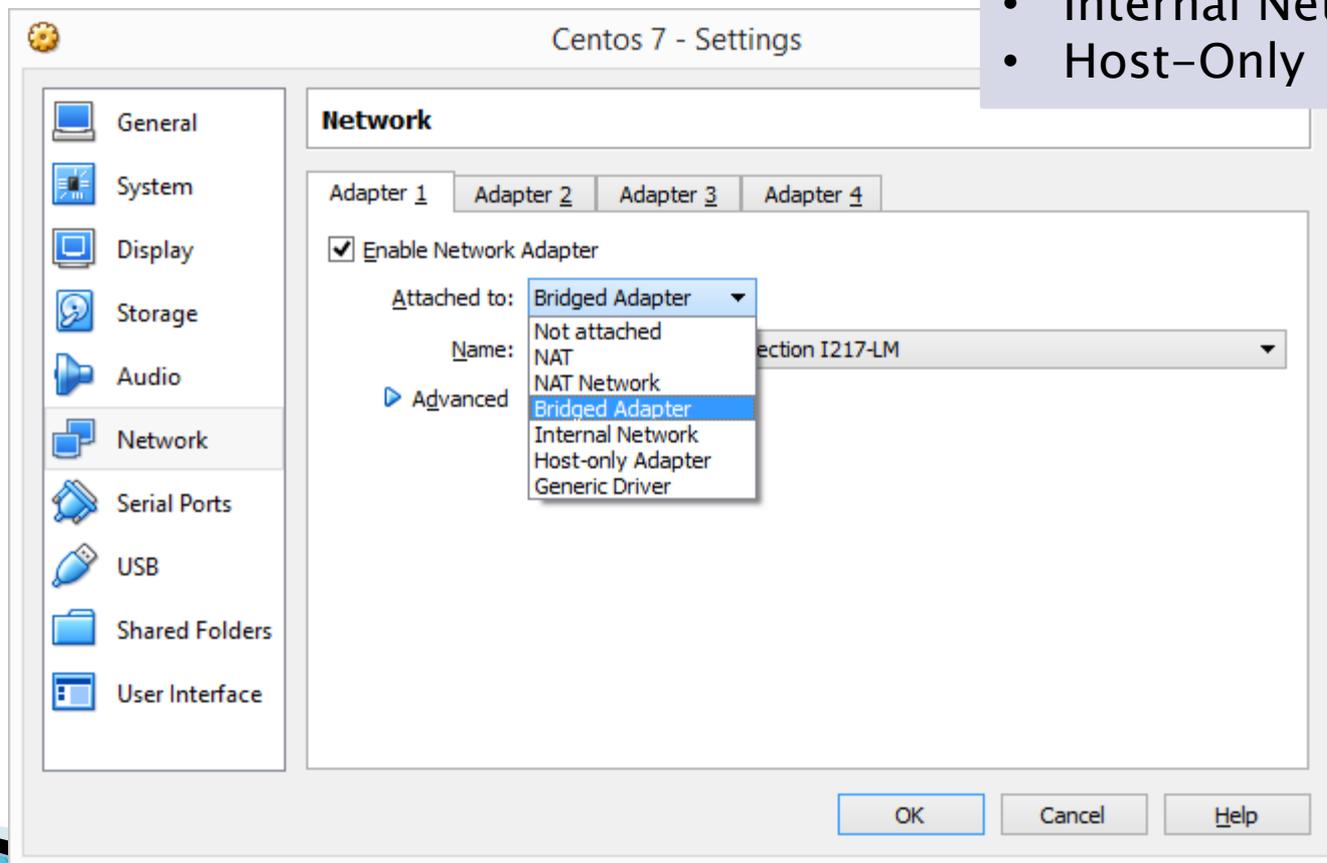
- Select ISO



PN-Virtual Machines: Oracle Virtualbox

Configure Network

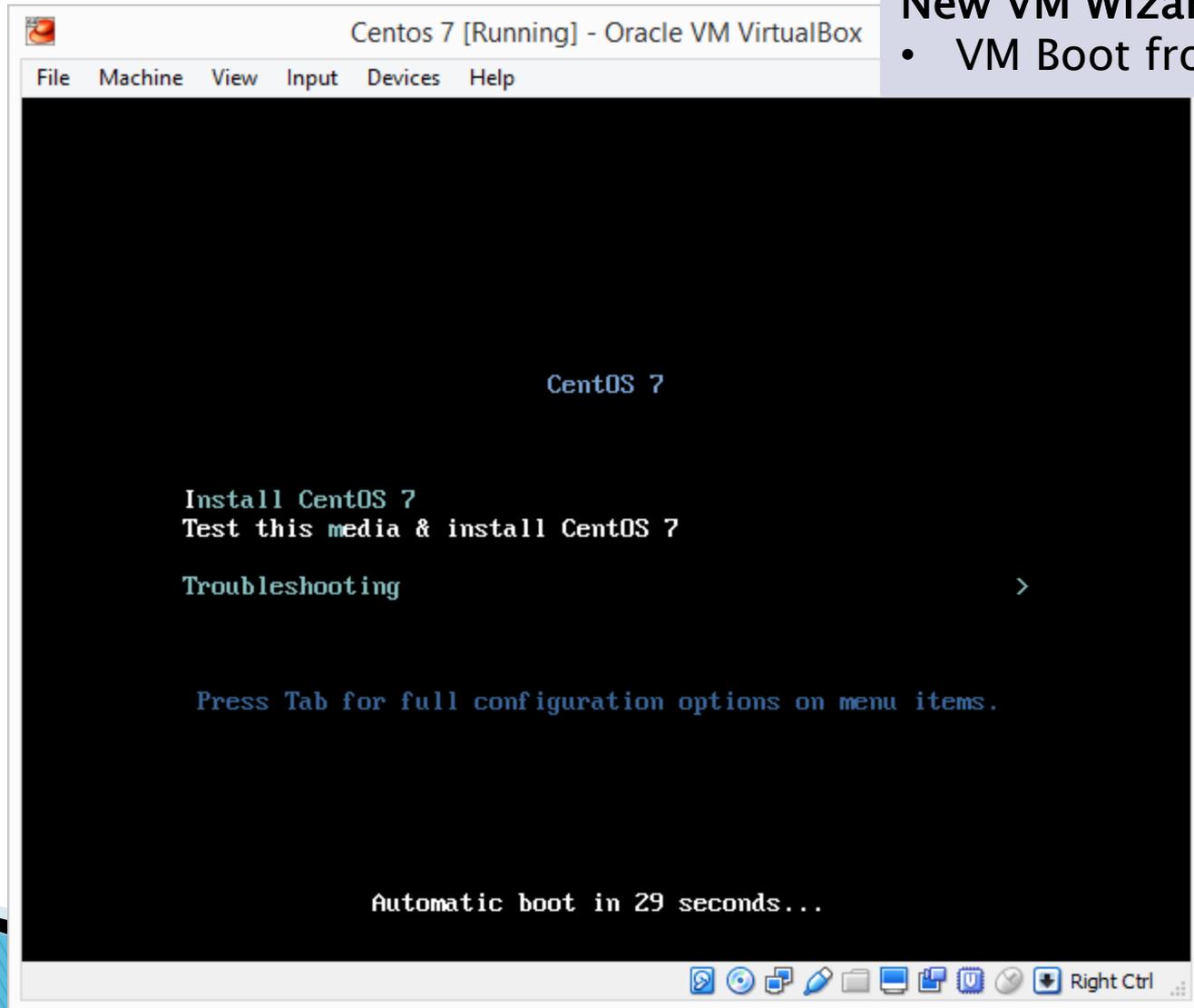
- Bridge
- NAT
- Internal Network
- Host-Only



PN-Virtual Machines: Oracle Virtualbox

New VM Wizard

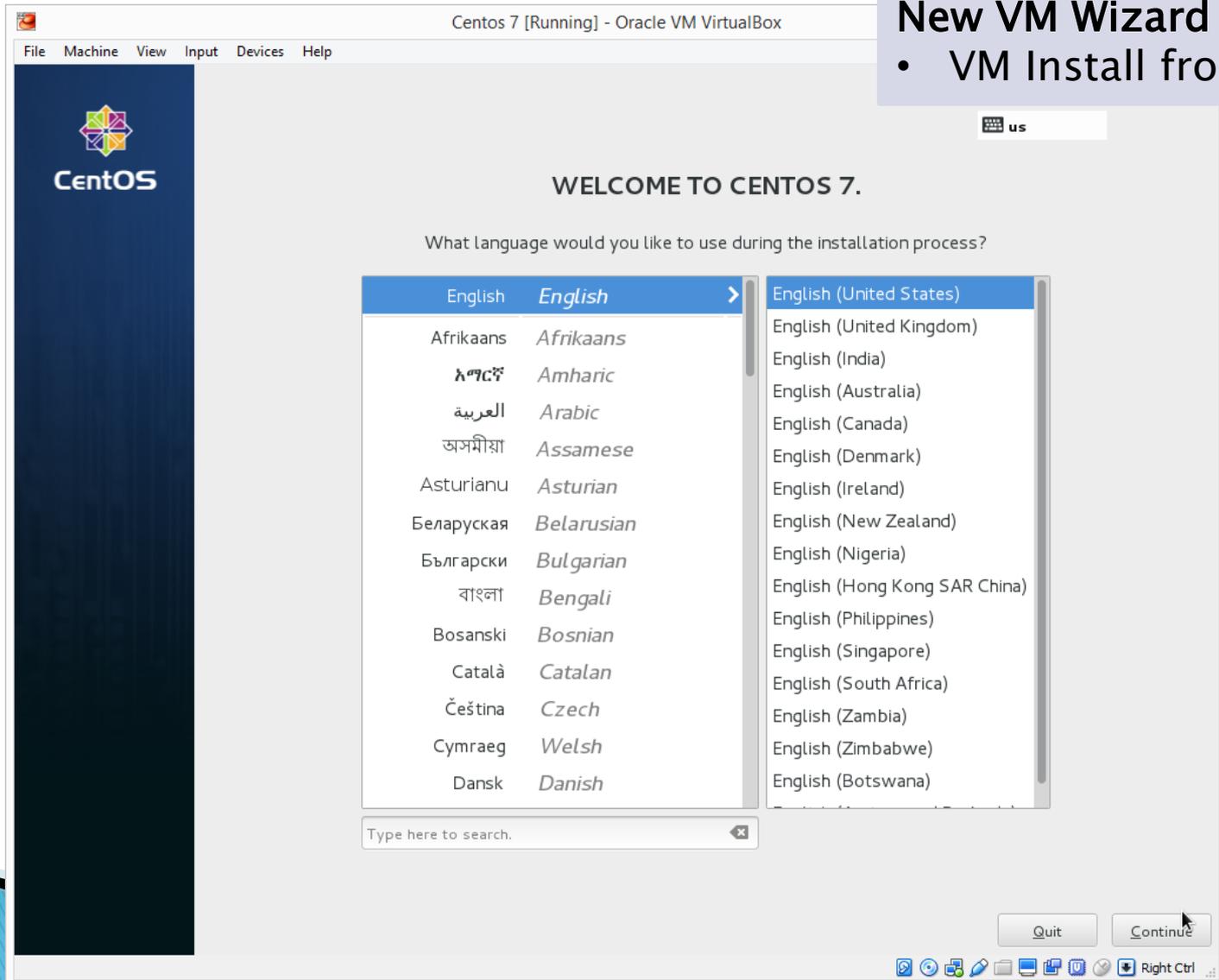
- VM Boot from ISO



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New VM Wizard

- VM Install from ISO



PN-Virtual Machines: Oracle Virtualbox

NOTE:

To Escape the Keyboard from Guest VM to Host
Press the right Ctrl Key

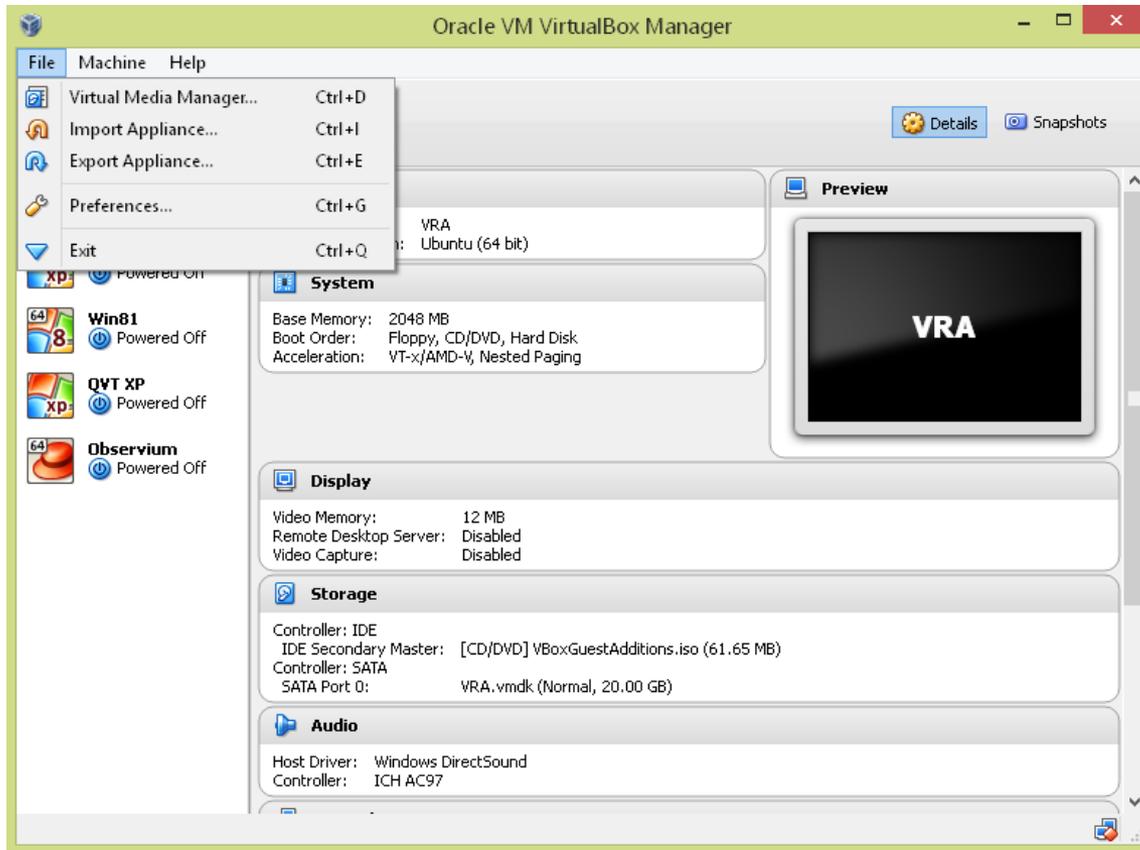
Keyboard Escape

- Right CTRL Key



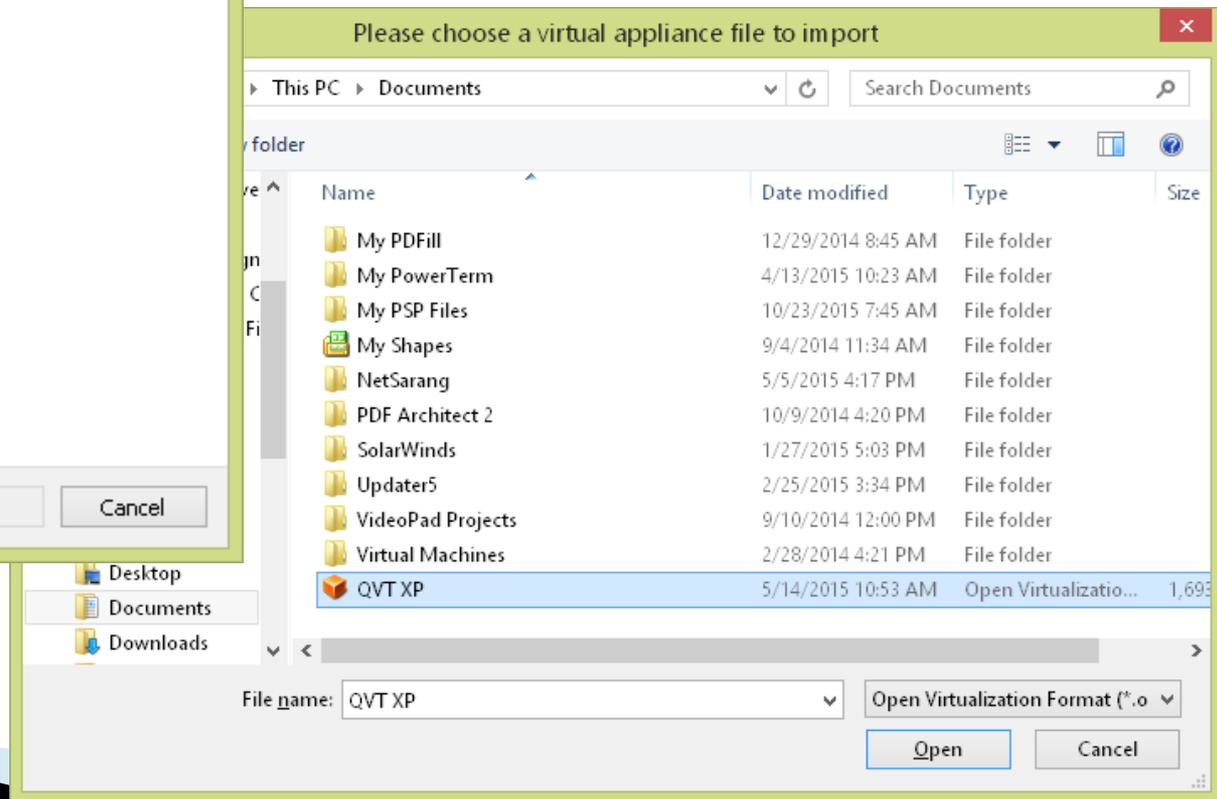
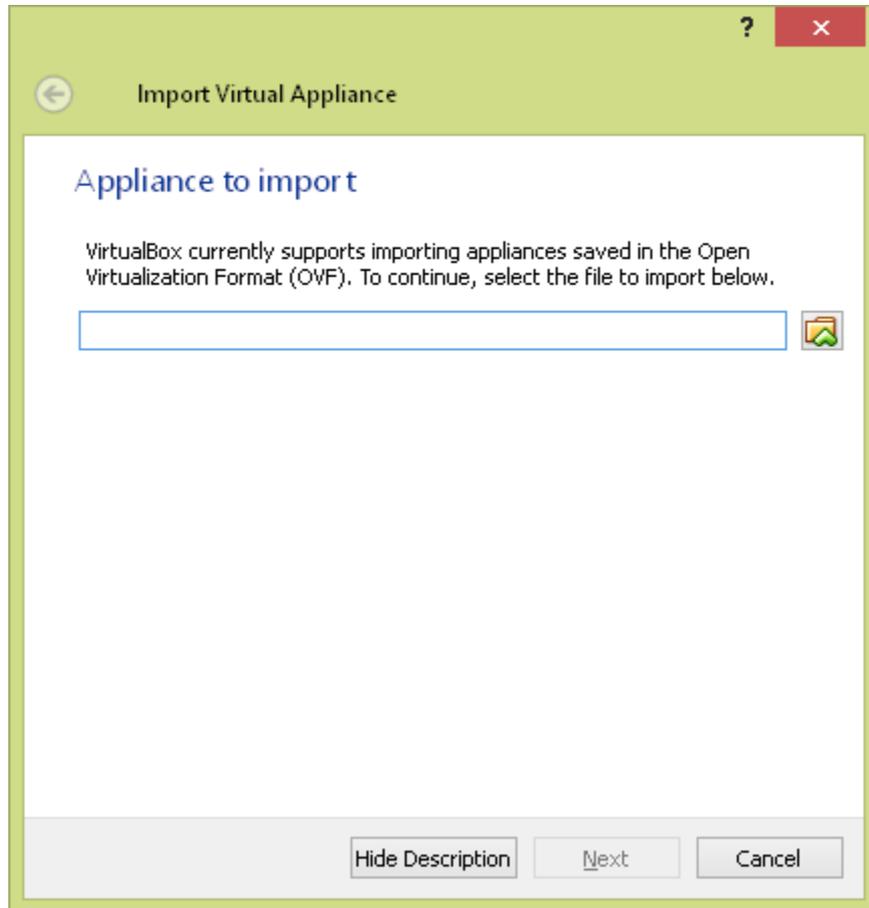
PN-Virtual Machines: Oracle Virtualbox

Import Appliance



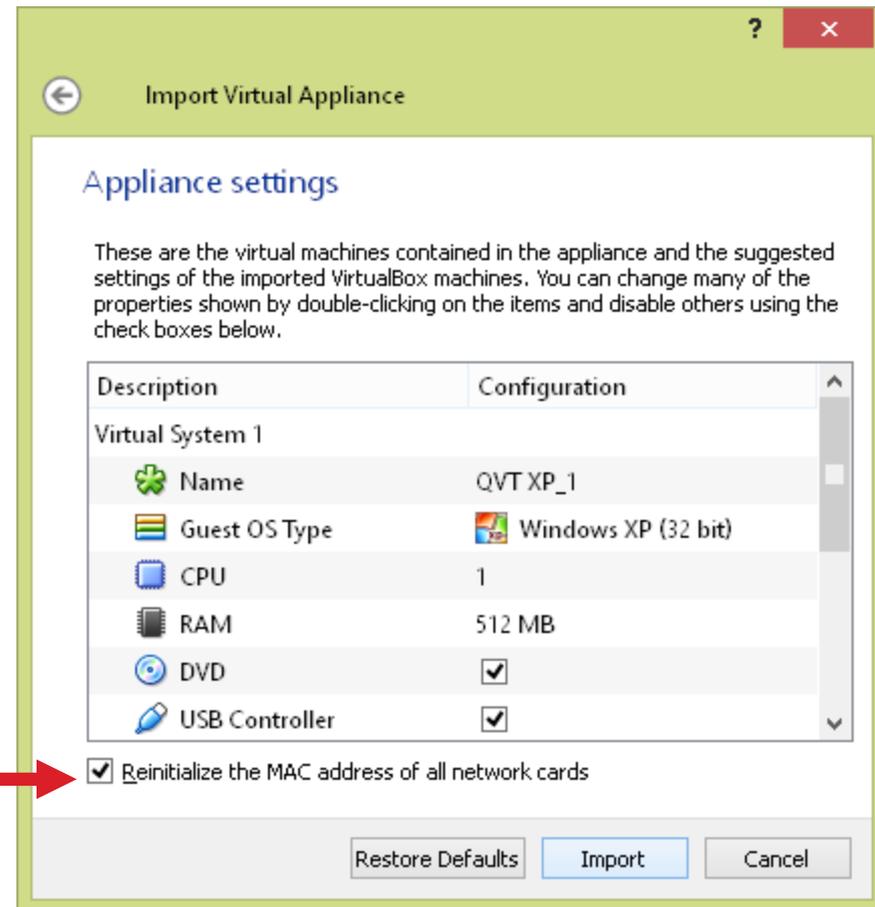
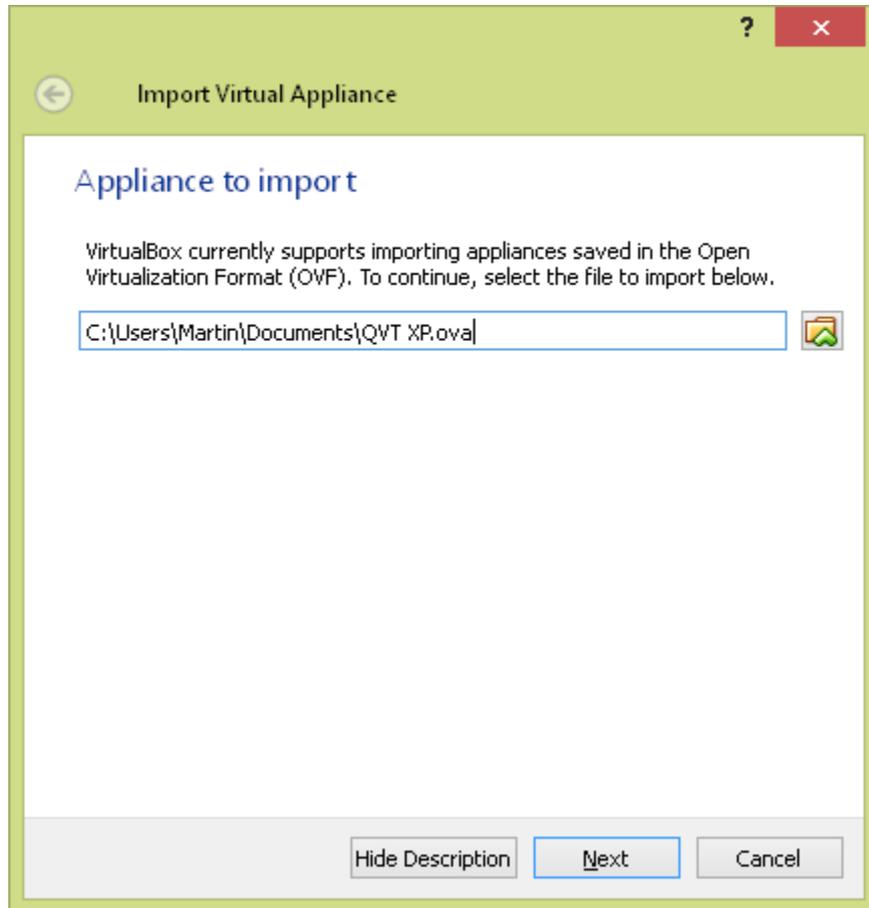
PN-Virtual Machines: Oracle Virtualbox

Import Appliance



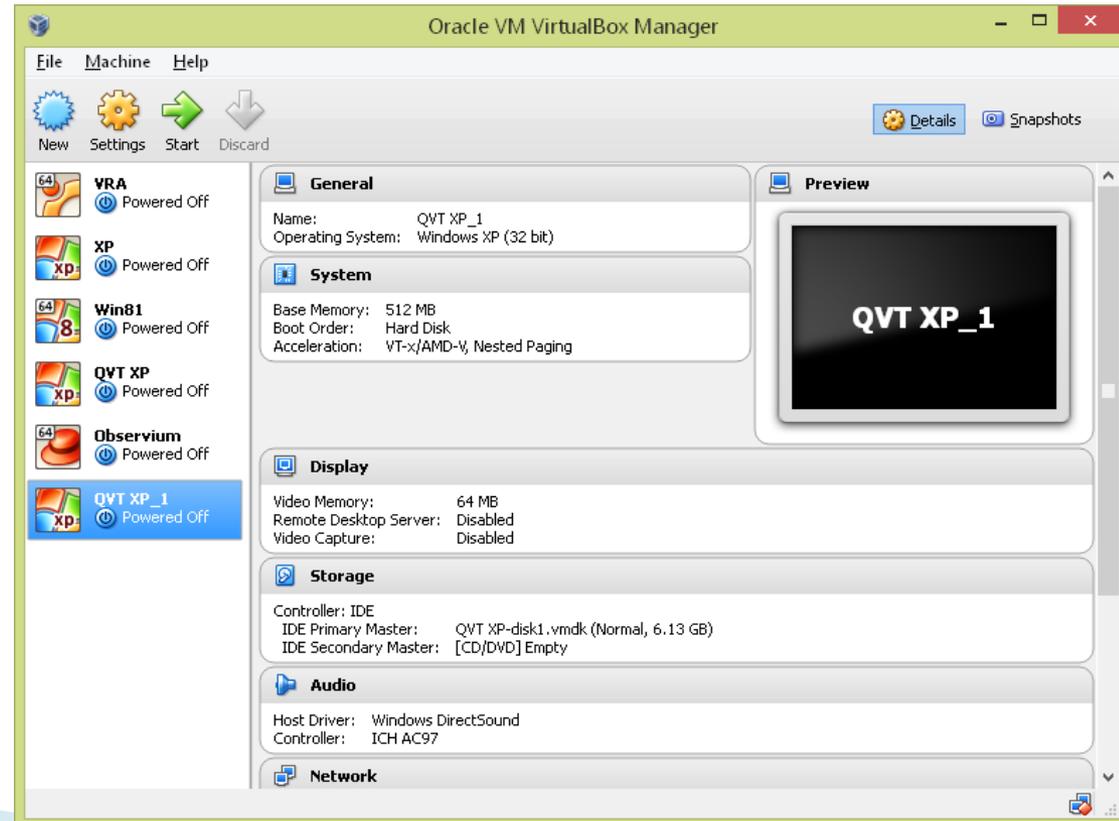
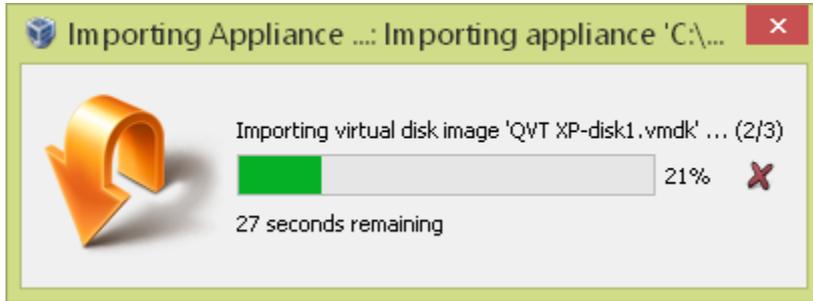
PN-Virtual Machines: Oracle Virtualbox

Import Appliance



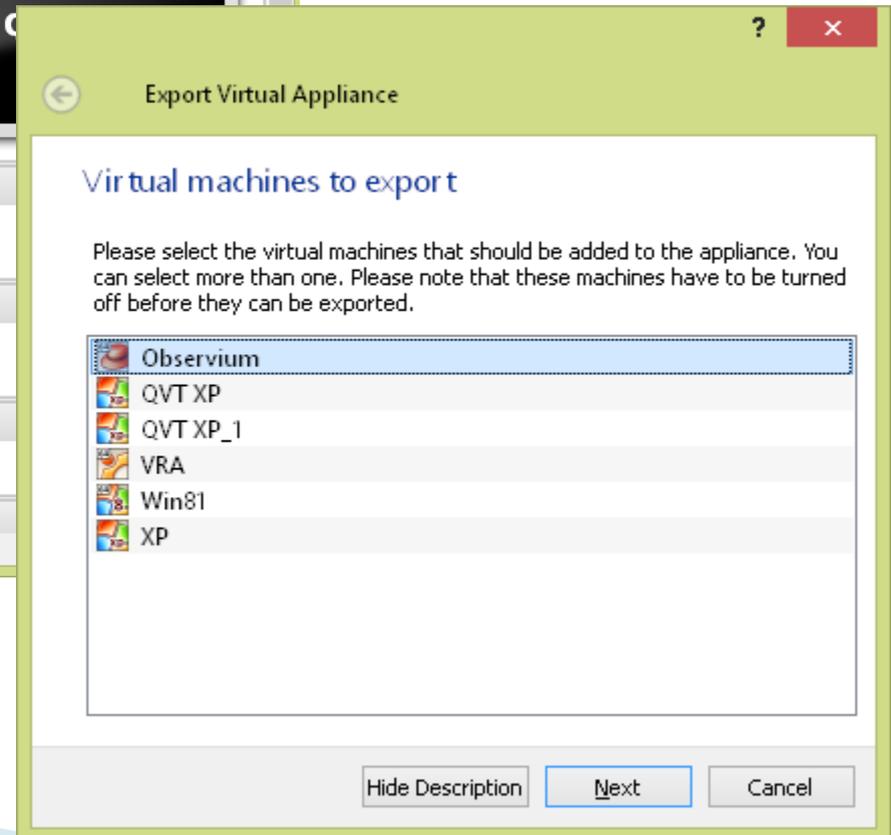
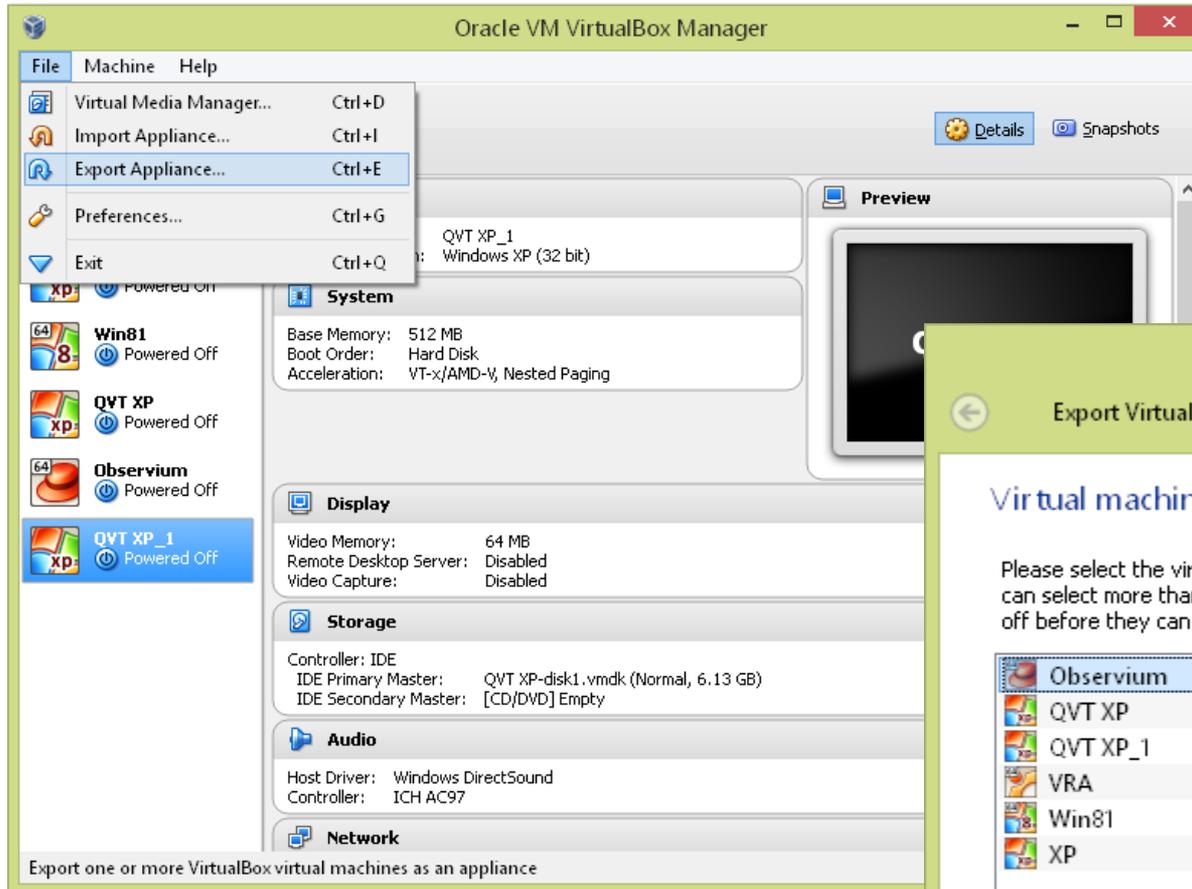
PN-Virtual Machines: Oracle Virtualbox

Import Appliance

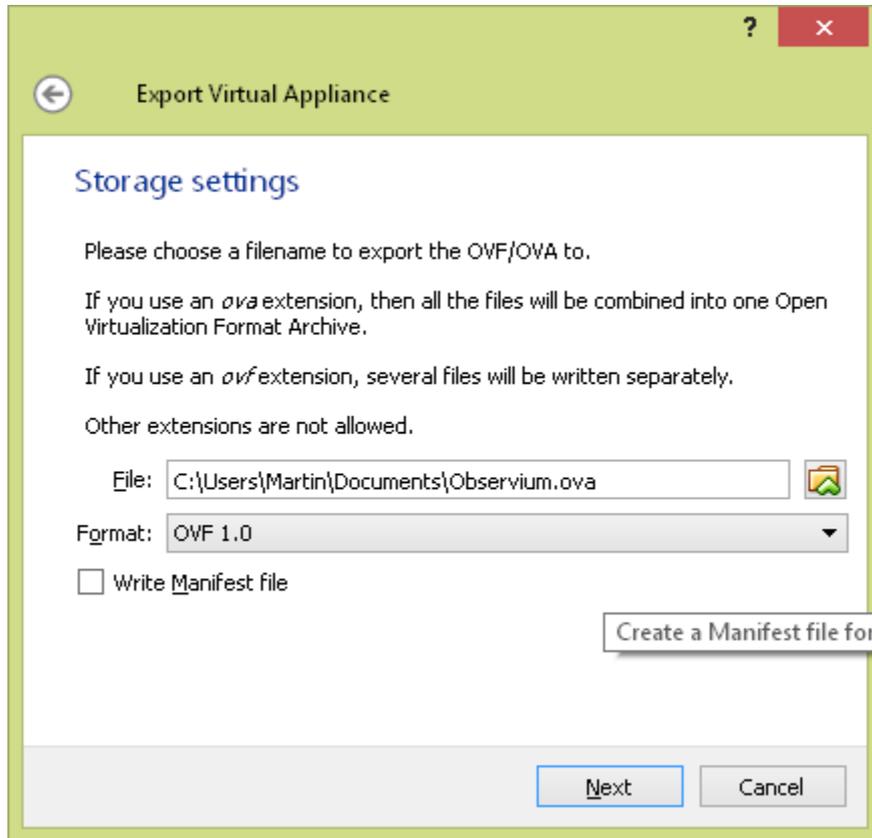


PN-Virtual Machines: Oracle Virtualbox

Export Appliance



PN-Virtual Machines: Oracle Virtualbox



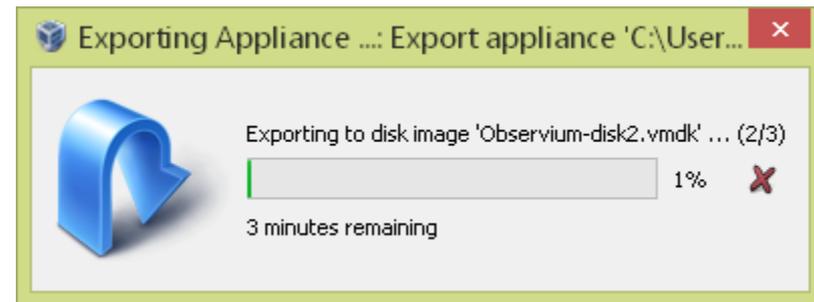
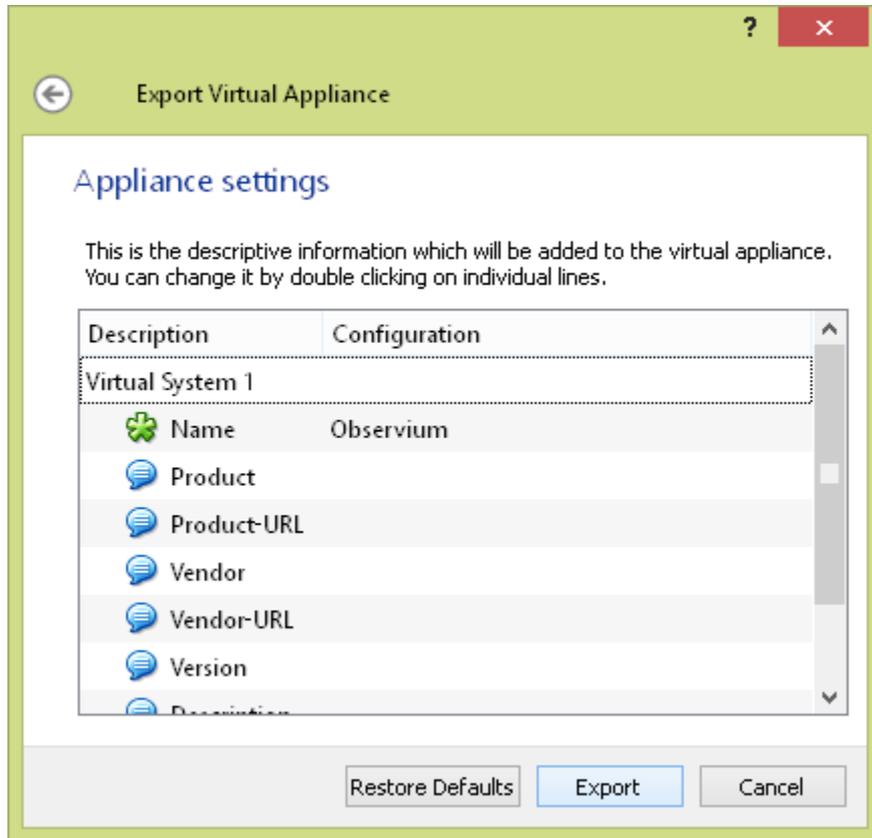
Export Appliance

OVF 1.0 Widely adopted international standard (adopted by ISO/IEC in 2011).

OVF 2.0 Enhanced set of capabilities, include support for network configuration along with the ability to encrypt the package to ensure safe delivery.

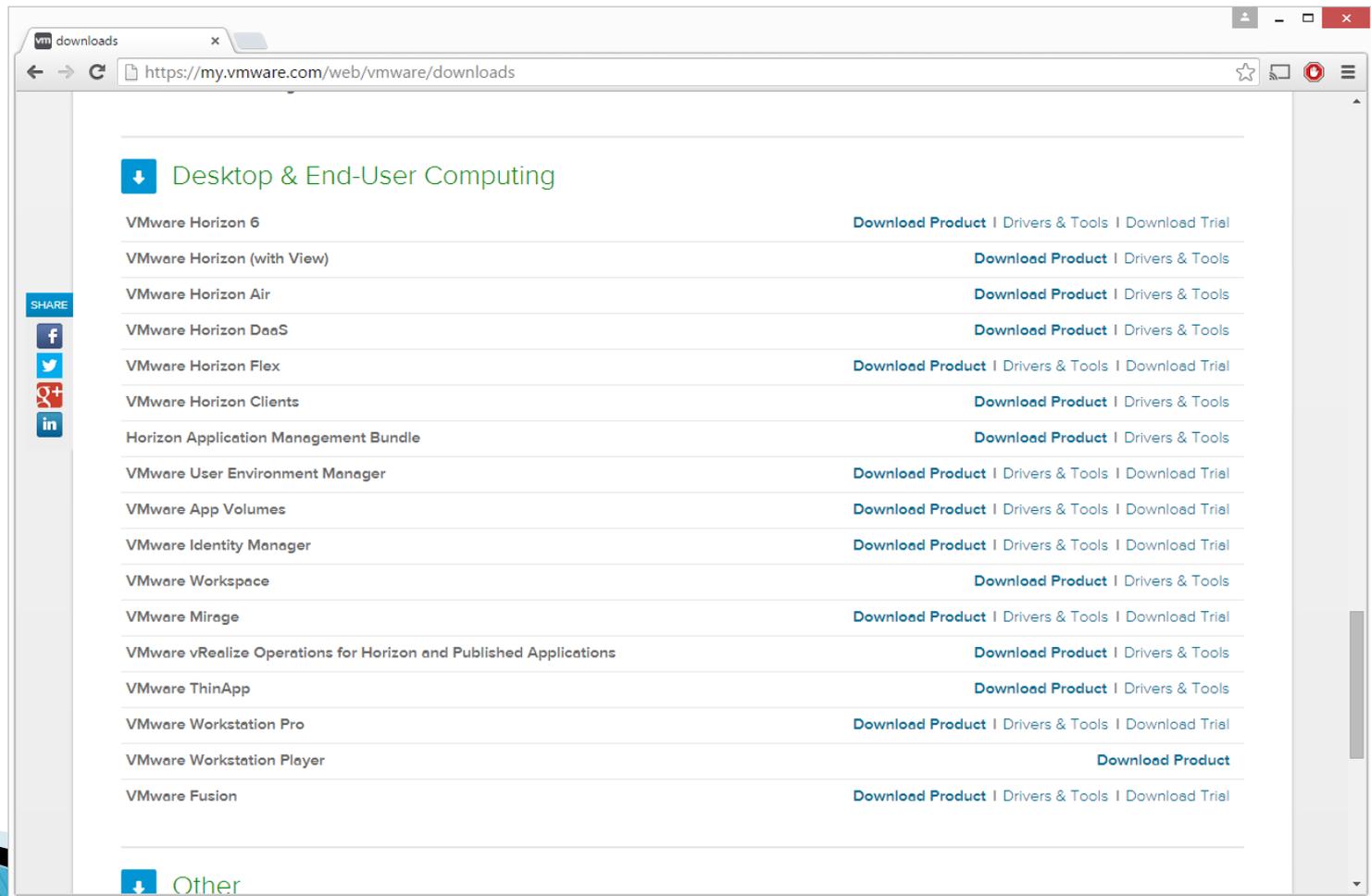
PN-Virtual Machines: Oracle Virtualbox

Export Appliance



PN-Virtual Machines: VMware Player

<https://my.vmware.com/web/vmware/downloads>

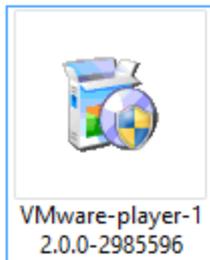


The screenshot shows a web browser window with the URL <https://my.vmware.com/web/vmware/downloads>. The page content is organized into a table with two main sections: 'Desktop & End-User Computing' and 'Other'. Each section contains a list of VMware products with links to download products, drivers, tools, and trials.

Product Name	Download Product Drivers & Tools Download Trial
VMware Horizon 6	Download Product Drivers & Tools Download Trial
VMware Horizon (with View)	Download Product Drivers & Tools
VMware Horizon Air	Download Product Drivers & Tools
VMware Horizon DaaS	Download Product Drivers & Tools
VMware Horizon Flex	Download Product Drivers & Tools Download Trial
VMware Horizon Clients	Download Product Drivers & Tools
Horizon Application Management Bundle	Download Product Drivers & Tools
VMware User Environment Manager	Download Product Drivers & Tools Download Trial
VMware App Volumes	Download Product Drivers & Tools Download Trial
VMware Identity Manager	Download Product Drivers & Tools Download Trial
VMware Workspace	Download Product Drivers & Tools
VMware Mirage	Download Product Drivers & Tools Download Trial
VMware vRealize Operations for Horizon and Published Applications	Download Product Drivers & Tools
VMware ThinApp	Download Product Drivers & Tools
VMware Workstation Pro	Download Product Drivers & Tools Download Trial
VMware Workstation Player	Download Product
VMware Fusion	Download Product Drivers & Tools Download Trial

PN–Virtual Machines: VMware Player

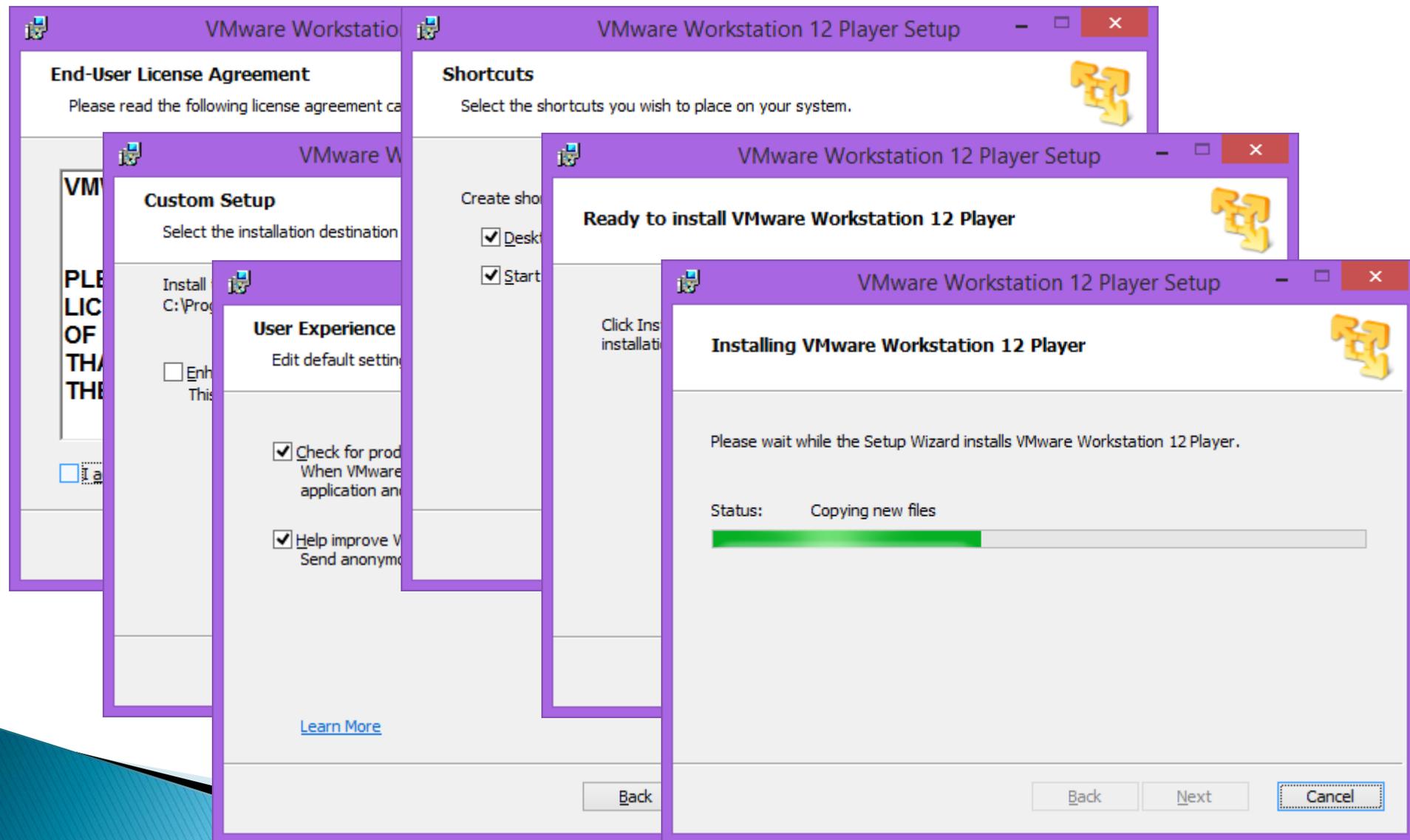
<https://my.vmware.com/web/vmware/downloads>



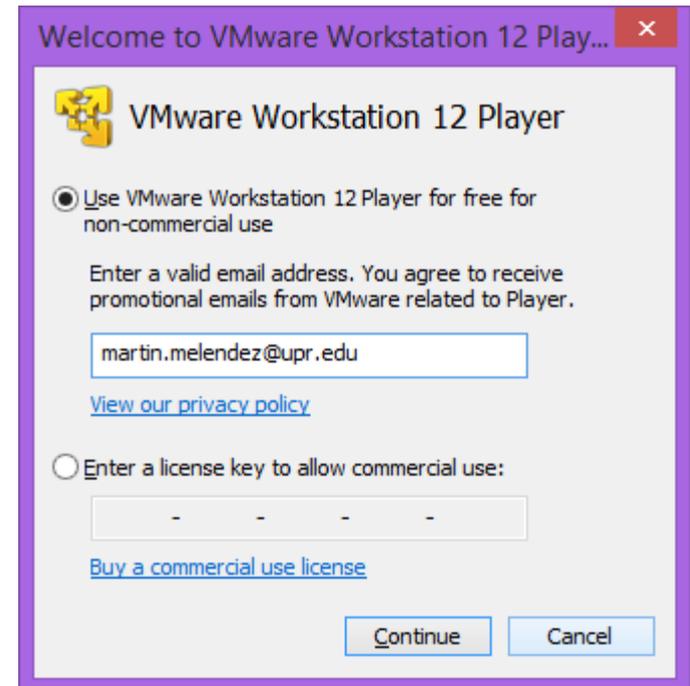
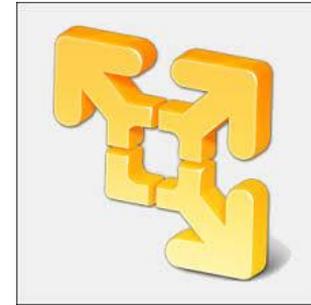
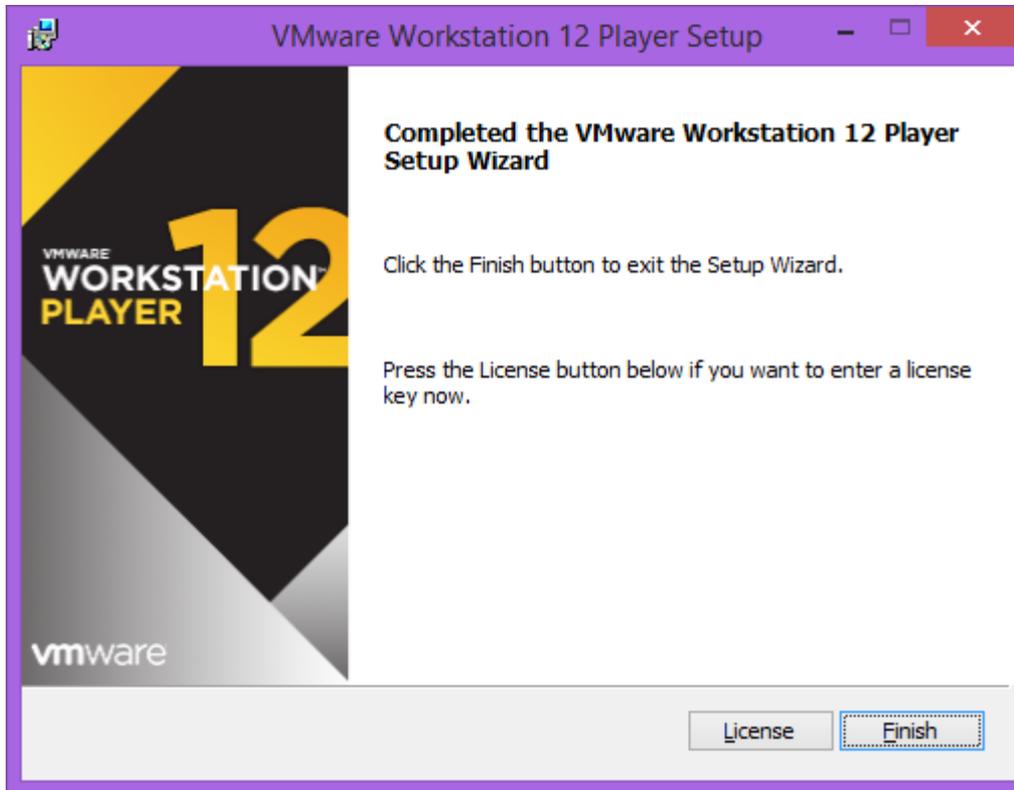
Download and double-click



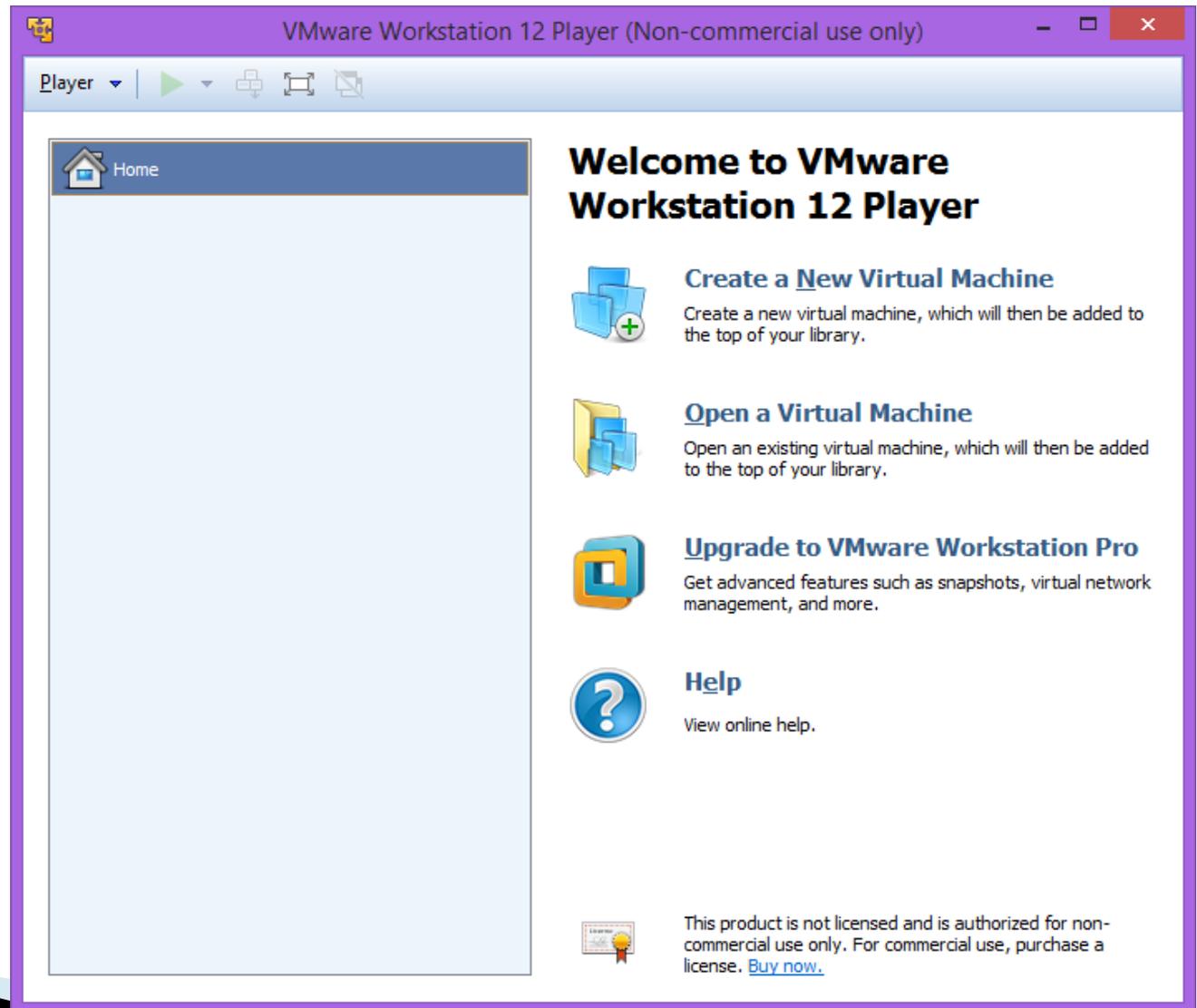
PN-Virtual Machines: VMware Player



PN-Virtual Machines: VMware Player



PN-Virtual Machines: VMware Player



PN-Virtual Machines: VMware Player

New Virtual Machine Wizard

Welcome to the New Virtual Machine Wizard

A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

Installer disc:

DVD RW Drive (D:)

Installer disc image file (iso):

Browse...

Select the installer disc image to continue.

I will install the operating system later.

The virtual machine will be created with a blank hard disk.

Help

< Back

Next >

VM Wizard

- Installer Disc
- ISO location

Browse for ISO Image

This PC > Desktop

Search Desktop

Organize New folder

Name	Date modified	Type
CentOS-7.0-1406-x86_64-DVD	3/25/2015 10:40 PM	Disc Image File

This PC

- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Local Disk (C:)
- VAULT-A (E:)

File name: CD-ROM images (*.iso)

Open Cancel

PN-Virtual Machines: VMware Player

New Virtual Machine Wizard

Welcome to the New Virtual Machine Wizard

A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?

Install from:

Installer disc:

DVD RW Drive (D:)

Installer disc image file (iso):

C:\Users\CTI\Desktop\CentOS-7.0-1406-x86_64-DVD

Browse...

CentOS 64-bit detected.

This operating system will use Easy Install. [\(What's this?\)](#)

I will install the operating system later.

The virtual machine will be created with a blank hard disk.

Help

< Back

Next >

Cancel

Easy install

- ISO OS detected
- User credentials

New Virtual Machine Wizard

Easy Install Information

This is used to install CentOS 64-bit.

Personalize Linux

Full name: Martin Melendez

User name: martin

Password: ●●●●

Confirm: ●●●●

This password is for both user and root accounts.

Help

< Back

Next >

Cancel

PN-Virtual Machines: VMware Player

New Virtual Machine Wizard [X]

Name the Virtual Machine
What name would you like to use for this virtual machine?

Virtual machine name:
CentOS7

Location:
C:\Users\CTI\Documents\Virtual Machines\CentOS7 [Browse...]

< Back Next > Cancel

Location and Disk Size

- VM Files path
- Disk Size
- Single / Multiple files

New Virtual Machine Wizard [X]

Specify Disk Capacity
How large do you want this disk to be?

The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.

Maximum disk size (GB): 20.0

Recommended size for CentOS 64-bit: 20 GB

Store virtual disk as a single file

Split virtual disk into multiple files

Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.

Help < Back Next > Cancel

PN-Virtual Machines: VMware Player

New Virtual Machine Wizard

Ready to Create Virtual Machine

Click Finish to create the virtual machine and start installing CentOS 64-bit and then VMware Tools.

The virtual machine will be created with the following settings:

Name: CentOS7
Location: C:\Users\CTI\Documents\Virtual Machines\CentOS7
Version: Workstation 12.0
Operating System: CentOS 64-bit

Hard Disk: 20 GB
Memory: 1024 MB
Network Adapter: NAT
Other Devices: CD/DVD, USB Controller, Printer, Sound Card

Customize Hardware...

Power on this virtual machine after creation

< Back

Finish

Cancel

Custom the VM

- Memory
- CPUs
- USB
- Sound Card

Hardware

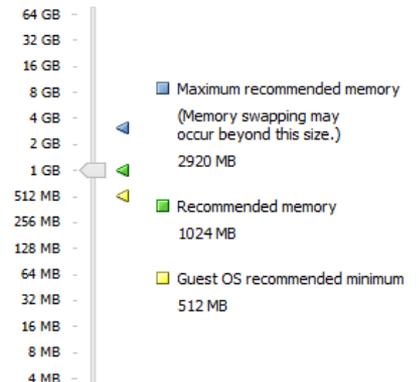
Device	Summary
--------	---------

Memory	1 GB
Processors	1
New CD/DVD (...)	Using file C:\Users\CTI\Desktop\C...
Network Adapter	NAT
USB Controller	Present
Sound Card	Auto detect
Printer	Present
Display	Auto detect

Memory

Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

Memory for this virtual machine: 1024 MB



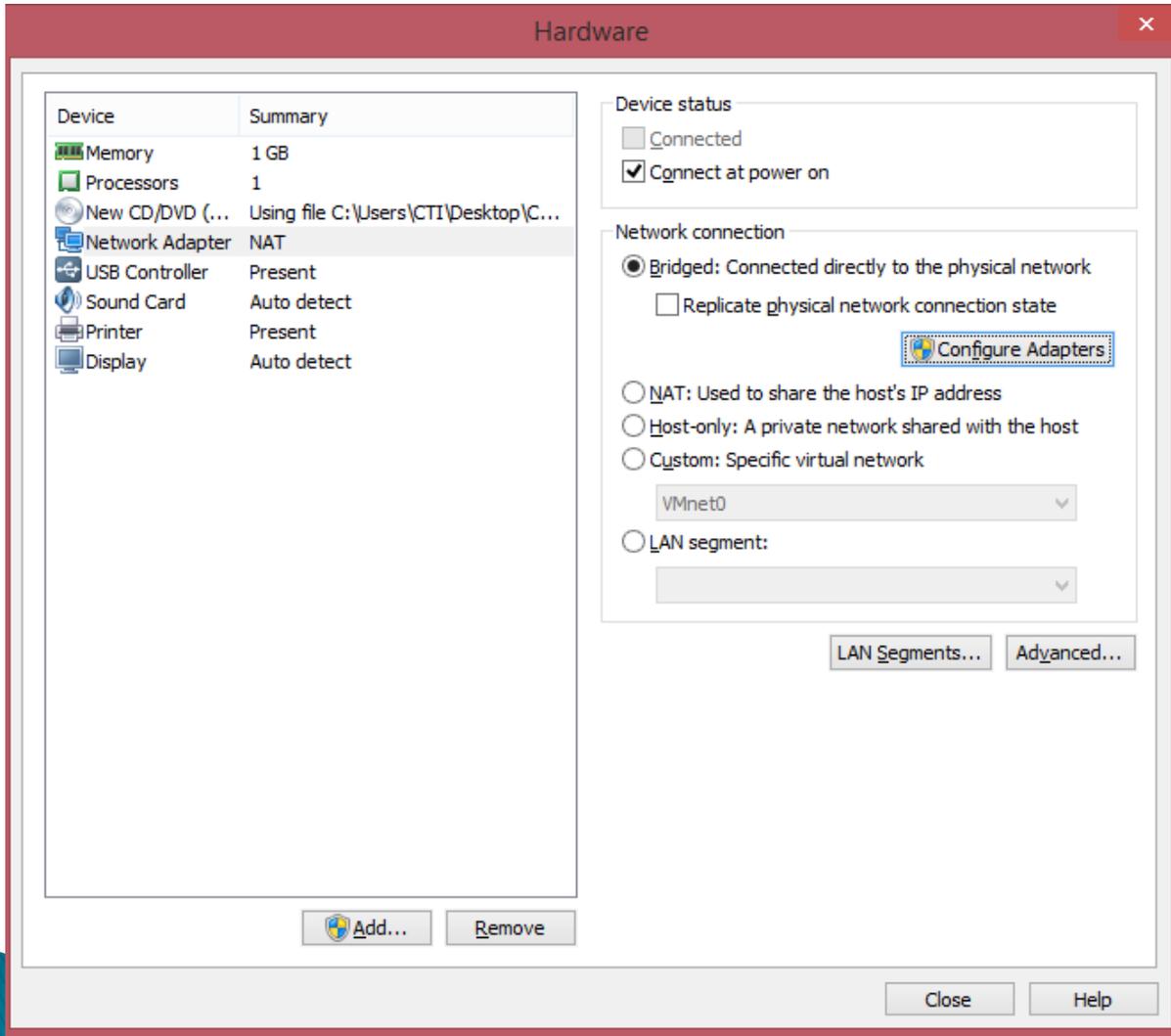
Add...

Remove

Close

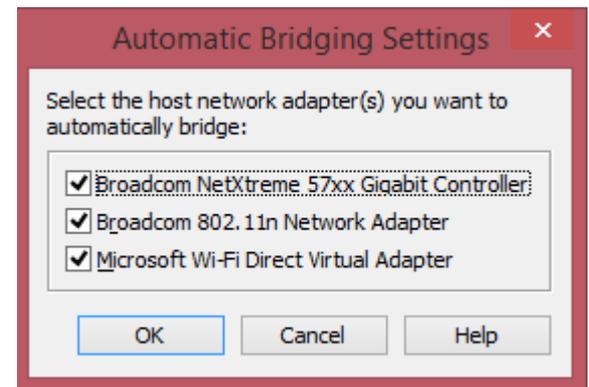
Help

PN-Virtual Machines: VMware Player



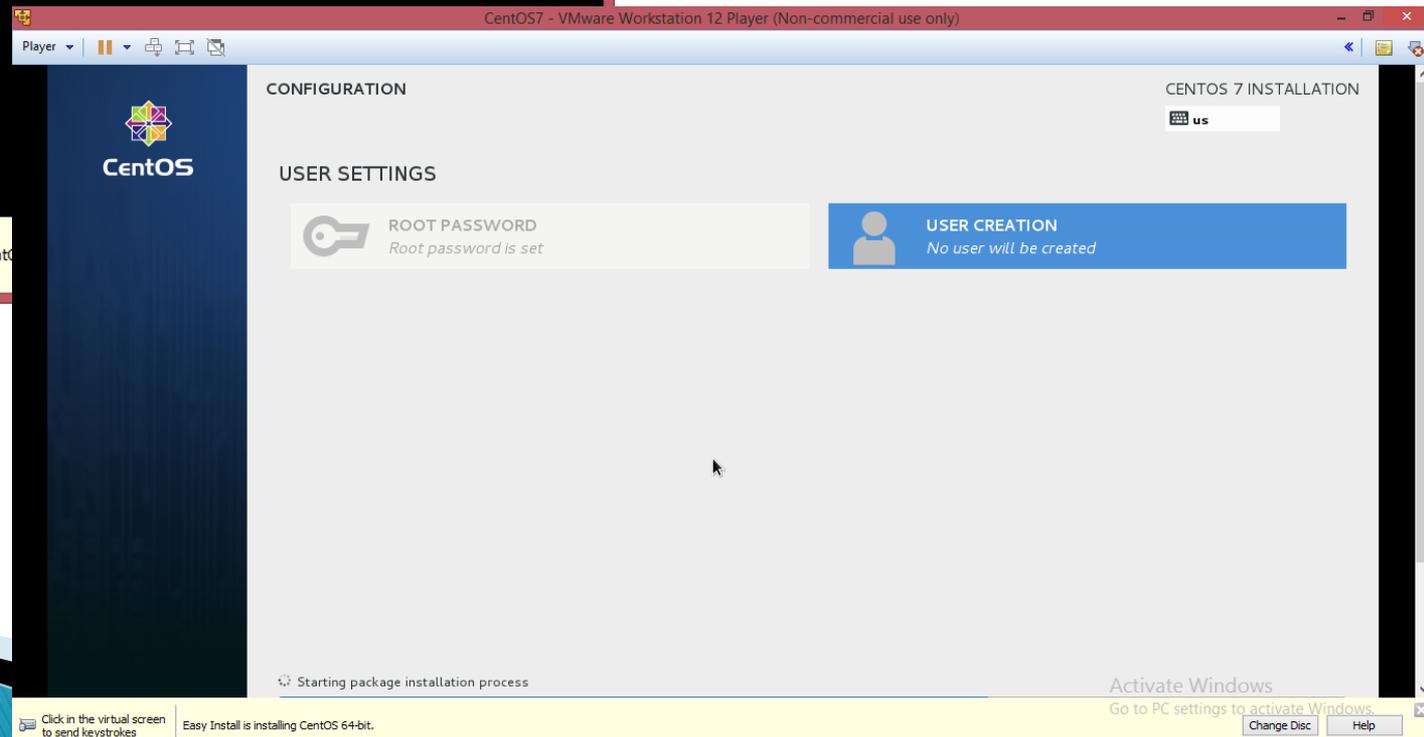
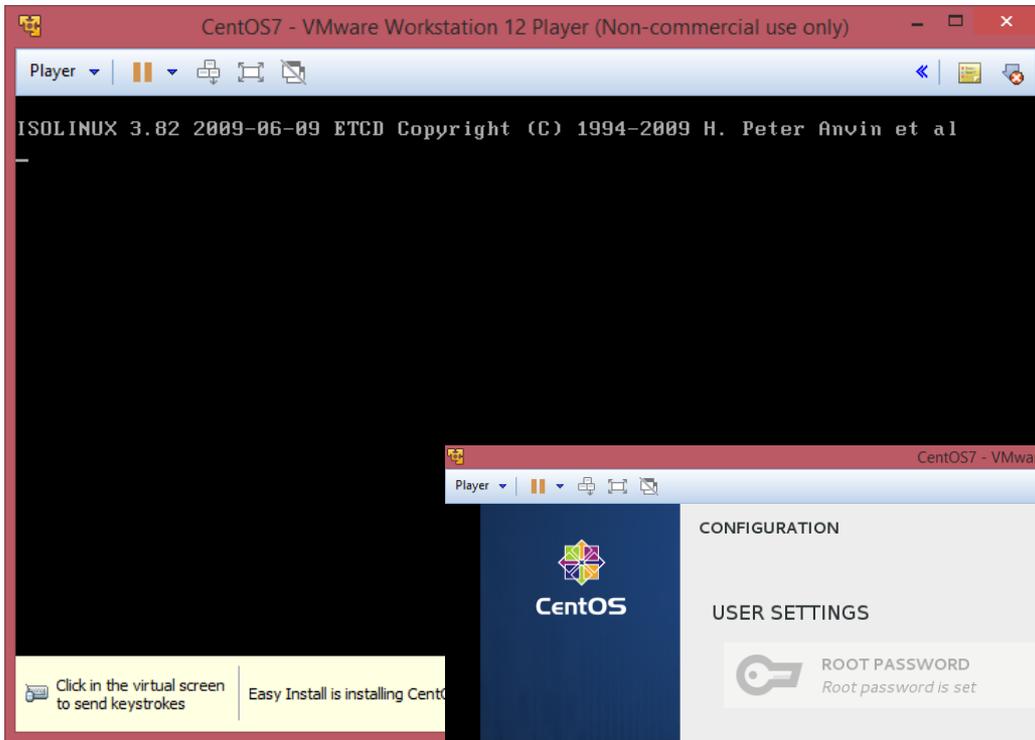
Network Interface

- Bridge
- NAT
- Host-Only
- Custom



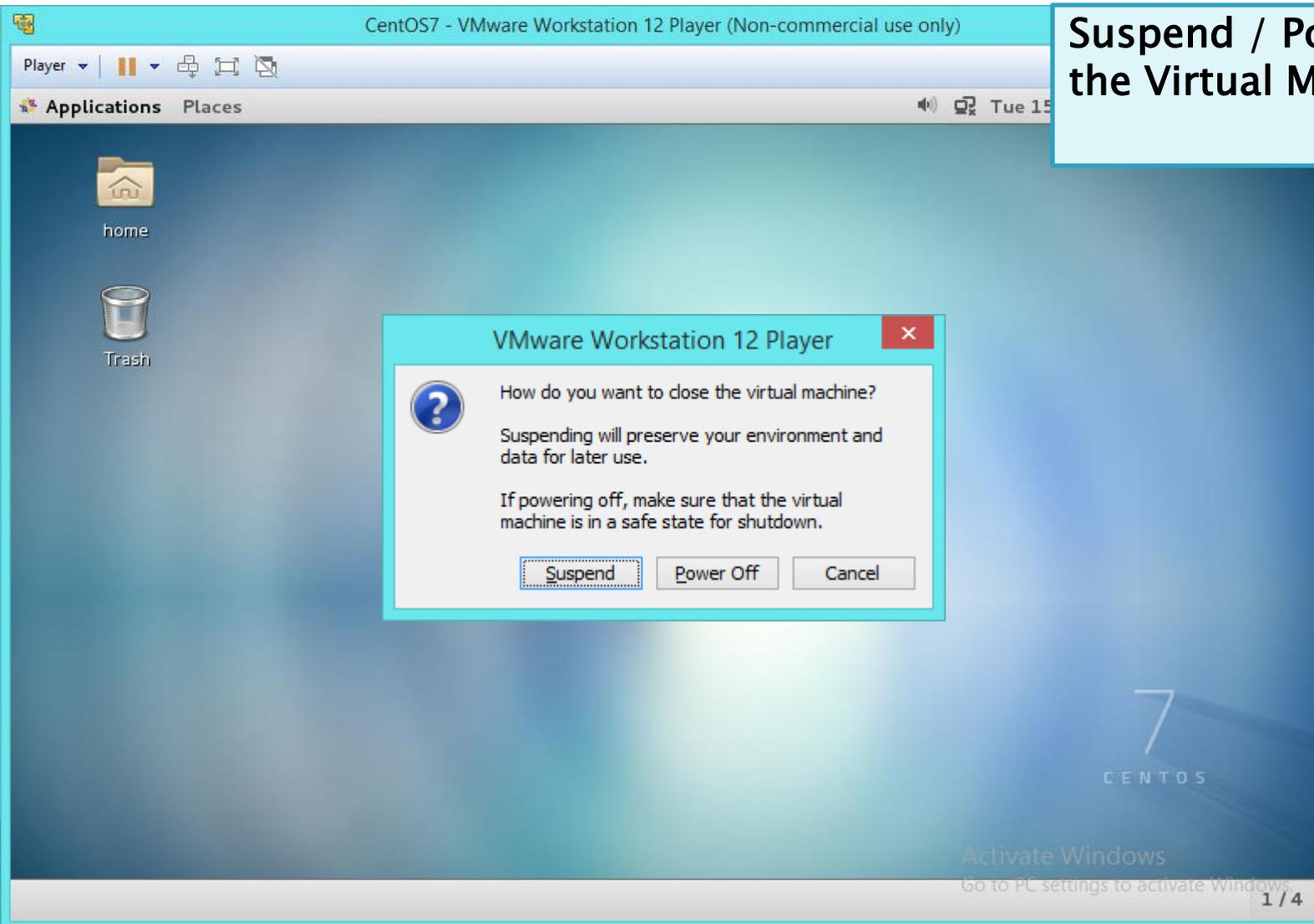
PN-Virtual Machines: VMware Player

Start the
Virtual Machine

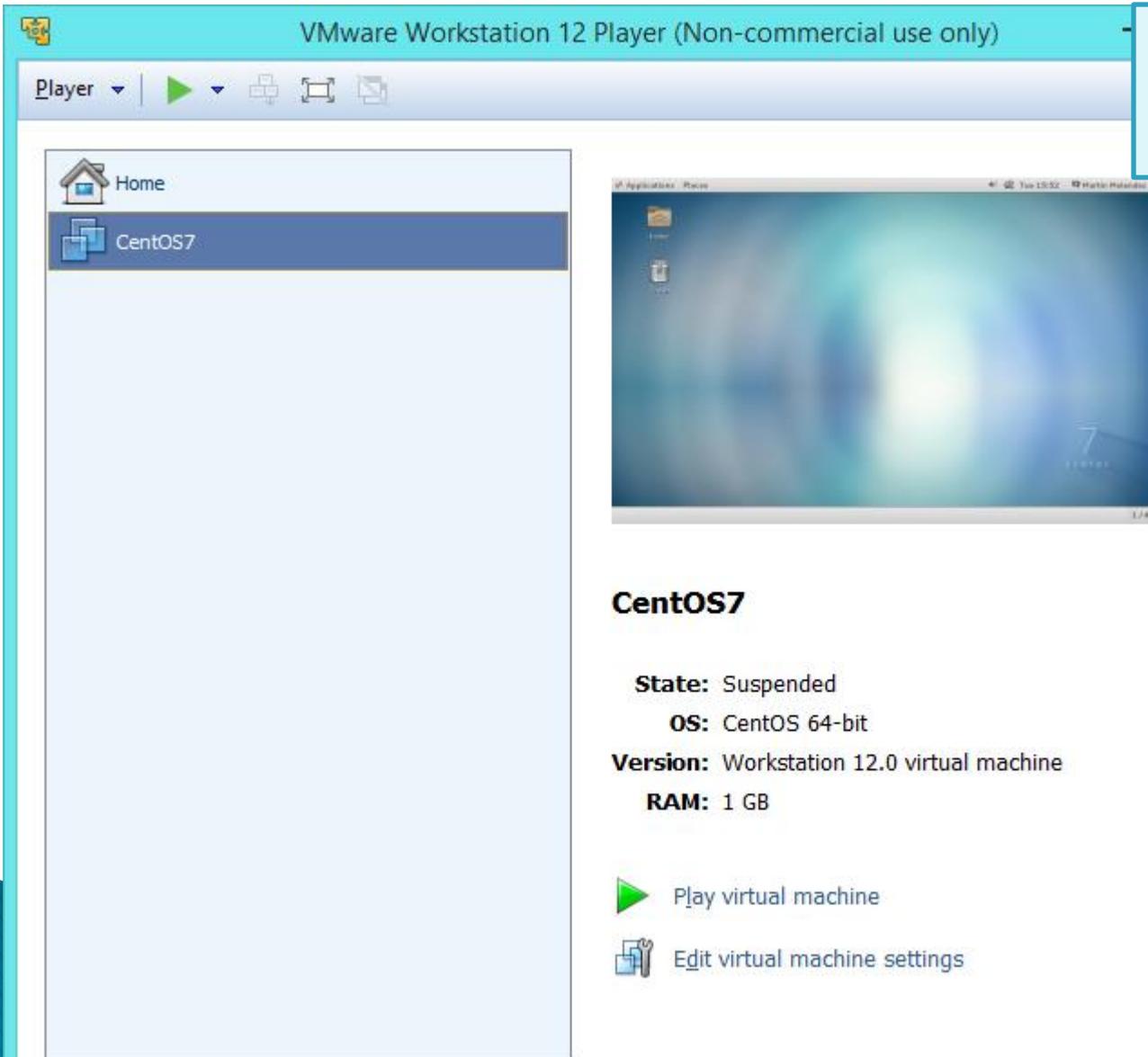


PN-Virtual Machines: VMware Player

Suspend / Power Off
the Virtual Machine



PN-Virtual Machines: VMware Player



Resume / Edit
the Virtual Machine

PN-Virtual Machines: VMware Player

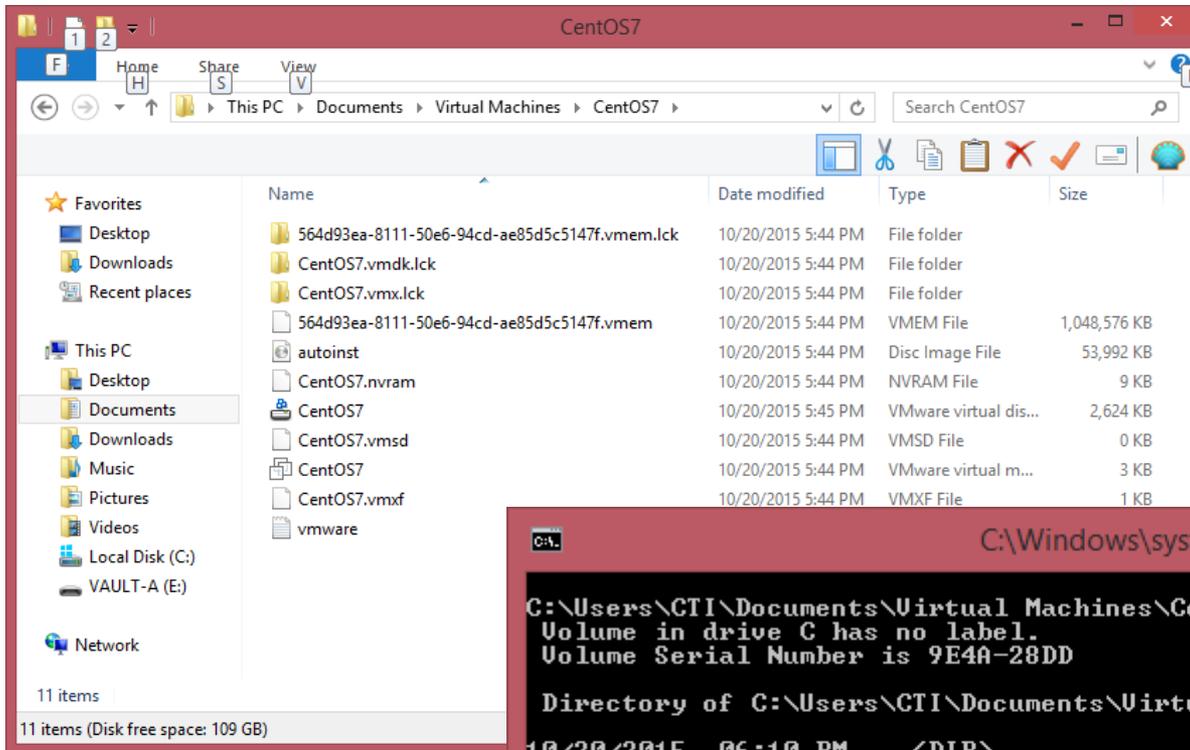
NOTE:

To Escape the Keyboard from Guest VM to Host
Press the **Ctrl + Alt** Keys

Resume / Edit
the Virtual Machine



PN-Virtual Machines: VMware Player



VM Files

- vmdk – Disk
- vmx – Configuration

